

# **Bridge Construction Records and Procedures Manual**



**Department of Transportation  
Structure Construction**

**Volume I**

Updated November 30, 2023

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## Preface for the *Bridge Construction Records and Procedures Manual*

The *Bridge Construction Records and Procedures Manual (BCR&P Manual)* provides Structure Construction (SC) specific policies, processes, procedures, expectations, technical guidance, and specification interpretation related to the duties of SC staff. The *BCR&P Manual* is not a contract document and is intended to be used as a resource to guide and assist SC staff in contract administration. The *BCR&P Manual* includes information that complements the information in the *Construction Manual* and other SC technical manuals available on the [SC intranet](#) and the [Caltrans internet](#).

### I – Background and Format

The first reported use of the *BCR&P Manual* was in 1964 by James E. Roberts (retired in 2001 as Chief Deputy Director, served as the California’s State Bridge Engineer for fifteen years, and recognized by the [James E. Roberts Award](#) which is one of the Outstanding Management and Engineering in Transportation Awards). It was a time when bridge contracts were separate from the road contracts and the *BCR&P Manual* provided field staff with guidance for administering a field office and construction projects.

Structure Construction administers projects firmly, fairly, and consistently based on the following ranked priorities:

1. Safety
2. Structural integrity
3. Functionality
4. Aesthetics, including visual and rideability.

As good stewards of public SC manage time and money to ensure the four priorities above are achieved. The priorities above are the goals of all projects. Time and money are the tools used to achieve the four priorities. Saving time and money shall not supersede achieving the four priorities.

This policy sets the standard for how SC operates, in support of the Caltrans Mission, Vision, and Goals, the Director’s Policies and the Division of Construction’s Policies. This policy is the highest level, with all other SC processes supporting it.

Information for the *BCR&P Manual* is organized in the following two volumes:

- Volume I, which includes information related to administrative responsibilities for documenting, reporting, and recording construction operations. Volume I is divided by the following lettered sections:
  - Section A, SC Administrative Processes
  - Section B, Safety
  - Section C, Project-Direct Construction Processes
  - Section D, SC Bridge Construction Engineers and Area Construction Managers – Project-Direct Processes
  - Section E, SC Bridge Construction Engineers and Area Construction Managers – Supervisory Processes
  - Section F, SC Quality Management System.
- Volume II, which includes information related to the technical aspects of SC operations. Volume II is divided into numbered sections that align with the [Contract Specifications](#). Sections of the specifications, such as Section 22, *Finishing Roadway*, are not covered in Volume II of the *BCR&P Manual* as this is work covered by the Division of Construction.

Each section of the *BCR&P Manual* contains the following:

- *A Table of Contents*
- Bridge Construction Memos.

The *BCR&P Manual* uses the following two terms:

1. Contract documents, which is used to refer to all the contract components as defined in Section 5-1.02, *Control of Work – Contract Components*, of the *Standard Specifications*; they include the:
  - 1.1 Special provisions
  - 1.2 Project plans
  - 1.3 Standard specifications
  - 1.4 Revised standard plans
  - 1.5 Standard plans
  - 1.6 Supplemental project information.
2. *Contract Specifications*, which is used to refer to:

- a. The specification components of the contract as defined in Section 5-1.02, *Control of Work – Contract Components*, of the *Standard Specifications*; they include the:
  - 2.1 Special provisions
  - 2.2 Standard specifications.
- b. As well as the following additional published revisions that include the:
  - 2.3 Revised standard specifications
  - 2.4 Non-standard special provisions.

## II – Revisions

When using the *BCR&P Manual*, be alert for new or revised specifications that may affect current manual guidance. As specifications, practices, procedures and policies change, SC will issue updates to the *BCR&P Manual*. The issue date reflects the publication date of the most recent revision, and it is understood that the corresponding version of the specifications and provisions were used in to revise the BCMs.

Revisions are announced by a *Change Letter* that provides a description of changes made and instructions to delete, revise or add content to the *BCR&P Manual*. The *Change Letter* has the following naming convention: *Change Letter Volume Number-Year-Change Number*. For example:

- *Change Letter I-2023-#02* informs the reader that this is the second revision in the year 2023 for Volume I of the *BCR&P Manual*.
- *Change Letter II-2022-#01* will be the first revision in the year 2022 for Volume II of the *BCR&P Manual*.

The *Table of Contents* for a section is revised each time a revision, addition and/or deletion is made to a section.

All revisions for the *BCR&P Manual* can be accessed on the [SC intranet](#).

## III – Distribution

All revisions are sent by email to all SC staff. Concurrent with the email notification, SC's technical manuals on the intranet are updated with all changes.

## IV – Errors or Omissions

Structure Construction encourages staff to report any errors or omissions discovered in the *BCR&P Manual*. Reporting errors, omissions or suggestions should be sent to the SC Technical Manual Manager at [SC.TMM@dot.ca.gov](mailto:SC.TMM@dot.ca.gov).

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# Table of Contents

Issue Date	Nature of Changes	Approved By
11/30/2023	Revise Section A-0. Revise and Remove Sections 1-0.0, 2-0.0, and B-2.00	Richard Foley
10/05/2023	Revise and Remove Section 13-0.0	Richard Foley
08/31/2023	Revised Section C-0	Richard Foley

<u>Section No.</u>	<u>Issue Date</u>	<u>Title</u>
A-0	11/30/2023	SC ADMINISTRATIVE PROCESSES FOR PROCESSES OWNED BY OTHERS
B-0	04/25/2023	SAFETY
C-0	08/31/2023	PROJECT DIRECT CONSTRUCTION PROCESSES
D-0	03/30/2021	SC BRIDGE CONSTRUCTION ENGINEERS AND AREA CONSTRUCTION MANAGERS – PROJECT-DIRECT PROCESSES
E-0	05/31/2022	SC BRIDGE CONSTRUCTION ENGINEERS AND AREA CONSTRUCTION MANAGERS – SUPERVISORY PROCESSES
F-0	07/31/2020	SC QUALITY MANAGEMENT SYSTEM

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# Table of Contents

## Revision and Approval

Revision	Date	Nature of Changes	Approved By
5	11/30/2023	Revised Attachment 1 of BCM A-1	Richard Foley
4	04/25/2023	Added BCM A-1	Richard Foley
3	11/30/2021	Updated BCM A-2	Richard Foley

Memo No	Issue Date	Title
A-1	04/25/2023	SC STAFF RESPONSIBILITIES FOR PROCESSES OWNED BY OTHERS
A-2	11/30/2021	SC TECHNICAL TEAM OPERATION
A-3	12/04/2020	SC OVERTIME ADMINISTRATION

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# SC Staff Responsibilities for Processes Owned by Others

## Revision and Approval

Revision	Date	Nature of Changes	Approved By
0	04-25-2023	Original Issue	Richard Foley

[Click here](#) to request previous versions      Contact [SC Technical Team P](#) for questions

## Background

This process establishes Structure Construction (SC) communication protocols and general responsibilities for Caltrans processes managed by other functional units.

Structure Construction is an organization built upon technical expertise, trust, and empowerment of staff to function with competency. Awareness of SC responsibilities enable staff to meet the needs of SC's stakeholders.

While the entire *Bridge Records and Procedures Manual* establishes responsibilities for SC staff, this Bridge Construction Memo (BCM) differs in that it communicates responsibilities for processes owned by other functional units. The responsibilities contained in this BCM include, but are not limited to, processes owned by:

1. Accounting
2. The Division of Construction (DOC)
3. The Office of Employee Health and Safety
4. Cal/OSHA
5. The Division of Engineering Services (DES)
6. The Division of Maintenance
7. The Department of Human Resources (DHR)

Caltrans construction processes that SC staff participate in are documented in the *Construction Manual*, which is managed by the Division of Construction. Resident Engineers are responsible for fulfillment of these processes. SC staff assist the Resident Engineer (RE) with fulfillment of these processes.

Most Caltrans administrative processes that SC staff participate in are documented in other Caltrans publications, including but not limited to the following:

1. *Caltrans Health and Safety Manual*
2. *Caltrans Travel Guide*
3. *Caltrans Independent Assurance Manual*

Understanding the responsibilities is critical in maintaining the safety of the public and the trust that the public and stakeholders have placed in SC as an organization of highly competent and well-trained engineers.

## **Process Inputs**

1. SC staff movement by either promotion, transfer, loan, rotation, or new hire
2. SC staff Annual Performance Review (APR)

## **Procedure**

1. All work associated with this process is charged as:
  - a. [Project Direct – Construction](#) for tasks related to project specific mentoring.
  - b. [Overhead](#) for completing probation reports and Annual Performance Reviews.
2. SC staff:
  - a. Review, discuss, and ask questions about SC staff responsibilities with peers and supervisor, including responsibilities for processes described in:
    - i. [Attachment 1](#), *SC Staff Responsibilities for Performing Operational Activities*, which covers the SC internal operations to manage organizational needs.
    - ii. [Attachment 2](#), *SC Staff Responsibilities for Performing Standard Construction Activities*, which covers contract administration duties supporting the District.
  - b. Review, discuss, and sign the Annual Performance Review (APR).
  - c. For new staff, review, discuss, and sign probation reports.

- d. For experienced staff, provide peer level mentorship and pass on knowledge to new and less experienced staff.
3. SC Supervisors:
- a. Review as necessary the SC Supervisor responsibilities of:
    - i. SC operational staff responsibilities as outlined in Attachment 1, *SC Staff Responsibilities for Performing Operational Activities*.
    - ii. Project specific staff responsibilities of the *Construction Manual* as outlined in Attachment 2, *SC Staff Responsibilities for Performing Standard Construction Activities*.
  - b. Discuss SC responsibilities with SC staff.
  - c. Using the APR, probation reports, and other competency tools, monitor SC staff for effectiveness in performing their responsibilities.
  - d. Provide and promote training regarding SC responsibilities to staff, such as:
    - i. RE Workshop and RE Academy, stormwater pollution prevention plan (SWPPP) training, and additional construction training sponsored by others.
  - e. Inform SC staff of opportunities for career development and provide feedback and mentorship for attaining such opportunities.
  - f. Notify SC managers of any problems with SC staff that are unable to meet the requirements of Attachments 1 and 2.
4. SC Managers:
- a. Establish SC Supervisor and SC staff responsibilities.
  - b. Review management responsibilities within:
    - i. SC staff operational responsibilities as outlined in Attachment 1, *SC Staff Responsibilities for Performing Operational Activities*.
    - ii. Project-specific SC staff responsibilities in the *Construction Manual* as outlined in Attachment 2, *SC Staff Responsibilities for Performing Standard Construction Activities*.
  - c. Promote through discussion the SC staff responsibilities within Attachments 1 and 2.
  - d. Discuss SC Supervisor responsibilities with SC Supervisors. Monitor SC staff and SC Supervisors for adherence and reinforce as necessary.
  - e. Promote the use of the Superior Accomplishment Awards and the CT Partnering Awards programs for SC staff that excel.

- f. Evaluate SC staff responsibilities in Attachment 1 and 2 as part of SC Management Review and make improvements as needed.

## **Process Outputs**

1. SC staff performance of SC responsibilities
2. SC staff APR and probation reports

## **Attachments**

1. [Attachment 1](#), *SC Staff Responsibilities for Performing Operational Activities*
2. [Attachment 2](#), *SC Staff Responsibilities for Performing Standard Construction Activities*
3. [Attachment 3](#), *Sample Letter and Report*

# SC Staff Responsibilities for Performing Operational Activities

## Table of Contents

Table of Contents.....	1
1 - Operational Activities in Support of Equipment Use.....	2
1-1 Use of State Computers .....	2
1-2 Use of State Cell Phones.....	3
1-3 Use of State Vehicles .....	3
1-3.01 Public Perception .....	5
2 - Operational Activities in Support of Material Management .....	5
2-1 Certification of Materials Testers .....	6
2-2 Acceptance of Materials .....	6
2-3 Certification of Materials .....	6
3 - Operational Activities in Support of Project Closeout.....	7
3-1 Final Disposition of Project Records.....	7
4 - Operational Activities in Support of Safety Management.....	7
4-1 Code of Safe Practices (COSP) .....	8
4-2 Fall Protection.....	9
4-3 Tailgate Safety Meetings .....	9
4-4 Respirators .....	9
4-5 Safety Document Retention.....	10
4-6 Peer Defusing and Grief Counseling .....	10
5 - Operational Activities in Support of SC HQ and Other Functional Units .....	11
5-1 Excess Leave Reduction Plans .....	11
5-2 Communication between SC Staff and SC HQ.....	11
5-3 Encroachment Permits .....	13

This attachment identifies the essential features of the general working relationship and responsibilities of Structure Construction (SC) staff to ensure the quality, consistency, efficiency, safety, and productivity of SC and its partners when performing operational activities. SC staff are expected to be aware of these standard activities, which include operational activities for project documentation and retention, quality assurance of materials, safety awareness and training to support contract administration, and in support of the Caltrans Injury and Illness Prevention Program (IIPP). Below are lists of responsibilities that SC staff perform, arranged in the following five groups:

1. Operational Activities in Support of Equipment Use
2. Operational Activities in Support of Material Management
3. Operational Activities in Support of Project Closeout
4. Operational Activities in Support of Safety Management
5. Operational Activities in Support of SC HQ and Other Functional Units

## **1 - Operational Activities in Support of Equipment Use**

Operational activities in support of equipment use include the:

- Use of State computers
- Use of State cell phones
- Use of State vehicles

### **1-1 Use of State Computers**

Computer upgrades, modifications, repairs, etc. is performed by Caltrans Information Technology. Direction for use of State computers is provided in the:

- Caltrans [Deputy Directives](#) (DD):
  - DD 65, *Install and Maintain Network Level Anti-Virus Software on All Caltrans Networks*
  - DD-66, *Software Management and Licensing Program*
  - DD-67, *Software Piracy*
  - DD-89, *Security of Portable Computing Devices and Portable Electronic Storage Media*
- [Information Technology](#) intranet website



## 1-2 Use of State Cell Phones

Refer to Caltrans [Director's Policy 29](#), *Communication and Entertainment Devices in the Work Zone*.

## 1-3 Use of State Vehicles

SC staff must be familiar with all policies for the use of State vehicles. Vehicles are provided to SC field staff by the Districts. Relevant resources related to the use of State vehicles include:

1. Caltrans [DD-111](#), *Use of State Vehicles*
2. Caltrans [DD-96](#), *Unnecessary Idling of Department's Fleet Vehicles and Equipment*.
3. Division of Equipment (DOE), [Use of State Vehicle Guidelines](#)
4. [Maintenance Manual](#), Chapter 4, *Equipment*
5. Caltrans Health and Safety intranet, [Motor Vehicle Accident Reporting](#)
6. *Caltrans Employee Safety and Health Manual*:
  - a. [Chapter 17](#), *Motor Vehicle Safety*
  - b. [Chapter 18](#), *Motor Vehicle Accidents*
7. *Caltrans Travel Guide*, [Chapter 5](#), Section titled, *State Owned (Or Leased) Vehicles*
8. [Vehicle Home Storage Permits](#) Guidelines
9. *California Code of Regulations*, Title 2, [§559.800](#), *Use of State-Owned Vehicles – Definitions*
10. Local District vehicle policies.

SC staff responsibilities for use of State vehicles include:

1. Successful completion of [Defensive Driver Training](#) online or through the Learning Management System (LMS) at least once every four years.
2. Proper use, storage, and maintenance of State vehicles.
3. Ensure [Form STD 269](#), *Accident Identification*, is in the glove compartment of SC staff's State vehicle.
4. Complete Form [DME-0283](#), *Pre-Operation Inspection, Post Operation Report & Repair Request (Trucks & Construction Equipment)*, before and after repairs to the State vehicle are made.

5. Be familiar with policies, guidelines, and rules for driver training and the safe operation of motor vehicles.
6. Use a personal identification Key Fob for each trip in a State vehicle. Requirements may vary in each District, check with your local District policy. Frequently asked questions for Key Fobs can be found in the following link: [ID Key FAQ's](#).
7. Review and sign [Form DME-0310](#), *State-Owned Vehicle and Fuel Credit Card User Agreement*.
8. Lock the State vehicle when left unattended.
9. Be familiar with additional policies if on a long-term assignment and the State vehicle is the only means of transportation. Discuss with the SC Supervisor the following:
  - a. [Form FA-0041](#), *Personal Use of State Vehicle One-Way Commuting and/or Round Trip*
  - b. Public perception, as described below.
10. Understand the responsibilities and submission deadlines for reporting vehicle accidents. For accidents in State vehicles, refer to the procedures in:
  - a. *Caltrans Safety and Health Manual*, [Chapter 17](#), *Motor Vehicle Safety*
  - b. *Caltrans Safety and Health Manual*, [Chapter 18](#), *Motor Vehicle Accidents*
  - c. Caltrans Health and Safety intranet, [Motor Vehicle Accident Reporting](#)
  - d. SC Intranet, [Reporting an Accident](#)
  - e. Division of Engineering Services (DES) Intranet, [Vehicle Accident Reporting Flow Chart](#)
  - f. Send accident reports to the DES Safety Officer
  - g. Follow any District policy related to vehicle accident reporting.
11. In case of breakdown, contact the nearest DOE facility:
  - a. Each vehicle contains a directory that lists the shops and personnel to contact in case of a vehicle breakdown or emergency on the road.
  - b. Roadside assistance is available 24 hours a day through the phone number on the back of the official State credit card for fuel.
12. Report income on Form FA-0041, *Personal Use of State Vehicle One-Way Commuting and/or Round Trip*, when the State vehicle is used for commuting purposes.
13. Be familiar with the policies related to who may ride in a State vehicle.

14. Complete [Form STD 377](#), *Vehicle Home Storage Request/Permit*, if a State vehicle is taken home regularly between work shifts.
15. Make vehicle available for use by others when not in use.

### 1-3.01 Public Perception

The operation of a State vehicle is a highly visible activity. Regulations and policy limit the use of State vehicles to official use only.

Because it is difficult to define precisely and conclusively the limits of "official business", SC relies heavily on the good judgment and integrity of its staff. The use of State vehicles within the job limits during working hours is a clear-cut example of official use. However, the operation of State vehicles before and/or after working hours, or away from places directly or indirectly related to the job may under some circumstances be perceived by the public as private or personal use.

It is recognized that employees assigned to construction projects away from their place of residence and means of private transportation, need to obtain meals and occasionally other necessary items of personal use. SC sanctions the reasonable use of State vehicles to obtain personal necessities where State vehicles are the employee's sole means of transportation. Use of State vehicles for reasons other than to obtain personal necessities (as they may occur while the employee is dependent on a State vehicle) is not permitted.

SC staff are reminded that the use of State vehicles is subject to public scrutiny and that allegations of misuse will occasionally be made. Therefore, when possible, a State vehicle should not be operated when there is appearance of misuse, even though the employee is able to show that the use of the vehicle is legitimate.

## **2 - Operational Activities in Support of Material Management**

Operational activities in support of material management include:

- Certification of Materials Testers
- Acceptance of Materials
- Certification of Materials

## 2-1 Certification of Materials Testers

Obtain certification as material testers prior to performing materials sampling and testing, including selection of test methods. The SC Supervisor and Structure Representative (SR) are responsible for ensuring that consultant engineers hired by Caltrans to perform materials sampling and testing on construction projects obtain and maintain certification as material testers per *American Society for Testing and Materials (ASTM) Test Methods* and [California Tests](#) (CT). The SC Supervisor states the requirement to the consultant contractor and the SR verifies the certification is and remains valid. Record of certifications is kept in the project files. SC staff generally perform field testing of freshly mixed concrete and bridge profilograph testing but may perform other field testing as well. Certification is required for all who perform materials sampling and testing per the *Construction Manual (CM)*, Chapter 6, *Sampling and Testing*.

## 2-2 Acceptance of Materials

Conduct field tests to ensure that all materials meet specifications per the *CM*, Chapter 6, [Section 6-107](#), *Sampling and Testing – Sample Types and Frequencies – Materials Acceptance Sampling and Testing*.

Regardless of previous release by the Transportation Laboratory, it is the SR's responsibility to be certain that all materials used in structure work complies with the *Contract Specifications*, and that proper written evidence of such compliance may be found in the job records. Materials may be damaged after release and no longer meet contract standards. If this occurs, coordinate with the METS Representative ([METS Rep](#)) and the SC Supervisor.

## 2-3 Certification of Materials

For all federally funded projects, the SC Supervisor is responsible for the certification of materials incorporated into the structure work of a Caltrans construction project as specified in the *CM*, [Chapter 6](#), *Sampling and Testing*. The certification is required by the Division of Construction (DOC) and is submitted prior to processing the final or semi-final estimate. To determine if a project is federally funded, check the cover of the *Special Provisions*. The certification is based on inspection by the SR or the SR's assignee. The SR prepares [Form SC-6306](#), *Structure Construction Materials Certification*, which is based on results of acceptance samples and tests, independent assurance samples and tests, final samples, and reports of inspection taken throughout the project. These test results are filed in job categories 37-39, 41 and 42 of the project records per the *CM*, Chapter 6, [Section 6-106](#), *Sampling and Testing – Sample Types and Frequencies – Project Materials Certification*. The SC Supervisor or SC Manager must concur with the certification on Form SC-6306.

## **3 - Operational Activities in Support of Project Closeout**

Operational activities in support of project closeout include:

- Final Disposition of Project Records

### **3-1 Final Disposition of Project Records**

SC staff must identify what project records must be submitted to SC and to the District construction staff.

[BCM C-6](#), *Required Documents to be Submitted During Construction*, details which project records are submitted to SC and how.

Upon completion of the contract and prior to departure of the SR, all job records shall be transferred to the Resident Engineer (RE) with [Form SC-6307](#), *Transfer of Structure Construction Job Records*. This includes, but is not limited to, field books, concrete pour records, and survey notes. A copy of Form SC-6307 should be filed in Category 63, *Project Completion Documents*. Any duplicate records already obtained and filed by the RE may be discarded. Additional information regarding project record disposition can be found in the *CM*, Chapter 5, [Section 5-104](#), *Contract Administration – Project Records and Reports – Final Construction Project Records*.

Upon completion of construction work, the RE must certify that the project materials conform to the approved plans and specifications. The SR sends Form SC-6366, *Structure Construction Material Certification*, to certify the materials were inspected by SC staff as discussed in Section 2-3, *Certification of Materials*, above.

When SC staff perform field inspection for District items, such as a District retaining walls, concrete barrier rails, or concrete drainage structures, the as-built information for these structures must be submitted to the RE instead of submitting to SC. Requirements for District as-built preparation can be found in the *CM*, Chapter 5, [Section 5-104D\(1\)](#), *Contract Administration – Project Records and Reports – Final Construction Project Records – As-Built Plans – District Procedure on As-Built Plans*.

## **4 - Operational Activities in Support of Safety Management**

Operational activities in support of safety management, as part of the Caltrans Accident Prevention and Safety Program, are non-technical construction administration activities

owned by the Office of Employee Health and Safety and the DOC. The following documents provide safety management guidance:

- California Code of Regulations, Title 8, Chapter 4, *Division of Industrial Safety*:
  - [Subchapter 4](#), *Construction Safety Orders (CSO)*
  - [Subchapter 7](#), *General Industry Safety Orders (GISO)*
  - [Subchapter 20](#), *Tunnel Safety Orders (TSO)*
  - [Subchapter 5](#), *Electrical Safety Orders (ESO)*
- [Caltrans Health and Safety Manual](#)
- [SC Code of Safe Practices](#)
- *Construction Manual*, Chapter 2, [Section 2-106](#), *Safety and Traffic – Safety Caltrans-Specific Safe Practices*
- Local District policies.

SC staff must identify and recognize their responsibilities regarding safe work practices for field projects. These activities must be performed in a timely manner. Some topics are included in the contract documents and, following the organization of this BCM, are covered in [Attachment 2](#), *SC Staff Responsibilities for Performing Standard Construction Activities*. Important safety topics not specifically covered in Attachment 2 include:

1. Safe work practices
2. Fall protection
3. Tailgate safety meetings
4. Confined spaces
5. Respirators
6. Safety document retention
7. Peer defusing and grief counseling.

## **4-1 Code of Safe Practices (COSP)**

Each project must adopt a written COSP signed by all project staff. The written COSP must include the following two sections, the:

1. [Division of Construction COSP](#)
2. [Structure Construction COSP Addendum](#).

Review both sections and sign the cover sheet of the Division of Construction COSP prior to visiting the project site. If items of work are not covered by the COSP, bring this to the attention of the SR or a SC Supervisor. If unique contract safety items are not

addressed in the COSP, the COSP must be amended per guidance in [Section 2-1.06A](#), *Safety and Traffic – Safety – Caltrans-Specific Safe Practices – Caltrans Division of Construction Code of Safe Practices*, of the CM.

Additional information regarding the COSP is found in Caltrans Director's Policy [DP-003](#), *Employee Health and Safety*.

## 4-2 Fall Protection

Acquire and maintain fall protection training provided by SC. Request the training from your supervisor and Area Senior Specialist. Numerous Cal/OSHA CSO regulations address fall protection and are provided below:

- [Section 1541](#), *Excavations – General Requirements*
- [Section 1620](#), *Standard Railings – Design and Construction of Railings*
- [Section 1670](#), *Fall Protection - Personal Fall Arrest Systems, Personal Fall Restraint Systems and Positioning Devices*
- [Section 1712](#), *Erection and Construction – Requirements for Impalement Protection*.

## 4-3 Tailgate Safety Meetings

SC staff must be aware of their responsibilities for tailgate safety meetings, including who conducts, who attends, what is discussed, and how records are retained and documented as specified in:

- *Construction Manual*, [Section 2-106B](#), *Tailgate Safety Meetings*
- *Caltrans Health and Safety Manual*, Chapter 2, [Section 2.05](#), *Safety Meetings – Tailgate Safety Meetings for Field Personnel*
- Cal/OSHA TSO, [§ 8406\(d\)](#), *Injury and Illness Prevention Program*.

SC staff must document attendance by using the correct charge codes on timesheets and by completing a [Tailgate Safety Meeting Sign-in form](#). If field operations prevent attendance, review the safety meeting documents, or attend a contractor safety meeting. Document the alternate method of attending a required safety meeting.

## 4-4 Respirators

Certain construction operations may require the use of respirators. Acquire and maintain respirator training if needed for field inspection duties. SC staff must be able to identify such tasks, choosing the appropriate type of respirator for the task.

Relevant references include:

- Cal/OSHA GISO, Group 16, *Control of Hazardous Substances*, [Article 107](#), *Dusts, Fumes, Mists, Vapors and Gases*, Subsection 5144, *Respiratory Protection*, and
- *Caltrans Health and Safety Manual*, [Chapter 15](#), *Respiratory Protection Program*.
- [Respirator Q&A](#) on the SC intranet under the “Safety” tab.

For most situations, suitable respiratory protection can be obtained through the SC HQ Equipment Coordinator or SC Safety Liaison. Respirator fit testing is provided by the District’s Construction Safety Coordinator. Respirator medical evaluation, training, and fit testing are required initially (prior to first use) and annually thereafter. Contact the [SC Safety Liaison](#) for forms and procedures for obtaining a respirator medical evaluation.

## 4-5 Safety Document Retention

Retain safety related documents in the project records, including but not limited to tailgate safety meeting minutes, accident reports, safety inspections, and major incidents. References for safety document retention include:

- *Construction Manual*, [Section 2-106](#), *Caltrans-Specific Safe Practices*
- *Construction Manual*, [Section 2-109](#), *Project Safety Reviews*
- *Construction Manual*, [Section 5-102C](#), *Description of Categories, Category 6: Safety*
- *Caltrans Employee Safety and Health Manual*, Chapter 1, [Section 1.11](#), *The Caltrans Injury and Illness Prevention Program – Recordkeeping*.

## 4-6 Peer Defusing and Grief Counseling

Peer defusing and grief counseling can be an effective means of assisting SC staff and others affected by a death or serious injury to a fellow employee in the immediate aftermath of the occurrence. Although SC staff have no direct responsibility for peer diffusing and grief counseling, they are responsible to be aware of availability of such services through the Office of Health and Safety and the CT Employee Assistance Program (EAP). Relevant references for peer defusing and grief counseling include:

1. [What To Do When an Employee Fatality Occurs](#) – a checklist with guidance on what tasks must be complete and by whom.
2. [Employee Assistance Program](#) (EAP)
3. [Grief: How to Help Yourself and Others Through the Grieving Process](#)
4. [How to Cope After a Traumatic Event](#)
5. CalHR [EAP Supervisor Handbook](#)



6. [HQ Office of Health and Safety Contact List](#)
7. [Caltrans EAP Contacts](#)

## **5 - Operational Activities in Support of SC HQ and Other Functional Units**

SC staff must identify and recognize their roles and responsibilities regarding expectations from SC HQ and other functional units.

### **5-1 Excess Leave Reduction Plans**

Excess leave balance reduction plans are required for all SC personnel that have leave balances in excess of 640 hour of vacation or annual leave in accordance with the requirements of the applicable Personnel Information Bulletin (PIB), currently [PIB 17-25](#), *Leave Balance Limits/Cap* and State Employee Bargaining Unit Memorandums of Understanding (MOU). Occasionally, State Employee Bargaining Unit MOU's may temporarily modify the limits established in PIB 17-25.

### **5-2 Communication between SC Staff and SC HQ**

Whenever possible, questions concerning construction methods and/or details, as well as routine questions concerning administrative procedures should be discussed with the SC Supervisor and/or the SC Manager (ACM) where the project is located. If an answer or decision is needed immediately and the SC Supervisor or the SC Manager cannot be contacted, contact the SC HQ Office Senior Liaison for the area in which your project is located per the SC website [Structure Construction Headquarters Contact List](#).

SC HQ staff is comprised of the Deputy Division Chief, Office Chief, Office Seniors, Office Associates, and SC Administrative Support.

During construction, it is permissible for field staff to communicate directly with personnel in other subdivisions within the DES. The SR's first-line supervisor must be kept informed of any matter affecting the work. Confirm understanding in writing when discussions result in an appreciable change or in the preparation of a change order. Include the SC Supervisor on such correspondence.

Central email accounts have been established by SC HQ to efficiently facilitate communication between SC Staff and SC HQ. Documents are forwarded to the appropriate recipient(s). Each contact serves a specific function as listed below.

Email account or Contact	Services
<p>SC Administration central email account:  <a href="mailto:osc.administration@dot.ca.gov">osc.administration@dot.ca.gov</a></p>	<p>Transmittal (from SC Field Staff) of:</p> <ul style="list-style-type: none"> <li>• ACM Bi-Monthly Reports.</li> <li>• Parking pass requests.</li> <li>• Phone Bridge Reservation requests.</li> <li>• Request to change a headquarter address.</li> <li>• Request to add a consultant for WEAT assignments.</li> <li>• Personnel documents that do not require a “wet” signature: <ul style="list-style-type: none"> <li>• Change of Address forms.</li> <li>• Emergency Notification forms.</li> <li>• Excess Leave Reduction plans.</li> <li>• From Rotators assigned to SC: <ul style="list-style-type: none"> <li>• Form FA-1350, <i>Long Term Assignment (LTA) Information and Certification of Subsistence Rates.</i></li> <li>• Form PM0915, <i>Authorization for Caltrans Long Term Assignment Differential</i></li> <li>• Form FA-1310, <i>Caltrans Long-Term Assignment Cost Analysis</i></li> </ul> </li> <li>• Safety Documents – Accident Reports.</li> </ul> </li> </ul>
<p>SC Office Associates central email account:  <a href="mailto:SC.Office.Associates@dot.ca.gov">SC.Office.Associates@dot.ca.gov</a></p>	<p>Transmittal (from SC Field Staff) of:</p> <ul style="list-style-type: none"> <li>• Constructability Review comments to the Designer.</li> <li>• Notification of Structure Maintenance upon Structure Completion per BCM 9-9.0.</li> <li>• Project records:</li> <li>• As-Built Plans.</li> <li>• Certification of Materials.</li> <li>• Joint Movement Calculations</li> <li>• Permanent Vertical Clearance.</li> <li>• Pile Driving Records.</li> <li>• Progress Schedule.</li> <li>• Report of Completion for Structures.</li> <li>• Shop Drawings.</li> <li>• Unrecoverable Final Records</li> </ul>

Email account or Contact	Services
	Transmittal (from other Caltrans staff) of: <ul style="list-style-type: none"> <li>• Constructability Review requests from the designer.</li> <li>• Change Order Requests</li> <li>• PS&amp;E Submittals</li> <li>• Structure RE Pending File questions</li> </ul>
SC Resources central email account: <a href="mailto:osc.resources@dot.ca.gov">osc.resources@dot.ca.gov</a>	Transmittal (from SC Field Staff) of PRSM issues related to Task Management: <ul style="list-style-type: none"> <li>• Add/Transfer ETC hours to units.</li> <li>• Assign and Remove units from Task 275.</li> <li>• Expenditure Reports.</li> <li>• PRSM/VISION Questions.</li> <li>• SCIMS login problems.</li> <li>• Task 275 close-out.</li> <li>• Task 275 Task Management edit support.</li> <li>• Time Charging.</li> <li>• Update percent complete.</li> <li>• Update Task 275 Start and Finish Dates.</li> </ul>
Current webmaster listed at the bottom of the website	SC Intranet site: <a href="http://des.onramp.dot.ca.gov/structure-construction">http://des.onramp.dot.ca.gov/structure-construction</a>

BCM C-6, *Project Specific Documents Required to be Submitted During Construction*, further details the requirements for the documents that are required to be submitted to SC Headquarters.

### 5-3 Encroachment Permits

Structure Construction may be requested by the District Permit Engineer (DPE) to assist at various stages of the encroachment process through the District’s Branch or Office Chief. When assisting with the encroachment process from constructability review to field inspection, SC staff is expected to refer to relevant SC guidance in the technical manuals. The DPE will provide charge codes for SC to charge their time using the DPE’s unit. Resources for encroachment permits are as follows:

- *Encroachment Permits Manual*, [Chapter 600](#), *Utility and Broadband Permits*
- [Project Development Procedures Manual](#)

# SC Staff Responsibilities for Performing Standard Construction Activities

## Table of Contents

Table of Contents.....	1
1 - <i>Contract Specifications</i> , Section and Title.....	4
1-1    CS, Section 1-1.09, General – Freeze-Thaw Areas.....	4
1-2    CS, Section 2-1.06B, Bidding – Bid Documents – Supplemental Project Information.....	5
1-3    CS, Section 2-1.07, Bidding – Job Site and Document Examination .....	5
1-4    CS, Section 4-1.05, Scope of Work – Changes and Extra Work .....	6
1-5    CS, Section 4-1.06, Scope of Work – Differing Site Conditions (23 CRF 635.109).....	6
1-6    CS, Section 4-1.07, Scope of Work – Value Engineering .....	6
1-6.01 Proposal Concept Stage .....	7
1-6.02 VECP Investigation Stage .....	7
1-7    CS, Section 5-1.01, Control of Work – General .....	7
1-8    CS, Section 5-1.02, Control of Work – Contract Components .....	7
1-9    CS, Section 5-1.03, Control of Work – Engineer’s Authority .....	8
1-10   CS, Section 5-1.09, Control of Work – Partnering .....	8
1-11   CS, Section 5-1.17, Control of Work – Character of Workers .....	8
1-12   CS, Section 5-1.20C, Control of Work – Coordination with Other Entities – Railroad Relations .....	8
1-13   CS, Section 5-1.23, Control of Work – Submittals .....	9
1-14   CS, Section 5-1.24, Control of Work – Construction Surveys.....	10
1-15   CS, Section 5-1.30, Control of Work – Noncompliant and Unauthorized Work .....	10
1-16   CS, Section 5-1.36, Control of Work – Property and Facility Preservation .....	11
1-17   CS, Section 5-1.37B, Control of Work – Maintenance and Protection – Load Limits .....	12
1-17.01 Contract Specifications for Weight Limitations.....	13
1-17.02 Overloads .....	13

1-17.03	Processing Requests for Construction Equipment Overloads .....	19
1-18	CS, Section 5-1.38, Control of Work – Maintenance and Protection Relief .....	20
1-19	CS, Section 5-1.42, Control of Work – Requests for Information.....	21
1-20	CS, Section 5-1.43A-D, Control of Work – Potential Claims and Dispute Resolution.....	21
1-21	CS, Section 5-1.43E, Control of Work – Alternative Dispute Resolution..	21
1-22	CS, Section 5-1.46, Control of Work – Final Inspection and Contract Acceptance .....	21
1-23	CS, Section 6-1.04, Control of Materials – Buy America .....	22
1-24	CS, Section 6-1.06, Control of Materials – Buy Clean California Act .....	23
1-25	CS, Section 6-2, Control of Materials – Quality Assurance .....	23
1-26	CS, Section 7-1.02K(1-5), Legal Relations and Responsibility to the Public – Labor Code – Labor Compliance .....	24
1-27	CS, Section 7-1.02K(6)(a), Legal Relations and Responsibility to the Public – Laws – Labor Code – Occupational Safety and Health Standards – General .....	24
1-28	CS, Section 7-1.02K(6)(c), Legal Relations and Responsibility to the Public – Laws – Labor Code – Occupational Safety and Health Standards – Tunnel Safety.....	24
1-29	CS, Section 7-1.02K(6)(d), Legal Relations and Responsibility to the Public – Laws – Labor Code – Occupational Safety and Health Standards – Confined Space Safety .....	24
1-30	CS, Section 7-1.02K(6)(j), Legal Relations and Responsibility to the Public – Laws – Labor Code – Occupational Safety and Health Standards – Lead Safety.....	24
1-31	CS, Section 7-1.02M(2), Legal Relations and Responsibility to the Public – Public Resources Code – Fire Protection .....	25
1-32	CS, Section 7-1.04, Legal Relations and Responsibility to the Public – Public Safety .....	25
1-33	CS, Section 8-1.02, Prosecution and Progress – Schedule.....	26
1-34	CS, Section 8-1.03, Prosecution and Progress – Preconstruction Conference .....	26
1-35	CS, Section 8-1.05, Prosecution and Progress – Time.....	26
1-36	CS, Section 8-1.06, Prosecution and Progress – Suspensions .....	26

1-37	CS, Section 9-1.02C, Payment – Measurement – Final Pay Item Quantities.....	27
1-38	CS, Section 9-1.03, Payment – Payment Scope .....	27
1-39	CS, Section 9-1.04, Payment – Force Account.....	27
1-40	CS, Section 9-1.05, Payment – Extra Work Performed by Specialists ....	27
1-41	CS, Section 9-1.06, Payment – Changed Quantity Payment Adjustments .....	27
1-42	CS, Section 9-1.15, Payment – Work-Character Changes .....	27
1-43	CS, Section 9-1.16, Payment – Progress Payments .....	27
1-44	CS, Section 9-1.17, Payment – Payment After Contract Acceptance.....	27
1-45	CS, Section 12-4. Temporary Traffic Control – Maintaining Traffic.....	28
1-46	CS, Section 13-2, Water Pollution Control – Water Pollution Control Program .....	29
1-47	CS, Section 13-3, Water Pollution Control – Stormwater Pollution Prevention Plan .....	29
1-48	CS, Section 13-4, Water Pollution Control – Job Site Management .....	29
1-49	CS, Section 14, Environmental Stewardship .....	30
1-50	CS, Section 14-11, Environmental Stewardship – Hazardous Waste and Contamination.....	30

SC staff support the Resident Engineer (RE) with contract administration. This attachment identifies the responsibilities of Structure Construction (SC) staff when performing standard construction activities in Division I, *General Provisions*, and Division II, *General Construction*, of the [Contract Specifications](#) (CS).

Sections 1 through 9 of the CS address Division I, *General Provisions*, processes for a construction project. Division I provides the framework for the general working relationship and responsibilities between the Department and the Contractor. SC staff are expected to be aware of these standard construction activities and to support the RE with contract administration by performing standard construction activities in cooperation with the RE. Below are responsibilities that SC staff perform arranged by the first two divisions of the CS that SC staff are to perform, regardless that these processes are established by others. These non-technical construction administration activities are owned by the Division of Construction. The *Construction Manual (CM)*, [Chapter 3](#), *General Provisions*, describes what needs to be done and how to perform these activities. These activities should be performed timely, accurately, and in accordance with the provisions of the [contract documents](#), the [CM](#), SC guidance, and additional guidelines set by the individual Districts.

Sections 10 through 16 of the CS address Division II, *General Construction*, processes for a construction project. The *CM*, [Chapter 4](#), *Construction Details*, describes what needs to be done and how to perform these activities.

## **1 - Contract Specifications, Section and Title**

Prior to reviewing the sections below, it is essential to review the corresponding section of the CS. The information in the CS typically will not be repeated in the text of this Bridge Construction Memo (BCM).

### **1-1 CS, Section 1-1.09, General – Freeze-Thaw Areas**

Verify the construction project is accurately categorized for freeze/thaw by field verification, having knowledge of the area from previously completed projects, and reviewing Caltrans Structure Technical Policy 5.1 ([STP 5.1](#)), *Corrosion Protection for Structural Concrete Elements*. STP 5.1 identifies severe climate areas that can be exposed to freeze-thaw conditions. The severe climate areas are listed by County, State Route, and post mile limits. STP 5.1 is used to verify that a project is in a severe weather area and requires additional design consideration, such as the use of corrosion resistant reinforcing steel, modifications to the concrete mix design, and curing methods. A structure located near severe weather areas may be exposed to deicing chemicals that are carried by vehicle traffic. Discuss any discrepancies regarding freeze-thaw classification, or lack thereof, with the Bridge Design Structure Project Engineer and prepare a change order, if necessary.

Freeze-thaw requirement references include the following:

- *Contract Specifications:*
  - Section 1-1.09, *General – Freeze-Thaw*
  - Section 90-1.02I, *Concrete – General – Materials – Concrete in Freeze-Thaw Areas*
- [Concrete Technology Manual](#)
- [BCM 90-1](#), *Concrete – General*

Discuss freeze-thaw requirements, such as epoxy coated reinforcement samples for Materials Engineering and Testing Services (METS), or curing requirements of concrete barriers, with the Contractor at the pre-construction conference.

Verify all concrete mix designs meet the requirements for freeze-thaw areas.

## **1-2 CS, Section 2-1.06B, Bidding – Bid Documents – Supplemental Project Information**

Review the supplemental project information included in the *Special Provisions*. These items are part of the contract documents. Critical project information may be included such as permits, foundation reports, and logs of test borings. If supplemental project information is provided, a copy is stored in the “OE Plans and Specs” folder of the Files tab for the project in [VISION](#).

## **1-3 CS, Section 2-1.07, Bidding – Job Site and Document Examination**

The Contractor is required to review the contract documents and verify preconstruction jobsite conditions prior to bidding. SC staff are responsible for doing the same and 1) identifying any constructability issues or inconsistencies in the plans, and 2) documenting the original site conditions per the CS, Section 5-1.36, *Control of Work – Property and Facility Preservation*. For additional guidance review:

- a. CM, Chapter 3, [Section 3-404B](#), *General Provisions – Scope of Work – Differing Site Conditions – Procedure*
- b. BCM C-7, [Attachment 5](#), *Daily and Weekly Reports – Construction Photos and Videos*.



## **1-4 CS, Section 4-1.05, Scope of Work – Changes and Extra Work**

Any changes to the project plans, specifications, or scope of work require a Change Order (CO). Adhere to procedures specified in [BCM C-10](#), *Change Orders*, and the *CM*, Chapter 3, [Section 3-403](#), *General Provisions – Scope of Work – Changes and Extra Work*.

## **1-5 CS, Section 4-1.06, Scope of Work – Differing Site Conditions (23 CRF 635.109)**

SC staff must review all contract documents, supplemental project information, and perform a field investigation should a differing site condition arise. Notify the Structure Representative (SR) and the Bridge Construction Engineer (BCE), referred to as the SC Supervisor in this Attachment, when a Contractor suggests there may be a differing site condition. Adhere to procedures specified in the *CM*, Chapter 3, [Section 3-404](#), *General Provisions – Scope of Work – Differing Site Conditions*, and [Section 3-404C](#), *Management Review Committee*, in assisting the RE if requested.

## **1-6 CS, Section 4-1.07, Scope of Work – Value Engineering**

Value engineering change proposals (VECPs) are usually initiated by the Contractor. SC staff must take the lead in VECPs for structure related items or when arranged with the RE. SC staff should be prepared and aware of procedures specified in the contract documents to address this should it arise on a project. For structure related items, the review times required by the Division of Engineering Services (DES) will vary depending upon the complexity of the VECP. Multiple functional units within DES may need to review and provide input on the VECP. Convey to the RE the review times required by DES for their discussion with the Contractor. Current DES practice requires management review prior to denying a VECP. Adhere to the procedure specified in the *CM*, [Section 3-405](#), *General Provisions – Scope of Work – Value Engineering*, for VECPs. Keep the SC Supervisor and the Area Construction Manager (ACM), referred to as the SC Manager in this Attachment, informed of all above mentioned items.

Per the *CS*, the Contractor must meet with the Engineer to discuss the proposal concept prior to submission of the VECP. When the Contractor presents the proposal concept, the appropriate DES representatives (SR, SC Supervisor, Bridge Design (BD) Structure Project Engineer, and BD Branch Chief) and Structure Maintenance & Investigations (SM&I) should participate in the meeting between the Contractor and the Engineer to ensure there is an adequate understanding of the Contractor's proposal concept. It is important that fatal flaws in the proposal concept be discussed early before the Contractor prepares a VECP.

## 1-6.01 Proposal Concept Stage

The DES representatives must confer and concur with the District on the proposal concept. If a proposal concept is found to be unacceptable, the SC Manager and BD Office Chief must review it with their counterparts. If they concur with the rejection, the proposal concept and VECP analysis report should be forwarded to the DES Deputy Division Chiefs for review. The DES Deputy Division Chiefs for SC, BD, and METS/GS meet with the District to determine whether the VECP proposal concept is acceptable.

The decision to accept or deny a VECP must be submitted in writing to RE and must be documented in a VECP analysis report. Refer to [Attachment 3](#), *Sample Letter and Report*, for a *Sample of a VECP Analysis Report*, for completing the VECP analysis report.

## 1-6.02 VECP Investigation Stage

During the VECP investigation stage, the SC Supervisor will facilitate the review by all DES functional units and SM&I to ensure all stakeholders have provided input and to ensure timely completion of the investigation.

The DES functional unit representatives confer and concur as to the DES decision for the VECP. If the representatives find the VECP to be unacceptable, the SC Manager/Office Chief review the VECP; if they concur with the rejection, the SC Supervisor arranges for a meeting between the DES Deputy Division Chiefs for BD, SC, GS, and METS to review the VECP. Prior to the meeting, provide the *DES VECP Analysis Report* to the Deputy Division Chiefs.

The *DES VECP Analysis Report* will provide:

1. All pertinent contract information along with a description of the VECP
2. Structures affected
3. Positive aspects of the VECP
4. Reasons the VECP should be accepted or rejected
5. The recommendation(s) of the SR and Project Engineer.

## **1-7 CS, Section 5-1.01, Control of Work – General**

## **1-8 CS, Section 5-1.02, Control of Work – Contract Components**

## **1-9 CS, Section 5-1.03, Control of Work – Engineer’s Authority**

The Contractor is responsible for quality control (QC). The Contractor is required to provide safe access for SC staff inspection; if safe access is not provided, request it. SC staff must understand contract component hierarchy and are responsible for making technical decisions on structures activities. Means and methods of construction are the Contractor’s decision. Except for rare occasions, SC staff should not direct the Contractor activities except on CO at force account work. Some exceptions include imminent hazards to life. Discuss with the SR or SC Supervisor prior to directing activities. The Contractor may protest the Engineer’s decision. If this occurs, the Contractor must follow the procedure of submitting a request for information (RFI) per CS, Section 5-1.42, *Control of Work – Requests for Information*, of the CS.

Relevant sections in the CM are:

- [Section 3-501](#), *General Provisions – Control of Work – General*
- [Section 3-502](#), *General Provisions – Control of Work – Engineer’s Authority*
- [Section 3-503](#), *General Provisions – Control of Work – Protests*

## **1-10 CS, Section 5-1.09, Control of Work – Partnering**

Review the Caltrans [Field Guide to Partnering on Caltrans Construction Projects](#) and the CM, [Section 3-504](#), *General Provisions – Control of Work – Partnering*. Attend and participate in the required project-specific partnering meetings and workshops. Partnering is working cooperatively with all contractors to make long-term commitments to achieve mutual goals. This requires changing traditional adversarial relationships into team-based relationships. Partnering promotes open communication, trust, understanding, and teamwork among participants.

## **1-11 CS, Section 5-1.17, Control of Work – Character of Workers**

Understand the definition of incompetent, disorderly, or improper behavior. Report and work in conjunction with the RE as needed. Refer to the CM, [Section 3-509](#), *General Provisions – Control of Work – Character of Workers*, for more information.

## **1-12 CS, Section 5-1.20C, Control of Work – Coordination with Other Entities – Railroad Relations**

When contracts involve railroads, the CS will indicate that a railroad company is involved and that the *Railroad Relations and Insurance Requirements* will be available in the *Information Handout*. A copy of the *Information Handout* is stored in the

“OE Plans and Specs” folder of the Files tab for the project in [VISION](#). Railroad Agreements are generated by the Regional/District Railroad Agents. The agreements are approved and sent to the railroads by Headquarters Right of Way Railroad Agreements. Service Contracts for railroad inspection and flagging are initiated and administered by Headquarters Right of Way Railroad Agreements.

If there are any issues with the agreement or a modification is needed, immediately notify the RE and Regional/District Railroad Agents. Change orders that involve railroads are coordinated through the RE to the Regional/District Railroad Agents. If notifications are received from the Contractor pertaining to the railroads, immediately forward these to the RE for processing through the Regional/District Railroad Agents.

Process all railroad paperwork and issues through the RE to the Regional/District Railroad Agents. Contact the District Right of Way Office for the name of the Regional/District Railroad Agent for your area.

Falsework, shoring, and demolition plan submittals that involve the railroad require railroad approval prior to construction. Because they have special requirements, follow the appropriate procedures outlined in:

- *Falsework Manual*, Chapter 2, [Section 2-4.02B](#), *Review of Shop Drawings – Review – Review Procedure when Railroad Company is Involved*
- *Bridge Construction Records and Procedures Manual*:
  - [BCM C-11](#), *Shop Drawing Review of Temporary Structures*
  - [BCM 60-2.02A\(3&4\)](#), *Existing Structures – Structure Removal – Bridge Removal – General – Submittals and Quality Assurance*, and [Attachment 2](#), *Bridge Removal Over and/or Adjacent to Railroad Tracks*

The railroad must be notified prior to any construction that affects clearance to railroad property. Temporary construction clearances and notification requirements for railroads will be specified in the *Railroad Relations and Insurance Requirements* and range from 15 to 30 days; advance planning is necessary. As stated above, notification must be given to the Regional/Railroad Agents through the RE.

The minimum permanent vertical and horizontal clearances to the railroad tracks must be noted on the General Plan sheet of the as-built project plans. Vertical clearance is measured from the top of rail to the structure. Horizontal clearance is measured to the centerline of the track to the structure.

## **1-13 CS, Section 5-1.23, Control of Work – Submittals**

Review the CM, [Section 3-511](#), *General Provisions – Control of Work – Submittals*.

## **1-14 CS, Section 5-1.24, Control of Work – Construction Surveys**

SC staff must know the responsibilities and procedures for establishing survey control for construction of structures. Per the contract documents, construction staking for structural elements is performed by Caltrans survey crews at the request of the Contractor and is limited to line and grade. The Contractor is responsible for transferring line and grade from the stakes to structural elements. SC staff shall independently perform quality assurance (QA) to verify elements are formed correctly. SC staff are not to set line and grade for the Contractor unless specified in the contract documents. SC staff may set additional control stakes in accordance with the requirements of the Caltrans [Surveys Manual](#), Chapter 12, Section 12.1-1(c), *Construction Surveys – Responsibilities – Structure Representative*, and Section 12.5, *Typical Department-Furnished Construction Stakes*.

It is good practice to be present when Caltrans survey crews establish line and grade controls. SC staff must monitor survey marks and know when they have been moved or damaged and the information is no longer reliable. The Contractor is responsible for protecting the survey points.

SC staff provides deck elevation control points per CS, Section 51-1.03F(5), *Concrete Structures – General – Construction – Finishing Concrete – Finishing Roadway Surfaces*. SC staff shall transfer temporary benchmark elevations as needed to maintain grade control through substructure and superstructure construction. During construction of the superstructure, it is a good idea to set temporary benchmarks on the column vertical reinforcement or other stable elements, for use during falsework, deck dowel, and overhang grading. For additional information refer to Chapter 7, *Bridge Deck Construction*, of the [Reinforced Concrete Construction Manual](#).

## **1-15 CS, Section 5-1.30, Control of Work – Noncompliant and Unauthorized Work**

SC staff assists the RE with administration and resolution of noncompliant or unauthorized structure work as set forth in the CM, [Section 3-514](#), *General Provisions – Control of Work – Noncompliant and Unauthorized Work*.

Perform applicable QA tests or review QC test results in a timely matter. Tests SC staff perform include, but are not limited to, visual inspection, profilograph, chaining of the bridge deck, measuring, surveying, or a straightedge. A review of test results could include compressive strength, aggregate tests, skid tests, or compaction results. Notify the Contractor in writing of the failed results. Request a repair plan from the Contractor.

## 1-16 CS, Section 5-1.36, Control of Work – Property and Facility Preservation

SC staff assist the RE with administration of preservation of existing property and facilities per the CM:

- Chapter 3, [Section 3-518](#), *General Provisions – Control of Work – Property and Facility Preservation*
- Chapter 4, [Section 4-1501](#), *Construction Details – Existing Facilities – General*
- Chapter 4, [Section 4-1502](#), *Construction Details – Existing Facilities – Before Work Begins*
- Chapter 4, [Section 4-1503](#), *Construction Details – Existing Facilities – During the Course of Work*

Existing property and facilities include, but are not limited to the following:

1. Highway improvements and facilities
2. Adjacent property
3. Waterways
4. Environmentally sensitive areas
5. Land administered by other agencies
6. Railroads and railroad equipment
7. Nonhighway facilities, including utilities
8. Survey monuments
9. Department's instrumentation
10. Temporary work
11. Survey benchmarks
12. High water marks
13. Objects of archeological or historical significance
14. Roadside vegetation not to be removed.

SC operations frequently occur in areas where there are existing utilities or other improvements which must be protected from damage and preserved or relocated. It is general practice to show utilities or other improvements in the contract documents. There are occasions, however, when utilities or improvements are not shown or are shown in a location other than where they are found in the field. At the beginning of the project, SC staff must document the condition of, and photograph the existing facilities.

Conduct a visual inspection of the project limits to verify location of existing facilities and document facilities not identified in the contract documents. Lights, utility markings, electrical panels, and conduits, are all indications of utilities present. If the Contractor discovers underground facilities not identified on the contract documents, the Contractor must immediately provide the Engineer written notification. Such facilities shall be relocated or protected from damage and paid for as extra work.

The CM, [Section 3-518](#), *General Provisions – Control of Work – Property and Facility Preservation*, covers utility relocation except for railroad work. All questions concerning permanent and/or temporary relocation of railroad facilities, including related utilities such as telegraph and signal communication lines, are handled through the Division of Right of Way and Land Surveys, [Office of Railroad and Utility Coordination](#).

Caltrans is required by the *Professional Land Surveyor's Act*, [Section 8771](#), *Setting of Monuments in General; Monument Perpetuation*, to arrange for the relocation of all monuments of record belonging to other governmental agencies if highway construction would otherwise result in their destruction. Relocation of survey monuments and government benchmarks will be handled by the District. The SR should notify the RE when survey monuments are encountered and need to be relocated.

If existing structures with high water marks are to be widened, repaired, or replaced, the elevation of the previously painted high water mark should be taken and recorded. If these high water marks are lost during construction, they should be replaced at the completion of the work.

Permanent or temporary relocation of railroad facilities, including related utilities such as telegraph and signal communication lines, are handled through the Office of External Liaison and Support, Local Assistance and Program Branch, Agreements Section.

## **1-17 CS, Section 5-1.37B, Control of Work – Maintenance and Protection – Load Limits**

Assist the RE with enforcement of load limits on all projects including paving only projects when equipment is to cross existing or newly constructed structures.

The following guidance is to ensure SC performs uniform review and proper allowance for movement of construction equipment over structures that are within the project limits and are not open to traffic.

For structures that are either open to traffic or partially open to traffic, within the project limits, these guidelines can also be used for reinforced concrete slab bridges and culverts, and for reinforced concrete bridges with girders provided that:

1. The bridge has three or more girders. Non-redundant 2-girder systems or bridges with girder spacing greater than 14 feet must be forwarded as specified below for further analysis.
2. Clear spacing between overload vehicle and the edge of travelled way open to adjacent traffic must be a minimum of 10 feet or actual girder spacing, whichever is greater.

Overload cases that vary from the guidelines provided herein must be forwarded to:

1. The Bridge Design (BD) Structure Project Engineer for new structures or structures being modified by contract.
2. Structure Maintenance & Investigations (SM&I), Permit/Rating Office for existing structures.

### 1-17.01 Contract Specifications for Weight Limitations

The CS, Section 5-1.37B, sets forth weight limitations for earthmovers, trucks, and truck and trailer combinations. It identifies what vehicles will be permitted to cross the existing, new, partially completed, or partially demolished bridge structures that are not open to traffic. Other construction equipment may be permitted to cross bridge structures subject to the weight limitations and conditions of the California Department of Transportation Permit Policy, whether open to the public or not. Refer to the [Transportation Permits \(Oversize/Overweight Vehicles\) webpage](#), and the [Transportation Permits Manual](#).

The provisions in the CS, Section 5-1.37B, applies only within the project limits. The *California Vehicle Code*, [Division 15](#), *Size, Weight and Load*, governs operation of vehicles (including construction equipment) on State highways beyond the project limits.

### 1-17.02 Overloads

Overloads on bridge structures within construction contracts may be either repetitive, occasional, or stationary. When reviewing overloads, consideration should be made for the potentially reduced capacity of a partially completed or partially demolished structure. Listed below are guidelines for evaluating common overloads:

#### *1-17.02A Repetitive Overloads*

Repetitive overloads usually occur in connection with an earthmoving operation and its' associated equipment. Some considerations for repetitive overloads include:



**1. Bridge Structures Designed and Rated for HS20, HS20-44, and HS20-S16-44, and Permit Live Loading or for HL93 and Permit Live Loading:**

According to the CS, Section 5-1.37B(1), load limits are only applicable for bridges that have the capacity to handle HS20 live loading. Any new structure that is designed for either HS20 and permit live loading or HL93 and permit live loading and any existing structure that has an inventory level load rating factor of 1.00 or higher for either HS20 or HL93 loading and permit ratings of “PPPPP,” has adequate capacity for the load limits.

To verify design loading, design or as-built plans must be reviewed. To verify bridge load rating Inventory/Operating loading, bridge inspection reports or bridge load rating summary sheets must be reviewed. Ratings are based on HS20 loading wherever Load Factor (LF) is indicated under Rating Method, and HL-93 ratings will be identified as a Load and Resistance Factor Rating (LRFR) Rating Method.

The following must be submitted for review when using earthmoving equipment on:

- a. A new or partially completed structure that exceeds the limitations specified in the CS, Section 5-1.37B(1), *Load Limits – General*.
- b. An existing structure that:
  - i. Does not have an HS20 Operating Rating Factor of 1.67 or an HL93 Operating Rating Factor of 1.30 or higher, and
  - ii. Does not have permit ratings of “PPPPP”.

**2. Structures Designed for Overloads:**

Under the requirements of the CS, Section 5-1.37B(2), *Increased Load Carrying Capacity*, the Contractor may request the redesign of a structure to increase its load carrying capacity to accommodate heavy construction vehicles such as earthmoving equipment. The Contractor must be willing to pay for the cost of redesign and increased cost of construction, and the Contractor’s equipment cannot produce stresses that exceed the permissible redesigned stress limits produced by the following construction (design vehicle). Additional information relative to construction overload design is given in Structure Technical Policy 3.1 ([STP 3.1](#)), *Design for Material Hauling Equipment Lane on Bridges*.

At the present time, the design vehicles used to represent the construction equipment loading are:

- a. A three-axle vehicle having a maximum axle load of 130 kips and a total gross load of 330 kips for spans greater than 54 feet.

- b. A two-axle vehicle having a maximum axle load of 130 kips and a total gross load of 200 kips for spans of 24 to 54 feet.
- c. For spans under 24 feet, the design is based on a single 130-kip axle.

The following are the procedures to be followed when the Contractor requests a redesign of a structure, or structures, to increase the load carrying capacity:

- The Contractor submits a letter to the RE requesting that the structure be designed to increase its load carrying capacity. In this letter, the Contractor must name the structure or structures to be redesigned, give specific details of the loads, and the positioning of the loads on the structure. The Contractor must also state that they are willing to pay the cost of redesign and the increased cost of construction.
- The SR submits a copy of the Contractor's letter to the Deputy Division Chief of Structure Construction and, if appropriate, forwards it to Bridge Design along with a memo requesting that the structure be redesigned. The SR should also request that the Contractor be advised of the estimated cost of redesigning the structure. Reach written agreement for the redesign costs in writing prior to proceeding with the redesign.
- After the redesign has been completed, and upon receiving revised contract documents and the estimated maximum cost of redesigning the structure, the SR will prepare a change order (CO). The CO will authorize the structural alterations to accommodate the construction overloads. If the final cost to the Contractor for the redesign is known, then the credit to the State should be included. Otherwise, a supplemental CO should be written when the final costs are completed. To follow is sample verbiage of this type of CO:

As provided in the CS, Section 5-1.37B(2), *Increased Load Carrying Capacity*, modify substructure of the Van Koevering Avenue Undercrossing, Bridge 54-1001, as shown on Sheets 2 and 3 of this change order to accommodate construction overloads.

It is agreed that the Contractor will furnish all labor, equipment and material, and perform all work required to accomplish the structural alterations at no cost to the State.

It is further agreed that the State will be credited by means of a supplemental change order for the actual cost for redesigning the Van Koevering Avenue Undercrossing to accommodate construction overloads. The design costs shall be a maximum of \$10,000.

## 1-17.02B Occasional Overloads

Occasional overloads will include the movement of construction equipment (concrete trucks, cranes, paving equipment, pavement grinders, excavators, etc.) across structures from one work site to another. Examples of occasional overloads include:

### 1. Concrete Trucks:

Concrete trucks traveling on the highway with full loads generally need to use booster axles to meet the axle weight requirements in [Division 15](#) of the *California Vehicle Code (CVC)*. When discharging concrete, the booster wheels need to be raised, which increases the loads on the remaining axles, resulting in axle loads that exceed the legal load allowed by the permit policy. The CS, Section 5-1.37B, *Load Limits*, allows trucks over legal (exceeding CVC weight limitations) limit on bridges, not open to traffic, with up to 28,000 pounds for single axles and 48,000 pounds for tandem axles. This limits most trucks to hauling a maximum of 7 cubic yards of concrete. These trucks should be weighed to confirm allowable specification loading if there is reason to suspect the trucks are being overloaded. See Section 3, Processing Requests for Construction Equipment Overloads, below for further details.

### 2. Cranes and Concrete Pumps:

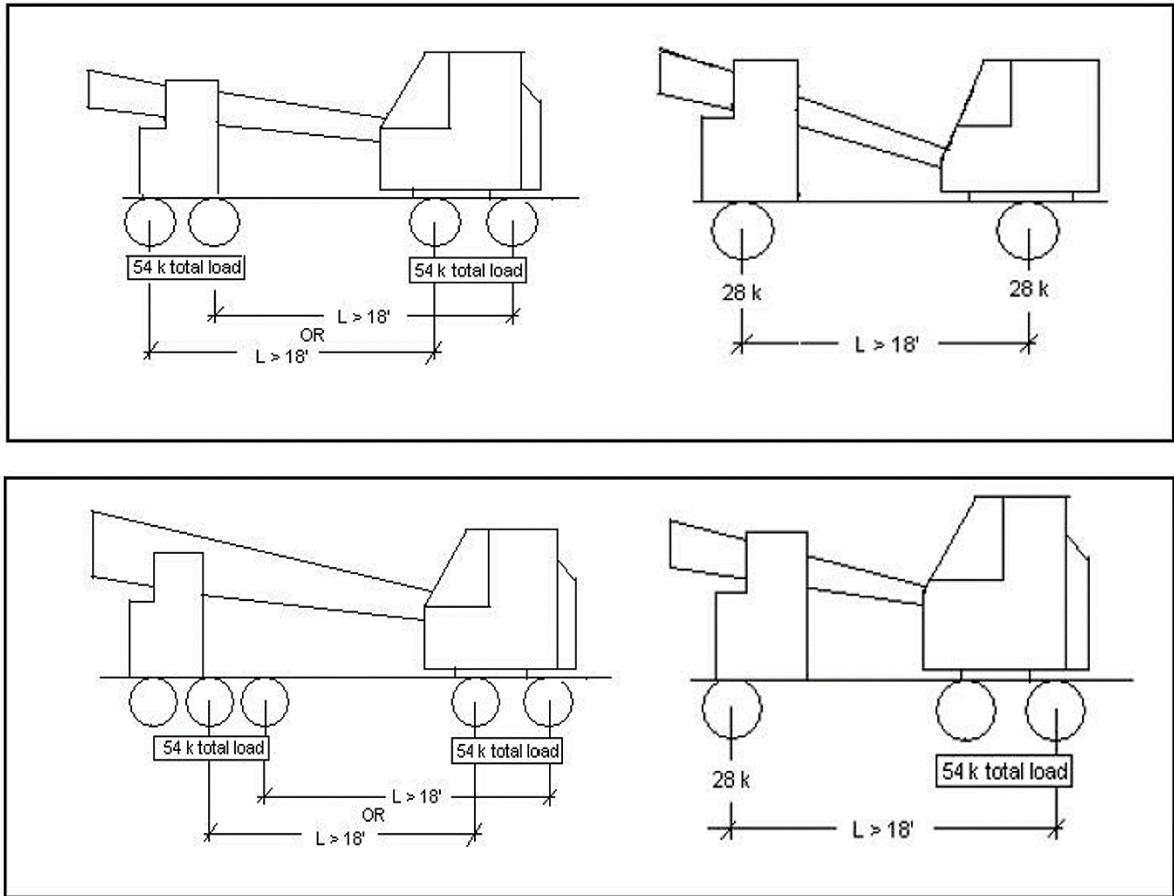
Provided they conform to [permit policy](#), fully equipped truck cranes are permitted to cross bridges on construction projects when rated for the following:

- HS20, Operating Rating Factor of 1.67; or
- HL93, Operating Rating Factor of 1.3 or greater; and
- Full purple rated permit capacity rated (PPPPP) bridge structures.

Full purple rated permit capacity must be for all 5, 7, 9, 11, and 13 axle vehicles. The following general guidelines may be used to determine if truck cranes or concrete pumpers traveling on the bridge meet permit policy, as follows:

- a. Tandem axle weights less than 54,000 pounds.
- b. Single axle weight less than 28,000 pounds.
- c. No group of three axles within an 18-foot distance (see Figure 1 below).
- d. Three axle groups less than 18 feet are treated as a tandem axle group limited to 54,000 pounds.

Large cranes are typically broken down (counterweights and other components removed) and the boom is supported on a trailer to achieve allowable permit weights. The Engineer should verify that the crane is configured in its traveling condition when moving on the bridge.



**Figure 1. Illustration Depicting the Limitation of Three Axles within an 18-foot Distance**

### 3. Track Equipment:

Track equipment, such as pavement grinders and excavators, occasionally needs to cross or work on a bridge. For bridges designed and/or rated for HS20 or HL93 loading, the Engineer may approve this equipment, provided that the following conditions are met:

- a. Maximum gross weight is less than 66,000 pounds.
- b. Maximum load on 12-inch wide, or larger, tracks is less than 6,000 lb per foot.
- c. Maximum load on 10-inch tracks is less than 5,000 lb per foot.

When track equipment crosses or works on a bridge, consider the track type and its effect on the deck surface. Protective covers may be required to protect the deck surface.

#### 4. Material Transfer Vehicles (MTVs):

The CM, [Section 3-519B](#), *General Provisions – Control of Work – Maintenance and Protection – Load Limits*, discuss the RE's responsibility to protect Caltrans' structural assets when the contract requires the use of MTVs or other types of heavy paving equipment.

The most used MTVs have axle loading double the legal limit when empty and triple the legal limit when loaded. MTVs typically exceed the load limits specified in the CS, Section 5-1.37B(1), *Load Limits – General*, and must be submitted for review. Field review and approval may be allowed provided that the request from the Contractor meets the following conditions:

- a. MTV is either a Roadtec SB2500 or a Weiler E2850 or lighter.
- b. MTV carrying a maximum of 5 Tons of asphalt in hopper.
- c. MTV is traveling 5 mph or less when crossing the bridge.
- d. MTV is the only construction equipment on the bridge. Adjacent legal traffic is not allowed.
- e. Bridge(s) to be crossed are rated to meet or exceed HS20 Operating Rating Factor of 1.67 or HL93 Operating Rating Factor of 1.30 and a 5-axle permit P5 permit rating of 1.00 or greater. Any new structure that is designed for permit loading will meet this requirement.
- f. The bridge structure is an RC slab, an RC culvert-type structure, or a multi-girder type where girder spacing is between 7 and 9 feet.
- g. If the bridge is a multi-girder type structure meeting the 7 to 9 feet girder spacing, the MTV wheel lines must be aligned with the bridge's girder lines during the crossing.

The MTV models noted above are assumed to have an 8-foot center-to-center wheel gage. Wheel lines should be equally spaced off girder lines within the allowable 7-to-9-foot range. Girder lines must be determined and marked out on the deck by the SR or Assistant Structure Representative (ASR) prior to the MTV crossing(s) and must be monitored by Caltrans (CT) field personnel.

#### 1-17.02C Stationary Crane and Concrete Pumps

Cranes are also used in a stationary position to do work from bridges, including pile driving, lowering falsework, and lifting girders. Cranes lifting in a stationary position cause high outrigger loading. Outrigger loads greater than 40,000 pounds should be referred to:

- The BD Structure Project Engineer for new structures or structures being modified by contract, or
- The SM&I, Permit/Rating Office for existing structures

See Section 3, *Processing Requests for Construction Equipment Overloads*, below for further details. The Engineer may review proposals for outrigger loads less than 40,000 pounds provided that the bridge is designed for permit loads and/or has full permit capacity (PPPPP). The Contractor must be required to provide calculations for outrigger loads. Outrigger loads may be distributed in one of three methods:

1. Outriggers that produce loads less than 25,000 pounds may be placed on timber mats. The mats should be 12" by 12" minimum and placed parallel to the girders. The minimum length of the mat is 5 feet; the minimum width must be equal to or greater than the outrigger plate width.
2. Outriggers that produce loads greater than 25,000 pounds should be placed on beams that distribute the load equally to two girders.
3. Outriggers placed upon concrete bent caps of box girder bridges do not require mats or beams to distribute loads.

Submittals for stationary loading to be referred to BD or SM&I should include the following information:

- a. Location of crane outriggers tied into reference locations (CL bent or abutment, CL bridge, or edge of deck etc.).
- b. Calculations for outrigger loads.
- c. Manufacturer's information for the crane and a description of how the crane will be outfitted and configured (boom length and counterweights).
- d. Weight of what will be lifted and maximum extension of the boom.
- e. Proposed method for distribution of outrigger loads.
- f. How the configured crane will be moved into position while complying with CS, Section 5-1.37B, *Load Limits*.

### 1-17.03 Processing Requests for Construction Equipment Overloads

As previously noted, requests from Contractors to utilize construction equipment not exceeding the limitations presented above may be approved at the job level by the SR. All other requests are to be forwarded by the SR to the BD Structure Project Engineer for new structures or structures being modified by contract, and the SM&I Design Engineer, Permit/Rating Office, for existing structures.

Prior to referring the request to either the BD Structure Project Engineer or SM&I Design Engineer, complete the appropriate *Bridge Overload Analysis Transmittal* form, which is either:

- [Form SC-1201-01](#), *Bridge Overload Analysis Transmittal (Stationary)*, or
- [Form SC-1201-02](#), *Bridge Overload Analysis Transmittal (Moving)*.

Include a letter requesting overload analysis and a complete description of the equipment. The Contractor's request must be explicit as to the nature of the overload and the conditions under which it will be moved. The information required includes:

- a. The type, the make, and the model of equipment.
- b. The axle spacing, axle width out and out of tires.
- c. The axle loads, which are obtained by scale weight if possible.
- d. The width and number of tires.
- e. Operating conditions, etc.

SC Staff and the Contractor must submit any overload request in a timely manner. Review time of an overload submittal can take from several days to several weeks or more depending on the completeness of the submittal and the complexity of the overload scenario. There is no contractual language regarding overload review time.

Construction overloads will often affect areas of responsibility of both the District and SC. The SR must ensure that copies of all correspondence related to overloads are furnished to the appropriate District personnel. Refer to [Attachment 3, Sample Letter and Report](#), for a sample letter to the Contractor from the Resident Engineer granting permission to cross bridge structures with construction equipment that does not exceed specified limitations.

## **1-18 CS, Section 5-1.38, Control of Work – Maintenance and Protection Relief**

Under the provisions of the CS, the Contractor may, under certain circumstances, be relieved of the duty of maintaining and protecting portions of the work which have been completed in all respects in accordance with the requirements of the contract.

Requests from the Contractor for relief from maintenance and responsibility must be in writing to the RE. If structures are involved, the RE will request that the SR provide information regarding the status of completion of the involved structures. The SR will then advise the RE if the structures are complete. If the structures are not complete, the SR will advise the RE of the work remaining to be done in writing. Relief from maintenance for structures cannot be granted unless the structure is complete.

For general discussion of Caltrans policy regarding relief from maintenance and responsibility, see the CM, [Section 3-520, General Provisions – Control of Work – Maintenance and Protection Relief](#).

## **1-19 CS, Section 5-1.42, Control of Work – Requests for Information**

Adhere to specification requirements for the response time requirements to RFIs. When the topic is related to a differing site condition (DSC), which may develop into a claim, timely response is critical. When an RFI has the potential to develop into a potential claim, keep the RE, SC Supervisor, and SC Manager informed of the issue. For additional guidance refer to the CM, [Section 3-521](#), *General Provisions – Control of Work – Requests for Information and Potential Claim Records*.

## **1-20 CS, Section 5-1.43A-D, Control of Work – Potential Claims and Dispute Resolution**

Adhere to specification requirements for the response time for reviewing and responding to potential claims. Assist the RE with the preparation of a claim report involving structure items. For additional guidance refer to the CM, [Section 5-4](#), *Contract Administration – Disputes*.

## **1-21 CS, Section 5-1.43E, Control of Work – Alternative Dispute Resolution**

For projects containing structure work, recommend to the RE during the Dispute Resolution Advisor (DRA) and Dispute Resolution Board (DRB) member selection for a member with relevant structure experience. Should a potential claim arise, remind the Contractor of specification timeline for filing RFIs, Initial Potential Claim Record, initial claim documents, supplemental claim documents, etc. Support the RE in writing position papers and preparing presentations. For additional information, refer to the CM:

- [Section 3-522](#), *General Provisions – Control of Work – Alternative Dispute Resolution*
- [Section 5-404](#), *Contract Administration – Alternative Dispute Resolution*

## **1-22 CS, Section 5-1.46, Control of Work – Final Inspection and Contract Acceptance**

The RE files the notice of completion, and the work is accepted by the District Director in each District. Communicate to the RE the status of structure inspection and completion and ensure all punch-list work and final inspection of structures item work is accepted prior to the RE granting relief from maintenance and contract acceptance.

When the structure work is complete, submit the *Report of Completion* per [BCM C-6](#), *Required Documents to be Submitted During Construction*.



Near the completion of a building project, it is best practice for the SR to arrange for a joint review of the project with representatives of other organizations who have a vested interest in the facility. The purpose of this review is to accomplish the following:

1. Review the operation of the facility.
2. Inform the Maintenance Regional Manager or the operators of the facility of the beginning date of the one-year guarantee period and who to contact for guarantee work.
3. Discuss manufacturer's warranties, service instructions, etc.
4. Discuss work that may be required after contract acceptance.
5. Review all design features that should be handled differently on future projects. These features should also be noted in the comprehensive letter which gives suggestions for improving the design or construction of building projects.

The SR should arrange for the following to attend the review:

- Maintenance Regional Manager or his representative for building projects which will be operated and maintained by State Maintenance forces.
- A representative of the organization that will be operating and maintaining the facility for building projects not operated and maintained by State Maintenance forces.
- The project architect. The architect will arrange for Headquarters representation at the review in accordance with instruction in the *Transportation Architecture Manual*.

At his discretion, the SC Supervisor may determine that minor construction projects, including Minor B contracts, do not warrant this joint review. If the review is not held, it is still required that input is obtained from Bridge Design, and that the appropriate people are informed about the operation of the facility and about the guarantee provisions, as well as who to contact for guarantee work.

It is important that the Maintenance Regional Manager be kept informed regarding job progress on building projects which will be operated and maintained by State Maintenance forces. Contact the Maintenance Regional Manager prior to the start of the project work and encourage periodic site visits as the work progresses.

## **1-23 CS, Section 6-1.04, Control of Materials – Buy America**

Review the CM, [Section 3-604](#), *General Provisions – Control of Materials – Buy America*.

## 1-24 CS, Section 6-1.06, Control of Materials – Buy Clean California Act

Review the project *Special Provisions* to verify if the Buy Clean California Act is required for the project. For additional guidance regarding quantities and types of materials included in the act, review the following:

- a. *Construction Procedure Directive 22-4 ([CPD 22-4](#)), Buy Clean California Act – Update*
- b. *CM:*
  - i. Chapter 3, [Section 3-606](#), *General Provisions – Control of Materials – Buy Clean California Act*
  - ii. Chapter 4, [Section 4-5201](#), *Construction Details – Reinforcement – General*
  - iii. Chapter 4, [Section 4-5501](#), *Construction Details – Steel Structures – General*
  - iv. Chapter 6, [Section 6-202A\(2\)](#), *Sampling and Testing – Acceptance of Manufactured or Fabricated Materials and Products – Responsibilities for Acceptance of Manufactured or Fabricated Materials and Products – Certificates of Compliance, Mill Test Reports, Buy America and Buy Clean California Act Requirements.*

## 1-25 CS, Section 6-2, Control of Materials – Quality Assurance

Be aware of contract requirements for the “Buy America” clause during review of material to be used on the project. Obtain all materials certification with “Buy America” clause from the field, Contractor, or manufacturer and file them in the appropriate category of the project records so that they can easily be retrieved should an audit be conducted.

In coordination with the RE, SC staff must verify materials incorporated into the finished structure work conform to the requirements of the contract documents. Understand the meaning of quality assurance, quality control, and Department acceptance – and who is responsible for each per the CM, Chapter 3, [Section 3-607](#), *General Provisions – Control of Materials – Quality Assurance*. When required, verify materials are received from authorized facilities, [Authorized Materials Lists](#) (AML), or authorized materials source lists per the CM, Chapter 6, [Section 6-202](#), *Sampling and Testing – Acceptance of Manufactured or Fabricated Materials and Products – Responsibilities for Acceptance of Manufactured or Fabricated Materials and Products*. Adhere to the sampling and testing requirements for materials stated in the tables in the CM, Chapter 6, [Section 6-107](#), *Sampling and Testing – Sample Types and Frequencies – Materials Acceptance Sampling and Testing*.

Additional relevant reference documents include:

- CM, Chapter 6, [Section 6-3](#), *Sampling and Testing – Field Tests*
- SC [Outline of Field Construction Practices](#), Section 48, *Materials*

## **1-26 CS, Section 7-1.02K(1-5), Legal Relations and Responsibility to the Public – Labor Code – Labor Compliance**

Write accurate and factual daily reports and do regular mandated labor compliance interviews of various trades on project per the CM, Chapter 8, [Section 8-102A\(3\)](#), *Employment Practices – Labor Compliance – Labor Compliance Responsibilities – Resident Engineer – Interviews with Contractor Personnel*.

## **1-27 CS, Section 7-1.02K(6)(a), Legal Relations and Responsibility to the Public – Laws – Labor Code – Occupational Safety and Health Standards – General**

## **1-28 CS, Section 7-1.02K(6)(c), Legal Relations and Responsibility to the Public – Laws – Labor Code – Occupational Safety and Health Standards – Tunnel Safety**

## **1-29 CS, Section 7-1.02K(6)(d), Legal Relations and Responsibility to the Public – Laws – Labor Code – Occupational Safety and Health Standards – Confined Space Safety**

## **1-30 CS, Section 7-1.02K(6)(j), Legal Relations and Responsibility to the Public – Laws – Labor Code – Occupational Safety and Health Standards – Lead Safety**

For the four sections of the CS grouped above:

Comply with the Cal/OSHA *Safety Orders*.

Resources to review include:

1. SC [Code of Safe Practices](#)
2. District [Code of Safe Practices](#)

3. *CM*:
  - a. Chapter 2, [Section 2-102B](#), *Safety and Traffic – Safety – Duties and Responsibilities – District Construction Safety Coordinator*
  - b. Chapter 2, [Section 2-102D](#), *Safety and Traffic – Safety – Duties and Responsibilities – Resident Engineer*
  - c. Chapter 2, [Section 2-104B](#), *Safety and Traffic – Safety – Division of Occupational Safety and Health – Citations and Civil Penalties*
  - d. Chapter 2, [Section 2-106B](#), *Safety and Traffic – Safety – Caltrans-Specific Safe Practices – Tailgate Safety Meetings*
  - e. Chapter 3, [Section 3-501](#), *General Provisions – Control of Work – General*
  - f. [Section 3-510B](#), *General Provisions – Control of Work – Coordination with Other Entities – Contractor-Property Owner Agreement*
  - g. Chapter 3, [Section 3-701D\(2\)](#), *General Provisions – Legal Relations and Responsibility to the Public – Laws to be Observed – Occupational Safety and Health Standards – Tunnel Safety*
  - h. Chapter 7, [Section 7-107B](#), *Environmental Stewardship – Environmental Rules and Requirements – Hazardous Waste and Contamination – Aerially Deposited Lead*
4. *Caltrans Employee Health and Safety Manual*, Chapter 14, [Confined Spaces](#)

## **1-31 CS, Section 7-1.02M(2), Legal Relations and Responsibility to the Public – Public Resources Code – Fire Protection**

See *Caltrans Code of Safe Practices* and comply with [California Public Resource Code – Fire Protection](#).

## **1-32 CS, Section 7-1.04, Legal Relations and Responsibility to the Public – Public Safety**

Safety is a priority on all projects for project personnel and the traveling public. SC staff are responsible for assisting the RE in reviewing the Contractor's Injury and Illness Prevention Program when requested. SC Supervisors ensure that staff are provided training for relevant safety topics such as confined spaces, ladder safety, and fall protection. For lead safety, fire protection, and tunnel safety, review the Contractor's Injury and Illness Prevention Program to ensure topics are addressed if applicable to the contract.

The RE completes a weekly safety inspection using [Form CEM 0606](#), *Construction Safety Checklists*. Assist the RE by providing input for the weekly safety inspection.

Refer to the *CM*, Chapter 2, [Section 2-109](#), *Safety and Traffic – Safety – Project Safety Reviews*. Topics relevant to structure work include, but are not limited to, the following:

1. Heavy equipment including cranes
2. Excavations
3. Structures work
4. Work over or near water
5. Tools and equipment
6. Power actuated tools
7. Scaffolding
8. Ladder safety
9. Work with chemicals, such as polyester concrete and methacrylate.

See Chapter 4, [Section 4-12](#), *Design Considerations – Falsework Over or Adjacent to Roadways or Railroads*, of the *Falsework Manual* for guidance on changes of structure clearances due to placement of falsework.

### **1-33 CS, Section 8-1.02, Prosecution and Progress – Schedule**

See Chapter 3, Section 3-801, *General Provisions – Prosecution and Progress – Schedule*, of the *CM*.

### **1-34 CS, Section 8-1.03, Prosecution and Progress – Preconstruction Conference**

See Chapter 3, Section 3-802, *General Provisions – Prosecution and Progress – Preconstruction Conference*, of the *CM*.

### **1-35 CS, Section 8-1.05, Prosecution and Progress – Time**

See Chapter 3, Section 3-804, *General Provisions – Prosecution and Progress – Time*, of the *CM*.

### **1-36 CS, Section 8-1.06, Prosecution and Progress – Suspensions**

SC Staff are responsible for assisting the RE's review of the Contractor's submitted baseline critical path method (CPM) and periodic updates of the CPM schedule with the RE for structures related work. Prepare for and participate in the preconstruction conference. For structures related work, assist the RE with review of the initial construction progress schedule and all subsequent updates. Assist the RE, if requested,

to analyze viability of project suspension and time impact analysis schedules related to structure claims and COs.

### **1-37 CS, Section 9-1.02C, Payment – Measurement – Final Pay Item Quantities**

### **1-38 CS, Section 9-1.03, Payment – Payment Scope**

### **1-39 CS, Section 9-1.04, Payment – Force Account**

### **1-40 CS, Section 9-1.05, Payment – Extra Work Performed by Specialists**

### **1-41 CS, Section 9-1.06, Payment – Changed Quantity Payment Adjustments**

### **1-42 CS, Section 9-1.15, Payment – Work-Character Changes**

### **1-43 CS, Section 9-1.16, Payment – Progress Payments**

### **1-44 CS, Section 9-1.17, Payment – Payment After Contract Acceptance**

The above sections contain payment related clauses in the [contract documents](#).

Review [BCM C-9](#), *Preparation of Progress Pay Documents*. SC staff must understand the different payment methods and be able to:

1. Determine where and how items of work are paid for.
2. Prepare payment estimates using a schedule of values.
3. Administer force account work.
  - a. Be aware of the Equipment Rental Hours chart in CS, Section 9-1.04D(3), *Payment – Force Account – Equipment Rental – Equipment Not on the Job Site and Not Required for Original-Contract Work*. Hours paid do not equal hours operated for equipment in this situation. Intermittently used equipment can be considered as full-time work.
4. Prepare the required documentation for force account work.
5. Determine if specialists are needed for extra work.
6. Determine if work-character changes exist.

7. Prepare payment withholds for outstanding items of work (missing shop drawings, as-builts project plans, etc.).
8. Assist the RE in the preparation of final estimates.

References related to the above sections in the CM are:

- [Section 5-306C\(3b\)](#), *Contract Administration – Change Orders – Change Order Content – Methods of Payment – Extra Work – Extra Work at Force Account*
- [Section 5-306C\(2d\)](#), *Contract Administration – Change Orders – Change Order Content – Methods of Payment – Payment Adjustment – Adjustments for Work-Character Changes*, and Section 3-403A *Work-Character Changes*
- [Section 5-306C\(2\)](#) *Payment Adjustment and* [3-904A](#) *Changed Quantity Payment Adjustments*
- [Section 3-907](#), *General Provisions – Payment – Payment After Contract Acceptance*.

## **1-45 CS, Section 12-4. Temporary Traffic Control – Maintaining Traffic**

For structure work that requires temporary lane closures, coordinate with the RE regarding the administration of temporary traffic control. Be aware of temporary traffic control requirements and review the CS:

- Section 12-4.02A(3)(b), *Temporary Traffic Control – Maintaining Traffic – Traffic Control Systems – General – Submittals – Closure Schedules*, for requirements for restricting horizontal and vertical clearances (also referenced in Section 7-1.04 of this attachment).
- Section 12-4.02C(3)(a), *Temporary Traffic Control – Maintaining Traffic – Traffic Control Systems – Construction – Closure Requirements and Charts – General*, for lane buffer requirements when work is within 6 feet of the traveled way.

Review temporary lane closure charts and know lane closure restrictions for structure work. Coordinate with the RE and be aware of temporary traffic control contingency requirements and penalties for work that exceeds temporary lane closure time limits. For falsework, be aware of the falsework traffic opening dimensions specified in the [contract documents](#) for vehicles and pedestrians. Additional information for temporary traffic control procedures is in the:

1. *CM*:
  - a. Chapter 2, [Section 2-12](#), *Safety and Traffic – Traffic*
  - b. Chapter 4, [Section 4-12](#), *Construction Details – Temporary Traffic Control*
2. [Temporary Pedestrian Access Routes Handbook](#)

3. *COZEEP/MAZEEP Pocket Guide*
4. *Flagging Instruction Handbook*
5. *Code of Safe Practices*
6. SC [Outline of Field Construction Practices](#):
  - a. Section 16, *Falsework*
  - b. Section 44, *Bridge Removal*
  - c. Section 56, *Safety*
7. [California Manual on Uniform Traffic Control Devices \(MUTCD\)](#), Part 6, *Maintaining Traffic Control*
8. [Construction Procedure Directive \(CPD\) 01-11](#), *Hoisting Operations near Public Traffic and Pedestrians*.

## **1-46 CS, Section 13-2, Water Pollution Control – Water Pollution Control Program**

## **1-47 CS, Section 13-3, Water Pollution Control – Stormwater Pollution Prevention Plan**

## **1-48 CS, Section 13-4, Water Pollution Control – Job Site Management**

Stormwater pollution prevention plan (SWPPP) and water pollution control program (WPCP) administration is the responsibility of the RE. Assist the RE in the administration of SWPPP/WPCP for structure related work.

1. Structure Representatives responsibilities include the following:
  - a. Review and discuss work methods with the RE for structure items that may affect the quality of stormwater discharges prior to the pre-construction conference.
  - b. Understand the approved SWPPP/WPCP.
  - c. Stay informed about any critical dates or any potential amendments to the SWPPP/WPCP that may affect structure work.
  - d. Verify SC staff have received SWPPP training offered to District personnel.
  - e. Ensure that the appropriate best management practices (BMPs), as indicated in the approved SWPPP/WPCP, are in place prior to the performance of the related work.
  - f. Report noncompliance and/or violations of the SWPPP to the RE.



2. Structure work that may affect the quality of stormwater might include, but not be limited to, the following:
  - a. Operations related to concrete and grouting operations; clean out, leakage, priming and pumping concrete.
  - b. Water removed from footings, cofferdams, and piles.
  - c. Water runoff from deck curing operations, especially if the flow is great enough to cause a disturbance to the surrounding ground.
  - d. Residue from sprayed on resins, concrete curing compound, and coatings.
  - e. General site cleanup and trash removal.
  - f. Potential heavy metal contamination from operations such as welding, grinding, sawing, and sandblasting.
  - g. Runoff from high pressure water wash.
  - h. Vehicle tracking.
  - i. Maintenance of concrete washouts.

Contractor proposed changes to the SWPPP will be reviewed and approved by the RE. Structure Representatives are not to approve changes to the SWPPP.

## **1-49 CS, Section 14, Environmental Stewardship**

### **1-50 CS, Section 14-11, Environmental Stewardship – Hazardous Waste and Contamination**

1. Review the contract documents and assist the RE with environmental stewardship activities. Activities include, but are not limited to, the following:
  - a. Discovery of unanticipated asbestos and hazardous substances
  - b. Hazardous waste management
  - c. Disturbance of existing paint systems on bridges
  - d. Treated wood waste
  - e. Native species relocation or mitigations around a structure
  - f. Water diversion or implementation of turbidity curtains around bridge piers
  - g. Proper review of equipment submittals to comply with environmental requirements for emissions or compliance, and
  - h. Any other review and enforcement of activities requested by the RE around structure sites.

2. Relevant references include:
- a. [BCM B-2](#), *SC Lead Compliance Plan*
  - b. [BCM 59-2](#), *Structural Steel Coatings – Painting Structural Steel*
  - c. [BCM 60-2.02C](#), *Existing Structures – Structure Removal – Bridge Removal – Construction*
  - d. [Concrete Technology Manual](#):
    - i. Chapter 6, *Structure Concrete Repair and Rehabilitation*
  - e. [Construction Manual](#):
    - i. Chapter 2, Section, 2-108, *Safety and Traffic – Safety – Hazardous Materials*
    - ii. Chapter 5, Section 2-102C, *Contract Administration – Project Records and Reports – Organization of Project Documents – Description of Categories, Category 19, Hazardous Waste and Hazardous Materials*
    - iii. Chapter 7, Section 7-106, *Environmental Stewardship – Environmental Rules and Requirements – Hazardous Materials*
    - iv. Chapter 7, Section 7-107, *Environmental Stewardship – Environmental Rules and Requirements – Hazardous Waste and Contamination.*

# Sample Letter and Report

## 1 - Sample of a Value Engineering Change Proposal (VECP) Analysis Report

The following is a sample *VECP Analysis Report* that can be used as a template:

### **Structure Construction – Value Engineering Change Proposal Analysis (VECP) Report**

*Insert Date*

#### **Project Information**

Dist-EA  
Dist-Co-Rte-PM  
Structure or bridge name  
Br. No.

#### **Description of VECP**

*Provide a description of the VECP*

- *Reduce any cost of construction.*
- *Reduce construction activity duration.*
- *Reduce traffic congestion.*
- *Permit issues.*
- *Impact on other projects.*
- *Project impacts, including traffic, schedule, later stages.*
- *Peer reviews.*
- *Overall proposal merits.*
- *Review times required by the Department and other agencies.*
- *Etc.*

**Structure(s) Affected:** *(Identify any structures that are affected)*

#### **Chronology:**

*Proposal Concept received: (date)*  
*Proposal Concept accepted or rejected: (date)*  
*VECP received: (date)*  
*VECP accepted or rejected: (date)*  
*Change Order issued: (date)*  
*Elapsed review time: \_\_\_\_\_ days*

Structure Construction Value Engineering Change Proposal (VECP) Report continued

**Introduction:**

This report presents the results of the review for the *(insert type of review completed, i.e., Proposal Concept or VECP)*.

**Discussion:**

Positive Aspects of the VECP – List and clarify

Reasons the VECP should be rejected – *This portion of the report would describe specific deficiencies found with the Proposal Concept or VECP that would be cause for rejection i.e.*

**Recommendation of the Structure Representative:**

Authorization – No exceptions were found with the VECP (*number or title of VECP or other unique identifier*).

Rejection:

Structure Construction does not accept the VECP. The *(insert type of review completed, i.e. Proposal Concept or VECP)* for *(identify specific location)* of the *(Bridge name, Br. No.)*, based upon the analysis that found the deficiencies listed above. This VECP was discussed with <<Names>> and the Construction Deputy and they concur with this decision for the reasons listed below.

Reasons for Rejection:

1. (list reason(s))

If you have any questions regarding this report, please contact Structure Representative at (XXX) XXX-XXXX.

Steve Street, P.E.  
Structure Representative  
Structure Construction

# 2 - Sample Letter to the Contractor for Overloads

## DEPARTMENT OF TRANSPORTATION

STRUCTURE CONSTRUCTION  
P1801 30<sup>TH</sup> STREET, MS 9-2/11H  
SACRAMENTO, CA 95816-7006  
PHONE (916) 227-7777  
FAX (916) 227-8179  
TTY 711  
www.dot.ca.gov



*Making Conservation  
a California Way of Life!*

Month date, year

<Contractor Information>

Title if not in line above

Organization

Address

City, ST ZIP

Dear :

Your request dated (date) for permission to cross the (name of bridge), Br. No. (xxx), with construction overloads is approved in accordance with the provisions of Section 5-1.37B, *Load Limits*, of the Standard Specifications, subject to the following conditions:

1. The approaches at each end of the bridge must be completed to the grade required to provide a smooth transition to the bridge roadway, and must be maintained in a smooth and uniform condition at all times while construction equipment is in use, for a length of not less than 150 feet measured from the bridge ends. Local depressions in the approaches in the vicinity of the bridge ends will not be permitted.
2. Construction equipment, either loaded or unloaded, must be operated at all times at a speed and in a manner so that no bouncing of the equipment occurs while the equipment is crossing the bridge.
3. Construction equipment must be confined to the construction equipment lane by means of substantial, temporary physical barriers.
4. Only one construction overload will be permitted on the bridge at any time.
5. On completion of the operation that requires the use of a construction overload, the bridge roadway must be cleaned and physical barriers used in connection with the construction equipment lane must be removed and disposed of away from the job site.

Note: Other conditions or restrictions may be added as necessary to suit particular job circumstances

*"Provide a safe and reliable transportation network that serves all people and respects the environment"*

**Figure 1. Sample Letter to the Contractor Permitting Construction Overload**

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# Structure Construction Technical Team Operation

## Revision and Approval

Revision	Date	Nature of Changes	Approved By
2	11-30-2021	Update	Rich Foley
1	06-30-2018	Update	Steve Altman
0	09-08-2017	Original Issue	Steve Altman

[Click here](#) to request previous versions      Contact [SC Technical Team Q](#) for questions

## Background

This process establishes the roles and responsibilities of the Structure Construction (SC) Technical Teams (TTs) for development of products and services in support of the SC Quality Management System (SC QMS) and SC's responsibilities within Caltrans.

Structure Construction organizes subject matter experts into Technical Teams to increase the retention and continual improvement of its organizational knowledge.

Established in 2006, SC Technical Teams (SC TTs) represent the subject matter experts and technical expertise of SC and were developed with the intent of:

1. Providing ownership of SC's technical manuals to ensure timely updating.
2. Providing SC input on specification development.
3. Providing SC members for Division of Engineering Services (DES) Technical Committees.

Each SC TT is comprised of an Area Construction Manager (ACM) Sponsor, Bridge Construction Engineer (BCE) Chair and Vice Chair, and SC TT members (comprised of BCEs and SC technical experts from across the State) so that all decisions being made include knowledge from all areas of the State.

## Process Inputs

1. DES and/or SC Top Management direction resulting from:
  - a. Partnership with Industry to improve processes.
  - b. Current legislation or regulations and proposed changes.
  - c. Current, new, and proposed changes to the contract standards, AASHTO amendments, FHWA, and information from other stakeholders.
  - d. SC Management review outputs per [BCM F-1](#), *SC QMS Management Review*.
  - e. Audit findings and recommendations per [BCM F-3](#), *SC Audit Program*.
  - f. Project inquiries, issues, and lessons learned.

## Procedure

1. All work associated with this process is charged as:
  - a. [Project Direct – Construction](#) for SC TT work associated with a going construction project.
  - b. [Project Direct – Preconstruction](#) for SC TT work associated with a project prior to advertisement.
  - c. [CapCorp](#) for all other SC TT work.
2. SC Top Management organizes SC TTs and assigns an ACM as the SC TT Sponsor. The SC TT Sponsor names the SC TT Chair, SC TT Vice Chair, and SC TT members.
3. SC TT Sponsors obtain new SC TT members as needed as described in [Attachment 1](#), *Structure Construction Technical Team Member Selection*.
4. Each member of the SC TT reviews and signs the SC Technical Team Charter as described in [Attachment 2](#), *Structure Construction Technical Team Charter*.
5. SC TT Sponsors and Chairs establish SC TT Work Plans and resource budgets annually as described in [Attachment 3](#), *SC Technical Team Work Plan and Resource Budget*. The SC TT Work Plans include provisions for the following:
  - a. Develop, review, and revise subject matter processes using PDDs as described in:
    - i. [Attachment 4](#), *Developing and Updating Process Development Diagram (PDD) Packages*.
    - ii. [Attachment 4.1](#), *Structure Construction 8-Step Development and Review Schedule – from PDD to Published BCM*.



- iii. [Attachment 4.2](#), *PDD to BCM Turtle Diagram*.
  - b. Develop, review, and revise subject matter in SC technical manuals and other guidance as described in:
    - i. [Attachment 5](#), *Developing and Updating SC Technical Manuals*.
    - ii. [Attachment 5.1](#), *Structure Construction 6-Step Development and Review Schedule – from Outline to Published SC Technical Manual*.
  - c. Review subject matter specifications, standard plans, and other information from stakeholders and provide comments as described in [Attachment 6](#), *Review of Standards, Policies, and Guidance*.
  - d. Request subject matter specification revisions as described in Attachment 6, *Review of Standards, Policies, and Guidance*.
  - e. Act as subject matter experts for the collection, production, and updating of field engineering aids and training materials as described in [Attachment 7](#), *Collecting, Producing, and Updating Field Engineering Aids and Training Materials*.
  - f. Maintain essential equipment list for subject matter processes as described in [Attachment 8](#), *Essential Equipment Lists*.
  - g. Recommend and assist with subject matter research proposals as described in [Attachment 9](#), *Recommend and Assist with Subject Matter Research Proposals*.
  - h. Respond to subject matter requests for assistance from SC staff, DES functional units and other stakeholders as described in [Attachment 10](#), *Respond to Requests for Assistance from Structure Construction Staff, Division of Engineering Services Functional Units, and other Stakeholders*.
  - i. Maintain subject matter stakeholder contacts, research industry trends, arrange industry group liaison meetings, and promote innovative solutions to continually improve SC processes as described in [Attachment 11](#), *Maintain Stakeholder Contacts, Research Industry Trends, Arrange Industry Group Liaison Meetings, and Promote Innovative Solutions to Continually Improve Structure Construction Processes*.
6. The SC TT Chair schedules:
- a. A minimum of four SC TT meetings annually, one of which may be at the BCE Meeting.
  - b. Inter-SC TT meetings, subject to the discretion of the SC TT Sponsor.
7. The SC TT Chair establishes SC TT meeting agendas. Refer to [Attachment 12](#), *SC Technical Team Meeting Agenda/Meeting Minutes*, for a sample agenda. Use

the sample agenda or create a meeting agenda that contains the information shown on the sample agenda.

8. The SC TT Chair delegates a SC TT member to take minutes for the SC TT meetings to provide institutional memory of discussions, deliberations, recommendations, action items, and decisions.
9. The SC TT Chair reviews the content of the SC TT web page and sends any necessary updates and all SC TT documents to the SC Webmaster for posting.
10. SC TT Sponsors and Chairs compile and deliver quarterly progress reports based on SC TT Work Plans and resource budgets as shown in [Attachment 13](#), *SC Technical Team Quarterly Report*.

## **Process Outputs**

1. SC TT structure and members
2. SC TT work plans
3. New or revised SC processes
4. New or revised SC technical manuals
5. Review comments on specifications, standard plans, and other Caltrans Standards
6. Specification change requests
7. List of inspection aids and training materials
8. Essential equipment lists
9. Research proposals
10. Responses to requests for assistance or information
11. List of stakeholder contacts
12. SC TT meeting agendas and meeting minutes
13. Quarterly reports

## **Attachments**

1. [Attachment 1](#), *Structure Construction Technical Team Member Selection*
2. [Attachment 2](#), *Structure Construction Technical Team Charter*
3. [Attachment 3](#), *SC Technical Team Work Plan and Resource Budget*
4. [Attachment 4](#), *Developing and Updating Process Development Diagram (PDD) Packages*

- a. [Attachment 4.1](#), *Structure Construction 8-Step Development and Review Schedule – from PDD to Published BCM*
- b. [Attachment 4.2](#), *PDD to BCM Turtle Diagram*
5. [Attachment 5](#), *Developing and Updating Structure Construction Technical Manuals*
  - a. [Attachment 5.1](#), *Structure Construction 6-Step Development and Review Schedule – from Outline to Published SC Technical Manual*
6. [Attachment 6](#), *Review of Standards, Policies, and Guidance*
7. [Attachment 7](#), *Collecting, Producing, and Updating Field Engineering Aids and Training Materials*
8. [Attachment 8](#), *Essential Equipment lists*
9. [Attachment 9](#), *Recommend and Assist with Subject Matter Research Proposals*
10. [Attachment 10](#), *Respond to Requests for Assistance from Structure Construction Staff, Division of Engineering Services Functional Units, and Other Stakeholders*
11. [Attachment 11](#), *Maintain Stakeholder Contacts, Research Industry Trends, Arrange Industry Group Liaison Meetings, and Promote Innovative Solutions to Continually Improve Structure Construction Processes*
12. [Attachment 12](#), *SC Technical Team Meeting Agenda/Meeting Minutes*
13. [Attachment 13](#), *SC Technical Team Quarterly Report*

# Structure Construction Technical Team Member Selection

Structure Construction (SC) Technical Team (TT) Sponsors are assigned by the Division of Engineering Services Deputy Division Chief to lead one SC TT. The following describes how SC TT members are selected:

1. Structure Construction TT Sponsors choose a SC TT Chair and Vice Chair from the Bridge Construction Engineer (BCE) team members on their SC TT.
2. Each SC TT has a fixed number of positions for BCE team members.
3. BCEs can be a member of only **one** SC TT at a time.
4. Structure Construction TT Sponsors should not assign work from their SC TT to one of their unit BCEs unless the BCE is a member of their SC TT.
5. Structure Construction TT Sponsors can “trade” BCE SC TT members, but the trade must be a 1:1 exchange.
6. Changes can be made to the number of allocated positions per SC TT by SC Top Management during Management Review. Refer to [BCM F-1](#), *SC QMS Management Review*.
7. In the event the BCE acting as the SC TT Chair or Vice Chair leaves SC, the SC TT Sponsor names a replacement from the current BCE members on the SC TT.
8. Structure Construction non-BCE staff can be nominated for membership on any SC TT by any BCE or Area Construction Manager (ACM), but SC TT Sponsors must approve any proposed SC non-BCE TT members before they can join the SC TT.
9. There is no limit of how many SC non-BCE TT members can be on any SC TT.
10. Structure Construction non-BCE staff can be a member of more than one SC TT at a time, subject to the approval of the SC TT Sponsors.
11. Structure Construction TT Chairs represent SC as a member of the corresponding DES Technical Committee, subject to approval of SC Chief. Refer to the [Strategic Quality Management System – Integration Plan](#).

# Structure Construction Technical Team Charter

Structure Construction (SC) has identified the need for adopting uniform operating standards as a specific strategy for achieving multiple objectives identified in the SC Documented Information Template (SCDIT). Structure Construction Decision Document 16-01, dated November 16, 2016, implements the SCDIT by mandating the development of documented information and a Document Control System in conformance with the SC Quality Management System (QMS). This Charter is intended to provide the necessary direction to develop and operate the SC Technical Teams that will be responsible for delivery of the objectives of SC Decision Document 16-01.

## Background

Structure Construction issued SC Decision Document 16-01 establishing the expectation and framework for the SC Document Control System. This Decision Document places responsibility for developing the documented information that resides in the SC Document Control System upon the SC Technical Teams. The SC Technical Teams need uniform operational guidelines to deliver their responsibilities.

SC Decision Document 16-01 identifies SC Technical Team responsibilities as:

- Create new Bridge Construction Memos (BCMs) for the *Bridge Construction Records and Procedures* manual, Volumes I and II.
- Create new and update existing SC technical manuals.
- Respond to Technical Team subject matter inquiries and requests for assistance.
- Evaluate subject matter draft specifications.
- Establish Technical Team subject matter training curriculum, equipment needs and research proposals.
- Evaluate Technical Team subject matter disputes and claims.

## Purpose

The purpose of this charter is to establish operational parameters for the SC Technical Teams so they can complete the first two responsibilities identified above by June 2019 and continually address all responsibilities identified above until otherwise directed.

## Process Owner

- Division of Engineering Services (DES) Deputy Division Chief, Structure Construction.

## Steering Committee

- Structure Construction Technical Team Sponsors.

## SC Technical Teams

- Technical Team Sponsor.
- Technical Team Chair.
- Technical Team Vice Chair.
- Technical Team members (Bridge Construction Engineers (BCEs) and SC technical experts).

## Roles & Responsibilities

### *Process Owner:*

- Provides overall leadership.
- Ensures deliverables meet the requirements of the Department and SC Decision Document 16-01.
- Communicates progress to staff.
- Reviews, approves, implements, and champions the deliverables.

### *Steering Committee:*

- Authorizes changes to Technical Team members between Technical Teams, as needed.
- Provides input into key issues.
- Resolves conflicts between Technical Teams, including staffing issues between Technical Team Sponsors.

### *SC Technical Teams:*

- Technical Team Sponsors:
  - In coordination with the Steering Committee, determine BCE Team members, name Team Chair and Vice Chair.
  - Determine need for and provide additional non-BCE Team members.
  - Link Technical Team's work to CT Mission and Vision, goals of the [California Bridges and Structures Strategic Direction](#) (CBSSD).

- Monitor progress of overall effort towards compliance with SC Decision Document 16-01.
- Provide leadership to the Technical Team.
- Approve Technical Team Work Plan and resource budget.
- Maintain working knowledge of technical issues.
- Review and approve deliverables generated by the Technical Team.
- Are cognizant that decisions made must reflect all of SC statewide and not regional habits and procedures.
- Ensure deliverables align with governing guidance (Specifications, Code of Federal Regulations (CFRs), etc.).
- Technical Team Chairs:
  - With Technical Team Sponsor, develop annual Technical Team Work Plan and resource budget.
  - Schedule and lead Technical Team meetings.
  - Assign tasks to Technical Team members.
  - With Technical Team Sponsor, liaison with external interested parties and develop innovative solutions to continually improve subject matter SC processes.
  - Review Technical Team deliverables for completeness and deliver them on time.
  - Act as SC representative to align DES Technical Committees.
- Technical Team Vice Chairs:
  - Act on behalf of the Technical Team Chair as needed.
  - Act as SC representative to align DES Technical Committees.
- Technical Team members:
  - Attend and actively participate in Technical Team meetings.
  - Participate as a member of a task group as assigned by the Technical Team Chair, or accept individual responsibility for assignments.
  - Review draft documents being worked on by the Technical Team including the Technical Team Work Plan.
  - Complete work assignments in a timely manner.

- Be mindful of approved Technical Team Work Plan and resource budget, charge time appropriately.
- Keep informed of subject matter and issues of concern to the Technical Team.
- Develop expertise to answer project delivery questions pertaining to the Technical Team's subject matter.
- Champion office/regional needs, verify that any positions taken represent the Subdivision's position, brief chain-of-command.

## **Governance Structure**

The SC Technical Teams will make decisions by consensus of the members. Consensus is defined as a decision that you can live with and support outside of the group. If the group cannot come to consensus on a particular issue, they will elevate it to the Steering Committee, in writing, for resolution. Similarly, the Steering Committee will make decisions by consensus. If the Steering Committee cannot make a consensus decision, it will be elevated to the Process Owner for resolution.

## **Deliverables**

The SC Technical Teams must deliver the following in accordance with the direction within [BCM A-2](#), *Structure Construction Technical Team Operation*:

- Technical Team Work Plan and Quarterly reports.
- Technical Team meeting agenda and minutes.
- SC Process Development Diagrams (PDD) supporting BCMs.
- SC Technical manuals.
- SC inspection aids and training materials.
- Review comments for specifications, standard plans, and other information.
- Specification change requests.
- Subject matter expert opinion.
- SC essential equipment needs.
- SC research proposals.
- List of subject matter stakeholders.



## Signatures

### SC Technical Team

Name \_\_\_\_\_

---

Print Name \_\_\_\_\_

Signature \_\_\_\_\_ Date \_\_\_\_\_

Deputy Division Chief, Structure Construction, DES

---

Print Name \_\_\_\_\_

Signature \_\_\_\_\_ Date \_\_\_\_\_

SC Technical Team Sponsor, Structure Construction, DES

---

Print Name \_\_\_\_\_

Signature \_\_\_\_\_ Date \_\_\_\_\_

SC Technical Team Chair, Structure Construction, DES

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Print Name \_\_\_\_\_

Signature \_\_\_\_\_ Date \_\_\_\_\_

SC Technical Team Vice Chair, Structure Construction, DES

---

Print Name \_\_\_\_\_

Signature \_\_\_\_\_ Date \_\_\_\_\_

SC Technical Team member, Structure Construction, DES

---

Print Name \_\_\_\_\_

Signature \_\_\_\_\_ Date \_\_\_\_\_

SC Technical Team member, Structure Construction, DES

---

Print Name \_\_\_\_\_

Signature \_\_\_\_\_ Date \_\_\_\_\_

SC Technical Team member, Structure Construction, DES

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Print Name \_\_\_\_\_

Signature \_\_\_\_\_ Date \_\_\_\_\_

SC Technical Team member, Structure Construction, DES

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Print Name \_\_\_\_\_

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SC Technical Team member, Structure Construction, DES

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Print Name \_\_\_\_\_

Signature \_\_\_\_\_ Date \_\_\_\_\_

SC Technical Team member, Structure Construction, DES

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Print Name \_\_\_\_\_

Signature \_\_\_\_\_ Date \_\_\_\_\_

SC Technical Team member, Structure Construction, DES

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Print Name \_\_\_\_\_

Signature \_\_\_\_\_ Date \_\_\_\_\_

SC Technical Team member, Structure Construction, DES

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Print Name \_\_\_\_\_

Signature \_\_\_\_\_ Date \_\_\_\_\_

SC Technical Team member, Structure Construction, DES

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# SC Technical Team Work Plan and Resource Budget

1. The intent of the [Technical Team Work Plan](#) is to plan, schedule, and track deliverables for the Technical Team:
  - a. Deliverables are input into the Work Plan and programmed into one of the three fiscal years based on their priority ranking as determined by the Team Sponsor and Team Chair.
  - b. The Team Sponsor and Team Chair estimate the time to complete each deliverable and assign Technical Team members accordingly.
  - c. Resources (hours) are allocated to the deliverables for the next three years.
2. The Work Plan must be updated at least annually by the Team Sponsor and Team Chair:
  - a. The best time to fully update the Work Plan is when Division of Engineering Services (DES) Cap-Corp Task resource estimates are requested. This usually occurs during the month of April preceding the next fiscal year.
  - b. Each Technical Team's Work Plan is rolled up into the DES Cap-Corp Task 6TTSC (Technical Teams - Structure Construction (SC)) resource request, thus the Team Sponsor should discuss any proposed changes to the Work Plan format and columns with the SC Task Manager for DES Cap-Corp Task 6TTSC.
3. Revisions may be required if an unexpected task is assigned to the Team. In such an event, the Team Sponsor and Team Chair will review the Work Plan and revise as necessary.
4. The minimum work breakdown for each Technical Team is:
  - a. Technical Support: These are resources for specific tasks in support of DES operations:
    - i. Internal to Caltrans.
    - ii. Federal, other State and local agencies.
    - iii. Industry engagement.

Specific tasks regarding development of inspection aids, training materials, research proposals, response to interested parties, external contacts and innovation are resourced here.
  - b. Standards, Policies, and Guidance Material: These are resources for development of standards, policies, guidance materials, and tools:

- i. Development of Process Development Diagrams (PDD) in support of Bridge Construction Memos (BCMs) in *Bridge Construction Records & Procedures*, Volume II, are resourced as policies.
- ii. Development of SC Technical manuals are resourced as guidance materials.
- iii. Development of software in support of SC corporate tasks are resourced as tools.

Structure Construction reviews of products owned by others are resourced by the other DES subdivisions that own the products. An example of this is when DES Specification Development requests SC to review a draft specification. The resources for the review are provided by DES Specification Development.

Review of SC products by other DES subdivisions are accounted for and resourced in this section. An example of this is a PDD that requires input or review from another DES subdivision. The resources for the review are provided by SC in our Work Plan.

- c. Other: These are resources for special products and services that do not fit the other categories. Currently, SC Technical Teams are not providing any products or services in this category.
5. As SC products are developed, confirm that the resources expended are within the allocated amount.
  6. The Work Plan is coordinated with the [SC 3-Year Technical Manual Revision Plan](#).

# Developing and Updating Process Development Diagram (PDD) Packages

Internal processes are developed by Structure Construction (SC) to produce products and perform services for SC customers. SC's business processes are identified by SC Top Management and assigned to SC Technical Teams (TT) for development. SC business processes are communicated to SC Staff by publishing Bridge Construction Memos (BCM) in the *Bridge Construction and Records Manual*, (*BCR&P Manual*). The following are instructions to SC TTs for developing a process using the PDD.

Process development consists of three these stages:

1. Process Development Planning
2. Develop the Draft PDD Package
3. PDD Package Submittal

PDDs are documents used to ensure conformance with the requirements for process development stated in the *SC Quality Manual*, Section 4.4, *SC's Business Processes*, and Section 8, *Operation*. PDDs contain the following sections, as stated in the *SC Quality Manual*, Section 8.1.3, *Development of Processes*:

1. Background
2. Inputs
3. Criteria
4. Resources, Responsibility and Authority
5. Organizational Risks and Opportunities
6. Procedure
7. Outputs/Deliverables/Records
8. Measurement & Evaluation
9. Improvement
10. Attachments

Bridge Construction Memos are the distilled version of the PDD and provide the essential sections for SC staff to complete the process. BCMs consist of the following sections of the PDD:

1. Background
2. Inputs

3. Procedure
4. Outputs/Deliverables/Records
5. Attachments

Process development has the following end product, referred to as the PDD Package, which has the following components:

1. Change Letter
2. Disposition of existing BCM(s), if any
3. PDD
4. Attachments, if any
5. PDD to BCM Matrix

The SC TT begins development of a process when a PDD template is received from the SC Technical Manual Manager (TMM). The PDD template provided by the SC TMM has the Background section filled out by the Quality Management Representative (QMR). This defines the scope of the process.

The SC TT is advised to review related processes to ensure information already documented is not repeated in the new process.

## **1. Process Development Planning (PDP)**

Process development planning correlates to Step 1.1 of [Attachment 4.1, 8-Step Development and Review Schedule - from PDD to Published BCM](#).

Before beginning work on the draft PDD, the SC TT must plan for the process development activities by considering the following:

1. The nature, duration, and resources needed for process development, which is accomplished by answering the following questions:
  - a. What is the scope of this process and how does it relate to other identified processes? To identify other related processes, obtain the file, "SC BCR&P processes Master.xls" aka "New to Old BCM table" from SC QMR as appropriate.
  - b. What responsibilities and authorities are needed to develop the process per list item 3 below?
  - c. How long will it take to develop the process?
  - d. What resources will be required to complete development of the process?

2. The required process development stages, including applicable development reviews, includes:
  - a. Researching existing documented and undocumented information, such as:
    - i. [Existing BCMs](#)
    - ii. [Revised Standard Specifications](#)
    - iii. Applicable [Standard Special Provisions \(SSPs\)](#)
    - iv. [Outline of Field Construction Practices](#)
    - v. [SC technical manuals](#)
    - vi. [Winter Training presentations](#)
    - vii. Caltrans (CT) [Construction Manual](#)
    - viii. [Construction Policy Bulletins](#) (not yet inserted into *Construction Manual*)
    - ix. [Construction Procedure Directives](#) (CPDs)
    - x. [Director's Policies](#)
    - xi. [Deputy Directives](#)
    - xii. [CT Safety and Health Manual](#)
    - xiii. [Other Caltrans manuals](#)
    - xiv. External agency requirements, such as California Code of Regulations ([CCR](#)) [Title 8](#)
    - xv. The tribal knowledge of SC TT members and other stakeholders.
  - b. Determining if the PDD is an SC process that should be developed into a BCM by using the *Justification to Delete or Combine a SC Process Development Diagram Memo*, which is referred to as a JTDC Memo. Use the latest JTDC Memo template from the [SC PDD Library](#).
    - i. If the SC TT determines the PDD should not be developed into a BCM, complete the JTDC Memo.
  - c. Determining the logistics needed for the SC TT to combine the results of the research. Will there be SC TT meetings? If not, how will information be shared?
3. The responsibilities and authorities involved in process development, which is accomplished by answering the following questions:
  - a. Which SC TT members will be responsible for each component of process development?
  - b. What authority will each SC TT member have? Will individual SC TT members have the authority to edit the work of other SC TT members?



4. The internal and external resource needs for process development, which is accomplished by answering the following questions:
  - a. Are stakeholders involved in the process?
  - b. What responsibilities and authorities will stakeholders have in the development of the process?
  - c. What are the outputs of the process, who are the customers of the outputs, and how should the customers be involved in the development of the process?
  - d. Who are the users of the process and how should the users be involved in the development of the process?
5. Develop documented information needed to demonstrate that design and development requirements have been met and maintained. This can be accomplished by documenting:
  - a. SC TT Meeting minutes documenting process development
  - b. Review comments and track changes within the PDD
  - c. Notes to SC TT within the PDD
  - d. Conversations with customers and other stakeholders.

Once process development planning has been completed, proceed with developing the draft PDD package.

## **2. Develop the Draft PDD Package**

Developing a draft PDD Package for each SC process correlates to Step 1.2 of Attachment 4.1, *8-Step Review and Development Schedule – from PDD to Published BCM*.

A process is defined as any activity or set of tasks that uses resources to transform inputs from stakeholders into outputs for customers. The SC TTs are responsible for identifying “the activity or set of tasks”, “resources”, “inputs”, and “outputs” for each process.

SC’s processes describe WHAT the person(s) performing the process is expected to do. SC’s technical manuals and process attachments describe HOW the user performs the process. Information ascribed to WHAT includes policy, process and procedure, or procedural steps SC staff are expected to perform. Information ascribed to HOW are the instructions, calculations, case studies, and other information that describe SC’s best practices for performing the process. The distinction between different types of documented information is described in detail in [The WHAT and HOW Document](#). For

example, BCM A-2, *Structure Construction Technical Team Operation*, is the process which describes WHAT is required to develop SC's business processes using the Process Development Diagram. BCM A-2 references this attachment, which describes HOW to develop SC's business processes.

When information used to describe HOW to perform a procedural step within a process is contained in an SC technical manual or other source document, use hyperlinks within the PDD to link the technical document that contains the HOW as shown below:

1. To link to a form, add the hyperlink to the location only (not the title), of the document in the PDD as shown in the following example: [Form CEM-3101](#), *Notice of Materials to be Used*.
2. To link to a BCM, add the hyperlink to the location only (not the title), of the document in the PDD as shown in the following example: [BCM A-2](#), *Structure Construction Technical Team Operation*.
3. To link to a SC technical manual, add the hyperlink to the location only (not the title), of the document in the PDD as shown in the following example: *Foundation Manual*, [Chapter 9](#), *Slurry Displacement Piles*.
4. If the specific portion of a technical document cannot be directly linked, reference the section of the technical document within the procedural step. For example, if the SC TT wanted to link a procedural step for Cast-In-Drilled-Hole pile acceptance to additional information in Chapter 9-9, *Pile Acceptance Testing*, of the *Foundation Manual*, the closest hyperlink available is to Chapter 9 of the *Foundation Manual*. In cases like this, use a reference, such as "Link to Chapter 9-9, *Pile Acceptance Testing*, of the *Foundation Manual*" in the procedural step. The actual hyperlink to the specific reference in Chapter 9-9 of the *Foundation Manual* will be established in SC HQ during the review and preparation for publication of the BCM.

When there is no technical manual that describes HOW to perform a procedural step within a process then an attachment is required to explain HOW to perform the procedural steps of the process. This process (BCM A-2) is a good example of a process that is unlikely to have an SC technical manual to provide the HOW, so attachments are necessary.

1. For Volume 1, the attachment will likely remain an attachment as the *Bridge Construction Records and Procedure (BCR&P) Manual* is the reference document.
2. For Volume II, information in the attachment will be incorporated in a SC technical manual. Until the attachment is incorporated add a note in the:
  - a. "Pending Revisions" section of the Change Letter,

- b. SC TT's bin list, and
- c. "Technical Team Notes" section at the end of the PDD, stating that the attachment will be incorporated into the technical manual.

When developing each process, write the PDD in accordance with the requirements of the [Style Guide for Structure Construction Technical Manuals](#), and use the latest PDD template from the [SC PDD Library](#) each time.

When developing Volume I PDDs, occasionally it may be more suitable to apply the Volume II PDD template to a Volume I process (e.g., BCM [C-11](#), *Shop Drawing Review of Temporary Structures*). This determination needs to be made by the SC TT on a case-by-case basis.

Be cognitive of language that will remove responsibility from the contractor or other stakeholders and place it on SC. Limit the use of words like "ensure" to actions and outcomes SC directly controls. "Confirm" or "verify" are preferred for actions or outcomes under the control of other stakeholders. When in doubt, contact the Caltrans Legal Division for an opinion.

Be sure to cite outside sources. In some cases where information is cited from outside Caltrans, permission may be required prior to using a link to their website in a PDD, in support of a BCM.

## 2.1 Develop the Draft Change Letter

The Change Letter is used to identify the current status of the documented information, and the scope of task required to complete required changes made to SC's documented information. The Change Letter provides a historical record of WHAT was changed, WHEN it was changed, and WHY it was changed. The Change Letter also conforms to the requirements for change management specified in the [SC Quality Manual](#), Section 6.3, *Managing Changes to the QMS*.

Change Letter templates for *Bridge Construction Records and Procedures*, Volumes I and II, are available in the [SC PDD Library](#). The Change Letter contains the following sections:

1. Revisions
2. General Revisions
3. Revisions Unique to Each Revised and/or Deleted BCM
4. New BCM
5. Pending Revisions

To follow is a description of how to complete each section of the Change Letter:

### 2.1.1 Revisions:

The “Revisions” section is a table (sample shown below) that depicts what changes are being made. The “EXISTING BCM (or portion of)” column identifies BCMs that are existing or currently published that will be revised, replaced, removed, or kept for now. The “New BCM or SC Technical Manual” identifies new or revised BCMs or Technical Manuals.

**Table 1. Revisions Table from the Change Letter**

<b>EXISTING BCM (or portion of)</b>	<b>Issue Date</b>	<b>NEW BCM or SC Technical Manual</b>	<b>Issue Date</b>
BCM 162-2.0, <i>Concrete Barriers on Structures</i>	07-01-99	BCM 83-3, <i>Railings and Barriers – Concrete Barriers</i>	09-30-21
BCM 3-8.0, <i>Hydraulic Reports</i>	12-01-95	BCM 5-1.36.0, <i>Control of Work – Property and Facility Preservation</i>	04-22-19
BCM 49-3.02B, Attachment 1, <i>CIDH Concrete Piling - Materials</i>	08-30-19	<i>Foundation Manual, Chapter 9, Slurry Displacement Piles, Section 9-4, Sampling and Testing Drilling Slurry, and Section 9-5, Types of Slurry</i>	xx-xx-xx
BCM 10-7.0, <i>Personnel – Expense Allowances</i>	09-17-04	--	
		BCM 72-11, <i>Slope Protection – Slope Paving</i>	10-15-21
BCM 112-4.0, <i>Friction Testing of Bridge Decks</i>	11-30-20	BCM 60-3.03B, <i>Existing Structures – Structure Rehabilitation – Methacrylate Resin Bridge Deck Treatment</i>	07-15-21

There are five types of revisions that could be identified in the revision table, they are:

1. **Revision Type #1:** An existing BCM is completely or partially replaced by a new BCM. This occurs when “WHAT” information from an existing BCM is moved to a new BCM. “WHAT” information is policy or procedure that informs the user WHAT to perform for a process. For example, in the revision table above:
  - a. BCM 162-2.0, *Concrete Barriers on Structures*, which was issued 07-01-99, was completely replaced by BCM 83-3, *Railings and Barriers – Concrete Barriers*, which was issued on 09-30-21.
    - i. When an existing BCM is completely replaced by a new BCM, the disposition does not need to include specific edits to the existing BCM as shown in the example above. Instead, for the disposition, add a note to the top of the existing BCM stating, “This BCM was replaced by BCM 83-3, *Railings and Barriers – Concrete Barriers*, on 09-30-21.” The

disposition of the existing BCM is archived upon publication of the new process.

- b. BCM 3-8.0, *Hydraulic Reports*, which was issued on 12-01-95, was partially replaced by BCM 5-1.36, *Control of Work – Property and Facility Preservation*.
  - i. When an existing BCM is partially replaced by a new BCM, information from an existing BCM is being incorporated into several new BCMs. When this occurs, the disposition of the existing BCM informs the SC TMM and the other SC TT using this BCM what conclusions were made by the SC TT in their review of the existing BCM. For example:
    1. This information is incorrect or outdated.
    2. The existing BCM remains published until all the information is incorporated into other future BCMs or SC technical manual as explained in the “Pending Revisions” section of the Change Letter.
2. Revision Type #2: An existing BCM is completely or partially replaced when “HOW” information from an existing BCM is moved to or is identified as already included in an SC technical manual. “HOW” information is commentary, examples, or calculations which informs the user HOW to perform a process. For example, in the revision table above:
  - a. BCM 49-3.02B, Attachment 1, *CIDH Concrete Piling – Materials*, which was issued on 08-30-19, will be completely replaced when the *Foundation Manual*, Chapter 9, *Slurry Displacement Piles*, Section 9-4, *Sampling and Testing Drilling Slurry*, and Section 9-5, *Types of Slurry*, is issued. The information in this row will be included in the revision table when the *Foundation Manual* is revised. Until then it is included in the “Pending Revisions” section of the Change Letter and in the SC TT’s bin list.
  - b. When this occurs, the disposition of the existing BCM informs the SC TMM and the other SC TTs using this BCM what conclusions were made by the SC TT from reviewing the existing BCM.
3. Revision Type #3: An existing BCM is being deleted because the information is outdated, incorrect, superfluous, incorporated into the specifications, and/or not needed. For example, in the revision table above:
  - a. BCM 10-7.0, *Personnel – Expense Allowances*, is being deleted. The reason is provided in the “Revisions Unique to Each Revised and/or Deleted BCM” section of the Change Letter, and the disposition of the existing BCM.
4. Revision Type #4: New information that is being added to a new BCM. For example, in the revision table above:

- a. BCM, 72-11, *Slope Protection – Slope Paving*, is a new BCM that was issued on 10-15-21.
5. Revision Type #5: Information from an existing BCM that needs to remain in the BCM until a later date when the information is updated/incorporated into the new BCM or moved to/included in a technical manual. For example, in the revision table above:
  - a. BCM 112-4.0, *Friction Testing of Bridge Decks*, which was issued on 11-30-20, contains information that was incorporated into BCM 60-3.03B on 07-15-21, and has information that will be incorporated into BCM 51-1.01. Thus, BCM 112-4.0 is being kept until BCM 51-1.01 is published.

### 2.1.2 General Revisions

The “General Revisions” section is used to describe revisions that are common to all BCMs that are being revised. Some general revisions are included in the Change Letter template. This section is not needed when new BCMs are issued or there are not revisions common to all revised BCMs. If it is not needed, enter “None”.

### 2.1.3 Revisions Unique to Each Revised and/or Deleted BCM

This section communicates to the reader what changes were made to an existing BCM. Information for each BCM identified in the column of the revision table titled, “EXISTING BCM (or portion of)”, is included in the section of the Change Letter. The format always starts with the number, followed by the title of the existing BCM, followed by a description of what is being changed. For example, referencing the fourth row of revision table above, the following information will be included:

BCM 10-7.0, *Personnel – Expense Allowances*, is being deleted because this is not an SC process. Additionally, expense allowance information is found in the *Travel Guide*, and the SC intranet.

Note that the description in the Change Letter is the same description that is shown on the disposition of BCM 10-7.0, *Personnel – Expense Allowances*.

### 2.1.4 New BCM

The “New BCM” section is used to identify and describe what the new process is. The format is always the same. It starts with the BCM number, followed by the title of the BCM, followed by a description of what the process is, which is copied from the “Background” section of the new PDD. For example, referencing the fifth row of revision table above, the following information will be included:

BCM 83-3, *Railings and Barriers – Concrete Barriers*, establishes SC responsibilities and procedures for submittals, quality assurance, materials, construction, and payment for concrete barriers.

If information from an existing BCM is incorporated into the new BCM, then that would be identified after the description of the new process.

### 2.1.5 Pending Revisions

The “Pending Revisions” section is used to describe pending or future revisions. For example, in the revision table above BCM 49-3.02B, Attachment 1, *CIDH Concrete Piling – Materials*, which was issued on 08-30-19, will be completely replaced when the *Foundation Manual*, Chapter 9, *Slurry Displacement Piles*, Section 9-4, *Sampling and Testing Drilling Slurry*, and Section 9-5, *Types of Slurry*, is issued. The row will be included in the revision table when the *Foundation Manual* is revised. Information from the “Pending Revisions” section of the Change Letter should be added to the SC TT’s bin list.

## **2.2 Develop Disposition(s) to Existing BCM(s)**

To develop a disposition for an existing BCM, obtain a copy of the existing BCM. Markup the existing BCM to inform the SC TMM of the disposition of information from the existing BCM. The markup on the disposition of an existing BCM must clearly delineate:

1. What information is being kept in the existing BCM?
2. What information is being discarded from the existing BCM?
3. What information is being transferred to the new process (BCM)?
4. What information is being transferred to an attachment to the new process or to an SC technical manual?

Electronic edits were used in the example below, but the SC TTs can use handwritten edits if preferred. The important thing is to clearly delineate the disposition of the information in the existing BCM.

Below is an example of disposition of existing BCM 130-6, *Measurement and Payment for Piling*, which was identified as partially replaced by PDD 49-2, *Piling – Driven Piling*.



This BCM can be removed upon publication of BCMs C-4.07, 49-2, and 49-3.

## Measurement and Payment for Piling

- 1 Measurement and payment clauses are in the *Standard Specifications (SS)*, the *Special Provisions (SP)* and the *Construction Manual*. Review these documents.

not necessary, can be removed

### Measurement

- 2 The SS<sup>1</sup> specify how piles are measured and paid for. However, the requirements of the SS vary depending on the version used when the contract was written.

Delete, no longer applicable

- 3 Contracts using Section 49-6.01 of the 2006 SS provide for measurement of piling as follows:

*The length of timber, steel, and precast prestressed concrete piles, and of cast-in-place concrete piles consisting of driven shells filled with concrete, shall be the greater of the following:*

- A. *The total length in place in the completed work, measured along the longest side, from the tip of the pile to the plane of pile cut-off.*
- B. *The length measured along the longest side, from the tip elevation shown on the plans or the tip elevation ordered by the engineer, to the plane of pile cut-off.*

- 4 Piling that extends beyond the tip elevation shown on the plans, as ordered by the Engineer, to meet design requirements, will be measured under the provisions of Part A; while piling that fails to reach the tip elevation shown on the plans, but has been determined to be suitable for the design, will be measured in accordance with Part B.

- 5 Contracts using amended versions of Section 49-6.01 of the 2006 SS provide for measurement of piling as follows:

*The length of timber, steel, and precast prestressed concrete piles, and of cast-in-place concrete piles consisting of drive shells filled with concrete, shall be measured along the longest side, from the tip elevation shown on the plans to the plane of pile cut-off.*

- 6 Contracts using revised versions of Section 49-2.01D of the 2010 SS provide for measurement of piling as follows:

Delete, no need to quote specifications

*Furnish piling is measured along the longest side of the pile from the specified tip elevation shown on the plans to the plane of pile cutoff.*

<sup>1</sup> 2010 SS, Section 49-2.01D, *Payment*, or 2006 SS, Section 49-6, *Measurement and Payment*.

Figure 1. Page 1 of the disposition of existing BCM 130-6, *Measurement and Payment for Piling*, which is being replaced by BCM 49-2, BCM 49-3, and BCM C-9.



7 Piling that fails to reach tip elevations shown on the plans, but has been determined to be adequate and approved by the Designer, will be measured along the longest side, from the tip elevation shown on the plans to the plane of cut-off elevation. Move to Attachment in BCM 49-2

**Payment** This information will be addressed in BCM C-4.07  
Can be removed prior to publication of BCM C-4.07

**Materials on Hand**

8 Bridge Construction Memo (BCM) 6-4.0, *Partial Payments*, addresses the differences between *Materials on Hand but not yet incorporated in the work*, and payments for *furnishing materials*. Refer to BCM 6-4.0 prior to making payments for piling.

9 When the SP qualify the material for *Materials on Hand* and it does not meet the requirements for “furnishing”, payment may be made as *Materials on Hand* at the Contractor’s request. Revise and move to Attachment in BCM 49-2, and Attachment in BCM 49-3, as applicable

Precast concrete piling, steel piling, steel shells for cast-in-steel-shell concrete piling, and permanent steel casing for cast-in-drilled-hole concrete piling are typically listed in the SP<sup>2</sup> as being eligible for payment for *Materials on Hand but not yet incorporated in the work*.

10 Bar reinforcing steel used in cast-in-place concrete piling is typically listed in the SP<sup>2</sup> as being eligible for payment for *Materials on Hand but not yet incorporated in the work*. Move to Attachment in BCM 49-3

11 Section 3-906E, *Materials on Hand*, of the *Construction Manual*, June 2013, states: “...In general, accept only completely fabricated units, ready for installation on the project with the following exceptions: Revise and move to an Attachment in BCM 49-2

12 Piling—Steel plate used for steel pipe piling and driven steel shells filled with concrete and reinforcement as described in Section 49, “*Piling*,” of the Standard Specifications may be considered acceptable as raw material. However, pay for such material as raw material only until shop fabrication of the pile is 100% complete. After shop fabrication is complete, the estimated fabricated value may be paid, subject to other specified restrictions and administrative guidelines.”

**Furnish and Drive** (13a) Move to an Attachment in BCM 49-2

13 The following guidelines have been established to ensure uniform practice throughout the State for partial payments for piling. Refer to BCM 6-4.0, *Partial Payments*, for additional instructions regarding payment for *Furnish Piling* items. This information will be addressed in BCM C-4.07. Can be removed prior to publication of BCM C-4.07

- a When steel or precast concrete piling of proper length are delivered to the job site ready for driving, the specification requirements for *furnishing* have been met and the material should be paid under *furnish piling* item on the progress pay estimate. Piles stored offsite, or onsite but not ready for driving, are to be considered as *Materials-on-Hand*.
- b Portions of piling, such as steel shells for cast-in-place concrete piles, as described in Section 49-3 of the 2010 SS, are not complete piling and cannot be paid under the *furnishing* contract item. When the steel shells for cast-in-steel-shell concrete piles have (13b) Revise and move to an Attachment in BCM 49-3

<sup>2</sup> 2010 SP, Section 9-1.16C or 2006 SP, Section 5.

BRIDGE CONSTRUCTION RECORDS & PROCEDURES MANUAL BCM 130-6.0  
06/30/14  
PAGE 2 OF 3

**Figure 2. Page 2 of the disposition of existing BCM 130-6, *Measurement and Payment for Piling*, which is being replaced by BCM 49-2, BCM 49-3, and BCM C-9**

(13c) Move to an Attachment in BCM 49-2

13b been driven and the concrete and reinforcing steel have been placed to provide a complete pile, the contract item for *furnishing* may be paid.

- c • For steel pipe piling, full payment on the furnish item will not be made until the piling is on site and all field welds are completed and approved. This work includes welding of splices, and shear rings, when shown on the plans or required in the Special Provisions.
- d • The concrete filling material for cast-in-steel-shell concrete piling is paid under the furnish item while the placement of said material is paid under the drive item. This is particularly important when making item adjustments. Move to an Attachment in BCM 49-3
- e • For cast-in-drilled-hole concrete piling, permanent casing is paid as a separate item, but temporary casing is fully compensated in the piling item. Rock sockets are paid as a separate Cast-In-Drilled-Hole (Rock Socket) item. This information will be moved to the Foundation Manual, as needed. The specifications also address this
- f • Bar reinforcing steel for cast-in-place concrete piling greater than or equal to 24 inches or 600 mm diameter is paid as a separate item. For smaller diameter cast-in-place concrete piling, bar reinforcing steel is included in the cast-in-place concrete piling item.
- g • For Cast-In-Drilled-Hole (CIDH) concrete piling constructed using the Wet Method (refer to BCM 130-7.0, *CIDH Concrete Piling*, for definition), payment for the CIDH concrete piling item and rock socket item (if applicable) will be made only after acceptance testing has been performed and the pile is accepted by the Engineer. This is being revised and will be included in BCM C-4.07

**Pile Tip Revisions**  
The SS<sup>3</sup> specify how piles are paid for when the Engineer revises the pile tip.

14 Contracts using amended versions of the 2006 SS provide for payment for piling as follows:  
*When pile tips are revised by the Engineer for timber, steel, and precast prestressed concrete piles, and for cast-in-place concrete piles consisting of driven shells filled with concrete, the additional length required, including all materials, equipment, and labor for furnishing, splicing, and installing the piling, will be paid for as extra work as provide in Section 4-1.0D, "Extra Work".* Delete, no longer applicable

15 Contracts using the 2010 SS provide for payment for piling as follows:  
*If the Engineer revises the pile tip elevation for driven piles, the work involved in furnishing, splicing, and driving the additional length of pile is change order work.* Delete, no need to quote specifications

16 The length of piling that extends beyond the tip elevation shown on the plans, as ordered by the Engineer to meet design requirements, will be paid for as *Extra Work* or *change order work*. Revise and addressed in BCM 49-2

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<sup>3</sup> 2010 SS, Section 49-2.01C(1), *General*, and 2010 SS, Section 49-3.03C(1), *General*; or SS 2006, Section 49-6.02, *Payment*.

BRIDGE CONSTRUCTION RECORDS & PROCEDURES MANUAL BCM 130-6.0  
06/30/14  
PAGE 3 OF 3

**Figure 3. Page 3 of the disposition of existing BCM 130-6, *Measurement and Payment for Piling*, which is being replaced by BCM 49-2, BCM 49-3, and BCM C-9.**

## 2.3 PDD

To follow is information that describes how to develop each section of the draft PDD.

### 2.3.1 Background

The Background section of the draft PDD is used to identify the scope of the process and any Caltrans policy addressed within the process. The scope of the process can be narrow, such as the process for administering a Contract Standard like Welding Quality Control. The scope of the process can also be wide, such as the process for SC TT operation.

The Background section is developed by the SC QMR after the process has been identified by SC Top Management. The SC QMR submits the Background section to the SC TMM for delivery to the appropriate SC TT.

The SC TT can add information to the Background section, but they should not alter the language provided without authorization from the SC QMR. The language provided is in conformance with the *Style Guide for Structure Construction Technical Manuals* and is intended to provide consistency with other SC processes. For some PDDs, it may be appropriate to change the background statement. The SC TT can and should change the Background statement when they deem appropriate. Any proposed edits must be authorized by the SC QMR and should be shown in red font and strikethrough only; do not delete any text.

Below (in blue text) is an example of a Background statement from PDD 49-2, *Piling – Driven Piling*:

This process establishes Structure Construction (SC) responsibilities and procedures for review and authorization of driven piling submittals, quality assurance, materials, construction and payment that apply to all driven piling specified in Section 49-2 of the *Contract Specifications*.

Additional unique requirements for this process are detailed:

- BCM 11-2, *Welding – Welding Quality Control*
- BCM 49-1, *Piling – General*

Prior to reviewing this BCM, it is essential to review the *Contract Specifications*, Section 49-2, *Piling – Driven Piling*, that this BCM is based on as identified in the title block above. The information in the contract specifications typically will not be repeated in the text of this BCM.

### 2.3.2 Inputs

Process inputs signals the start of a process. Process inputs can be physical objects, such as a submittal or test samples. Process inputs can also be informational, such as a contract requirement or an event. In either case, process inputs are often the result of outputs from a precedent process. For example, a submittal is the input for a review process, and the output of that process is the authorized submittal. The authorized submittal then becomes the input for the materials acquisition, fabrication, or construction processes.

List all process inputs in bullet form. Include submittals that are received before construction begins. If the contract specifications require a “work plan” instead of submittal, list “work plan” as an input.

Below (in blue text) is an example of inputs from PDD 49-2, *Piling – Driven Piling*:

1. Contract work requiring the use of driven piling
2. All Driven Piling:
  - a. Form CEM-3101, *Notice of Materials to be Used*
  - b. Form TL-0029, *Report of Inspection of Material*
  - c. Pile and Driving Data form submittals for each hammer
  - d. Authorized Pile Handling Plan submittal from the contractor
  - e. Driving System Submittal for each hammer, when specified
  - f. Printed hammer energy readouts from the Contractor
3. Steel Pipe Piling:
  - a. Shop drawings for pile handling devices
  - b. Driven steel pipe piling submittals
  - c. Field welding submittals
  - d. Inspection request form
  - e. Certificates of compliance
4. Structural Shape Steel Piling:
  - a. Structural shape steel pile submittals
  - b. Field welding submittals
  - c. Certified material test report
  - d. Certificates of compliance
5. Precast Prestressed Concrete Piling:

a. Shop drawings (when requested)

Following (in blue text) are several of the inputs for this process (PDD A-2):

1. **New or significant changes to the Contract Specifications.** A new specification or a significant change to an existing specification signals the beginning of the SC Technical Team Operation process. Whether the new specification results in a new or revised SC business process depends on the results of the procedural steps performed by the SC TT.
2. **Project inquiries, issues, and Lessons Learned.** These are often the raw material that result in draft specifications, but they may also provide input for identification of a process improvement that results in a new or revised PDD.
3. **DES and/or SC Top Management direction.** Management direction can be the result of a change of Caltrans or FHWA policy, a regulatory change, or anything else that provides a reason to change a SC business process.

### 2.3.3 Criteria

Criteria for a process provides the basis for how the process will be judged and is used to evaluate whether the process achieved the intended requirements.

Most criteria are based on laws, regulations, contract standards, and/or policy guidance in manuals. When for example, for most construction field processes, the criteria for the process is the contract documents. Did the process achieve the requirements of the contract documents? Other examples include CCR Title 8 regulations. Did the process achieve the safety goals and requirements of the regulations?

Criteria supports the Procedure section of the PDD. The SC TT must review the criteria when writing procedural steps to verify the process achieves the intended requirements.

List all criteria in bullet form. For example, “contract documents” is adequate for describing all criteria that may be included within the hierarchy of documents listed in *Standard Specifications, Section 5-1.02, Contract Components*.

Below (in blue text) is an example of Criteria from PDD 49-2, *Piling – Driven Piling*:

1. Contract documents
2. Project Code of Safe Practices (COSP)
3. Project information Handout:
  - a. Foundation Reports
  - b. Railroad requirements
4. Resident Engineer (RE) Pending File

5. Water Pollution Control Plan (WPCP) and other environmental requirements
6. *Foundation Manual*, Chapter 7, *Driven Piles*, Appendix E, *Driven Piles*, and Appendix K1, *Driven Piling Construction Checklists*
7. American Welding Society (AWS) D1.1
8. Cal/OSHA CCR Title 8, Chapter 4, *Division of Industrial Safety*, Subchapter 4, *Construction Safety Orders*
9. (Caltrans) Department's Authorized Facility Audit list

When a manual is listed as criteria, reference must be made to the applicable chapter or section of the manual.

### 2.3.4 Resources, Responsibilities and Authorities

#### 2.3.4.1 Resources

Resources are the people, infrastructure, and environment needed to complete the process. List the resources needed to complete the process including only those resources unique to the process that have an associated task in the Procedure. Refer to the *SC Quality Manual*, Section 7.1, *Resources*, for additional information.

Resources should be known and acquired in advance of performing the process. Without the necessary resources, the process might abruptly stop. The resource, people, includes the persons who perform the process. Typical persons include the Structure Representative, Assistant Structure Representative, the Bridge Construction Engineer, and the Area Construction Manager. The resource, people, may also include the Designer, the Geoprofessional, other staff from Materials Engineering and Testing Services (METS) or Geotechnical Services (GS), District staff, and stakeholders who have a role in the process.

However, it is not enough just to list the persons who perform the process. Per the *SC Quality Manual*, Section 7.1, *Resources*, and Section 7.2, *Competence*, the persons must be competent and be able to perform the process. Competence and ability are achieved through education, training, counseling, and experience, which are used by SC Staff to perform the tasks of each process; such that the contract requirements, and SC policies and procedures are met.

The resource, infrastructure, includes the physical facilities and equipment necessary to perform the process. Examples of infrastructure include office space, electronic communication equipment, computers, and vehicles, but can also include testing equipment, personal protective equipment, survey equipment, and other

tools. However, each PDD should only list the equipment and tools that are unique to the process (i.e., paint inspection kit, profilograph machine, etc.).

The resource, environment, includes the physical environment the process is performed in. Consider the job site – is there safe access to perform the process? Other environmental factors may apply, such as weather conditions. However, each PDD should only list environment that is unique to the process (i.e., safe walkway and work platform, confined space, etc.).

#### 2.3.4.2 Responsibilities and Authorities:

Under each resource, identify their responsibility for the tasks within the Procedure and the authority they must have to carry them out.

Resources, Responsibilities and Authorities support the Procedure section of the PDD. The SC TT must review the resources, responsibilities and authorities when writing procedural steps to verify the process includes all needed resources.

List all required resources, responsibilities and authority in bullet form for each category (People, Infrastructure, and Environment.)

Below (in blue text) is an example of Resources, Responsibilities and Authority from PDD 49-2, *Piling – Driven Piling*:

1. People:
  - a. Structure Representative:
    - i. Review and authorize submittals in accordance with the requirements of the contact documents.
    - ii. Coordinate with Materials Engineering and Testing Services (METS) representatives for field welding of structural shape steel piling and for fabrication and field welding of steel pipe piling.
    - iii. Coordinate with FTI for review of driving system submittal, field dynamic monitoring, and bearing acceptance criteria.
    - iv. Communicate status of field welding requirements to Assistant SRs.
    - v. Perform calculations and prepare pile acceptance charts using Form SC-4809, *Pile Driving (US Customary) Blows Per Foot using Gates Formula (when Gates Formula is allowed)*.
    - vi. Determine driven pile acceptance in the field.

- vii. Prepare Material on Hand payment based on Form CEM-3101, *Notice of Materials to be Used*, and Form TL-0029, *Report of Inspection of Material*.
  - viii. Prepare contract item payment based upon completed Form SC-4803, *Pile Quantity and Driving Record (Driven Piles)*, and Form SC-4806, *Pile Layout Sheet*.
  - ix. Prepare change orders for payment of piling beyond specified tip elevation.
- b. Assistant Structure Representative:
- i. Inspect field work performed in accordance with the requirements of the contract documents.
  - ii. Determine if field welding performed on structural shape steel piling and steel pipe piling is in accordance with the requirements of the contract documents.
  - iii. Assist SR in determining pile acceptance in the field.
  - iv. Assist SR in reviewing submittals.
  - v. Assist SR with calculations and preparing pile acceptance charts using Form SC-4809, *Pile Driving (US Customary) Blows Per Foot using Gates Formula (when Gates Formula is allowed)*.
  - vi. Assist SR preparing Material on Hand payment based on Form CEM-3101, *Notice of Materials to be Used*, and Form TL-0029, *Report of Inspection of Material*.
  - vii. Assist SR in preparing contract item payment based upon completed Form SC-4803, *Pile Quantity and Driving Record (Driven Piles)*, and Form SC-4806, *Pile Layout Sheet*.
  - viii. Assist SR with preparing change orders for payment of piling beyond specified tip elevation.
- c. Structural and Geotechnical Designers:
- i. Provide construction support (e.g., revise pile design due to fabrication issues, raise or lower tip elevation).
  - ii. Review and provide information regarding the foundation design.
- d. SC Substructure Engineer:
- i. Provide guidance and assistance to the Structure Representative when requested.
- e. METS Representative:



- i. Provide source inspection and field welding support.
- f. Foundation Testing and Instrumentation (FTI):
  - i. Review and provide comments to the Driving Systems submittal.
  - ii. Perform dynamic monitoring.
  - iii. Provide bearing acceptance criteria when required.
- 2. Infrastructure (Tools, physical assets unique to this process):
  - a. None
- 3. Environment (Physical, social, safety & health unique to this process):
  - a. Hearing protection.

### 2.3.5 Risks and Opportunities

Risk in this context is any uncertainty that can affect our ability to perform the process. Risk management is how we evaluate and address each risk. Risks generally have negative connotations, but can also have positive connotations, which become opportunities. In both cases, uncertainty is involved, both in knowing when or if a risk will come to pass and how it will affect us.

In this context, consider only those risks and opportunities that affect each individual process. What could possibly go wrong (or right) during the performance of the process?

For example, submittal review is a common process. One of the risks associated with submittal review is not being able to complete the review in the required timeframe. Your task as a SC TT is to assess the following:

1. What is the probability of this risk occurring and what is the impact?
2. How could the performer of the process assess whether this risk arises?
3. How is this risk addressed?

For submittal review, the probability of not completing the review in the required timeframe is low, but the impact to the contract schedule could be high if the submittal review is on the critical path. Assessing whether this risk arises is straight-forward if the submittal review is within our control, but some submittals are reviewed by others.

Addressing this risk requires tracking submittal review progress and communication with all parties involved with review of the submittal. These considerations are documented in the table included in this section.

Risks and opportunities are used to support the Procedure section of the PDD. The SC TT must review the risks and opportunities inherent to the process and address them. When writing procedural steps, include possible actions to address risks and opportunities. How is the risk avoided or minimized? How are opportunities capitalized?

List all risks and opportunities in the table as shown (in blue text) in the example from PDD 49-2, *Piling – Driven Piling*, below, including probability, impact, assessment, and mitigation for each risk or opportunity

**Table 2. Risk and Opportunity Table**

<b>R/O</b>	<b>Description</b>	<b>Probability</b>	<b>Impact</b>	<b>Assessment Method (if applicable)</b>	<b>Mitigation</b>
		<i>&lt;number from 1-5, 5 being highest probability &gt;</i>	<i>&lt;number from 1-5, 5 being highest impact&gt;</i>	<i>How could you determine whether the risk or opportunity arises?</i>	<i>How is the risk or opportunity addressed? Action/task taken to reduce risk.</i>
R1	Missed Environmental work window	3	5	Track schedule/Attend PDD Meetings	Monitor/Change schedule to meet environmental window prior to bid.
R2	Notice of Materials to be Used not submitted in a timely fashion.	1	2	Check beginning of job submittals for form.	Monitor/Change schedule to meet environmental window prior to bid.
R3	Submittal is incomplete	4	3	Timely review.	Coordinate with FTI to quickly perform the review for completeness.
R4	Submittal not reviewed in a timely manner.	3	5	Track submittal/contract schedule.	Monitor submittal/review status/Coordinate with FTB to quickly perform review.
R5	Miscalculation of Gates Formula.	2	4	Driving of piles is not as anticipated or settlement of structure.	Have the calculations verified by another engineer.

R6	Adjustments to Gates formula not made for battered piles	3	4	Driving of piles is not as anticipated or settlement of structure.	Have the calculations verified by another engineer.
R7	Shop welding certifications expired.	2	4	Inspection of welding documents.	Get shop recertified.
R8	Material certification papers don't correlate to the piles delivered to the job site.	1	4	Check material delivered to the jobsite in a timely fashion. Check lot numbers against accepted certifications.	Call METS to verify the materials and what materials have been certified. Collect Inspection tags.
R9	Disagreements regarding Material on Hand payment	2	3	Progress Payment dispute.	Develop consensus with the contractor prior to.
R10	Field Welder certifications expired.	3	3	Inspection of welding documents.	Get welder recertified.
R11	Energy delivered by the hammer exceeds pile capacity.	2	5	Pile crushes or fractures.	Revise driving system submittal or Pile and Driving data.
R12	Pile driving too soft.	4	4	Blow counts are low at tip.	Revise pile specified tip elevation, install pile lugs, allow time for pile to set, call GD and SD.
R13	Pile driving too hard.	4	4	High blow counts above tip.	Consult with GD, incorporate driving aids such as drilling, jetting or driving tips, possibly revise pile specified tip elevation.
R14	Since driven piling is not a "Final Pay" item, there may be disagreements between the Contractor and the Structures Representative	3	3	Difference in item quantity when reviewing contractors' wish-list.	Keep pile logs accurate.

### 2.3.6 Procedure

Procedures are a step-by-step list of tasks that set forth WHAT needs to be done to convert process inputs into process outputs.

Keep in mind all procedures listed are those which SC staff need to do to perform the process – NOT what the contractor does. Each of the precedent sections of the PDD establish what goes in this section. The “Background” section sets the scope of the process. The “Inputs” section establishes what can be expected to initiate or continue the process. The “Criteria” section establishes the parameters or requirements of what the process is to achieve. The “Resources, Responsibility and Authority” section establishes the people, infrastructure, and environment needed to perform the process, and establishes the responsibilities and authorities of each person that participates in the process. The “Risks and Opportunities” section establishes the potential risks and opportunities inherent in the process and what can be done to address them. Your task as a SC TT is to capture this information in a step-by-step list of procedural tasks.

[Attachment 4.2](#), *PDD to BCM Turtle Diagram*, illustrates the interdependent relationship of the PDD sections.

The procedural steps must be written:

- Using complete sentences.
  - Using transition text from the main text to each bullet point. Text cannot be written as an outline or PowerPoint slide. Refer to the text format and content used in the *Contract Specifications* for example (e.g., Refer to *Contract Specifications*, Section 49-2.01A(3)(b), *Piling – Driven Piling – General – General – Submittals – Driving System Submittal*)
- Without using personal pronouns.
- Using “*Contract Specifications*” instead of “*Standard Specifications*” when referencing the specifications; and includes the specification number and title.

For additional guidance refer to the [Style Guide for SC Technical Manuals](#).

In general, processes associated with the performance of the construction contract, listed in *Bridge Construction Records and Procedures, Volume II*, are organized in subsections as follows:

1. Before construction begins
2. During construction
3. Following construction (if needed)

The subsection “Before construction begins” pertains to all tasks associated with the process that take place before construction begins. These include preparatory procedures, such as review criteria documents, technical manuals, etc., preconstruction meetings, submittal reviews, materials fabrication and release, discussions with the contractor, and preparation of forms and other documentation needed for construction. For submittals received before construction begins, include a procedural step that states: Review and authorize (or return for resubmittal) the following submittals that are required by the *Contract Documents*. If appropriate identify specific items to verify in the submittal.

The subsection “During construction” pertains to all tasks associated with the process that take place during construction. These include completion of forms and other documentation based on construction performed, inspection of the work performed, any testing performed during construction, and writing the daily reports.

The subsection “Following construction” pertains to all tasks associated with the process that take place after construction is completed. These include filing forms and documents in the project records and any measurement and payment requirements associated with the process.

Below (in blue text) is an example of a procedure from PDD 49-2, *Piling – Driven Piling*:

1. All work associated with this process is charged as Project Direct – Construction.
2. Inspection of field work for this process is:
  - a. Benchmark for:
    - i. Inspection of piling delivered to the project.
  - b. Continuous for:
    - i. Field welding of steel piling.
    - ii. Inspection of the pile driving operation.
    - iii. Determining pile acceptance during pile driving.
3. Before construction begins:
  - a. Review the following documents:
    - i. Contract documents for:
      1. Noise and vibration requirements.
      2. Difficult pile installation conditions per BCM 49-1, *Piling – General*.
    - ii. R.E. Pending File, Foundation Report, and Project Information Handout for applicable environmental commitments and railroad requirements.

- iii. Project-specific Code of Safe Practices and the requirements of Cal/OSHA Title 8, Chapter 4, Subchapter 4, Construction Safety Orders, for driven piling construction, including but not limited to:
  - 1. Article 6, *Excavations*
  - 2. Article 9, *Derricks, Cranes, Boom-type Excavators*
  - 3. Article 12, *Pile Driving and Pile Extraction*
  - 4. Article 15, *Cranes and Derricks in Construction*
  - 5. Article 24, *Fall Protection*
- b. Coordinate action with the following:
  - i. Discuss with Resident Engineer (RE) and contractor any existing facilities concerns and agency requirements, such as overhead power lines, underground utilities, and the railroad requirements. Call DigAlert (Underground Service Alert), if applicable.
  - ii. Notify Foundation Testing and Instrumentation (FTI) of pile driving requirements for the project.
  - iii. Discuss definition of hard driving, soft driving and redrive with the SC Substructure Engineer and the Geotechnical Designer and how it applies to construction.
  - iv. Discuss with and concur on the definition of “refusal” and remedial measures with the Geotechnical Designer, FTI, and the contractor. Refer to *Foundation Manual*, Chapter 7, Driven Piles, Section 7-7, *Driving Challenges*.
- c. Review and authorize each submittal required by Contract Specifications for this process, as follows:
  - i. Discuss requirements for Pile and Driving Data forms and Driving Systems Submittal (DSS) requirements during the preconstruction meeting per the *Foundation Manual*, Chapter 7, Driven Piles, Section 7-5, *Nominal Resistance/Bearing Capacity*.
  - ii. Review and authorize or reject the submitted Pile and Driving Data forms:
    - 1. Discuss any questions about the Pile and Driving Data forms with FTI.
    - 2. Discuss issues preventing authorization of the Pile and Driving Data forms with the contractor.
  - iii. If a DSS is required, perform an initial review of the submitted DSS for completeness:

1. Review the DSS with the RE to verify compliance with any additional project requirements and request contingency plan from the contractor as needed.
  2. Request additional information from the contractor if needed until the DSS is complete.
  3. Forward the complete DSS to FTI for review, per the instructions on the FTI website. Authorize or reject the DSS based on FTI recommendation. Refer to the *Foundation Manual*, Section 7-5, *Nominal Resistance/Bearing Capacity*, and Appendix K1, *Driven Piling Construction Checklist*.
  4. Notify the contractor in writing of rejection or authorization of the DSS.
- iv. If not previously authorized, perform a concurrent review of the Pile Handling Plan submitted per BCM 49-1, *Piling – General*, and verify compatibility of the Pile Handling Plan, Pile and Driving Data forms, and the DSS.
- v. For steel pipe piling:
1. Verify with the Materials Engineering and Testing Services (METS) Representative the proposed steel pipe piling fabrication facility is on the Department's Authorized Facility Audit list.
  2. Review AWS D1.1 requirements.
  3. Discuss shop drawing review and authorization, certificates of compliance, steel pipe piling fabrication, welding certifications for Class N steel pipe piling, and field welding requirements with the contractor and METS Representative.
  4. Review certificates of compliance and verify that materials match certification documents.
- vi. For structural shape steel piling and precast prestressed concrete piling:
1. Review submittals and notify the contractor in writing of rejection or authorization of the steel piling and/or concrete piling submittals.
- d. Review Materials, as follows:
- i. Review and discuss with the METS Representative any materials to be inspected and released via Form CEM 3101, *Notice of Materials to be Used*, and Form TL-0029, *Report of Inspection of Material*, and which materials are to be field released via Form SC-4102, *Material Inspected and Released on Job*. Utilize the forms to justify any materials on hand payments.

1. Confirm steel that meets the contract requirements is being procured and that METS has been notified.
  - ii. For field welding of steel piling, verify Welding Quality Control Plan and welder certification requirements have been met per BCM 11-2, *Welding Quality - Control*.
  - iii. Perform timely field verification that the materials delivered meet contract requirements and were not damaged in shipping:
  - iv. Collect orange Inspection Tags and match them with the appropriate Form TL-0029, *Report of Inspection of Material*.
  - v. Verify material condition meets the requirements of the contract documents.
- e. Preparing for Construction:
- i. Coordinate with FTI if dynamic monitoring or pile load tests are required per BCM 49-1, *Piling – General*.
  - ii. Discuss the possibility of installing driven piles using a vibrating hammer, and if so, to what elevation, with the Structural and Geotechnical designers.
  - iii. Prepare Form SC-4803, *Pile Quantity and Driving Record (Driven Piles)*, Form SC-4805, *Log Pile Sheet*, and Form SC-4806, *Pile Layout Sheet*, for all locations with driven piling. See *Foundation Manual*, Chapter 7, *Driven Piles*, Section 7-6, *Preparing to Drive Piles* and Appendix K1.
  - iv. Prepare bearing acceptance criteria:
    1. For driven piling to be accepted using the Gates Formula, prepare pile acceptance charts for each authorized hammer using Form SC-4809, *Pile Driving (US Customary) Blows Per Foot using Gates Formula*, as described in Attachment 2, *Driven Piling – Acceptance Criteria*, with modifications as required to account for battered piling.
    2. For driven piling to be accepted using bearing acceptance criteria determined by dynamic monitoring, verify bearing acceptance criteria has been received from FTI.
  - v. Review the project specific Code of Safe Practices (COSP) for personal protective equipment requirements and safety hazards associated with the pile driving operation. See *Foundation Manual*, Section 7-8, *Driven Piles, Safety*.
  - vi. Review the pile driving equipment and verify it matches the authorized DSS and/or Pile and Driving Data Form per the *Foundation Manual*, Section 7-6 and Appendix K1.



- vii. Verify the pile driving crane meets the requirements of Title 8 CCR Chapter 4, *Division of Industrial Safety*, Subchapter 4, *Construction Safety Orders*, Article 15, *Cranes and Derricks in Construction*. See *Foundation Manual*, Section 7-8, and Appendix K1.
    - 1. If the pile driving crane is used for tasks other than pile driving, verify the operator certification meets the requirements of the Construction Safety Orders.
  - viii. Determine pile position and alignment requirements and determine rejection criteria for piling driven “materially out of line”. See *Foundation Manual*, Section 7-7.3, *Driven Piles, Driving Challenges, Alignment of Piles*.
  - ix. Confirm how the hammer stroke will be measured during driving.
  - x. Verify pile lengths for the given location where piles are to be driven. See *Foundation Manual*, Section 7-6, and Appendix K1.
  - xi. Verify reference staking hubs locations where piles are to be driven to provide pile cutoff elevations during driving. See *Foundation Manual*, Section 7-6, and Appendix K1.
  - xii. Verify pile marking at 1-foot intervals to measure penetration during driving. See *Foundation Manual*, Section 7-6, and Appendix K1.
  - xiii. Check that the contractor’s pile layout meets contract requirements. See *Foundation Manual*, Section 7-6, and Appendix K1.
4. During construction:
- a. Inspect piling delivered to the job site, as follows:
    - i. Review materials as they are delivered to the job site.
      - 1. Collect orange inspection release tags and match them to Form TL-0029.
      - 2. Collect certificates of compliance for the steel reinforcement.
      - 3. Complete Form SC-4101, *Materials Release Summary*, and Form SC-4102, *Material Inspected and Released on Job*.
    - ii. Reject damaged precast concrete piling per *Foundation Manual*, Section 7-6.2.1, *Driven Piles, Preparing to Drive Piles, Precast Concrete Piles*.
  - b. Discuss driven piling operations in a Tailgate Safety meeting before field operations begin:
    - i. Ensure personal protective equipment, including hearing protection, is available and ready for use.
  - c. If drilled or predrilled holes are required, verify dimensions of the holes.

- d. Use Form SC-4806, *Pile Layout Sheet*, to verify the pile location at the start of driving.
- e. Verify the vertical alignment (plumb or battered) of the pile at the start, and during driving.
- f. Monitor and log the blow count, hammer stroke, and pile penetration during driving on Form SC-4803, *Pile Quantity and Driving Record (Driven Piles)* and Form SC-4805, *Log Pile Sheet*. See *Foundation Manual*, Section 7-6.
  - i. Apply corrections for battered piling. See *Foundation Manual*, Section 7-5.4, *Driven Piles, Nominal Resistance/Bearing Capacity, Battered Piles* and Appendix E, *Driven Piles*.
- g. Monitor noise and vibration due to pile driving to ensure compliance with the requirements of the contract documents.
- h. Monitor the hammer performance during driving for proper operation.
- i. For double-acting pile driving hammers or other hammer types where the ram stroke cannot be visually observed:
  - i. Receive the printed readout of hammer energy for each pile during driving operations from the contractor.
  - ii. Determine pile acceptance using the printed readout hammer energy delivered at the pile specified tip elevation.
- j. Verify piles are driven to the correct position and alignment. See *Foundation Manual*, Section 7-7.3:
  - i. If hard driving is encountered, address contractor's request for use of driving aids such as drilling, spudding, jetting, or raising the specified tip elevation. See *Foundation Manual*, Section 7-7, and Appendix K1.
    - 1. Consult with Geotechnical Services before authorizing contractor requests.
    - 2. Consider if the hammer is not operating properly. Consult with FTI.
  - ii. If soft driving is encountered, implement the use of pile lugs in accordance with [Attachment 1](#), *Driven Piling – Steel H-Pile Lugs*, lower the specified tip elevation, or re-drive the pile. See *Foundation Manual*, Section 7-7, and Appendix K1.
  - iii. Consult with Geotechnical Services before authorizing changes.
- k. Check the reference staking hubs periodically to verify elevation is not changing due to soil heave during pile driving. See *Foundation Manual*, Section 7-6.

- I. Confirm field welded splices meet the requirements of the contract documents.
    - i. Coordinate inspection of field welded splices with the METS Representative as needed.
  - m. For rejected piling proposed for use, the contractor must propose a repair plan in writing. Coordinate review of the repair plan with both Structure and Geotechnical Designers.
  - n. Contact Structure and Geotechnical Designers for pile design revisions, if needed due to:
    - i. Fabrication issues.
    - ii. Proposals to raise or lower tip elevation.
    - iii. Pile relocation.
    - iv. Other unforeseen issues.
  - o. Use the pile driving acceptance criteria chart for the impact hammer used to drive each pile to determine whether each driven pile can be accepted for bearing.
  - p. Accept driven piling that is in the correct position and alignment and achieves proper bearing and specified tip.
  - q. Keep accurate pile logs and field documentation to ensure:
    - i. Good documentation for claim disputes and record audits.
    - ii. Sufficient information for progress payments.
  - r. Document all inspection, construction, and quality assurance activities, pertinent to this BCM, in the daily reports per BCM C-7, *Daily and Weekly Reports*.
5. Measurement and Payment:
- a. Prior to each progress payment, compare Materials on Hand vs. Furnish Piling requirements per [Attachment 3](#), *Driven Piling – Measurement & Payment*.
  - b. Prior to authorizing payment for Furnish Piling:
    - i. Review Attachment 3, *Driven Piling – Measurement and Payment*.
    - ii. Inspect piling delivered to the job site.
    - iii. Reject damaged precast concrete piling per *Foundation Manual*, Section 7-6.2.1, *Precast Concrete Piles*.
  - c. Prior to authorizing payment for Drive Piling:

- i. Review Attachment 3, *Driven Piling – Measurement and Payment*.
    - ii. Verify accurate completion of Form SC-4803, *Pile Quantity and Driving Record (Driven Piles)*, and Form SC-4806, *Pile Layout Sheet*.
  - d. After consulting with the Structural and/or Geotechnical Designer, prepare change order(s) per BCM C-10, *Change Orders*, for piling driven beyond the specified tip elevation, if applicable.
  - e. File all payment records in the appropriate category in the project records as specified in the *Construction Manual, 5-102, Organization of Project Documents*.
6. Following construction:
- a. Complete applicable Forms SC-4803, SC-4805, and SC-4806.
  - b. File all forms, test results and Daily Reports in the appropriate category in the project records as specified in the *Construction Manual, 5-102, Organization of Project Documents*.

In general, processes associated with the requirements of SC, listed in *Bridge Construction Records and Procedures, Volume I*, are organized in subsections as follows:

1. SC Staff
2. SC Supervisors
3. SC Managers

The subsection “SC Staff” pertains to all tasks associated with the process that are completed by SC staff.

The subsection “SC Supervisors” pertains to tasks associated with the process that are completed by the SC supervisor.

The subsection “SC Managers” pertains to tasks associated with the process that are completed by SC managers.

Below (in blue text) is an example of a procedure for PDD C-8, *Correspondence with the Contractor*, from Volume I, which does not have a field inspection component. Note in this example, instead of using the template subsection “SC Staff”, the subsection “Structure Representative” is used. If the Technical Team determines this is appropriate, this change can be made:

1. All work associated with this process is charged as Project-Direct – Construction.

2. Structure Representative will:
  - a. Prepare project correspondence for structure work. Before preparing any project correspondence, meet with the Resident Engineer (RE) and obtain an electronic copy of the RE's current authorized letterhead and format for official correspondence with the contractor. Although letter format may vary slightly with each RE, the format will include the current authorized letterhead and the RE's name at the bottom of each letter. As stated in the *Construction Manual, 3-502, Engineer's Authority*, the RE is the lead for contact and correspondence with the contractor. Structure Construction is responsible for the technical control of structure work per the *Construction Manual, 1-104, Structure Construction Organization*.
  - b. Address all correspondence between the State and the contractor to the primary contractor, even when the subject matter is of direct concern only to a subcontractor. Written instructions are given to the subcontractors by means of copies of letters to the primary contractor.
  - c. Prepare and send documentation to the contractor as needed to document the following:
    - i. Concurrence with contractor activities.
    - ii. Deficiencies with contractor activities.
    - iii. Discussions with the contractor. As a follow-up to contractor activities and discussions with the contractor, prepare and send a letter that documents the key points of the discussion.
    - iv. Response to contractor submittals.
    - v. Response to information requests.
    - vi. For assistance in defending and mitigating disputes with the Department, correspondence should accurately establish and document current submittal status and project conditions, along with advisements, warnings, and prohibitions for future operations.
  - d. When preparing correspondence:
    - i. Include references to contract documents as needed to emphasize correspondence.
    - ii. Review the *Construction Manual* and the *SC Bridge Construction Records and Procedures Manual* for technical guidance to assist correspondence preparation. For example, BCM C-11, *Shop Drawing Review of Temporary Structures*, includes a template for the *Temporary Structure Analysis Report*.

- iii. Include the project E.A. (Expenditure Authorization) in the subject heading when sending correspondence by email.
  - iv. Review correspondence with the RE prior to sending correspondence to the contractor.
  - e. Inform the RE when correspondence is sent the contractor.
  - f. Assist the RE as needed to maintain complete and accurate project records for Structure Construction activities. All correspondence must go through the RE and be filed according to the RE's protocol and as specified in the *Construction Manual, 5-102C, Description of Categories*.
3. SC Supervisors:
    - a. Periodically review correspondence for adherence to format, tone, and content requirements.
  4. SC Managers:
    - a. Audit staff communications as needed.

There are many possible procedure steps that could be identified as part of a process. As the SC TT members tribal knowledge, as well as knowledge of previously documented procedures is essential to fully capture the procedures necessary to fulfill the requirements of the process.

It is important to differentiate between informational/background reading versus required action:

- "Review document X" could be informational reading
- "Perform work in accordance with document X," emphasizes required, mandatory conformance.

### 2.3.7 Outputs/Deliverables/Records

Process outputs signal the conclusion of a process. Like process inputs, outputs can be physical objects, such as an authorized contractor submittal or test samples. Process outputs can also be informational, such as a contract requirement or an event. In either case, process outputs are often the inputs for the subsequent process.

The customer of the process output must be identified, as well as the customer's expectations for the process output. Customer expectations cannot be assumed. They are derived from communication with the customer.

List all process outputs in bullet form.

Below (in blue text) is an example of process outputs from PDD 49-2, *Piling – Driven Piling*:

1. Submittals:
  - a. Authorized Pile and Driving Data forms:
    - i. Customers: Structure Representative, District
    - ii. Customer Expectations: Timely review, can be used for pile construction and acceptance
  - b. Authorized Driving System Submittal, if applicable:
    - i. Customers: District, Contractor, Assistant Structure Representatives
    - ii. Customer Expectations: Contract requirements are met, timely review and authorization
  - c. Authorized pile submittals for steel pipe piling, structural shape steel piling, precast prestressed concrete piling, and steel sheet piling:
    - i. Customers: District, Contractor
    - ii. Customer Expectations: Timely and accurate authorization of submittals in conformance with the requirements of the contract documents
2. Materials:
  - a. Form TL-0029, *Report of Inspection of Material*, and matching orange tags:
    - i. Customers: District, all interested parties
    - ii. Customer Expectations: Materials inspected and released by METS are the same materials installed at the job site
  - b. Completed Form SC-4101, *Materials Release Summary*, and Form SC-4102, *Material Inspected and Released on Job*:
    - i. Customers: District
    - ii. Customer Expectations: All materials used are inspected and released for construction
3. Construction:
  - a. Completed pile driving acceptance criteria charts:
    - i. Customers: Assistant SR, District
    - ii. Customer Expectations: Accurate pile driving acceptance charts ready for use to accept driven piling
  - b. Completed Forms SC-4803, SC-4805, and SC-4806:
    - i. Customers: Districts, SC HQ

- ii. Customer Expectations: Accurate project records for contract payment and project archives
- c. Daily Reports:
  - i. Customers: Districts
  - ii. Customer Expectations: Timely and accurate description of the construction work performed

Following are two of the process outputs (in blue text) for this process (PDD A-2):

1. Review comments on draft specifications:
  - a. Customers: Structure and Engineering Services, Offices of Structure Quality Management (SQM) and Structure Specification Research and Development (SSR&D); DES Technical Committees
  - b. Customer Expectations: Thorough and timely review comments
2. New or revised SC processes:
  - a. Customers: SC Technical Manual Manager (TMM), SC employees, other project sponsors and stakeholders
  - b. Customer Expectations: Useful descriptions of processes and procedures they are expected to adhere to

### 2.3.8 Measurement & Evaluation

Measurements determine if the process is performing as expected – or is being performed as expected. Evaluation compares the actual results from the measurement with the intended results of the process and identifies if there is a gap in a process.

There are three parameters the SC TT is expected to address in this section:

1. Intended results of the process
2. Measurements needed to evaluate the process
3. Evaluation of the process

The intended results of the process identify what the process is trying to achieve. For example, this process (PDD A-2) intends for SC TTs to produce a scheduled number of PDDs within each fiscal year. The number of PDDs expected is measurable. However, for some processes, the intended results are more subjective and may require some thought about how to determine measurements that are meaningful.

The measurements needed to evaluate the process are necessary to determine the actual results of the process. For example, a measurement for this process (PDD A-2)



that corresponds to the intended results is the actual number of PDDs produced by SC Technical Teams within each fiscal year. Again, for some processes, measuring the actual results may be difficult if the results are subjective.

The evaluation of the process determines if the process is working as intended and is the difference between the actual measured results and the intended results for each measurement tool.

To evaluate a process, start with the measurement tools SC already uses. For example, Project and Office Audit performed per [BCM F-3](#), *SC Audit Program* uses the *Project Record Review* form to measure various parameters that are common to many SC processes. There are other measurement tools in SCEMS and VISION that can also be used to measure the results of SC processes. The SC TTs do not need to reinvent measurement tools, unless one does not currently exist for the process.

Below is an example of measurement and evaluation from PDD 49-2, *Piling – Driven Piling*:

1. Intended results of the process:
  - a. Completed in-place driven piling.
  - a. Accurate and complete driven piling records.
2. Measurements needed to evaluate the process:
  - a. Project and Office Audit performed per BCM F-3, *SC Audit Program*.
3. Evaluation of the process:
  - a. SC Top Management review of project and office audits.

List all intended results of the process, measurements needed to evaluate the process, and evaluation of the process in bullet form under the respective parameter.

### 2.3.9 Improvement

Improvement is a critical part of the Plan Do Check Act (PDCA) cycle. This section is intended to address more general categories of future improvement. Could the process be made more efficient, perhaps through a Lean-6 Sigma analysis? Could the process be simplified to reduce nonconformities? Could the process be revised to address enterprise-level risks and SC Top Management review? These are items that the SC TT may not be able to immediately address but can be listed as considerations for future development.

Below is an example of improvement from PDD 49-2, *Piling – Driven Piling*:

1. Process continual improvement based on the results of SC Top Management review.

List all improvement categories in bullet form within this section.

### 2.3.10 Attachments

Recall from above that PDDs address the WHAT, while attachments and SC's technical manuals address the HOW. Attachments to PDDs are intended to capture instructions and other information that is necessary for release of the new or revised PDD.

Attachments can be used as an intermediate step to capture technical information that cannot be immediately transferred to a technical manual. Attachments are a great way to capture tribal knowledge and other organizational information that might otherwise be lost.

What if there is no technical manual that supports the process? Then attachments are required to explain HOW to perform the procedural steps of the process. This process (PDD A-2) is a good example of a PDD that is unlikely to have an SC technical manual to provide the HOW, so attachments are necessary.

Attachments can provide a variety of information, including:

1. Information on HOW to perform the procedural step.
2. Information on HOW to fill out forms and other documents.
3. Sample calculations in support of the procedural step.
4. Commentary on the governing specifications or other requirements.
5. Case studies describing how the process was performed on other projects.
6. Historical information on the origins of the process.

Attachments must always be referenced in the Procedure section of the PDD, and include the following components:

1. A title
2. An introduction which states the purpose of the attachment
3. Text that provides information needed to explain HOW to perform the procedural step that references the attachment

Below is an example of an attachment. It is Attachment 3, *Driven Piling – Measurement & Payment*, from PDD 49-2, *Piling – Driven Piling*.

# Driven Piling – Measurement & Payment

Driven piling that fails to reach tip elevations shown on the plans but has been determined to be adequate and approved by the Designer, is measured along the longest side, from the tip elevation shown on the plans to the plane of cut-off elevation.

## Materials on Hand

When the contract special provisions qualify the material for *Materials on Hand* and it does not meet the requirements for “furnishing”, payment may be made as *Materials on Hand* at the Contractor’s request.

Steel piling and precast concrete piling are typically listed in the contract special provisions as being eligible for payment for *Materials on Hand*, but not yet incorporated in the work.

Determine eligibility for *Materials on Hand* payments per the *Construction Manual, Section 3-906E, Materials on Hand*.

## Furnish and Drive Piling Contract Item Payment

When steel or precast concrete piling of proper length are delivered to the job site ready for driving, the specification requirements for *furnishing* have been met and the material should be paid under *furnish piling* item on the monthly progress pay estimate. Piles stored offsite, or onsite but not ready for driving, are to be considered as *Materials on Hand*.

For steel pipe piling, full payment on the furnish item will not be made until the piling is on site and all field welds are completed and approved. This work includes welding of splices, and shear rings, when required in the contract documents.

The length of piling that extends beyond the tip elevation shown on the plans, as ordered by the engineer to meet design requirements, will be paid for as Extra Work or change order work.

There is no “one size fits all” type of attachment. When attachments are necessary, each PDD will have attachment(s) that are unique to the process.

Ultimately, the goal is to eventually migrate information contained in attachments into the respective SC technical manual – unless there is no SC technical manual that supports the process.

## 2.4 PDD to BCM Matrix

The PDD to BCM Matrix is a step-by-step check to verify that the PDD conforms to the Turtle Diagram and that no information is lost when converting the PDD to the BCM.

To complete the PDD to BCM Matrix, follow the steps below. Refer to Figure 4.

1. Populate all items in columns labeled as “Inputs, Criteria, Resources, Responsibility & Authority, Risks & Opportunities, Outputs & Deliverables & Records” (columns c-g in the template file).
2. Indicate the corresponding procedural step number in columns labeled as “Where is it? Procedure” or “Where is it? Attachments” (columns i and j in the template file) for each item in step 1. Sometimes the item is not in Procedure section but is mentioned in an Attachment to the PDD.
3. If an item in step 1 is not identified in Procedure or Attachment(s), then ask:
  - a. Is it out of scope?
  - b. Does it add value?
  - c. Is it unique to the process?
4. Revise the PDD as needed then fix the matrix.
5. You must have a completed PDD to BCM Matrix as part of the PDD package.

Below is an example of a PDD to BCM Matrix:

1. Criteria #2 of the PDD appears in Procedure number 3b and 3d.
2. Criteria #3 of the PDD is not addressed in any of the Procedure steps. The PDD must be revised to either remove Criteria #3 or add a procedure that references the relevance of Criteria #3.

Although the Input section and the Outputs section of the PDD is Published, most often (but not always) they will be repeated in the Procedure or Attachment section of the PDD

Sections Published		Sections NOT Published				Sections Published		
Identified Process	Identified Process Title	Inputs	Criteria	Resources, Responsibility & Authority	Risks & Opportunities	Outputs & Deliv & Rec	Where is it? Attachments	Where is it? Procedure
49-2.01D	Driven Piling - General - Payment							
		1						3a
		2						3b; 3d
			1					3c
			2					3c
			3					x

common errors:  
 - not unique  
 - no value

Figure 4. View of the PDD to BCM Matrix

Available for use is the [PDD Package Checklist](#) to verify the PDD Package is complete.

### **3. PDD Package Submittal**

Completing the draft PDD package correlates to Step 1.2 of Attachment 4.1, *8-Step Development and Review Schedule - from PDD to Published BCM*. At the end of Step 1, (Step 1.6), the SC TT Sponsor will submit the PDD Package to the SC Technical Manual Manager.

# Structure Construction 8-Step Development and Review Schedule – from PDD to Published BCM

This attachment details the eight-step process required for to develop and review a Process Development Diagram (PDD) that results in publishing a Bridge Construction Memo (BCM), as shown in Table 1 for Steps 1 to 3 and, Table 2 for Steps 4 to 8.

Table 1. Step 1 to 3 of the 8-Step Development and Review Schedule – from PDD to Published BCM.

STEP	Action By	CLOCK	TASK	File Name
		Calendar Days	Key to Success → BCM B-2.02, Attachment 4.1, Developing and Updating Process Development Diagram (PDD)	
		5	1.1 - If required, complete the <i>Justification to Delete and/or Combine (JTDC)</i> memo instead of the PDD <sup>1</sup> . Skip to Step 1.6.	xx-x.xx_JTDC_TT X_Step 1.1
1	TT	25	1.2 - TT author(s) draft/edit PDD. Email PDD <sup>1</sup> to TT members.	
		15	1.3 - TT members review PDD <sup>1</sup> . Email comments to author(s) (cc TT members).	
		15	1.4 - Perform PDD review at TT Meeting.	
		7	1.5- TT author(s) edit PDD. Email <sup>2</sup> PDD <sup>1</sup> to TT Sponsor.	xx-x.xx_PDD_TT X_Step 1.5
		8	1.6 - TT Sponsor reviews/edits PDD (or justification form). After editing PDD, review as BCM. Review for concise, consistent, clear language. PDD should be <i>polished</i> and ready to publish. Email <sup>2</sup> PDD <sup>1</sup> (or JTDC memo) to TMM.	xx-x.xx_PDD_TT X_Step 1.6
2	TMM	15	2.1 - TMM team reviews/edits PDD. Reviewer email <sup>2</sup> PDD <sup>1</sup> to TMM.	xx-x.xx_PDD_TT X_Step 2.1
		15	2.2 - TMM review/edit PDD. TMM email <sup>2</sup> PDD <sup>1</sup> to TT Sponsor.	xx-x.xx_PDD_TT X_Step 2.2
3	TT	15	3.1 - TT review/edit PDD. TT Sponsor emails PDD <sup>1</sup> to ACMs.	
	ACM	15	3.2 - ACMs review/edit PDD package. ACMs email <sup>2</sup> PDD <sup>1</sup> to TT Sponsor.	
	TT	15	3.3 - TT review/edit ACMs' comments. TT Sponsor emails <sup>2</sup> PDD <sup>1</sup> to	xx-x.xx_PDD_TT X_Step 3.3
<p>1: "PDD" in this schedule is the "PDD Package", which includes the PDD, Change Letter, PDD to BCM Matrix, and/or Attachment(s) and Disposition(s), if any.</p> <p>2: Subject line for this email is: xx-x.xx - Step X is Complete</p>				

**Table 2. Step 4 to 8 of the 8-Step Development and Review Schedule – from PDD to Published BCM**

STEP	Action By	CLOCK Calendar Days	TASK Key to Success → BCM B-2.02, Attachment 4.1, Developing and Updating Process Development Diagram (PDD)	File Name
4	TMM	2	4.1- TMM reviews files. Email <sup>2</sup> PDD <sup>1</sup> to Editor.	xx-x.xx_PDD_TT X_Step 4.1
	Editor	5	4.2- Edit/proofread/format PDD. Email <sup>2</sup> PDD <sup>1</sup> to TMM.	xx-x.xx_PDD_TT X_Step 4.2
5	TMM	21	5.1 - TMM reviews/edits PDD <sup>1</sup> to confirm BCM is ready to publish. If needed, TMM makes suggested edits and contacts the TT to reconcile comments.	
			5.2 - TMM sends PDD <sup>1</sup> via a calendar invite to DDC and Structures IQA. Calendar invite subject line is: xx-xx.xx - Files for our review.	xx-x.xx_PDD_TT X_Step 5.2
6	DDC	15	6.1 - DDC and Structures IQA review/edit PDD <sup>1</sup> .	
	Str IQA		6.2 - DDC and Structures IQA emails comments to TMM.	xx-x.xx_PDD_TT X_Step 6.2
7	TMM	7	7.1 - TMM emails <sup>2</sup> PDD <sup>1</sup> DDC and Str IQA comments to TT Sponsor.	xx-x.xx_PDD_TT X_Step 7.1
	TT	7	7.2 - TT reviews/edits PDD <sup>1</sup> . Emails <sup>2</sup> PDD <sup>1</sup> to TMM.	xx-x.xx_PDD_TT X_Step 7.2
	TMM	7	7.3 - TMM reviews PDD with DDC. Email <sup>2</sup> PDD <sup>1</sup> to Editor.	xx-x.xx_PDD_TT X_Step 7.3
8	TMM	10	8.1 - TMM reviews PDD. Email <sup>2</sup> PDD <sup>1</sup> to Editor.	xx-x.xx_PDD_TT X_Step 8.1
	Editor		8.2 - SC Editor creates BCM. Emails PDD to TMM.	xx-x.xx_PDD_TT X_Step 8.2
	TMM		8.3 - TMM reviews PDD. Email <sup>2</sup> PDD <sup>1</sup> to Webmaster.	xx-x.xx_PDD_TT X_Step 8.3
	Web-master		8.4 - Webmaster posts all files. Webmaster emails to inform TMM that files are posted. TMM sends email to notify SC Staff and Structures IQA of new/revised/deleted web content.	xx-x.xx_PDD_TT X_Step 8.4
<p>1: "PDD" in this schedule is the "PDD Package", which includes the PDD, Change Letter, PDD to BCM Matrix, and/or Attachment(s) and Dispositions(s), if any.</p> <p>2: Subject line for this email is: xx-x.xx - Step X is Complete</p>				

To follow is a narrative to the *Structure Construction 8 Step Development and Review Schedule – From PDD to Published BCM* above. Note that in this narrative the terms “PDD” and “PDD Package”, includes the PDD, Change Letter, PDD to BCM Matrix, and/or Attachment(s) and Disposition(s), if any. The Structure Construction (SC) Technical Teams (TT) completes Steps 1 and 3, and when necessary Steps 5 and 7.

## Step 1 – Technical Team draft PDD for submittal to TMM (75 days)

### **Step 1.1 – If required, complete the *Justification to Delete and/or Combine (JTDC)* memo instead of the PDD. Skip to Step 1.6.**

1. The TT author(s) uses the *Justification to Delete and/or Combine (JTDC)* memo, to determine if the PDD is an SC process that should be developed into a BCM. If the PDD:
  - a. Should not be developed into a BCM, complete the JTDC memo and skip to Step 1.6.
  - b. Should be developed into a BCM, proceed to Step 1.2.

### **Step 1.2 – TT author(s) draft/edit PDD. Email PDD to TT members.**

1. Technical Team author(s) draft/edit PDD package using the latest templates in SC PDD Library and in accordance with BCM A-2, Attachment 4, *Developing and Updating Process Development Diagrams (PDD) Packages*.
2. Verify that Track Changes feature is engaged. The Track Changes feature is engaged using this path MS Word > Review > Tracking > Track Changes.
3. For additional assistance in completing the PDD package refer to the Process Development Diagram (PDD) Package Checklist. Note that this document is available on the "[SC Technical Teams](#)" link from SC intranet.
4. Use the file naming convention for each file of the draft PDD Package as shown in Table 3.

**Table 3. Naming Convention for PDD Package**

PDD Package Files	File Name
Change Letter	xx-x.xx_CL_TT X_Step X
Existing BCM Disposition	BCM xx-x.xx_Disp for PDD xx-x.xx_Step X
PDD → BCM Matrix	xx-x.xx_PDD_TT X_Step X
Attachment No. X	xx-x.xx_Att#X_TT X_Step X
PDD → BCM Matrix	xx-x.xx_Matrix_TT X_Step X

5. Technical Team author(s) circulates draft PDD Package for team review.



### **Step 1.3 – TT members review PDD.**

1. TT members review source Standard Specifications (SS)/policy.
2. Review the PDD package.
3. Ensure the content answers the purpose and scope stated in the Background:
  - a. Is the content within scope?
  - b. Does the content add value? Is each point made unique to the process?
  - c. Is the content lean?
4. Add a comment with each suggested edit so that the author (or future reviewers) can locate the edits. Use the MS Word > > Comments > New Comment feature.
5. Email comments to author (cc TT members).

### **Step 1.4 – Perform PDD review at TT Meeting.**

1. Discuss and address review comments.
2. All TT members are required to participate. TT is developing expertise at TT meeting. TT members are the SC Subject Matter Experts.

### **Step 1.5 – TT author(s) edits PDD.**

1. Respond to all comments and edit the PDD package accordingly.  
Lead each comment response with:
  - a. Accept – Edit made.
  - b. Disagree – Edit is not needed because ... (comment is invalid or an opinion that does not change the technical integrity of the PDD).
  - c. Defer – Agree with the comment but decided to defer to specified later time and justification.
2. Task an end-user to test drive the PDD. Edit as necessary.
3. Author(s) send PDD package to TT-Sponsor.

### **Step 1.6 – TT-Sponsor reviews/edits PDD (or JTDC memo).**

1. TT-Sponsor reviews PDD package (or JTDC memo) for fatal flaws. TT-Sponsor is the gatekeeper, ensuring the PDD is polished and ready to publish.
2. TT-Sponsor emails the Step 1 PDD package (or JTDC memo) to the TMM at [SC.TMM@dot.ca.gov](mailto:SC.TMM@dot.ca.gov), and cc the SC Quality Management Representative (QMR) at [SC.QMR@dot.ca.gov](mailto:SC.QMR@dot.ca.gov). The subject line is as follows: PDD #-#.## - Step 1 Complete.
3. Place Step 1 PDD Package in Technical Team's folder/Revisions/PDD x.xx/Step 1 on the Shared Drive. Please note that the file structure for the 8 Step Process in the Revisions Folder should be as follows:
  - a. POST PUBLICATION COMMENTS – Store post publication comments
  - b. Step 0 – Store files from TMM to TT
  - c. Step 1 – Store files from TT to TMM
  - d. Step 2 – Store files from TMM to TT
  - e. Step 3 – Store files from TT to TMM

- f. Step 4 – Store files from Editor to TMM
- g. Step 5 – Store files from TMM to DDC & Str IQA
- h. Step 6 – Store files from DDC & IQA comments to TMM
- i. Step 7 – Store files from TMM to TT for 7-1 & TT to TMM for 7-2
- j. Step 8- Store Posted Files

## **Step 2 – Technical Review by TMM (30 days)**

### **Step 2.1 – TMM team reviews/edits PDD.**

1. Perform initial review for coherence, polish, and overall conformance with Attachment 4. Are there any unresolved comments?
  - a. Reject submittal (as needed).
2. Review source SS/policy.
3. Review draft PDD for consistency with other departmental policies and manuals.
4. Review for compatibility with other SC PDDs using the “New to Old BCM Table” Excel file. Verify there is not overlapping or contracting information if other PDDs.
5. Send PDD to TMM.

### **Step 2.2 – TMM reviews/edits PDD.**

1. Review source SS/policy.
2. Review the work performed in Step 2.1 to the extent necessary.
3. Review PDD for consistent use of terms, economy of words. Is the content “polished”/ready to publish?
4. TMM returns PDD to TT-Sponsor with email subject line: PDD #-#.## - Step 2 Complete.

## **Step 3 – Technical Team Addresses TMM Comments and Initiates ACM Review (45 days)**

### **Step 3.1 – TT reviews/edits PDD.**

1. TT author(s) address all review comments as described in Step 1.5.
2. Author(s) send PDD to TT-Sponsor.
3. The TT-Sponsor reviews the PDD and initiates ACM review by sending an email to the assigned Management Review Team, which is comprised of three ACM reviewers, as shown in Table 4:

**Table 4. Management Review Teams**

<b>Management Review Teams</b>			
<b>Technical Team</b>	<b>Reviewer 1</b>	<b>Reviewer 2</b>	<b>Reviewer 3</b>
A	TT K Sponsor	TT G Sponsor	TT P Sponsor
B	TT D Sponsor	TT F Sponsor	TT O Sponsor
C	TT K Sponsor	TT A Sponsor	TT D Sponsor
D	TT B Sponsor	TT F Sponsor	TT H Sponsor
E	TT F Sponsor	TT G Sponsor	TT C Sponsor
F	TT B Sponsor	TT D Sponsor	TT P Sponsor
G	TT E Sponsor	TT C Sponsor	TT K Sponsor
H	TT O Sponsor	TT A Sponsor	TT G Sponsor
K	TT C Sponsor	TT A Sponsor	TT H Sponsor
O	TT P Sponsor	TT G Sponsor	TT H Sponsor
P	TT O Sponsor	TT E Sponsor	TT K Sponsor
Q	TT P Sponsor	TT B Sponsor	TT E Sponsor

**Step 3.2 – ACMs review/edit PDD package.**

1. Each ACM reviews the PDD to:
  - a. Verify tribal knowledge or risks are addressed.
  - b. Verify there are no missing steps or errors.
  - c. Add content to the Measurement & Evaluation sections of the PDD.
  - d. Verify the sections of the PDD that are published as a BCM (Background, Inputs, Procedure, Outputs, Attachments) are ready to publish.
  - e. Add a comment with each suggested edit so that the author (or future reviewers) can find the edits. Use the MS Word > > Comments > New Comment feature.
  - f. After review is complete each ACM reviewer emails the PDD to the TT-Sponsor.

**Step 3.3 – TT review/edit ACMs' comments.**

1. TT author(s) address all review comments as described in Step 1.5.
2. Any comment not addressed will result in PDD package being rejected by SC TMM.

3. TT-Sponsor performs a last review of PDD ensuring the PDD is coherent and is polished for publication.
4. TT-Sponsor emails the PDD to the TMM and cc the SC QMR, with the naming convention outlined above in Step 1.2, with the updated file name ending in “Step 3”: The subject line for the email is: PDD #-#.## (Step 3 Complete).

## **Step 4 – Editor Edits/Formats PDD (7 Days)**

### **Step 4.1 – TMM reviews PDD.**

1. TMM reviews PDD, and emails PDD to the Editor.

### **Step 4.2 – Editor edits/proofreads/formats PDD.**

1. Edits the PDD package to current templates and SC Style Guide.
2. Proofreads the content for grammar.
3. Updates links for references and makes comments if there is content that does not make sense.
4. Creates the Table of Contents (TOC).
5. Editor emails PDD to TMM.

## **Step 5 – TMM Prepares PDD for DDC and Structures IQA Review (21 Days)**

**Step 5.1 – TMM reviews/edits PDD to confirm BCM is ready to publish. If needed, TMM makes suggested edits and contacts TT to reconcile comments.**

**Step 5.2 – TMM emails PDD to DDC and Structures IQA.**

## **Step 6 – DDC and Structures IQA Review (15 Days)**

**Step 6.1 - DDC and Structures IQA review/edit PDD.**

**Step 6.2 - DDC and Structures IQA emails comments to TMM.**

## **Step 7 – TT Addresses DDC and Structures IQA Review Comments (21 Days)**

This step is only required when significant comments are generated during DDC or Structures IQA review.

**Step 7.1 – TMM emails DDC and Structure IQA comments to TT Sponsor.**

1. If TMM can address comments TMM will reconcile comments.

2. If comments require TT input, the TMM returns the PDD package to TT-Sponsor for comment resolution.

**Step 7.2** – TT reviews/edits PDD. Emails PDD to TMM.

**Step 7.3** – TMM reviews PDD with DDC. Emails PDD to Editor.

## **Step 8 – TMM Team Publishes BCM (10 days)**

**Step 8.1** – TMM reviews PDD. Emails PDD to SC Editor.

**Step 8.2** – Editor creates BCM. Emails PDD to TMM.

**Step 8.3** – TMM reviews PDD. Emails PDD to Webmaster.

**Step 8.4** – Webmaster posts all files. TMM sends email to notify SC Staff and Structures IQA of new/revised/deleted web content.

# PDD to BCM Turtle Diagram

The ten sections of a Process Development Diagram (PDD) in each process performed by Structure Construction (SC) conforms with the requirements of ISO 9001, *Quality Management Systems*. Five of the ten sections of a PDD are published in the Bridge Construction Memo (BCM) to communicate the scope, input, procedure, outputs, and attachments for each SC process. The remaining five sections are not published, and are used by:

- The SC Technical Team (TT) to develop each process.
- SC Top Management to review, evaluate, measure, and improve each SC process.

This PDD to BCM Turtle Diagram shown below illustrates the importance of the 5 non-published sections and their relationship to the BCM.

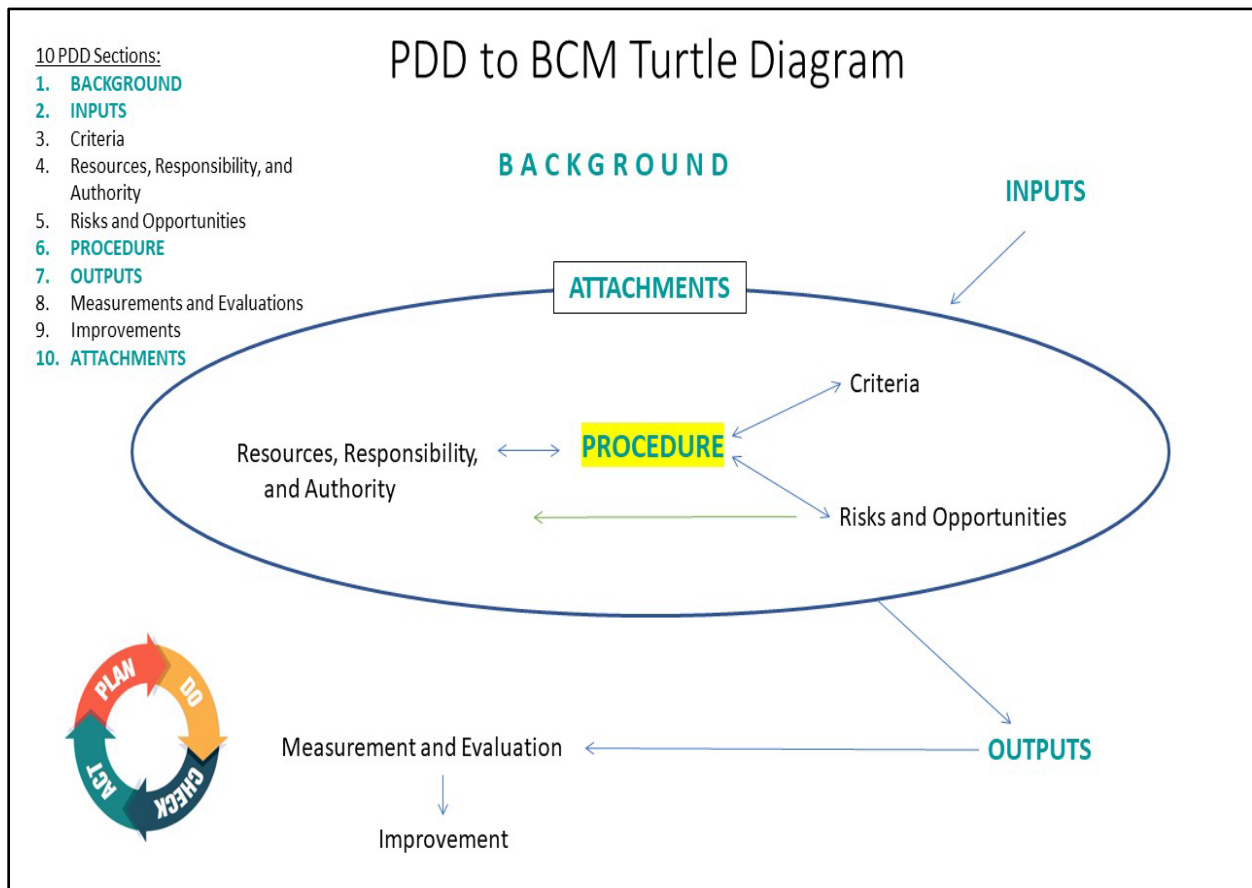


Figure 1. PDD to Turtle Diagram

Within the turtle are the 5 sections of a BCM, which are described below.

1. **Procedure** is the “heart of the turtle.” It is where the end-user will likely spend the most time. As such, development of the PDD Procedure section should be where

the author focuses the most effort. In fact, many experienced (and inexperienced) authors typically start building the PDD by first developing the procedural steps that are needed to perform the process.

2. **Inputs** is analogous to food for the turtle. Make it as specific as reasonable, without limiting the published value of the PDD. (Another analogy - keys for a car. You want the key to start this specific car.)
3. **Outputs** is the end product; any deliverables, or necessary documentation and paperwork that must be generated by persons performing the process.
4. **Background** describes the scope of Procedure. Does each content of the PDD fall within the Background scope? Or is it out of scope?
5. **Attachments** includes technical details or additional information that do not fit into the Procedure section. The Procedure section is intended to be “lean,” short and to the point. The Procedure tells you “what to do.” “How to do” information belongs in the BCM Attachments section, or SC’s organizational technical manuals.

Revolving outside of the turtle is the five sections of a PDD which are not published in a BCM. Each of these five sections are used by the SC TT to develop each process, are geared for management (towards SC Top Management), and their relationship to the BCM are as follows:

1. **Criteria** – This section includes requirements or guidelines the process must adhere to or is judged by to ensure the process is compliant.
2. **Resources, Responsibility and Authority** – The required resources that are unique to each process are listed in this section. This section is used by SC Top Management to secure the required resources to perform the process. Similarly, the Procedure must advise SC field staff to obtain the necessary resources for performing the process. The Responsibility and Authority describes the responsibility and authority of persons performing the BCM process and holds such persons accountable.
3. **Risks and Opportunities** – This section is often developed in tandem with the Procedure. Identify common risks to avoid, minimize, or mitigate. Likewise, identify opportunities that can be capitalized. Discuss management of these risks and opportunities in the Procedure section since SC field staff is our front line of defense with respect to risk management.
4. **Measurement and Evaluation** – SC Top Management measures and evaluates the PDD Outputs to determine if the process is satisfactory or improvements made to the process are required.
5. **Improvements** – Any improvements to the process are noted and incorporated into the process. This completes the Plan-Do-Check-Act Cycle (PDCA Cycle).

Use this Attachment 4.2, *PDD to BCM Matrix*, as a turtle diagram test to verify no information is lost when converting a PDD to a BCM, and each content incorporated into the PDD is useful, lean (unique to the process), and clear.



# Developing and Updating Structure Construction Technical Manuals

1. Applicable Structure Construction (SC) Technical Manuals are reviewed when a new Bridge Construction Memo (BCM) is developed or an existing BCM is updated and revised. For some SC Technical Manual revisions, material gathered from the work performed in [Attachment 3](#), *SC Technical Team Work Plan and Resource Budget*, is the basis for revision to an SC Technical Manual.
2. New SC Technical Manuals are developed when new BCMs are developed that have no supporting documentation in existing SC Technical Manuals. However, there may be a considerable time gap between the time a BCM is published and a new SC Technical Manual is published. In this case, temporary attachments to the BCM may be used to bridge the time gap. Refer to [Attachment 4](#), *Developing and Updating Process Development Diagram (PDD) Packages*, Section 2, *Develop the Draft PDD Package*, for more information on the use of temporary attachments.
3. Refer to [The WHAT and HOW Document](#) for the types of information to include in SC technical manuals.
4. For a detailed workflow procedure, refer to:
  - a. [Attachment 4.1](#), *Structure Construction 8-Step Development and Review Schedule – from PDD to Published BCM*, for developing BCMs for the *Bridge Construction Records and Procedures Manual*.
  - b. [Attachment 5.1](#), *Structure Construction 6-Step Development and Review Schedule – from Outline to Published SC Technical Manual*, for developing all SC Technical Manuals except the *Bridge Construction Records and Procedures Manual*.
5. For guidance and tools to aid in the development and review of the SC Technical Manuals refer to the [Style Guide for Structure Construction Technical Manuals](#).

# **Structure Construction 6-Step Development and Review Schedule – from Outline to Published SC Technical Manual**

This attachment details the six-step process required to develop and review the draft files for all Structure Construction (SC) Technical Manual (except for the *Bridge Construction Records and Procedures Manual*) that results in publishing a SC Technical Manual, as shown in Table 1 for Step 0 to 2, and Table 2 for Steps 3 to 6.

**Table 1. Step 0 to 2 of the 6-Step Development and Review Schedule – from Outline to Published SC Technical Manuals**

STEP	Action By	CLOCK calendar days	TASK	File Name
0	TT	--	0.1 - Develop a bin list for the SC Technical Manual.	TOC_SCTM_TT X_Step 0 OR Outline_SCTM_TT X_Step 0
		--	0.2 - Determine the format for the SC Technical Manual.	
		--	0.3 - Develop an Outline or Table of Contents for the SC Technical Manual. Identify two end-user reviewers to test drive the FILES. One end-user is experienced and one is less experienced.	
	TT Sponsor	--	0.4 - Bring the Outline or Table of Contents to SC Top Management for management review and Authorization to Proceed (ATP).	
	TMM		0.5 - TT contact SC TMM to request files for existing manual to edit or template files for drafting each section of proposed new manual.	
1	TT	365	1.1 - TT author(s) draft/edit assigned chapter(s) of the SC Technical Manual, the Change Letter, Preface, Introduction, Appedii (if any) and Disposition(s) (if any), which are referred to as FILES <sup>1</sup> . Email FILES to TT members for review.	
			1.2 - TT members review FILES. Send comments to author(s) (cc TT members).	
			1.3 - Review and reconcile TT comments for FILES at TT Meeting(s).	
			1.4 - TT author(s) edit assigned file(s) of the SC Technical Manual. Send file(s) to TT-Chair and TT-Sponsor.	
			1.5 - TT-Chair and TT-Sponsor review/edit FILES. Verify each chapter and appedii (if any) supports the SC Technical Manual as a whole. Review for concise, consistent, clear language. SC Technical Manual text should be <i>polished</i> and ready to publish. TT-Sponsor emails FILES <sup>1</sup> to TMM and QMR; the subject line is <Title of FILES> - Step 1 Complete .	xx_SCTM_TT X_Step 1 e.g.: Ch 1_T & S_TT K_Step 1
2	TMM	3	2.1 - TMM verifies all FILES are submitted. If FILES are not complete, return FILES to TT for resubmittal. If FILES are ready to be reviewed/edited, TMM sends FILES to Editor.	
	Editor <sup>2</sup>	15	2.2 - Editor formats FILES. Editor emails FILES to the TMM; the subject line is <Title of FILES> - Step 2.2 Complete.	
	TMM	5	2.3 - TMM reviews FILES for completeness. TMM emails FILES to TT-Sponsor; the subject line is <Title of Files> - Step 2 Complete .	xx_SCTM_TT X_Step 2
<p><b>NOTES:</b>            1: "FILES" in this schedule refers to the "SC Technical Manual Files", which includes the SC Technical Manual chapter(s), Change Letter, Preface, Chapters, Appedix (if any) and Disposition(s) (if any).            2: SIQA is Structures IQA .            3: The Editor and ADA Specialist may be the same person.</p>				

**Table 2. Steps 3 to 6 of the 6-Step Development and Review Schedule – from Outline to Published SC Technical Manuals**

STEP	Action By	CLOCK calendar days	TASK	File Name
3	TT	5	3.1 - TT addresses TMM's and Editor's comments. TT develops a review schedule for the entire SC Technical Manual (Each chapter and appendix). TT-Sponsor sends FILES by email using a calendar invite requesting review/comment of FILES to TMM, ACMs, DDC, and SIQA; the subject line is <Title of FILES> - Step 3.1 Complete.	xx_SCTM_TT X_Step 3.1
	TMM ACM DDC SIQA <sup>2</sup>	60	3.2 - TMM, ACMs, DDC and SIQA review/comment the FILES and return FILES with review comments to the TT-Sponsor.	
	TT	10	3.3 - TT addresses reviewers' comments. TT-Sponsor emails FILES to TMM; the subject line is <Title of Files> - Step 3 Complete .	xx_SCTM_TT X_Step 3
4	TMM	5	4.1 - TMM verifies all FILES are submitted and comments appear to be addressed. If FILES are not complete and/or comments are not addressed, return FILES to TT to resubmit. If FILES are ready to be edited, TMM sends FILES to Editor.	
	TMM Editor	15	4.2-Editor edits/formats FILES. Editor sends email to the TMM informing TMM the SC files are formatted; subject line is <Name of FILES> - Step 4 Complete .	
	TMM	5	4.3 - TMM returns FILES to TT-Sponsor if edits are needed; the subject line is <Title of FILES> - Step 4 Complete. If FILES are ready to post go to Step 6.	xx-x.xx_TM_TT X_Step 4
5	TT	10	5.1 - TT addresses TMM's and Editor's comments.	
	TT	10	5.2 - TT-Sponsor reviews/edits. Send FILES to TMM; the subject line is <Title of FILES> - Step 5 Complete.	xx_SCTM_TT X_Step 5
6	TMM	20	6.1 - TMM sends FILES to the ADA Specialist by email; the subject line is <Title of FILES> - Step 6.1 Complete.	xx_SCTM_TT X_Step 6.1
	ADA Specialist <sup>3</sup>		6.2 - ADA Specialist prepares FILES to post. ADA Specialist sends FILES to the TMM by email; the subject line is <Title of FILES> - Step 6.2 Complete.	xx_SCTM_TT X_Step 6.2
	TMM		6.3 - TMM reviews FILES. TMM sends FILES to the Webmaster by email; the subject line is <Title of FILES> - Step 6.3 Complete .	xx_SCTM_TT X_Step 6.3
	Webmaster Editor TMM		6.4 - Webmaster posts all FILES. Webmaster sends email to TMM and Editor informing FILES are posted; the subject line is <Title of FILES> - Step 6.3 Complete . Editor updates MASTER FILES for TT access. TMM sends email informing SC Staff that FILES are posted.	xx_SCTM_TT X_Step 6.4
<b>NOTES:</b>	<p>1: "FILES" in this schedule refers to the "SC Technical Manual Files", which includes the SC Technical Manual chapter(s), Change Letter, Preface, Chapters, Appedix (if any) and Disposition(s) (if any).</p> <p>2: SIQA is Structures IQA .</p> <p>3: The Editor and ADA Specialist may be the same person.</p>			

To follow is a narrative of the 6-Step Development and Review Schedule – from Outline to Published to SC Technical Manuals. Note that in this narrative the term “FILES” includes the Change Letter, Preface, Chapters, Appendix (if any), and Disposition(s) (if any). The SC Technical Teams (TT) completes Steps 0, 1, 3, and 5.

## **Step 0 – Technical Team Assemble Plan for SC Technical Manual Development (no timeline)**

### **Step 0.1 – Develop a bin list the SC Technical Manual.**

1. Develop a bin list of revisions for existing SC technical manuals or develop a list of topics for new SC technical manuals.

### **Step 0.2 – Determine the format for the SC Technical Manual.**

1. Determine the format for the revision to an existing SC technical manual or the creation of a new SC technical manual. This step is crucial to SC technical manual development. The format should be suitable for the tribal knowledge and best practices SC wants to document for HOW a process BCM is performed.
  - a. Should the SC technical manual have a “textbook” format, containing a narrative description of technical information about the subject?
  - b. Should the SC technical manual have a “field guide” format, containing a narrative description of information on HOW a process BCM is performed?
  - c. Should the SC technical manual have a “hybrid” format, consisting of a combination of the “textbook” and “hybrid” format?

### **Step 0.3 – Develop an Outline or Table of Contents for the SC Technical Manual.**

1. Develop a revised Table of Contents for existing SC technical manuals or develop an outline for new SC technical manuals.
2. Identify two end-user reviewers to test drive the FILES. One end-user is experienced and one is less experienced.

### **Step 0.4 – Bring the Outline or Table of Contents to SC Top Management for management review and Authorization to Proceed (ATP).**

1. Use the following file naming convention:

<b>SC Technical Manual File</b>	<b>File Name</b>
<b>Outline</b>	Outline_SCTM_TT X_Step 0

Where “SCTM” is the title of the SC Technical Manual.

# Step 1 – Technical Team draft SC Technical Manual Files for Submittal to SC TMM (365 Days)

## Step 1.1 – Draft SC Technical Manual FILES

1. TT author(s) draft/edit chapters of the SC Technical manual using the latest templates in the SC Technical Manual Templates folder on the Shared drive, and in accordance with BCM A-2, [Attachment 5, Developing and Updating SC Technical Manuals](#). Refer to the [Style Guide for Structure Construction Technical Manuals](#) for guidance.
2. Verify that Track Changes feature is engaged. The Track Changes feature is engaged using this path MS Word > Review > Tracking > Track Changes.
3. Technical team author(s) research and identify all references (Construction Manual, Caltrans construction contract standards, Bridge Construction Memos (BCMs) and/or manuals, Deputy Directive, etc.).
4. Verify consistency with other departmental policies and manuals. If applicable, collaborate with Caltrans Legal, Structures and Engineering Services, Materials Engineering and Testing Services, Geotechnical Services, Bridge Design, Program/Project Management and Office Engineer, Office of Strategic Quality Management, Structures Maintenance & Investigations, etc.
5. Use concise, consistent, clear language, and include sufficient detail for use by a new TE-Civil.
6. Use the file naming convention for each file as shown in Table 3.

**Table 3 Naming Convention for the SC Technical Manual files**

SC Technical Manual Files	File Name
Change Letter	SCTM_CL_TT X_Step X
Chapter	Ch X_SCTM_TT X_Step X
Appendix	App X_SCTM_TT X_Step X
Preface	Preface_SCTM_TT X_Step X
Dispositions, if any	Title of Existing File_Disposition for Title of New File_TT X_Step X
NOTE: SCTM is the title of the SC Technical Manual	

7. Technical Team (TT) author(s) circulates draft FILES for team review.

### **Step 1.2 – TT members review FILES**

1. TT members review source Contract Standards/CT policy.
2. Then review the FILES.
3. Ensure the content answers the purpose and scope of the SC Technical Manual. When reviewing ask the following questions:
  - a. Is the content within scope?
  - b. Does the content add value? Is each point made unique to the process?
  - c. Is the content lean?
4. Comment with each edit so that the author (or future reviewers) can locate the edits:
  - a. Use the MS Word Review > Comments > New Comment feature
5. Email comments to author (cc TT members)

### **Step 1.3 – Review and reconcile TT comments for FILES at TT Meeting(s)**

1. Discuss and address review comments.
2. All TT members are required to participate. TT is developing expertise at TT meeting. TT members are the SC Subject Matter Experts.

### **Step 1.4 – TT author(s) edit assigned file(s) of the SC Technical Manual. Send file(s) to TT-Chair and TT-Sponsor.**

1. Respond to ALL comments and edit the SC technical manual (sections) accordingly. Lead each comment response with:
  - a. Accept – Edit made.
  - b. Disagree – Edit is not needed because ... (comment is invalid or an opinion that does not change the technical integrity of the SC technical manual (sections)).
  - c. Defer – Agree with the comment but decided to defer to specified later time and justification.
2. Task an end-user to test drive the SC technical manual. Edit as necessary.
3. Author(s) send SC technical manual (sections) to TT-Chair and TT-Sponsor.

### **Step 1.5 – TT-Chair/Sponsor reviews/edits FILES.**

1. TT-Chair reviews/edits the SC Technical Manual as the final technical reviewer.
2. TT-Sponsor reviews the SC Technical Manual for fatal flaws. TT-Sponsor is the gatekeeper, ensuring the content is polished and ready to publish.

3. TT-Sponsor emails the Step 1 FILES to the SC TMM at [SC\\_TMM@dot.ca.gov](mailto:SC_TMM@dot.ca.gov), and cc the SC Quality Management Representative (QMR) at [SC.QMR@dot.ca.gov](mailto:SC.QMR@dot.ca.gov). The subject line is as follows: <Title of FILES> - Step 1 Complete. Attach Step 1 files with the email.
4. TT-Chair places the Step 1 FILES in Technical Team's folder/SCTM/Step 1 on the Shared Drive. The file structure for the 6 Step Process in the SCTM Folder should be as follows:
  - a. TT Folder
    - i. SCTM
      1. POST PUBLICATION COMMENTS – Store post publication comments
      2. Step 0 – Store files from TMM to TT
      3. Step 1 – Store files from TT to TMM
      4. Step 2 – Store files from TMM to TT
      5. Step 3 – Store files from TT to TMM, ACM, DDC, and SIQA
      6. Step 4 – Store files from TMM to TT
      7. Step 5 – Store files from TT to TMM
      8. Step 6 – Store Posted Files

## **Step 2 – Content Review by SC TMM (20 Days)**

### **Step 2.1 – TMM verifies all FILES are submitted.**

1. TMM performs initial review to verify files submitted are complete:
  - a. If the FILES are not complete, return FILES to TT for resubmittal.
  - b. If the FILES are complete, TMM emails FILES to the Editor.

### **Step 2.2 – Editor formats the FILES.**

1. Editor emails FILES to the TMM; the subject line is <Title of FILES> - Step 2.2 Complete.

### **Step 2.3 – TMM reviews FILES for completeness.**

1. TMM emails FILES to the TT-Sponsor; the subject line is <Title of Files> - Step 2 Complete.



## **Step 3 – TT initiates ACM Review, TMM, DDC Review, and DES IQA Review (70 Days)**

### **Step 3.1 – TT addresses TMM's and Editor's comments.**

1. TT develops a review schedule for the entire SC Technical Manual (Each chapter and appendix).
2. TT-Sponsor sends FILES by email using a calendar invite requesting review/comment of FILES to TMM, ACMs, DDC, and SIQA; the subject line is <Title of FILES> - Step 3.1 Complete. Note that all ACMs are to review a technical manual.

### **Step 3.2 – TMM, ACMs, DDC and SIQA review/comment the FILES and return FILES with review comments to the TT-Sponsor.**

1. TT-Sponsor reviews the FILES and initiates review by distributing files to the TMM, DDC, ACMs, and SIQA.

### **Step 3.3 – TT addresses reviewers' comments.**

1. TT-Sponsor emails FILES to TMM; the subject line is <Title of Files> - Step 3 Complete.

## **Step 4 – Content Review by SC TMM (25 Days)**

### **Step 4.1 – TMM verifies all FILES are submitted and comments appear to be addressed.**

1. If the FILES are not complete and/or comments are not addressed, return FILES to TT for resubmittal.
2. If the FILES are ready to be edited, TMM emails FILES to the Editor.

### **Step 4.2 – Editor edits/formats FILES.**

1. Editor sends FILES to TMM; the subject line is <Title of FILES> - Step 4 Complete.

### **Step 4.3 – TMM returns FILES to TT-Sponsor if edits are needed; the subject line is <Title of FILES> - Step 4 Complete. If FILES are ready to post go to Step 6.**

## **Step 5 – Final Review by SC TT (20 Days)**

### **Step 5.1 – TT addresses TMM's and Editor's comments.**

**Step 5.2** – TT-Sponsor reviews/edits. Send FILES to TMM; the subject line is <Title of FILES> - Step 5 Complete.

## **Step 6 – TMM Team Publishes SC Technical Manual (20 Days)**

**Step 6.1** – TMM sends FILES to the ADA Specialist by email; the subject line is <Title of FILES> - Step 6.1 Complete.

**Step 6.2** – ADA Specialist prepares FILES to post. ADA Specialist sends FILES to the TMM by email; the subject line is <Title of FILES> - Step 6.2 Complete.

**Step 6.3** – TMM reviews FILES. TMM sends FILES to the Webmaster by email; the subject line is <Title of FILES> - Step 6.3 Complete.

**Step 6.4** – Webmaster Specialist posts all FILES.

1. Webmaster sends email to TMM and Editor informing FILES are posted; the subject line is <Title of FILES> - Step 6.3 Complete.
2. Editor updates MASTER FILES for TT access.  
TMM sends email informing SC Staff that FILES are posted.

# Review of Standards, Policies, and Guidance

*Standards*, as used by Caltrans, are standard documents that apply in all cases. These include the *Standard Specifications*, *Revised Standard Specifications*, *Standard Special Provisions*, and *Standard Plans*.

*Policies* are documents that describe the owner's method of implementation of its business processes. These include *Memos to Designers*, *Bridge Design Specifications*, AASHTO amendments, and other Division of Engineering Services (DES) policy documents. For Structure Construction (SC), the implementation of business processes is within the *Bridge Construction Records & Procedures Manual*.

*Guidance* are documents that are used in support of the owner's policies. These include *Bridge Design Aids*, *Bridge Design Details*, *Bridge Design Practice*, and other DES guidance documents. For SC, guidance includes our technical manuals.

## **Proposed Draft Standards, Policies, and Guidance**

The following uses draft specifications as the subject matter. The process for reviewing other draft Standards, Policies, and Guidance is similar.

1. The SC Technical Team (TT) Sponsor and SC TT Chair receive a draft specification and Memorandum of Understanding (MOU) from the SC Training Engineer (point of contact between SC and other Task Owners) and perform an initial review:
  - a. The SC TT Sponsor and SC TT Chair determine whether the Task Owner of the draft specification has provided resources in the MOU for SC to perform the review. Un-resourced work is performed at the discretion of the SC TT Sponsor.
  - b. During the initial review, the SC TT Chair and SC TT Sponsor determine if the draft specification pertains to the SC TT's subject matter expertise.
2. Distribute the draft specification to the SC TT members with a deadline for review and comments. Review comments should focus on constructability:
  - a. Work performed during the review is charged to the Task Owner of the draft specification as specified in the MOU.
3. The SC TT Chair compiles the responses and returns the draft specification to the SC Training Engineer, who submits comments back to the Task Owner.

4. The response will be reviewed by the Task Owner in accordance with their own Quality Management System (QMS). In general, the Task Owner will:
  - a. Contact the SC TT for further discussion or clarification.
  - b. Accept the SC TT's comments and incorporate them into the draft specification.
  - c. Proceed with revising the draft specification without including the SC TT's comments or concerns in the final version.
5. The SC TT will document and maintain records of the comments provided to the Task Owner. Store these documents in the SC TT's shared folder. The SC TT retains comments that were not incorporated into the final version of the specification for future consideration.
6. After the specification has been published, the SC TT will review it again. If changes to a BCM, SC technical manual, or SC training material are required, the SC TT Sponsor and SC TT Chair will update the Work Plan, schedule, and resourcing to accommodate such changes. Refer to the procedures for developing or updating a:
  - a. Work Plan – refer to [Attachment 3](#), *SC Technical Team Work Plan and Resource Budget*.
  - b. BCM – refer to [Attachment 4](#) *Developing and Updating Process Development Diagram (PDD) Packages and Attachment 4.1, Structure Construction 8-Step Process Development and Review Schedule – from PDD to Published BCM*.
  - c. SC technical manuals – refer to [Attachment 5](#), *Developing and Updating SC Construction Technical Manuals*.
  - d. SC training materials – refer to [Attachment 7](#), *Collecting, Producing, and Updating Field Engineering Aids and Training Materials*.

## **Existing Standards, Policies, and Guidance**

Occasionally, SC staff become aware of issues or concerns with existing Standards, Policies, or Guidance. These issues or concerns are elevated through the chain of command to SC Top Management, who may assign review of the existing Standard, Policy, or Guidance to a SC TT for further review.

The following uses existing specifications as the subject matter. The process for reviewing other existing Standards, Policies, and Guidance is similar.

The SC TT follows the steps below in the order of the urgency of the issue or concern:

1. The SC TT Sponsor and SC TT Chair briefly review the issue or concern and update the SC TT Work Plan as described in Attachment 3, *SC Technical Team Work Plan and Resource Budget*.
2. The SC TT Sponsor and SC TT Chair present the existing specification and the issue or concern associated with it to the SC TT members for review, discussion, and comments. The SC TT may invite the Task Owner of the existing specification to participate in the discussion.
3. The SC TT Chair compiles all comments and submits the existing specification and comments to the SC Training Engineer, who forwards the comments to the Task Owner.
4. The comments will be reviewed by the Task Owner in accordance with their own QMS. In general, the Task Owner will:
  - a. Contact the SC TT for further discussion or clarification.
  - b. Accept the SC TT's comments and incorporate them into a new draft specification.
  - c. Take no action.
5. The SC TT will document and maintain records of the comments provided to the Task Owner. Store these documents in the SC TT's shared folder. The SC TT retains comments that were not incorporated into the specification for future consideration.

# Collecting, Producing, and Updating Field Engineering Aids and Training Materials

This attachment includes information to aid Structure Construction (SC) Technical Teams (TT) in collecting, producing, and updating field engineering aids and training materials.

## Field Engineering Aids

1. Each SC TT receives subject matter innovative methods for performing field tasks:
  - a. The SC TT may periodically send requests to SC field staff for submission of new or innovative methods for performing a task in the field they may be doing in their area.
  - b. Structure Construction field staff may send suggestions to SC TTs as described in [BCM F-4](#), *Intake Process for Proposed Changes to the SC QMS*.
2. Upon receipt of a proposed method, the SC TT will:
  - a. Review the proposed method and ensure it does not negatively deviate from any standard, policy, or guidance.
  - b. Evaluate if the proposed method may be beneficial to others either as a newly established field engineering aid or as a suggested practice:
    - i. If the SC TT determines the proposed method may be beneficial to all SC staff, the SC TT submits it to SC Top Management for review.
    - ii. If the SC TT determines the proposed method does not have a significant benefit to SC as a whole, the SC TT may further develop the proposed method or ask for additional information from the originator to clarify the benefit to SC.
3. The SC TT Sponsor submits the proposed method to SC Top Management for review:
  - a. If approved by SC Top Management, proceed with Step 4.
  - b. If not approved by SC Top Management, document the reasons why and stop here.
4. The SC TT Sponsor distributes the proposed method to SC staff for comments, with a deadline to respond.
5. The SC TT will review and evaluate all comments, revise the proposed method, and submit the revision to SC Top Management.

6. SC Top Management reviews the revised proposed method during management review:
  - a. SC Top Management will decide if the revised proposed method will be incorporated into a Bridge Construction Memo (BCM), an SC technical manual, or as SC training material.
7. The SC TT incorporates the revised proposed method into the PDD supporting the BCM or SC technical manual. The SC TT Sponsor and SC TT Chair update the Work Plan, schedule, and resourcing to account for the revision. Refer to the procedures for developing or updating a:
  - a. Work Plan – refer to [Attachment 3](#), *SC Technical Team Work Plan and Resource Budget*.
  - b. BCM – refer to [Attachment 4](#) *Developing and Updating Process Development Diagram (PDD) Packages*, and [Attachment 4.1](#), *Structure Construction 8-Step Development and Review Schedule – from PDD to Published BCM*.
  - c. SC technical manuals – refer to [Attachment 5](#), *Developing and Updating Structure Construction Technical Manuals*.
  - d. SC training materials – refer to this Attachment 7, *Collecting, Producing, and Updating Field Engineering Aids and Training Materials*.

## **Training Materials**

1. When a BCM or SC technical manual is created or revised, the revision is disseminated to all SC staff by the SC TMM:
2. The SC TT may recommend training be provided to SC staff when a BCM or SC technical manual is revised or created. Training may be accomplished by several methods depending on the nature of the change. The SC TT will propose one of the following methods to SC Top Management:
  - a. Address the changes during an upcoming SC Winter Training.
  - b. Create an online training module. If time tracking is required, set up a charge code on LMS.
  - c. Create a video and post on the CT channel in YouTube.
  - d. Schedule a training meeting.
3. Subject to the direction of SC Top Management, the SC TT assists the SC Training Engineer in the development of the approved training.

# Essential Equipment Lists

Each SC Technical Team customizes an Essential Equipment List in accordance with their subject matter requirements. If the procurement source is known for this equipment, that may be added.

1. Electronic equipment:
  - a. Identify any specific programs needed for the process.
  - b. Identify what programs may be helpful, especially if it is free ware or available through a group license at no added cost.
  - c. Identify a list of helpful links (Title 8 search, etc.).
2. Tools/Equipment for inspection:
  - a. Specialized tools that we maintain that require specialized training and maintenance, e.g.:
    - i. Fall Protection – semi-annual documented inspections.
    - ii. Confined Space – air monitoring and gas testing.
    - iii. Calibrated equipment.
    - iv. Other.
  - b. Specialized tools that we get from other functional units with timelines and contacts (Profilograph, pile testing, e.g.).
  - c. Specialized equipment that should be provided by the Contractor per the contract documents.
3. Tools/equipment for material testing:
  - a. Refer to the [Caltrans Lab Safety Manual](#) and specific test methods to help determine specialized equipment needs for their subject matter. Note that this manual can be accessed via the Materials Engineering and Testing Services ([METS](#)) intranet link.
4. Personal protection equipment:

Refer to [Caltrans Code of Safe Practices](#) (CT COSP) and apply the relevant sections of the SC COSP for the specific operation (available under the [SC intranet link](#), under the “Safety Tab”). Be sure to coordinate this effort with the Resident Engineer. Each project should have only one project-specific COSP:

  - a. Refer to [CT Safety Manual](#) for the specific operation.
  - b. Note that some specialized personal protective equipment (PPE) like respirators (refer to Section 4-4, *Respirators*, of Attachment 1, *SC Staff Responsibilities for Performing Operational Activities*, of [BCM A-1](#), *SC Staff Responsibilities for Processes Owned by Others*) require medical exams and specialized training.



5. List helpful but not essential tools:
  - a. Sound meters, light meters (there are some available in app form for smart phones and tablets).
  - b. Smart levels, total station, e.g.

# Recommend and Assist with Subject Matter Research Proposals

Ideas for research proposals may come from many sources. The idea may result from a proposed change to a regulation, requested use of a new product, or long term issues observed on completed projects. The idea may come from any division within Caltrans or from other stakeholders.

1. The SC Technical Team (TT) Sponsor or SC TT Chair responds to the initiator of the idea, provides an initial scope for the idea, and sends an email to document receipt of the idea to the initiator.
2. Research proposals should be placed on the SC TT Work Plan and used to:
  - a. Determine the level of importance.
  - b. Estimate the hours needed for review.
3. Assign the following tasks to the SC TT members:
  - a. Review completed or ongoing research projects at the [Division of Research, Innovation and System Information](#) (DRISI) website to determine whether similar research has been or is being performed.
  - b. If research is currently in progress, request to be part of the research or at a minimum, get copies of the research.
  - c. Determine if there is potential cross over to other Caltrans functional units (e.g., Division of Construction, Traffic Operations, Safety & Health, Quality Management Representative (QMR), etc.) and check to see if they have started research that may parallel the research proposal.
4. The SC TT members provide compiled information back to the SC TT Sponsor and the SC TT Chair to decide the next action:
  - a. If there is existing completed research:
    - i. Share the research results with the SC TT, reply to the initiator, and proceed to Step 10.
  - b. If the idea has already been proposed and is being researched:
    - i. Request the SC TT be included in the research and assign a SC TT member to aid or follow up on the progress of the research. See the section titled, *Overlapping Research Proposal Example*, in Attachment 9, *Recommend and Assist with Subject Matter Research Proposals*.
    - ii. Document, distribute to the SC TT, reply to the initiator, and proceed to Step 10.

- c. If the idea is new:
  - i. Make any necessary revisions to the SC TT Work Plan.
  - ii. Determine if the research may be done within Caltrans or if it requires an external contract.
  - iii. Assign a SC TT member to draft a research proposal. Consult the *DRISI* Research Manual (available under the [DRISI website](#), under “Transportation Research”), for details of how to assemble a research proposal.
  - iv. Send initiator an updated email with the status of the research proposal.
5. The SC TT Chair compiles the draft research proposal for the SC TT Sponsor.
6. The SC TT Sponsor presents the draft research proposal to SC Top Management.
  - a. SC Top Management determines if the draft research proposal requires further input from the SC TT or the initiator.
  - b. SC Top Management makes the decision whether to forward the draft research proposal for funding consideration.
7. If the decision of SC Top Management is to forward the draft research proposal:
  - a. Update the initiator.
  - b. The SC TT Sponsor submits the draft research proposal to the SC TT member that is a member of the appropriate Division of Engineering Services (DES) Technical Committee for consideration to be included in the next fiscal year’s research program. The Structure Policy Board will select the top research ideas. The [DRISI](#) Research Program webpage is also a great source of information on the Department’s research efforts.
8. If the draft research proposal goes forward as a formal research project:
  - a. Update the initiator.
  - b. Assist with the research as requested.
9. If the results of the formal research project have statewide interest or value, the SC TT Sponsor will determine the best method to share and or implement the results. This may start the SC TT on further development of processes.
10. Update the SC TT Work Plan and document results.
11. The SC TT maintains a database of ideas and proposals along with results to minimize repeating proposals and to facilitate new or similar proposals.

# Overlapping Research Proposal Example

To follow is an example of an overlapping research proposal that should be reviewed by the appropriate SC TT for a future research proposal:

1. Potential research proposal: The proposal is to research a warning or alarm system for over height vehicles approaching falsework.
2. How does the research proposal overlap? The research proposal described below has been requested by North Region Construction Safety Coordinator, Ed Yarborough, to the Division of Traffic in District 3, Joe Horton. The research proposal pertains to SC work; thus, the SC TT A, *Temporary Structures*.

The information in the emails below is an example of how an idea can be presented to SC TT A, *Temporary Structures*, sponsor:

**From:** Horton, Joseph W@DOT  
**Sent:** Friday, January 27, 2017 9:33 AM  
**To:** Yarbrough, Ed E@DOT <ed.yarbrough@dot.ca.gov>  
**Cc:** Altman, Steve D@DOT <steve.altman@dot.ca.gov>; Wilder, Dennis@DOT <dennis.wilder@dot.ca.gov>; Babcock, John F@DOT <john.babcock@dot.ca.gov>; Smith, Kim B@DOT <kim.smith@dot.ca.gov>; Alvarado, Andy@DOT <andy.alvarado@dot.ca.gov>; Solak, Ken L@DOT <ken.solak@dot.ca.gov>; Ead, Samir W@DOT <samir.ead@dot.ca.gov>  
**Subject:** Re: Research Proposal - Overheight Vehicles and Falsework

Ed,  
I like your idea. Maybe we can do review of what other states are doing.

Justin,  
Cut and paste Ed's idea into a PI request. After I find out which PSC this should be in, we will see what we can do for Ed and his people.

Joe Horton  
Office Chief, DRISI  
(916) xxx-xxxx

---

**From:** Yarbrough, Ed E@DOT  
**Sent:** Wednesday, January 25, 2017 3:17:34 PM  
**To:** Horton, Joseph W@DOT  
**Cc:** Altman, Steve D@DOT; Wilder, Dennis@DOT; Babcock, John F@DOT; Smith, Kim B@DOT; Alvarado, Andy@DOT; Solak, Ken L@DOT; Ead, Samir W@DOT  
**Subject:** Research Proposal - Overheight Vehicles and Falsework

Joe:

I attended the Statewide Construction Partnering Steering Committee meeting today and was part of the discussion on current safety initiatives, like the Work Zone Intrusion Alarm study, plus my participation in the NCHRP Synthesis on one-way traffic control.

As part of that discussion an interesting point was brought up by Dennis (one of our Structures Managers), who was attending for Steve, as to potential research on some type of warning/alarm system for overheight vehicles approaching falsework. We continue to have problems with these vehicles striking our falsework, even though we are placing the appropriate sign packages and informing the Office of Truck Services of the reduction of height at the bridge locations so that they can cover that as part of their permitting process. The safety implications of vehicles striking falsework are readily apparent and this seems to be a topic that would be a good candidate for some research and testing.

I found this to be an interesting idea and would like to present it to you for consideration. I don't know what other States are doing, although I have seen a couple of interesting pictures on secondary roads of items like having a bar across the road at the same height as the bottom of the bridge a few hundred feet in front of the bridge with additional warning signs. Basically if you hit the bar, pull over, because you are going to hit the bridge.

I can't see the Department being able to do something like that, but my initial quick thoughts are that it seems that there should be some type of portable electronic height measuring device that could be placed on the shoulder, maybe on a pole, that we could connect into a PCMS through some software in advance of the falsework that could automatically flash a message on the PCMS for the overheight vehicle to see. I'm sure you know of the integrated software applications VerMac is doing with their JamLogic software and this should be much simpler.

Could this be something that we might be able to propose a study on and see what comes of it? Your thoughts would be appreciated.

Ed Yarbrough  
Caltrans North Region Construction  
Construction Safety Engineer

# **Respond to Requests for Assistance from Structure Construction Staff, Division of Engineering Services Functional Units, and Other Stakeholders**

In general, requests for assistance fall into two categories:

1. Project-specific subject matter inquiries that need an immediate response.
2. General questions pertaining to Technical Team subject matter that have statewide applicability.

For project-specific subject matter inquiries, any Technical Team member that receives the inquiry should provide the response after quick consultation with the Team Chair and/or Team Sponsor. The rest of this attachment addresses general instructions for responding to requests pertaining to Technical Team subject matter:

1. Requests for assistance should come in through the Team Sponsor. If a request is received by another Technical Team member, they should send it to the Team Sponsor:
  - a. The recording and documenting process begins here.
  - b. The Team Chair sends the requester an email confirming receipt of request.
2. The Team Chair enters requests for assistance on the Technical Team Work Plan:
  - a. If the request is project-specific, charge Technical Team time to the project.
  - b. Determine the level of importance.
  - c. Estimate the hours needed to provide a response.
  - d. Assign to team members with due dates (draft, compiled, comments, complete).
3. The Team Chair sends requester an updated email with the status of the request.
4. Assigned Technical Team members send comments back to the Team Chair, who compiles them for the Team Sponsor.
5. The Team Sponsor presents the proposed response to SC Top Management and determines if the request requires further input from the Technical Team.
6. The Team Chair sends the Technical Team's response to requester.

7. If the response to the request for assistance has statewide applicability, Structure Construction (SC) Top Management will determine the method of distribution. If changes to a Process Development Diagram (PDD) supporting a Bridge Construction Memo (BCM), SC technical manual, or SC training material are required, the Team Sponsor and Team Chair update the Work Plan, schedule, and resourcing to accommodate such changes. Refer to the procedures for developing or updating a:
  - a. Work Plan – refer to [Attachment 3](#), *SC Technical Team Work Plan and Resource Budget*.
  - b. BCM – refer to [Attachment 4](#), *Developing and Updating Process Development Diagram (PDD) Packages*, and [Attachment 4.1](#), *Structure Construction 8-Step Development and Review Schedule – from PDD to Published BCM*.
  - c. SC technical manuals – refer to [Attachment 5](#), *Developing and Updating Structure Construction Technical Manuals*.
  - d. SC training materials – refer to [Attachment 7](#), *Collecting, Producing, and Updating Field Engineering Aids and Training Materials*.
8. Each Technical Team maintains a database of requests and results to minimize repeating responses to requests for assistance.

# Maintain Stakeholder Contacts, Research Industry Trends, Arrange Industry Group Liaison Meetings, and Promote Innovative Solutions to Continually Improve Structure Construction Processes

Structure Construction (SC) Technical Teams are encouraged to have dialogue with other stakeholders that share similar subject matter expertise. This is intended to promote the exchange of ideas and innovative solutions. While this is intended to promote the free flow of ideas, be aware that Technical Team members are not to act as agents of the Department unless specifically authorized to do so.

1. Technical Team members are encouraged to utilize Section 3.3(b), Professional Society and Organization Dues reimbursement, of the [Bargaining Unit 9 MOU](#) in order to join a professional society or organization aligned with the Technical Team's subject matter. Technical Team members could join different professional societies or organizations to broaden their sphere of influence.
2. Periodically review published material pertaining to Technical Team subject matter.
3. Network with external groups to strengthen industry ties. For example:
  - a. Contractor groups e.g. Associated General Contractors ([AGC](#)), United Contractors ([UC](#)).
  - b. Vendor groups and trade show i.e. World of Concrete.
  - c. Other State Agencies (e.g. Department of Water Resources ([DWR](#)), Occupational Safety and Health Standards Board ([OSHSB](#))).
  - d. Local Agencies and Transportation groups.
  - e. Consultant Engineer groups.
4. Establish and maintain a communication path with Division of Construction, Division of Engineering Services (DES) subdivisions, and other Caltrans functional units.
5. Networking with interested parties may be accomplished through regular meetings and/or personal contacts with other professionals in the field of expertise.
6. Develop an external contact list that the Technical Team can access.



7. Utilize the above contacts to help answer vendor's questions and direct them to the best person or committee to help bring awareness to new products.
8. Technical Team members should share new information and updates from meetings with other team members to enhance the overall technical expertise of the group.

# SC Technical Team Meeting Agenda / Meeting Minutes

Technical Team: \_\_\_\_\_ Date: \_\_\_\_\_

Meeting Location or Phone Bridge information: \_\_\_\_\_

**Members Attending:**

Title	Name	Signature (or by "Phone")
Technical Team Sponsor		
Technical Team Chair		
Technical Team Vice Chair		

Name	Signature (or "by Phone")	Name	Signature (or "by Phone")

1. Introduction:

2. Technical Team Work Plan update:

3. Review progress of deliverables generated by the Technical Team:

- a. Process Development Diagrams.
- b. SC Technical manuals and other guidance documents.
- c. Draft specifications.
- d. Report on requests for assistance from SC employees, DES functional units and other interested parties.
- e. Inspection aids and training materials.
- f. Changes to essential equipment list.

- g. Status or proposal of subject area research proposals.
- h. Report on external contacts made or meetings attended.
- i. Share new technical information with the team.
- j. Open discussion.

4. Action Items:

AI Number	Description	Responsible Party	Due Date

Meeting Minutes confirmed by Team

Chair: \_\_\_\_\_

Additional comments from Team

Sponsor: \_\_\_\_\_

Team Sponsor

signature: \_\_\_\_\_

Date: \_\_\_\_\_

Post Technical Team Meeting Minutes to SC Technical Team website.

# SC Technical Team Quarterly Report

Each SC Technical Team creates a quarterly report showing its progress with deliverables.

Copy and paste the embedded spreadsheet below into a new EXCEL spreadsheet to create your Technical Team's quarterly report. The example shown below is for Technical Team A, Temporary Structures.

1. Allocated resource and expended resource reports will be provided to each Technical Team. Note there is generally a one-month lag before expenditure data is available.
2. Use the Technical Team Work Plan to fill in the "Task Scheduled" columns.
3. For products developed over a length of time, such as SC Technical manuals, use a linear distribution to estimate scheduled percent complete.

Structure Construction - Technical Team A (Temporary Structures)									
FY 17-18	Quarter 1		Quarter 2		Quarter 3		Quarter 4		
Allocated Resources	x		x		x		x		
Hours charged	y		y		y		y		
Task	Scheduled	Completed	Scheduled	Completed	Scheduled	Completed	Scheduled	Completed	
<b>A. Technical Support (non-project direct only):</b>									
1) Internal to Caltrans									
TT Meetings									
Develop subject matter inspection aids and training materials									
Develop subject matter research proposals									
Respond to inquiries	*		*		*		*		
2) Federal, other State and Local Agencies									
Respond to inquiries	*		*		*		*		
External contacts	*		*		*		*		
3) Industry Engagement									
<b>B. Standards, Policies and Guidance Material:</b>									
1) Standards (Design specs, Std Plans, SSP, XS,...)									
Standard Specifications, SSP reviews	*		*		*		*		
Standard Plans, XS Sheets reviews	*		*		*		*		
2) Policies (MTD, SPM,...)									
Law and Regulation reviews	*		*		*		*		
MTD reviews	*		*		*		*		
Other DES policy document reviews	*		*		*		*		
AASHTO amendment reviews	*		*		*		*		
Bridge Construction Memos created									
Bridge Construction Memos reviewed	*		*		*		*		
3) Guidance Material (BDP, BDA, etc...)									
BDP, BDD, BDA reviews	*		*		*		*		
Bridge Removal Manual (% complete)	0%		0%		5%		10%		
Falsework Manual (% complete with continual improvement for FY)	25%		50%		75%		100%		
Temporary Structure Manual (% complete)	0%		0%		5%		10%		
4) Tools (Software, databases,...)									
Falsework Check Program (% complete)									
<b>C. Other (Provide description)</b>									
Falsework Check Program (% complete)									
* performed upon request, not scheduled									



# Overtime

## Revision and Approval

Revision	Date	Nature of Changes	Approved By
0	12-04-2020	Original Issue	Richard Foley

[Click here](#) to request previous versions      Contact [SC Technical Team P](#) for questions

## Background

This process establishes Structure Construction (SC) roles, responsibilities, and procedures for administration of the use of overtime, including authorization and documentation. Overtime use must be judiciously managed and minimized when possible.

## Process Inputs

1. Assigned work cannot be completed in a normal shift and it cannot be deferred

## Procedure

1. All work associated with this process is charged as [Project Direct – Construction](#), and/or [Project Direct – Preconstruction](#).
2. Overtime for field work should only be continuous inspection processes or work which cannot be deferred to the next shift, including some office work such as submittal reviews. Overtime work must be preauthorized. Thus, to document preauthorization of overtime, the following three overtime preauthorized request options are available for use by SC. In this BCM they are referred to as a “SC Overtime Preauthorization Request”:
  - a. [Form SC-0104A](#), *Structure Construction Preauthorization Overtime Log by Employee*
  - b. [Form SC-0104B](#), *Structure Construction Preauthorization Overtime Log by Unit*

- c. An equivalent form (authorized prior to use by TT P).
3. All SC staff:
  - a. Reviews and understands [DD-56-R4](#), which includes references to applicable MOU(s) of the bargaining unit, FLSA rules, and Division Policies regarding overtime.
  - b. Authorization must be obtained prior to working overtime. In the event of an emergency, authorization must be obtained as soon as is practical.
4. SC Assistant Structure Representatives:
  - a. Notifies the Structure Representative (SR) when overtime work is anticipated.
  - b. Record actual overtime worked and what was accomplished on [Form CEM-4601](#), *Assistant Resident Engineer's Daily Report* and a SC Overtime Preauthorization Request, as detailed in [Attachment 3](#), *Instructions for Completing Form SC-0104A and Form SC-0104B*.
5. SC Structure Representatives:
  - a. Determine the amount of overtime needed for each employee, including self, assigned to the projects in consultation with first-line supervisor.
  - b. Complete the SC Overtime Preauthorization Request as detailed in Attachment 3, and shown in [Attachment No. 1](#), *Sample Form SC-0104A, Structure Construction Preauthorization Overtime Log by Employee*, and [Attachment No. 2](#), *Sample Form SC-0104B, Structure Construction Preauthorization Overtime Log by Unit*.
  - c. Submit the request to the first-line supervisor for preauthorization of overtime.
  - d. Document own overtime hours and what work was accomplished on [Form CEM-4501](#), *Resident Engineer's Daily Report*.
6. SC First-Line Supervisors:
  - a. Discuss with SR for amount of overtime needed for preauthorization.
  - b. Sign [Form SC-0104A](#) or [Form SC-0104B](#) to grant preauthorization of overtime.
  - c. Obtain additional prior written authorization from the second-line supervisor for employees who exceed:
    - i. 12 hours regular and overtime worked in one day
    - ii. 30 hours overtime worked in one week
    - iii. 50 hours overtime worked in a month
    - iv. 6 workdays per week

- d. Verify actual overtime worked with employee's timesheet and Form SC-0104A/Form SC-0104B.
  - e. Monitor overtime allocation and employee overtime usage.
7. SC Second-Line Supervisors:
- a. Review and authorize additional overtime requests submitted by first-line supervisors.
  - b. Obtain additional prior written authorization from the obtain DES Chief's authorization in cases that may exceed the annual limit below:
    - i. 450 hours overtime worked within the fiscal year (July 1 through June 30).
  - c. Retain Form SC-0104A and Form SC-0104B for 5 years. May be delegated to SC First-Line Supervisors.

## **Process Outputs**

1. Overtime work for SC employees is preauthorized, except in emergency
2. Reasons, product produced, and actual overtime worked by SC employees are documented
3. Minimize the use of overtime

## **Attachments**

1. [Attachment No. 1](#), *Sample-Structure Construction Preauthorization Overtime Log by Employee* (Form SC-0104A)
2. [Attachment No. 2](#), *Sample-Structure Construction Preauthorization Overtime Log by Unit* (Form SC-0104B)
3. [Attachment No. 3](#), *Instruction for Completing Form SC-0104A and Form SC-0104B*

# Sample Form SC-0104A, Structure Construction Preauthorization Overtime Log by Employee

**STRUCTURE CONSTRUCTION PREAUTHORIZATION OVERTIME LOG  
BY EMPLOYEE**

DEPARTMENT OF TRANSPORTATION  
STRUCTURE CONSTRUCTION  
SC-0104A (Formerly DH-OS C21)  
(Rev. 12/17/13)

1. Employee Name (Print or Type): Beau Bridge Jul-13		2. Employee ID: ST23456		3. Perm Dist-Unit: 59-540-xxx		4. Structure Representative Name: Joe Bossman		5. FY Balance from Previous Month:		5. FY Balance from Previous Month:		
7. First Line Supervisor Name: Biggs Bosse		11. Project Identifier		12. Reason for Overtime/Product Produced		13. **Reason for approval enter A, B, C, D, E		14. Date approved		15. OT Must be Documented in Daily Report <sup>1</sup>		
8. Date of Request	9. # OT Hours Requested <sup>***</sup>	10. Time period for OT Requested <sup>**</sup> / Date OT worked	11. Project Identifier	12. Reason for Overtime/Product Produced	13. **Reason for approval enter A, B, C, D, E	14. Date approved	15. OT Must be Documented in Daily Report <sup>1</sup>	16. Time OT Starts <sup>*</sup>	17. Time OT Ends <sup>*</sup>	18. This Month	19. This Month	20. This Fiscal Year
7/7/13	18	Week of 7/7/13	03-105104	Pile Driving week of July 7, 2013	A	7/7/2013				0.0	25.0	25.0
		7/8/13	03-105104	Pile Driving 16-0016 Bt 2L, 1-5				1500	1700	2.0	2.0	27.0
		7/9/13	03-105104	Pile Driving 16-0016 Bt 2L, 1-5				1500	1600	1.0	3.0	28.0
		7/10/13	03-105104	Pile Driving 16-0016 Bt 2L, 1-5				1500	1700	2.0	5.0	30.0
		7/11/13	03-105104	Pile Driving 16-0016 Bt 2L, 1-5				1500	1700	2.0	7.0	32.0
		7/12/13	03-105104	Pile Driving 16-0016 Bt 2L, 1-5				1500	1700	2.0	9.0	34.0
		7/13/13	03-105104	Pile Driving 16-0016 Bt 2L, 1-5				0600	1430	8.0	17.0	42.0
7/15/2013	4	7/15/13	03-105104	Deck pour on 25-0016	A	7/16/2013		1530	1930	4.0	21.0	46.0
7/16/2013	2	7/17/13	03-105104	Polyester placement on 15-4050	A	7/16/2013		1530	1730	2.0	23.0	48.0
7/16/2013	2	7/19/13	03-105104	Polyester placement on 11-4073	A	7/16/2013		1530	1730	2.0	25.0	50.0
7/19/2013	4	Week of 7/21/13	03-105104	Final Falsework Submittal Review-due 7/26/13	D	7/19/2013				25.0	50.0	50.0
		7/24/13	03-105104			7/19/2013		1530	1730	2.0	27.0	52.0
		7/26/13	03-105104			7/19/2013		1530	1730	2.0	29.0	54.0
											29.0	54.0
											29.0	54.0
											29.0	54.0
											29.0	54.0
											29.0	54.0
											29.0	54.0

<sup>\*</sup>Use 24 Hour Clock, log the time OT starts and ends.  
<sup>\*\*</sup> A. Work requiring full-time inspection that cannot be deferred and must be inspected during the work shift (work performed adjacent to public traffic, pile driving, and concrete placement).  
<sup>\*\*</sup> B. Work required to ensure the safety of the traveling public.  
<sup>\*\*</sup> C. Fair Labor Standards Act (FLSA) Travel.  
<sup>\*\*</sup> D. Field office work required to ensure timely response to the contractor in order to not delay the controlling item of work.  
<sup>\*\*</sup> E. Work to ensure quality and safety compliance during an emergency response.  
<sup>1</sup> Document overtime in Assistant Structure Representative's Daily Report.  
<sup>\*\*\*</sup> Overtime for more than one day can be requested; however the "Actual OT Worked" must identify Time OT Starts and Time OT Ends.  
 Bridge Construction Engineer may attach supporting documents if necessary.



# Sample Form SC-0104B, Structure Construction Preauthorization Overtime Log by Unit

STRUCTURE CONSTRUCTION PREAUTHORIZATION OVERTIME LOG  
BY UNIT

DEPARTMENT OF TRANSPORTATION  
STRUCTURE CONSTRUCTION  
SC-0104B (NEW 12/17/13)

1. Senior Name (Print or Type): Sam McKenzie		2. Unit Number: 69-643-101	3. Month-Year: September-13	4. Area Construction Manager Name Henry Kizhner			OT Must be Documented in Daily Report <sup>1</sup>				
5. Employee Name	6. Date of Request	7. # OT Hours Requested <sup>**</sup>	8. Time period for OT Hours Requested <sup>***</sup> / Date OT worked	9. Project Identifier	10. Reason for Overtime/Product Produced	11. Reason for Approval Enter A, B, C, D, E	12. Date Approved	13. Supervisor's Signature	14. Time OT Starts	15. Time OT Ends	16. Total Time This Shift
Tom Thomas	9/13/2013	4	9/14/2013	07-188004	Weekend work-Approach slab concrete pour	A	9/13/2013		0900	1300	5
Andrew Alvarado	9/16/2013	8	9/16 & 9/17/13	07-132344	Night work for falsework erection	A, B	9/13/2013		2100	0500	8
Tony Freeman	9/18/2013	4	9/18/2013	07-155432	Extended shift for concrete deck pour	A, B, C	9/13/2013		1530	1700	1.5

SAMPLE

<sup>1</sup> Use 24 Hour Clock, log the time OT starts and ends.  
<sup>\*\*</sup> A. Work required full-time inspection that cannot be deferred and must be inspected during the work shift (work performed adjacent to public traffic, pile driving, and concrete placement).  
<sup>\*\*</sup> B. Work required to ensure the safety of the traveling public.  
<sup>\*\*</sup> C. Fair Labor Standards Act (FLSA) travel.  
<sup>\*\*</sup> D. Field office work required to ensure timely response to the contractor in order to not delay the controlling item of work.  
<sup>\*\*</sup> E. Work to ensure quality and safety compliance during an emergency response.  
<sup>1</sup> Document overtime in Assistant Structure Representative's Daily Report.  
<sup>\*\*\*</sup> Overtime for more than one day can be requested; however the "Actual OT Worked" must identify Time OT Starts and Time OT Ends.  
*Bridge Construction Engineer may attach supporting documents if necessary.*

# Instructions for Completing Form SC-0104A and Form SC-0104B

The *Structure Construction Preauthorization Overtime Log by Employee*, ([Form SC-0104A](#)), and the *Structure Construction Preauthorization Overtime Log by Unit*, ([Form SC-0104B](#)), are to be completed as described below. [Attachments No. 1](#) and [No. 2](#) are samples of each form, respectively, providing examples of common scenarios for completing the form(s).

## **Preauthorization:**

1. The Structure Representative (SR) will consult with the first-line supervisor about the need for overtime and identify who will be working overtime.
2. Once the need for overtime has been authorized, the SR will complete Items 1-14 of Form SC-0104A, or 1-12 of Form SC-0104B, for the time period overtime is requested. The SR may delegate this to the Assistant SR; however, the SR must review to ensure accuracy.

## **Documenting Actual Overtime Worked:**

1. After the overtime is worked, the SR will complete Items 16-18 on [Form SC-0104A](#), or 14-16 on [Form SC-0104B](#), for each day overtime is worked. The SR may delegate this to the Assistant SR; however, the SR must review to ensure accuracy.
2. *Time OT Starts* and *Time OT Ends* is the beginning and ending of the overtime period. Use the 24-hour time system (1500 – 1700).
3. On Form SC-0104A, the *FY Balance from Previous Month* must be entered in Item 5.
4. On Form SC-0104A, values in Items 19-20, the total number of overtime hours worked for the month and fiscal year, will calculate automatically.

## **Review, Signature and Retention:**

1. At intervals determined by the first-line supervisor, not to exceed one calendar month, the SR will send [Form SC-0104A](#) or [Form SC-0104B](#) to the first-line supervisor for signature.
2. The first-line supervisor will verify the entries on Form SC-0104A or Form SC-0104B are in agreement with each employee's timesheet; then, complete item 15 on Form SC-0104A or item 13 on Form SC-0104B, for each line entry on the Form SC-0104A or Form SC-0104B, respectively.

3. The first-line supervisor will send the completed Form SC-0104A or Form SC-0104B to the second-line supervisor (ACM) for retention. The completed Form SC-0104A or Form SC-0104B must be retained for five years.

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# Table of Contents

## Revision and Approval

Revision	Date	Nature of Changes	Approved By
1	04-25-2023	Added BCM B-3	Richard Foley
0	01-12-2023	Original issue. Added BCM B-2	Richard Foley

Memo No	Issue Date	Title
B-1	XX/XX/20XX	SAFE WORK PRACTICES
B-2	01/12/2023	SC LEAD COMPLIANCE PLAN
B-3	04/25/2023	INVESTIGATING AND REPORTING INCIDENTS INVOLVING STRUCTURE WORK

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# SC Lead Compliance Plan

## Revision and Approval

Revision	Date	Nature of Changes	Approved By
0	01-12-2023	Original Issue	Richard Foley

[Click here](#) to request previous versions      Contact [SC Technical Team O](#) for questions

## Background

This process establishes Structure Construction (SC) roles, responsibilities, and procedures for administering the [Department's Injury and Illness Prevention Program \(IIPP\)](#) and SC's Lead Compliance Plan for SC staff who have potential exposure to lead during their duties.

Caltrans policies and guidance for lead safety are in:

1. *Contract Specifications, Section 7-1.02K(6)(j), Legal Relations and Responsibility to the Public – Laws – Labor Code – Occupational Safety and Health Standards – Lead Safety*
2. *Construction Manual, Chapter 7, Environmental Stewardship, [Section 7-107F](#), Disturbance of Existing Paint Systems on Bridge*
3. [Caltrans Employee Safety Manual](#), Chapter 15, *Respiratory Protection Program*.

Prior to reviewing this Bridge Construction Memo (BCM), it is essential to review any policy and guidance documents referenced above. The information in these documents typically will not be repeated in the text of this BCM.

## Process Inputs

1. Contract work that may expose the employee to lead
2. Lead compliance plan (LCP) submittal from the Contractor

# Procedure

1. All work associated with this process is charged as [Project Direct – Construction](#) for ongoing employee exposure and [Overhead](#) for employee training.
2. SC staff:
  - a. Review contract documents for potential lead exposure.
  - b. Review, understand, and conform to the following:
    - i. The Department’s IIPP, which is Chapter 1 of the [Caltrans Employee Safety Manual](#)
    - ii. [Attachment 1](#), *Structure Construction Lead Compliance Plan*
    - iii. [Attachment 2](#), *Structure Construction - Lead Compliance Program Matrix*
    - iv. Project specific or the Division of Construction’s [Code of Safe Practices](#)
    - v. References provided in the Background section above.
  - c. Attend lead compliance training at intervals required per the SC LCP.
  - d. Use and maintain the appropriate lead exposure personal protective equipment (PPE) per the SC LCP.
3. SC supervisors:
  - a. Verify SC staff follow the Department’s IIPP and SC LCP.
    - i. Conduct reviews of employees with lead exposure at specified intervals, to evaluate their compliance with the SC LCP.
  - b. Monitor SC staff per the SC LCP.
  - c. Ensure resources and training for lead compliance are available to SC staff.
  - d. Document training history, medical evaluation, and [Form SC-0602](#), *SC Medical Testing Authorization Form*.
  - e. Monitor the medical surveillance program as specified in the SC LCP.
4. SC managers:
  - a. Ensure SC supervisors have proper resourcing for essentials, including training and PPEs for SC staff.
  - b. Verify SC staff follow the Department’s IIPP and SC LCP.
    - i. Confirm that SC supervisors are performing reviews at specified intervals and forward the reviews to the SC Safety Liaison.
  - c. Verify medical surveillance program is implemented as specified in the SC LCP.



5. SC Safety Liaison (found in [SC HQ Contacts](#)):
  - a. Provide oversight of the SC LCP.
  - b. Coordinate industrial hygiene monitoring for work involving lead, to evaluate employee exposures per the SC LCP.
  - c. Archive all files related to the medical surveillance program per the SC LCP.
  - d. Initiate [Attachment 3](#), *Structure Construction Lead Compliance Memorandum* per the SC LCP. Send copies to SC staff, SC supervisor, SC manager, and Office of Safety and Health.

## **Process Outputs**

1. SC staff training documentation
2. Form SC-0602, *SC Medical Testing Authorization Form*
3. *Structure Construction Lead Compliance Memorandum*
4. Medical Surveillance Program

## **Attachments**

1. [Attachment 1](#), *Structure Construction Lead Compliance Plan*
2. [Attachment 2](#), *Structure Construction - Lead Compliance Program Matrix*
3. [Attachment 3](#), *Structure Construction Lead Compliance Memorandum*

# STRUCTURE CONSTRUCTION LEAD COMPLIANCE PLAN

This lead compliance plan (LCP) provides guidance to the Structure Construction (SC) personnel who work on bridges and other structures that are coated with paint containing lead, particularly during operations that disturb that paint. This LCP also meets the requirements of the Cal/OSHA *Construction Safety Orders*, [Section 1532.1, Lead](#). Note that the *Construction Safety Orders*, are found in *California Code of Regulations*, Title 8, Division 1, Chapter 4, Subchapter 4.

All SC personnel who perform work on a structure or bridge, and are exposed to paint being disturbed, must follow the requirements of this LCP unless the paint system and underlying residual paints have been tested and found to contain no lead. If the paint content is not known, then it will be presumed to contain lead until tested.

This LCP addresses lead related hazards and does not replace the [Caltrans Injury and Illness Prevention Program \(IIPP\)](#), the [SC Code of Safe Practices](#), or other location specific safety rules and regulations. Note that the *IIPP* is the first chapter found in the [Caltrans Employee Safety Manual](#).

## **1 - Roles and Responsibilities**

### **1.1 Area Construction Managers (ACM)**

1. Ensure that SC staff receive the necessary health and safety training to work around lead-containing materials safely, and that such training is renewed annually as required.
2. Ensure that the required personal protective equipment (PPE) is available to SC staff.
3. Ensure that the medical surveillance program is provided when required based on the level of exposure.
4. Conduct accident investigations as needed with the first-line supervisor, SC Headquarters, and the Office of Safety and Health, and make recommendations on any necessary actions.
5. Periodically review the performance of first-line supervisors to ensure that the actions required by the LCP are being completed.

### **1.2 First-Line Supervisors (Bridge Construction Engineers)**

1. Ensure that all SC staff working around lead containing materials are trained in the provisions of the LCP.
2. Ensure that SC staff follow the provisions of the LCP and other applicable safety and health rules related to lead.

3. Ensure that SC staff follow the respiratory protection requirements and wear their respiratory protection properly.
4. Ensure that the PPE used by SC staff exposed to lead is appropriate for the actual exposure.
5. Provide regular pre-job safety meetings to discuss lead safety issues and document attendance of the same with [Form PM-S-0110](#), *Safety Meeting Report*.
6. Ensure that SC staff follow the proper decontamination and hygiene procedures.
7. Conduct routine health and safety audits and document those findings, including recommendations for modification of the LCP if needed, and take immediate action to correct any unsafe conditions.
8. Ensure that lead waste is disposed of in compliance with local, state, and federal regulations.

Note - the above items are primarily the responsibility of the first-line supervisor; however, it is expected that SC staff assigned as lead workers will assist the first-line supervisor.

### **1.3 SC Staff**

1. Complete the necessary health and safety training to work around lead-containing materials safely.
2. Follow the provisions of the LCP and other applicable safety and health rules related to lead.
3. Use the required PPE properly.
4. Report any unsafe condition or equipment to their supervisor immediately.
5. Follow proper decontamination and hygiene procedures.

### **1.4 District/Headquarters Office of Safety and Health and/or Construction Safety Liaison Coordinators**

1. Provide oversight of the LCP and coordinate industrial hygiene monitoring for lead work to evaluate SC staff exposures.

### **1.5 SC Safety Liaison**

1. Receive, review, and report, within 5 days of receipt, the results of Blood Lead Level (BLL) testing to the tested SC staff and to the first-line supervisor.
  - a. Provide a *Structure Construction Lead Compliance Memorandum to SC*

staff if their testing revealed blood lead levels of 10 micrograms/deciliter or above (additional details provided in Section 10, SC Staff Sampling Intervals).

2. Receive from the ACM, review, file, and maintain for 3 years the BCE's quarterly reviews of SC staff's compliance with this LCP.
3. Participate in assessment interviews if BLL is greater than 20 micrograms/deciliter.
4. Provide technical guidance on lead issues.
5. Review LCP biannually and initiate appropriate changes.
6. Facilitate lead training as requested by ACMs and BCEs.

Refer to the [SC intranet](#) for the current SC Safety Liaison assignment.

## **2 - Activities with Lead Exposure**

The following activities performed by SC staff could involve exposure to paint containing lead on steel bridges and structures:

1. Inspection of surface preparation conducted by the Contractor prior to painting, including measurement of areas and examination of cleaned surfaces.
2. Entering the Contractor's lead paint containment area.
3. Inspection of new and old paint on the structure.
4. Inspection of the Contractor's lead paint clean up and disposal operations.
5. Onsite inspection of contract work.
6. Disturbance of lead contaminated soil under or near existing structures (coordinate with District Construction to see how this topic is addressed in their lead compliance plan as outlined in the *Contract Specifications*).
7. Inspection of seismic retrofit projects, including removal and replacement of structural steel and paint.
8. Activities that disturb aerially deposited lead debris on girder flanges, the tops of bent caps, and inside bridge cells and towers.

## **3 - Expected Exposure Level**

Initial monitoring, conducted on operations similar to those listed above, indicates that expected SC staff's exposure to airborne lead is well below the [action level of 30 micrograms per cubic meter](#) of air [8 Hour Time Weighted Average (TWA)]. If the SC staff's exposure is below the action level, the requirements of the LCP are dramatically reduced.

## **4 - SC Staff Training**

SC staff who work on the activities listed above will be trained in the following topics prior to starting work:

1. Lead health hazards
2. Contents of Cal/OSHA *Construction Safety Orders*, [Section 1532.1](#), *Lead*
3. Operations that could result in lead exposures
4. Medical surveillance program
5. Medical removal protection
6. Chelating agent use
7. Applicable engineering controls
8. Contents of this SC LCP
9. Required personal hygiene and decontamination practices
10. Rights to access medical and exposure monitoring records
11. Purpose, selection, proper use, and limitations of respiratory protective devices
12. Hazardous materials or products.

Qualified trainers, in cooperation with the District/Headquarters Office of Safety and Health, and Structure Construction, will provide training. Update this training annually if lead exposure continues. Refer to the project *Special Provisions*, as the Contractor may be required to provide this training.

## **5 - Exposure Control Methods**

The SC practice is to minimize SC staff's exposures to lead using engineering and administrative controls. In accordance with this practice, SC staff will not enter the Contractor's containment area during any operation that disturbs the paint containing lead. Additionally, SC staff will not enter the containment area when the Contractor stops work, unless it has been cleaned as outlined below, and the proper PPE is worn.

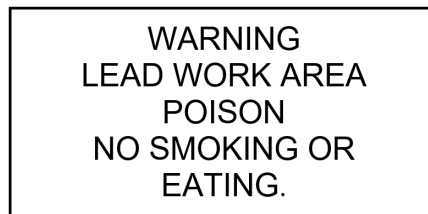
SC staff will position themselves away from active removal or clean-up operations to minimize their exposure to lead. To assist in the control of lead exposures to workers during work involving disturbance of paint containing lead, the following work areas or zones will be established:

Containment Area (lead work area): this is the area where actual lead paint disturbance and cleanup is taking place. It includes the areas where lead dust and paint chips accumulate during work.

Cleanup Area: this is the transition area between the actual work area and the support areas (where no lead exposure exists). This zone is located outside of the actual lead work area and includes the blasting support equipment, the initial decontamination area, transportation vehicles to the change room/decontamination trailer and support area, and the dirty side of the change room/decontamination trailer.

Support Area: these areas are the locations where no lead exposure exists. It includes lunchrooms, offices, toilets, crew rooms, the clean side of the change room/decontamination trailer, SC staff's personal transportation, and all locations after final decontamination.

Tarps are used in containment areas to contain lead emissions and minimize contamination of surrounding areas. Verify a sign is posted at the entrance to lead work areas as shown in Figure 1 below.



**Figure 1. Sign posted at entrance to lead work areas**

Access into the lead work area will be restricted to authorized personnel wearing the required PPE.

These regulated areas are required under the Cal/OSHA *Construction Safety Orders*, Section 1532.1, *Lead*. These areas are also addressed in the Contractor's LCP. The Contractor will establish them and provide the necessary signs, clean-up equipment (i.e., tarps, HEPA vacuum, etc.), and decontamination facilities (hand wash facilities, etc.). If inspection activities by SC staff occur outside of the Contractor's normal working hours, these items are still required. Discuss with your first-line supervisor/lead worker any inspection activities that will occur outside the Contractor's normal working hours. You may need to reschedule these inspection activities.

Daily cleaning of the lead work area is required to minimize the accumulation of lead containing materials. HEPA (High Efficiency Particulate Air filter) vacuums or wet wash

methods that minimize dust are required. Do not use methods that create dust, such as wet or dry sweeping, shoveling, compressed air blown down, etc.

(Exception: Those locations where a full enclosure, a negative pressure air ventilation system, and air supplied respiratory protection are used.)

Tarps and other materials used for containment will also be HEPA vacuumed or wet washed before taken down or moved. The Contractor's personnel will perform the clean-up operations.

## **6 - Work Procedures**

SC personnel exposed to lead containing materials will follow the work procedures, decontamination procedures, and PPE requirements listed in Attachment 2, *Structure Construction - Lead Compliance Program Matrix*.

## **7 - Personal Protective Equipment**

SC staff entering the containment or clean up areas will wear coveralls (cloth and/or Tyvek, depending on work activity and expected level of contamination) over their work clothes. Gloves are required to minimize skin contamination. Wear rubber boots or work shoes in the lead work area to aid in decontamination. At the end of the work shift, remove, properly store, or clean coveralls, protective equipment, and contaminated shoes before leaving the clean-up area. The *Contract Specifications* require the Contractor to provide coveralls for SC personnel. Review your project *Special Provisions* early to determine if sufficient coveralls are provided for SC staff. It might be necessary to write a change order to increase the number of coveralls provided.

SC staff must wear respiratory protection equipment in accordance with the Lead Compliance Program Matrix. They will also comply with the *Caltrans Employee Safety Manual*, [Chapter 15](#), *Caltrans Respiratory Protection Program*. A respiratory medical evaluation and a respirator fit testing will be required annually. Clean and check the fitting on the respirator each day. SC practice is that SC staff cannot wear respirators requiring a tight facepiece seal if they have facial hair in the seal area. SC staff with facial hair below their upper lip will be required to shave.

Any SC staff exposed to lead may request a respirator regardless of the exposure level. They must comply with all provisions of the Caltrans Respiratory Protection Program.

## **8 - Entry/Exit and Decontamination**

To minimize cross contamination and taking home lead containing materials, use the following entry/exit and decontamination procedures. The specifics of the entry/exit and decontamination procedures for each project are also covered in the LCP submitted by the Contractor or subcontractor. The following are the minimum entry/exit procedures for SC staff:

1. SC staff will enter the cleanup area from the support area through an established location (preferably at the decontamination facilities). Wear work clothes and shoes, coveralls, and appropriate personal protective equipment into the lead work clean-up area. Before moving into the containment area (if necessary and allowable), put on the required respiratory protection equipment.
2. When workers leave the containment area, they must be decontaminated to remove lead residue from their protective equipment and outer clothing. Use a HEPA vacuum or water wash (for rain suits) just before or after leaving the containment area. Do not blow down or shake clothing to remove lead dust. Remove outer protective clothing and other protective equipment. Vacuum cloth coveralls or work clothes and clean shoes if contaminated. Remove Tyvek coveralls inside out and place in bags or buckets for disposal. Do not eat, drink, or smoke in the cleanup area.
3. To leave the cleanup area and enter the support area, go to the established entry/exit decontamination location and wash face, arms, hands, and neck with soap and water. Remove coveralls and, if necessary, vacuum or remove contaminated inner work clothing before entering lunchroom, toilets, offices, etc. in the support area. Do not wear coveralls and contaminated work clothing into lunchrooms, vehicles, or the support areas.
4. At the end of shift, workers must decontaminate in accordance with the Lead Compliance Program Matrix, before entering the support area and going home. As a minimum, all SC staff must wash hands, face, neck, and arms before leaving. If work clothes are contaminated, clean or change before leaving the site. Store contaminated clothing or coveralls in plastic bags to prevent cross contamination.
5. Cloth coveralls must be changed and laundered at least weekly. They will be stored in sealed and labeled plastic bags until laundered. If washed at home, wash separately from the family's clothes. If laundered commercially, notify the laundry facility that the clothing is contaminated with lead. Change Tyvek coveralls daily or as needed. As discussed previously, the *Special Provisions* require the Contractor to provide coveralls for SC staff.
6. Decontamination areas, change rooms, cars, etc. that could be contaminated with lead containing materials must be cleaned and decontaminated by a HEPA



vacuum and/or wet methods on a weekly basis at a minimum, to minimize lead contamination.

## **9 - Medical Surveillance Program**

All SC personnel who are exposed to lead paint removal (i.e., structure re-painting jobs) will be enrolled in the medical surveillance program, which includes blood sampling and analysis for lead (BLL) and zinc protoporphyrin (ZPP) levels. SC personnel must fill out [Form SC-0602](#), *SC Medical Testing Authorization Form*, and contact the SC Safety Liaison to arrange for medical surveillance or respirator physicals (see below for sampling intervals).

The results of this monitoring will be reported to the SC Safety Liaison and provided simultaneously to the tested SC staff and the SC staff's first-line supervisor within 5 days.

Cal/OSHA regulations require the employer to maintain SC staff medical records for 30 years, therefore no deviation is allowed from the following procedure when arranging for medical surveillance or respirator medical evaluations:

1. The supervisor selects a local laboratory approved by Cal/OSHA.
2. The laboratory contacts the SC Safety Liaison to verify the work to be done and to arrange payment.
3. The supervisor completes a Form SC-0602, *SC Medical Testing Authorization Form*, for each SC staff going for lab work.
4. A copy of the signed authorization form is emailed to SC Headquarters (HQ) in Sacramento (Attn: SC Safety Liaison).
5. The SC staff presents and surrenders the authorization form at the laboratory.
  - a. The laboratory emails the results and the invoice directly to SC HQ in Sacramento.
6. SC HQ in Sacramento processes the invoice to Accounts Payable.
7. Results are relayed via e-mail or phone to the SC staff, the supervisor, and to the Office of Safety & Health.
8. The original results will remain on file with SC HQ in Sacramento.

## **10 – SC Staff Sampling Intervals**

The following are the minimum sampling intervals for SC staff:

1. No prior sampling: Sample before the job and at the end of the job, at 6 months and at 12 months for the first year, and then annually.

2. Prior sampling, but not within last 2 years: Sample before the job and at the end of the job, at 6 months and at 12 months for the first year, and then annually.
3. Current sampling (within last 2 years): Sample at the end of the job and annually.

Note: Sampling will continue as long as SC staff exposure exists. If lead work is completed and no further exposure is expected, end of job sampling is required.

SC staff with blood lead levels at 10 micrograms/deciliter or above will be sent a *Structure Construction Lead Compliance Memorandum* and will be required to have their blood sampled every 6 months until their blood lead level drops below 10 micrograms/deciliter. See Attachment 3, *Structure Construction Lead Compliance Memorandum*, for a sample memorandum.

However, because the half-life of lead is 30 days, the SC staff will be asked to retest in 30 days. If SC staff has zero exposure for 30 days, the BLL should drop from 10 micrograms/deciliter to 5 micrograms/deciliter.

During this 30 days SC staff may continue with assigned duties. However, SC staff, the lead worker, and the supervisor must pay strict attention to the provisions of the LCP, and be aware of all sources of lead exposure. There may be lead exposure at home as well as at work. SC staff must follow the basic hygiene practice of washing hands and face before eating, drinking, or smoking.

The SC Lead Compliance mandates that employees with blood lead levels over 20 micrograms/deciliter will be transferred to work assignments with no lead exposure until subsequent monitoring shows their BLL has fallen below 10 micrograms/deciliter.

If BLL exceeds 20 micrograms/deciliter, conduct an assessment interview with the first and second-line supervisors, the Office of Safety & Health, and the SC Safety Liaison to determine if changes to the LCP are required.

Perform the blood lead sampling under the direction of a California licensed physician, and the blood analysis must be performed at a Cal-EPA/DHS accredited laboratory. The employee's ACM is responsible to ensure that the medical surveillance program is conducted.

## **11 - SC Lead Compliance Plan Evaluation**

Bridge Construction Engineers (BCE) (first-line supervisors) and Structure Representatives (lead workers) are responsible to ensure that employees are following the provisions of this LCP. The BCE (first-line supervisor) must conduct quarterly

reviews of employees exposed to lead containing materials to evaluate their compliance with this LCP. Such reviews will be recorded and forwarded to the appropriate ACM, who is responsible to ensure that such reviews are being conducted. The ACMs will forward these reviews to the SC Safety Liaison, who will maintain them for three years. The results will be used to make needed changes to this LCP and to monitor and schedule SC lead training. This LCP must be reviewed and updated as necessary every 6 months.

# STRUCTURE CONSTRUCTION - LEAD COMPLIANCE PROGRAM MATRIX

This attachment illustrates that Structure Construction staff exposed to lead containing materials, must follow the work procedures, decontamination procedures, and personal protective requirements listed in this matrix.

TASK	Expected Exposure	Respirator	Personal Protective Equipment	Decontamination Procedures	Administrative Requirements	Work Procedures
Bridge steel/paint inspection, area measure, entering cleaned containment area	Low Exposure: <30 micrograms/ cubic meter	Half Face HEPA when entering containment area	Coveralls, gloves, safety glasses	Remove coveralls, wash face & hands before eating or smoking	Annual training, Quarterly inspection, Annual blood test BLL/ZPP	Keep paint chips off street clothes, minimize dust, HEPA vac or wash coveralls
Scaffold rigging, bridge maintenance with minimal paint disturbance	Very Low	None required if no airborne exposure	Coveralls, gloves, safety glasses	Remove coveralls, wash face & hands before eating or smoking	Annual training, Quarterly inspection	Keep paint chips off street clothes, minimize dust, HEPA vac or wash coveralls
Painting	Low	Not required for lead - but use is required for paint	Coveralls, gloves, safety glasses	Remove coveralls, wash face & hands before eating or smoking	Annual training, Quarterly inspection	Keep paint chips off street clothes, minimize dust
Cleanup after blasting, entering dirty containment area, containment removal	Low	Half Face HEPA, Full Face HEPA	Coveralls, boots, gloves, safety glasses	HEPA vac at site, remove coveralls, wash face & hands	Annual blood test, 6 mos. fit test, annual training/ quarterly inspection	Wet or HEPA vac cleanup, NO DRY SWEEP, clean containment before removal
Vehicle & building lead dust/paint chip decontamination	Low	HEPA mask, Half Face HEPA	Coveralls, boots, gloves, safety glasses	HEPA vac at site, remove coveralls, wash face & hands	Annual blood test, 6 mos. fit test, annual training/ quarterly inspection	Minimize dust, HEPA vac or wet wipe cleanup
Manual surface prep (hand scraping & brushing), drilling painted surfaces	Low	Half Face HEPA	Coveralls, safety glasses, gloves, boots	HEPA vac at site, remove coveralls, wash face & hands	Annual blood test, 6 mos. fit test, annual training/ quarterly inspection	Minimize dust, contain waste, HEPA vac or wet cleanup
Pressure washing	Low	Half Face HEPA Full Face HEPA	Rain suit, rubber boots, face shield w/safety glasses or goggles	Wash off at site, remove rain suit, wash hands & face	Annual blood test, 6 mos. fit test, annual training/ quarterly inspection	Contain chips & water, wash down, HEPA vac or wet cleanup

Note: HEPA = High Efficiency Particulate Air, BLL = Blood Lead Level, ZPP = zinc protoporphyrin

# Structure Construction Lead Compliance Memorandum

This attachment is intended to provide a sample memorandum that Structure Construction would send to an employee to inform them of the results of blood level testing if their blood lead levels tested at 10 micrograms/deciliter or above.

State of California  
DEPARTMENT OF TRANSPORTATION

California State Transportation Agency

## Memorandum

*Making Conservation  
a California Way of Life.*

To:

Date: Month Day, Year

File: Safety BLL/ZPP

From: DEPARTMENT OF TRANSPORTATION  
Division of Engineering Services  
Structure Construction

Subject: **RESULTS OF BLOOD LEAD LEVEL TESTING**

Your blood lead level (BLL) test resulted in a BLL of XX µg/dl. In accordance with the Structure Construction Lead Compliance Plan (LCP), this level warrants an advisory letter. While this level of lead in the blood does not imply immediate health risks, it is at the high end of the BLL in the general population.

Structure Construction's (SC) LCP is based on controls and procedures that will maintain an employee's BLL at or below 10 µg/dl and I am concerned that your initial testing is at our first trigger level.

The LCP requires you to retest within 6 months, however, please schedule yourself for another BLL test in 30 days. The half-life of lead is 30 days. If you have zero exposure for the next 30 days, I would expect your BLL to drop to X/2 µg/dl.

Continue with your assigned duties, however, pay strict attention to the provisions of the LCP, be aware of all sources of lead that you may be exposed to, at home as well as at work, and follow the basic hygiene practice of washing your hands and face before eating, drinking, or smoking.

We will review and discuss the results of this second sample. In the meanwhile if you have any questions please contact me at (xxx) xxx-xxxx.

### *Name of SC Safety Liaison*

SC Safety Liaison  
Senior Bridge Engineer

cc: Bridge Construction Engineer,  
Area Construction Manager,  
SC Safety Liaison

"Provide a safe and reliable transportation network that serves all people and respects the environment"

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# Investigating and Reporting Incidents Involving Structure Work

## Revision and Approval

Revision	Date	Nature of Changes	Approved By
0	04-25-2023	Original Issue	Richard Foley

[Click here](#) to request previous versions      Contact [SC Technical Team O](#) for questions

## Background

This process establishes SC responsibilities, and procedures for (1) reporting incidents involving structure work, and (2) investigating and reporting the cause of incidents involving structure work.

Attention is directed to the following important definitions:

- *Incident*: An incident is defined in the *Caltrans Employee Safety and Health Manual, Chapter 1, Injury and Illness Prevention Program*, as: “An incident is an unplanned event which results in an injury, illness, property damage, and/or the interruption of a process. It also includes near-miss events that did not result in an accident, injury, illness, or damage.”
- *Accident*: The term accident is used to refer to vehicle accidents.
- *Serious Injury*: A serious injury or illness is defined in Cal/OSHA Title 8 CCR [§ 330, Definitions](#), (h) : “... any injury or illness occurring in a place of employment or in connection with any employment which requires inpatient hospitalization for a period in excess of 24 hours for other than medical observation or in which an employee suffers a loss of any member of the body or suffers any serious degree of permanent disfigurement...”
- *Near-miss*: SC defines a near-miss as an incident in which:
  - An incident where no one was hurt, however, the potential for a serious injury was present.
  - SC staff can learn from the incident.

## Process Inputs

1. Incidents involving SC contract work within the project limits meeting the definitions provided in the Background statement.

## Procedure

1. All work associated with this process is charged as [Project Direct – Construction](#).
2. SC Staff:
  - a. Establish a clear understanding with the SC Supervisor of participation for incident investigation and reporting by SC staff.
  - b. Review and understand:
    - i. *Caltrans Employee Safety and Health Manual*:
      1. Chapter 1, *Injury and Illness Prevention Program (IIPP)*, [Section 1.06](#), *Accident/Incident Investigations*
      2. [Chapter 4](#), *Accident Investigation and Analysis*
      3. [Chapter 10](#), *Reporting Personal Injuries and Illnesses*
      4. [Chapter 18](#), *Motor Vehicle Accidents*
      5. [Chapter 19](#), *Special Reporting of Serious Injury, Illness or Fatality*
    - ii. Caltrans Office of Employee Health and Safety (OEHS) website:
      1. [Motor Vehicle Accident Reporting](#)
      2. [Employee Injury Reporting Requirements](#)
      3. [OEHS Guide for Cal/OSHA Inspections](#)
    - iii. *Construction Manual*, Chapter 2, [Section 2-3](#), *Safety and Traffic – Major Construction Incidents*
    - iv. *Caltrans Director’s Policy DP-03, Employee Safety and Health*
    - v. Any local District policies
    - vi. Cal/OSHA - Title 8 regulations:
      1. Title 8 CCR [§ 330](#), *Definitions*, (h), *Serious Injury or Illness*
      2. Title 8 CCR [§ 3203](#), *Injury and Illness Prevention Program*
      3. Title 8 CCR [§ 342](#), *Reporting Work-Connected Fatalities and Serious Injuries*
    - vii. From the [Safety link](#) on the SC intranet:



1. [Reporting Safety Incidents: Forms, Links, & Flow Charts](#) in the Reporting an Accident sub-link.
- c. When an incident, per the definitions in this BCM, occurs:
- i. Notify the Division of Construction (DOC) chain of command as described per local District guidelines. In absence of local District guidance, notify the Resident Engineer (RE). If the RE is not available, continue up the DOC chain of command until a live person is contacted. For incidents not involving injuries or significant damage, email notification is acceptable. The types of incidents which justify a phone call versus an email include:
    1. Injuries to State, Consultant, or Contractor personnel transported to a hospital by an ambulance.
    2. Incidents such as a falsework collapse, shoring failure, live utility line strike, crane tip-over, or impacts to the traveling public of 30 minutes or more.
  - ii. Notify the Structure Representative (SR) by phone. If the SR is not available, continue up the SC chain of command until a live person is contacted. For incidents not involving injuries or significant damage, email notification is acceptable. The types of incidents which justify a phone call versus an email include:
    1. Injuries to State, Consultant, or Contractor personnel transported to a hospital by an ambulance.
    2. Incidents such as a falsework collapse, shoring failure, live utility line strike, crane tip-over, or impacts to the traveling public of 30 minutes or more.
  - iii. When requested, assist the RE with incident reporting.
  - iv. Assist the SC Supervisor in the investigation of incidents.
  - v. Secure the site and preserve any evidence.
  - vi. When applicable, facilitate access for emergency services and law enforcement to perform their tasks.
  - vii. If media arrive to the jobsite regarding the incident:
    1. Refer the media to the Public Information Officer (PIO) for comment
    2. Notify the RE, SR, and SC Supervisor.
  - viii. If Cal/OSHA arrives to the jobsite, follow the guidance on the Headquarters [OEHS website](#) and complete the [OEHS Guide for Cal/OSHA Inspections](#).
    1. Notify the RE, SR, and SC Supervisor.

3. SC Supervisors:

- a. For incidents involving serious injuries or significant incidents without injuries, notify the SC Manager, SC HQ Manager, SC Safety Senior Engineer, and SC Deputy Division Chief.
- b. For Cal/OSHA reportable injuries to SC staff, as defined in Cal/OSHA Title 8 CCR [§ 342](#), *Reporting Work-Connected Fatalities and Serious Injuries*, ensure that Cal/OSHA notifications occur within eight hours of notification of injury. If the local District Safety Officer cannot be reached, or requests that the SC supervisor perform the notification, follow the guidelines in the *Caltrans Employee Safety and Health Manual*, Chapter 19, *Special Reporting of Serious Injury, Illness or Fatality*. Complete the Cal/OSHA reporting template located in Appendix B, *Cal/OSHA Reporting Template*, of Chapter 19. This will ensure the SC supervisor will be able to answer the questions asked by Cal/OSHA.
- c. Investigate, analyze, and document every vehicle accident, occupational injury and/or illness, and near miss in the construction zone.
  - i. Investigate per the duties of the first line supervisor as described in the *Caltrans Safety and Health Manual*:
    1. Chapter 1, Section 1.07, *Incident Investigation*
    2. Chapter 4, *Accident Investigation and Analysis*.
  - ii. When possible, initiate the investigation within 24 hours and complete within 72 hours of the incident.
  - iii. Complete [Form HS-0005](#), *Incident Investigation*. Form HS-0005 is not required for a vehicle accident. Submit Form HS-0005 to the SC Manager, the SC HQ Manager, the SC Deputy Division Chief, and the SC Safety Senior Engineer.
- d. Communicate with the SC Manager on the status of the incident investigating and reporting.

4. SC Managers:

- a. Perform the investigation per the duties of the second line supervisor as described in the *Caltrans Safety and Health Manual*:
  - i. Chapter 1, Section 1.07, *Incident Investigation*
  - ii. Chapter 4, *Accident Investigation and Analysis*.
- b. Review the draft [Form HS-0005](#), *Incident Investigation* with SC Staff.
- c. Verify applicable reporting forms and [Form HS-0005](#), *Incident Investigation* is submitted. After review, forward Form HS-0005 to the DES Safety Officer.

- d. Communicate with the SC Deputy Division Chief and the DOC Area Construction Engineer of incident investigating and reporting.

## **Process Outputs**

1. [Form HS-0005](#), *Incident Investigation*
2. Depending on the type of incident or accident, a variety of forms will be required. The SC website, [Reporting Safety Incidents: Forms, Links, & Flow Charts](#), can be used as a reference. These forms may include:
  - a. [Form CEM-603](#), *Major Construction Incident Notification*
  - b. [Form PM-S-0066](#), *Report of Minor Incident*
  - c. [Form PM-S-0037](#), *Medical Treatment Authorization*
  - d. [Form SCIF 3301](#), *Employee's Claim for Workers' Compensation Benefits*
  - e. [Form PM-S-0012](#), *Acknowledgement of Receipt of SCIF 3301*
  - f. [Form SCIF 3067](#), *Employers Report of Occupational Injury or Illness*
  - g. [Form PMS-S-0067](#), *Data Input for Personal Injury Accident*
  - h. [Form STD 269](#), *Accident Identification Card*
  - i. [Form STD 270](#), *Vehicle Accident Report*
  - j. [Form HS-0270](#), *Data Input for Motor Vehicle Incident*
  - k. Cal/OSHA reporting template

## **Attachments**

None

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# Table of Contents

## Revision and Approval

Revision	Date	Nature of Changes	Approved By
11	08/31/2023	Revised BCM C-6 and BCM C-7	Richard Foley
10	04/25/2023	Added BCM C-14	Richard Foley
9	02/16/2023	Added BCM C-9	Richard Foley

Memo No	Issue Date	Title
C-1	12/05/2017	SC PROJECT ASSIGNMENT INFORMATION
C-2	08/31/2020	USING THE RESIDENT ENGINEER'S PENDING FILE FOR STRUCTURE WORK
C-3	12/05/2017	OBTAINING ELECTRONIC CONTRACT PLAN FILES
C-4	04/22/2019	BRIDGE DECK CONTOURS AND GEOMETRICS
C-5	11/12/2021	DIVISION OF PROJECT WORK
C-6	08/31/2023	REQUIRED DOCUMENTS TO BE SUBMITTED DURING CONSTRUCTION
C-7	08/31/2023	DAILY AND WEEKLY REPORTS
C-8	07/15/2021	CORRESPONDENCE WITH THE CONTRACTOR
C-9	02/16/2023	PREPARATION OF PROGRESS PAY DOCUMENTS
C-10	06/30/2020	CHANGE ORDERS
C-11	04/30/2021	SHOP DRAWING REVIEW OF TEMPORARY STRUCTURES
C-12		NOTICE OF CHANGE OF STRUCTURE CLEARANCE OR PERMIT RATING – Deleted and Replaced by BCM C-6 and Atts. 1-2 of BCM C-6 on 01/12/2023
C-13	09/30/2021	PERMANENT REFERENCE ELEVATIONS
C-14	04/25/2023	SC ADMINISTRATION OF PROJECTS BY OTHER IMPLEMENTING AGENCIES

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# SC Project Assignment Information

## Revision and Approval

Revision	Date	Nature of Changes	Approved By
0	12-05-2017	Original Issue	Steve Altman

[Click here](#) to request previous versions      Contact [SC Technical Team P](#) for questions

## Background

This process establishes Structure Construction (SC) roles, responsibilities, and procedures for (1) assigning SC employees to projects or office assignments and (2) what SC employees must do when reporting to a new assignment.

## Process Inputs

1. Advertisement of construction project with structure work.
2. Project structure construction support resources established in [VISION](#).
3. Emergency or Director's Orders requiring SC involvement.

## Procedure

1. Area Construction Manager (ACM) or Bridge Construction Engineer (BCE) uses [VISION](#) to assess project construction support resources for SC and make project staff assignments as needed.
2. SC staff receives verbal notification of assignment from BCE, followed by an email assignment via [WEAT](#).
3. SC staff complete the necessary notification forms and transmits them to the appropriate parties:
  - a. Structure Representative:

- i. [Form SC-0101](#), *Job Assignment Information* – to METS field offices in Sacramento, Vallejo, and Los Angeles.
  - ii. [Form SC-0102](#), *Change of Address for Check Disbursement* – to SC headquarters (HQ).
  - iii. [Form FA-0205A](#), *Authorization to Use Privately-Owned Vehicles on State Business* – to the BCE.
  - iv. [Form FA-1350](#), *Long Term Assignment (LTA) Information and Certification of Subsistence Rates* – to the BCE.
  - v. [Form CEM-6003](#), *Progress Pay Estimate Project Initiation or Update* – to the Resident Engineer (RE). Refer to [BCM C-9](#), *Preparation of Progress Payment Documents*.
- b. Assistant Structure Representative
- i. [Form SC-0102](#), *Change of Address for Check Disbursement* – to SC HQ.
  - ii. [Form FA-0205A](#), *Authorization to Use Privately-Owned Vehicles on State Business* – to the BCE.
  - iii. [Form FA-1350](#), *Long Term Assignment (LTA) Information and Certification of Subsistence Rates* – to the BCE.
- c. Resident Engineer, Resident Engineer/Structure Representative:
- i. [Form CEM-0101](#), *Resident Engineer's Report of Assignment* – to distribution list on Form CEM-0101.

## **Process Outputs**

1. Form SC-0101, *Job Assignment Information*.
2. Form SC-0102, *Change of Address for Check Disbursement*.
3. Form FA-0205A, *Authorization to Use Privately-Owned Vehicles on State Business*.
4. Form FA-1350, *Long Term Assignment (LTA) Information and Certification of Subsistence Rates*.
5. Form CEM-6003, *Progress Pay Estimate Project Initiation or Update*.
6. Form CEM-0101, *Resident Engineer's Report of Assignment*.

## **Attachments**

None





# Using the Resident Engineer’s Pending File for Structure Work

## Revision and Approval

Revision	Date	Nature of Changes	Approved By
0	08-31-2020	Original Issue	Richard Foley

[Click here](#) for previous versions

Contact [SC Technical Team P](#) for questions

## Background

This process establishes Structure Construction (SC) roles, responsibilities, and procedures for receipt and review of the Resident Engineer’s (RE) Pending File for all projects.

The RE Pending File is a compilation of project guidance and information collected by the project engineer(s) necessary to administer a construction contract. For projects with structures work, project engineers from the District and Division of Engineering Services (DES) compile and distribute RE Pending File components separately:

- Most DES components are uploaded by the DES project engineer and are available through VISION or mailed to the Structure Representative (SR). Other components not found in VISION are found in the Supplemental Project Information package included with the contract and [BIRIS](#). DES components are often referred to as the “Structures RE Pending File”.
- District components are sent directly to the resident engineer by the District project engineer or project manager per the *Construction Manual*, Chapter 5, [Section 5-001](#), *Resident Engineer’s Pending File*.

## Process Inputs

1. Resident Engineer’s Pending File

# Procedure

1. All work associated with this process is charged as:
  - a. [Project Direct – Construction](#)
  - b. [Project Direct – Preconstruction](#)
2. SC Staff:
  - a. Review *Construction Manual*, Section 5-001, *Resident Engineer's Pending File*, for background information.
  - b. Review RE Pending File information for use in managing the contract as project activities require. For typical contents and retrieval information, see [Attachment 1](#), *Typical Contents of the Resident Engineer's (RE) Pending File for Structures Work*.
  - c. Structure Representative (SR):
    - i. Conduct meetings with the DES project engineer and any other DES units to discuss the content of RE pending files.
    - ii. Coordinate with RE to discuss District-related content of the RE pending file.
    - iii. For missing RE Pending File documentation, see [Attachment 1](#), *Typical Contents of the Resident Engineer's (RE) Pending File for Structure Work*, for contact information.
    - iv. Download as-builts from BIRIS if existing structures work is part of the contract along with new construction.
    - v. Transmit 1 set of 4-scale to the contractor.
    - vi. Utilize and reference information in RE Pending File throughout construction.
    - vii. Provide directions to Assistant Structure Representative (ASR) to review RE Pending File.
  - d. Assistant Structure Representative:
    - i. Assist the Structure Representative with review of supplemental project information as necessary to review submittals, to develop construction information, manage payment quantities or addressing contract disputes.
      1. Refer to *Construction Contract Development Guide (CCD)*, [Section 10-4](#), *Supplemental Information and the Information Handout*, for a list of items that could be useful during construction contract administration.
  - e. SC Headquarters [Office Associate](#):

- i. Transmit 2 sets of 4-scales to the SR.
  - ii. As needed, assist field staff to obtain information throughout the life of the project for contents listed in the RE Pending File.
  - iii. As, needed, assist field staff to obtain information that should have been included in the RE Pending File.
3. SC Bridge Construction Engineer (BCE):
  - a. Ensure SR reviews RE Pending File.
  - b. Perform cursory review of the RE Pending File with the SR.
    - i. Identify and/or discuss missing items.

## **Process Outputs**

1. Efficient and effective contract administration

## **Attachments**

1. [Attachment 1](#), Typical Content of the Resident Engineer's (RE) Pending File for Structure Work

# Typical Contents of the Resident Engineer's (RE) Pending File for Structure Work

The Project Engineer is responsible for furnishing the Resident Engineer (RE) with any pertinent project data required to administrate the construction contract. For structure projects, project engineers from the District and the Division of Engineering Services (DES) compile and distribute RE Pending File components separately.

The RE Pending File will typically include the following items for structure work:

- a. Provided by the Structure Design Project Engineer:
  - i. Refer to the *Bridge Design Process and Procedure Manual*, [Section 5.14](#), *Resident Engineer (RE) Pending File*
- b. Provided by Geotechnical Services, Geologist:
  - i. Foundation Report
- c. Provided by Structures Maintenance & Investigations:
  - i. As-builts in [BIRIS](#)
- d. Provided by Structure Policy & Innovation offices, Office of Design and Technical Services, Structure Hydraulics & Hydrology:
  - i. Hydraulic Reports.



# SC Obtaining Electronic Project Plan Files

## Revision and Approval

Revision	Date	Nature of Changes	Approved By
1	08-31-2023	Revised	Richard Foley
0	12-05-2017	Original Issue	Steve Altman

[Click here](#) to request previous versions      Contact [SC Technical Team X](#) for questions

## Background

This process establishes Structure Construction (SC) roles, responsibilities, and procedures for obtaining electronic project plan files from the project designer. It is important to note that the signatures, seal information, names, and plan sheet border will be removed from the project plan drawings prior to release. The released electronic project plan files will not be considered as project plan sheets. Final as-built corrections must be prepared on the project plan sheets.

Electronic project plan files should only be requested for drafting purposes to prepare Change Orders, value engineering change proposals, as-built corrections, and any other construction support operations (e.g., falsework layout, 4-scale, etc.). Requests to use electronic project plan details for other reasons than stated above will only be approved on a case-by-case basis.

## Process Inputs

1. Contract approval.
2. Contract administration document needs.
3. Contractor request for electronic project files.

## **Procedure**

1. Review the *Project Delivery Processes and Procedures Manual*, [PDPP 4.1.5](#), *Release of Electronic Plans*, for information on the release of electronic in-house project plan files.
2. Confirm with the Structure Project Engineer or Design Oversight Engineer for externally funded projects the software type required to edit the electronic project plan files and verify your computer is equipped with it. Contact HQ-IT to install software if necessary. If electronic project plan files are requested by the Contractor, advise them of the type of electronic project plan files that will be released.
3. Submit a written request to the:
  - a. Bridge Design Office Chief per guidance in PDPP 4.5.1, *Release of Electronic Plans*, for in-house project plans.
  - b. Design Oversight Engineer for externally funded projects and provide the following information:
    - i. Your name
    - ii. Office address
    - iii. Phone number
    - iv. Email address
    - v. Project Identification or Contract Number
    - vi. Reason for requesting the electronic project plan files
    - vii. Bridge Number(s)
    - viii. Project Plan Drawing Sheet Name
    - ix. Project Plan Drawing Sheet Number.

## **Process Outputs**

1. Electronic project plan files.

## **Attachments**

None



# Bridge Deck Contours and Geometrics

## Revision and Approval

Revision	Date	Nature of Changes	Approved By
0	04-22-2019	Original issue.	Steve Altman

[Click here](#) to request previous versions    Contact [SC Technical Team O](#) for questions

## Background

This process establishes Structure Construction (SC) responsibilities, and procedures for obtaining and completing bridge deck contour plots.

Bridge deck contours and geometrics are provided by Structure Design for new bridges. Bridge deck contours for bridge widenings and partial deck replacements are developed by SC field staff.

## Process Inputs

1. Assigned to project with new bridges, bridge widenings, or partial deck replacements.
2. Resident Engineer (RE) Pending File.
3. Contours are requested by the Contractor.

## Procedure

1. All work associated with this process is charged as [Project Direct – Construction](#).
2. Inspection of field work for this process is: [Benchmark](#).
3. SC Staff:
  - a. Review contract plans to determine if your project has new bridge structures, bridge widenings, or partial deck replacements.

- b. For new bridges, verify two full sized “4-scale” copies of the deck contour plots were included with the RE Pending File sent from the SC Headquarters in Sacramento.
  - i. Contact the Design Engineer to request additional copies or electronic copies.
  - ii. Contact [SC Office Associate](#) if deck contour plots were not included in the RE Pending File.
  - iii. Verify the deck contour plot is correct. If necessary, return to Structure Design Engineer for correction. See *SC Bridge Construction Survey Manual*, [Chapter 3](#), *Deck Contour Sheets*.
  - iv. Check deck contour plot against the final finish grade profiles and the superelevation diagrams shown in the roadway plan sheets. If there are discrepancies between district and structure profiles, notify the RE that discrepancies exists and facilitate correction. See *Reinforced Concrete Construction Manual*, Chapter 7, [Section 7-6](#), *Grade Control*.
  - v. After a detailed check of the plan dimensions and grades, errors and conflicting dimensions corrected, make copies of the deck contour plots available to the Contractor.
- c. For bridge widenings and partial deck replacements, deck contour plots are not provided by Structure Design. They are developed by SC staff.
  - i. Perform bridge construction survey.
    - 1. If the Contractor is unable to provide traffic control, contact Maintenance forces for assistance.
  - ii. Review as-builts for existing structure, including existing bridge deck contours when matching to or replacing existing structures.
  - iii. Prepare deck contour plot.
    - 1. Hand-draw bridge deck contour plots on the job.
    - 2. Request a plot from the Design Engineer after providing the following:
      - a. A topographic survey with points recorded every 10 feet along the saw-cut line with at least one more point taken transverse to the saw cut line to approximate the existing cross-slope.
      - b. A hand-plotted, profile grade along the saw-cut line, using a best-fit line or curve.
      - c. Shots taken at the beginning of bridge (BB) and the end of bridge (EB).
      - d. A few points taken off the structure, at either end, to help fit existing conditions.



- i. Points should be stated in relation to station, offset (right or left), and elevation.
    - ii. Communicate with the Design Engineer to work out the best fit for any cross-slope discrepancies. (As-built versus as-designed)
  3. Make copies of the deck contour plots available to the Contractor.
4. SC Supervisors:
  - a. Provide tools and equipment to complete deck contour plot.
  - b. Provide training and resources as necessary for timely completion of deck contour plot for bridge widening.

## **Process Outputs**

1. Bridge Deck Contour Plot for Bridge Widening and Partial deck replacements.
2. Bridge Deck Contour Plot for New Bridges.

## **Attachments**

None

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# SC Division of Project Work

## Revision and Approval

Revision	Date	Nature of Changes	Approved By
0	11-12-2021	Original issue	Richard Foley

[Click here](#) to request previous versions      Contact [SC Technical Team O](#) for questions

## Background

This process establishes Structure Construction (SC) roles, responsibilities, and procedures for establishing the division of road work and structure work for each project, including verification of structure engineering cost data for each project before submission to the Construction Accounting System (CAS).

Knowledge of the available SC construction support resources is essential before establishing the division of work for each project.

## Process Inputs

1. Contract Award package, including the:
  - a. Bid summary
  - b. Contract documents

## Procedure

1. All work associated with this process is charged as [Project Direct – Construction](#).
2. No inspection of field work for this process.
3. SC Structure Representative:
  - a. Obtain and review the Contract Award package.

- b. Review *Construction Manual, Chapter 5, Section 002, Contract Administration – Conduct of the Work – Preconstruction Conference with Caltrans Personnel*.
  - c. Identify structures items of work using the Contract Award package, including the Bid Summary and contract documents.
  - d. Assess and review any District requests for SC to perform additional work with the Bridge Construction Engineer (BCE).
  - e. Negotiate and agree on ownership of bid items and/or portions of bid items with the Resident Engineer (RE).
  - f. Calculate percentage of bridge mobilization (and Time Related Overhead, if present) for the contract. See [Attachment 1](#), *How to Calculate Bridge Mobilization*.
  - g. Generate a Division of Work Memo summarizing structures bid items per *Construction Manual Chapter 5, Section 002*. See [Attachment 2](#), *Sample of a Division of Work Memo*.
  - h. Send the Division of Work Memo to the RE.
  - i. Email a copy of the Division of Work Memo to the BCE and the headquarter (HQ) SC Office Associate at [sc.office.associates@dot.ca.gov](mailto:sc.office.associates@dot.ca.gov).
  - j. Verify the Bridge Department Data section of [Form CEM-6003](#), *Progress Pay-Estimate Project Initiation or Update*, is accurate before submission to CAS.
  - k. Complete the Project Status Initiation entry in VISION.
4. SC Supervisors:
- a. Confirm that resources identified in the Division of Engineering Services Resource Estimate and the resource allocation, which is accessed in VISION, are sufficient to perform the work as defined in the Division of Work Memo.
  - b. Make assessments to agree or decline District requests for SC to perform additional work
  - c. Verify additional SC construction support budget is provided by the Project Manager and is reflected in PRSM and VISION, when SC covers work in the District plans (e.g., retaining walls, sound walls, overhead sign structures, etc.) based on the work agreement.

## **Process Outputs**

1. Division of Work Memo

# **Attachments**

[Attachment 1](#), How to Calculate Bridge Mobilization

[Attachment 2](#), Sample of a Division of Work Memo

# How to Calculate Bridge Mobilization

For projects that are part of the Construction Administration System (CAS), an appropriate amount of the Mobilization contract item is automatically included in the cost of "structure" work. The method used for determining the portion of the Mobilization contract item to be applied to "structure" work is as follows:

1. Calculate the percentage of structure mobilization.

Example:

*Total Contract Bid Amount (excluding Mobilization) = \$10,000,000*

*Total Structure Work Amount = \$5,000,000*

*Percent Structure Mobilization = \$5,000,000 / \$10,000,000 = 50%*

2. Calculate Bridge Mobilization by apportioning the bid price for the mobilization contract item based on the percentage calculated above on Step No. 1.

Example Continued:

*Mobilization Contract Item = \$1,000,000 (typically 10% of Total Contract Bid Amount)*

*Structure Mobilization Amount = 50% of \$1,000,000 = \$500,000*

3. Add Structure Mobilization Amount calculated above on Step No. 2 to the "structure" work amount.
4. For projects with Time Related Overhead (TRO), perform Steps 1 – 3 to determine the percent structure TRO.

Example:

*Total Contract Bid Amount (excluding Mobilization and TRO) = \$10,000,000*

*Total Structure Work Amount = \$5,000,000*

*Percent Structure TRO = \$5,000,000 / \$10,000,000 = 50%*

*TRO Contract Item = \$50,000*

*Structure TRO Amount = 50% of \$50,000 = \$25,000*

Add the structure TRO amount along with the amount calculated in Step 3 to the "structure" work amount.

5. Coordinate with the Resident Engineer (RE) and have Resident Engineer enter:

- a. The mobilization percentage calculated in Step 1 on Form CEM-6003, Progress Pay-Estimate Project Initiation or Update, Line C15, "Mobil %" field.
  - b. The total "structure" work amount calculated in Step 4 on "Original Authorized Amount for Bridge Work" field.
6. Enter mobilization (and TRO, if present) information in the Division of Work Memo.

For projects that are not part of the CAS, the Oversight Engineer or Structure Representative must include an appropriate portion of the Mobilization contract item (if applicable) when calculating the values of "structure" work to be shown in the Division of Work Memo and in [Form CEM-6003](#), *Progress Pay-Estimate Project Initiation or Update*, prepared by the Resident Engineer. The "structure" work amount will also be used to calculate staffing needs for Structure Construction so the proper PY allocation will be requested. Refer to [Attachment 2](#), *Sample of Division of Work Memo*.

# Sample of a Division of Work Memo

This attachment includes a sample Division of Work memorandum to assist the Structure Representative when writing this memorandum to the contractor.

When writing letters to a contractor always start with the [current template](#) from the Director's Office.

State of California

California State Transportation Agency

## Memorandum

To: DEPARTMENT OF TRANSPORTATION  
DISTRICT 04 CONSTRUCTION  
San Rafael Construction Office  
Trans. Engineer, P.E., Resident Engineer

Date: December 4, 20XX

File: 04-XXXXX4  
04-MRN-1XX-  
0413000XXXX  
For Construction on State Highway in Marin  
County Near Mill Valley from SC  
Highway frontage road to Route 1XX

From: DEPARTMENT OF TRANSPORTATION  
DIVISION of ENGINEERING SERVICES  
OFFICE of STRUCTURE CONSTRUCTION  
OFFICE F - San Rafael Construction Office  
I.M. Engineer, P.E., Structure Representative

Subject: DIVISION OF WORK

Bridge construction engineers will provide field engineering, quantity calculations, and progress pay estimates for the following structure items:

ITEM NO.	ITEM DESCRIPTION	UNITS	QUANTITY	BID AMOUNT	TOTAL
28	60" CIDH CONCRETE PILE(SIGN)	LF	31	\$ 2,650.00	\$ 82,150.00
30(F)	FURNISH SIGN STRUCTURE (TRUSS)	LB	15500	\$ 5.10	\$ 79,050.00
31(F)	INSTALL SIGN STRUCTURE (TRUSS)	LB	15500	\$ 0.30	\$ 4,650.00
32	REMOVE SIGN STRUCTURE (EA)	EA	1	\$ 5,000.00	\$ 5,000.00
55	CHAIN LINK RAILING (TYPE 7 MODIFIED)	LF	4060	\$ 65.00	\$ 263,900.00
69	MOBILIZATION	LS	1	\$ 419,000.00	\$ 419,000.00
	MOBILIZATION (Structures %)	LS	11.56%	\$ 419,000.00	\$ 48,436.87
	CONTRACT TOTAL BID AMOUNT				\$ 4,179,777.00

**Total Structures work without mobilization = \$ 434,750.00**

### Below not including mobilization

$\frac{\text{Total Structures}}{\text{Total Contract}} = \frac{\$ 434,750.00}{\$ 3,760,777.00} \times 100\% = 11.56\%$

Total Mobilization= \$ 419,000.00  
Structures Mobilization= \$ 48,436.87  
District Mobilization= \$ 370,563.13

### Total Structures Dollar Amount =

**\$ 483,186.87**

Total Contract Amount = \$ 4,179,777.00

\_\_\_\_\_  
I.M Engineer, P.E.  
Structure Representative

cc: BCE, ACM, OSC, RE., file





# Required Documents to be Submitted During Construction

## Revision and Approval

Revision	Date	Nature of Changes	Approved By
0	01-12-2023	Original Issue	Richard Foley

[Click here](#) to request previous versions      Contact [SC Technical Team P](#) for questions

## Background

This process establishes Structure Construction (SC) roles, responsibilities, and procedures for:

- Submitting required documents to SC headquarters (HQ)
- Obtaining authorization to declare a lost or destroyed required document as unrecoverable.

Because the required documents are used to assist in maintaining new or modified structures, and the development of future projects that relate to a given structure, requesting authorization to declare a required document as unrecoverable is used only when the required document is lost or destroyed and cannot be recreated.

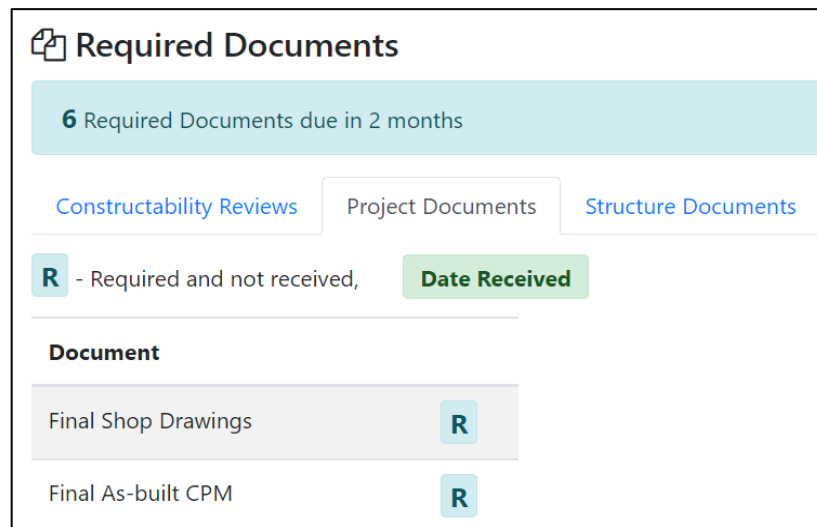
This BCM is the SC policy for submitting required documents to SC HQ, and for determining if any required document is unrecoverable.

## Process Inputs

1. Project assignment letter
2. Project closeout
3. Structure Representative (SR) declares a required document is unrecoverable

# Procedure

1. All work associated with this process is charged as [Project Direct – Construction](#).
2. All SC Staff:
  - a. Review [Attachment 1](#), *List of Required Documents Submitted to SC HQ*, to determine what and when each required document is submitted to SC HQ.
  - b. Complete and submit each required document to SC HQ as specified in the Attachment 1.
3. Structure Representative (SR):
  - a. Review Attachment 1, *List of Required Documents Submitted to SC HQ*, to determine what and when each required document is submitted to SC HQ.
  - b. Verify the list of SC required documents submitted during construction is accurate when it is received by email from one of the [Office Associates](#) in the SC HQ Project Management Branch (PMB), which is typically received within seven days of the advertise date. If the list appears to be incorrect, send an email to the [sc.office.associates@dot.ca.gov](mailto:sc.office.associates@dot.ca.gov) email address. Figure 1 and Figure 2 is a sample of the required documents listed in the “Required Docs” tab in VISION.



**Figure 1. Sample of Required Documents Listed in the “Project Documents” tab of the “Required Docs” tab in VISION**

Required Documents

6 Required Documents due in 2 months

Constructability Reviews Project Documents Structure Documents

**R** - Required and not received, **Date Received**

Bridge No	Description	Completion Date	Structure Completion Notification	Report of Completion	Joint Seal Calculations	Pile Records	As-built	Paint Records	Perm. Vert. Clearance
16 0010	DRY CREEK (REMOVAL)			<b>R</b>					
16 0053	DRY CREEK BRIDGE (REPLACE)		<b>R</b>	<b>R</b>	<b>R</b>		<b>R</b>		

**Figure 2. Sample of Required Documents Listed in the “Structure Documents” tab of the “Required Docs” tab in Vision**

- c. Complete each required document as project work progresses.
- d. Review each required document for completeness prior to submitting to SC HQ. Refer to:
  - i. [Attachment 1](#), *List of Required Documents Submitted to SC HQ*, for details on what must be included and when each required document must be submitted.
  - ii. [Attachment 2](#), *Guidance for Completing Required Documents Submitted to SC HQ*, for background information and guidance for each required document.
  - iii. [Attachment 3](#), *Guidance for Completing As-Built Project Plans*.
  - iv. [Attachment 4](#), *Samples of Required Documents Submitted to SC HQ*, for examples of completed required documents.
- e. Submit each required document to SC HQ as specified on Attachment 1. Submit by mail only when the required document cannot be scanned and emailed.
- f. Review the “Required Docs” tab in [VISION](#) for each project to verify that receipt of each required document is recorded.
- g. If a required document is lost or destroyed:
  - i. Exhaust all resources to recreate the lost or destroyed required document using information from other source documents within the project files. For example:

1. For the Report of Completion, the concrete mix design can be used to complete information for the cement, aggregate, and chemical admixture sections.
  2. For as-built project plans, the original project plans can be used to generate a replacement set of as-built project plans. SC staff recollection and project files such as change orders and daily reports can be used to recreate as-built details. If a dimension (i.e., a footing overpour), pile tips, bar sizes, location of mechanical bar splices, etc., were changed from what was shown on the project plans but the exact details are lost, the notes on the as-built project plans should reflect the changes as well as this limitation. These notes could have a significant impact on the design and construction of future projects for a structure.
    - ii. The as-built project plans are unrecoverable, submit the original project plan sheets with the note “AS-BUILT PROJECT PLANS NOT RECOVERABLE” on each sheet.
    - iii. The Project Status Initial and Project Status Final should not be classified as unrecoverable, because the information can be obtained from the Caltrans *Division of Accounting, Major Construction Payment & Information* website (for Major and Minor A contracts, and occasionally Minor B projects) by:
      1. Contract Number at <https://misc-external.dot.ca.gov/pets/ctnums.php>
      2. Contractor’s Name at <https://misc-external.dot.ca.gov/pets/ctors.php>
  - h. If a required document cannot be recreated, inform the SC Supervisor that the document is unrecoverable.
  - i. At project closeout, review the “Required Docs” tab in VISION for each project to verify that receipt of all required documents is recorded.
4. SC Supervisor:
- a. Verify required documents are submitted to SC HQs when they are due by:
    - i. Checking VISION to identify past due required documents.
    - ii. Performing project record reviews per [BCM E-2](#), *SC Project Record Review*.
  - b. If needed, prepare a recommendation to the Area Construction Manager (ACM), listing the efforts made to recreate an unrecoverable required document, and the reason(s) why a required document is being declared as unrecoverable. The memorandum should list the unrecoverable required documents for each structure separately, and include the action taken to ensure that each future required document is submitted as required.

5. SC Manager:
  - a. Takes appropriate action to ensure each future required document is completed and submitted in the timeframe required as detailed in Attachment 1.
  - b. Confirms the required document is unrecoverable. Then submits a recommendation to the SC Deputy Division Chief that details why the required document should be proclaimed as unrecoverable.
6. SC Deputy Division Chief:
  - a. Determines if the required document is unrecoverable.
  - b. Issues a memorandum stating the required document is unrecoverable.
7. SC Headquarters Project Management Branch (PMB):
  - a. Emails the list of required documents to the SR, SC Supervisor, SC Manager, and SC HQ Senior Bridge Engineer Liaison within seven days of the advertise date.
  - b. Informs the SR that the required document was received.
  - c. Provides quality assurance review of the required documents received. Resolves issues with the SR. If necessary, the required document is returned for correction.
  - d. Records required document into VISION using SCEMS and forward as described in the SC PMB Desk Manual.
  - e. Updates VISION to specify the required document as unrecoverable, if required.
  - f. Proactively communicates with the SR when required documents are past due.

## **Process Outputs**

1. Required documents listed in Attachment 1 were submitted when required to SC Headquarters.
2. Memorandum stating the required document is unrecoverable authorized by the SC DDC.

## **Attachments**

1. [Attachment 1](#), *List of Required Documents Submitted to SC HQ*
2. [Attachment 2](#), *Guidance for Completing Required Documents Submitted to SC HQ*

3. [Attachment 3](#), *Guidance for Completing As-Built Project Plans*
4. [Attachment 4](#), *Samples of Required Documents Submitted to SC HQ*

# List of Required Documents Submitted to SC HQ

This attachment identifies the 26 required documents that must be submitted to Structure Construction (SC) headquarters (HQ) and when they are due as detailed in:

- Table 1, *Required Documents Submitted to the SC Office Associates*, which includes 16 items that are submitted by email to the email address [sc.office.associates@dot.ca.gov](mailto:sc.office.associates@dot.ca.gov).
- Table 2, *Required Documents Submitted to the SC Substructure Engineer*, which includes 4 items that are submitted by email to the email address [sc.substructure.engineer@dot.ca.gov](mailto:sc.substructure.engineer@dot.ca.gov).
- Table 3, *Required Documents Submitted to the SC Falsework Engineer*, which includes 1 item that is submitted by email to the email address [sc.office.associates@dot.ca.gov](mailto:sc.office.associates@dot.ca.gov).
- Table 4, *Required Documents Submitted to the SC Administrative Staff*, which includes 2 items that are submitted by email to the email address [osc.administration@dot.ca.gov](mailto:osc.administration@dot.ca.gov).

For additional information, expectations, and guidelines for submitting the required documents, refer to Attachment 2, *Guidance for Completing Required Documents Submitted to SC HQ*. For samples of completed required documents refer to Attachment 4, *Samples of Required Documents Submitted to SC HQ*.

If a required document cannot be scanned and submitted by email, submit the required document by mail to:

State of California  
Department of Transportation  
Engineering Services  
Structure Construction  
1801 30<sup>th</sup> Street, MS 9-2/11H  
Sacramento CA 95816

**Table 1. Required Documents Submitted to the SC Office Associates.**

	<b>Required Document</b>	<b>What is Submitted</b>	<b>When to Submit</b>
1	Project Status Initial	<p>The following information is entered in VISION:</p> <ul style="list-style-type: none"> <li>• Contract Start Date</li> <li>• Contract Amount</li> <li>• Structure Division of Work</li> <li>• Name of Structure Contractor</li> </ul>	<p>PSI data is entered in VISION after the Task 275 start date in VISION and after the Division of Project Work memo has been issued. Refer to <a href="#">BCM C-5</a>, <i>Division of Project Work</i>.</p>
2	Driven Pile Records	<ul style="list-style-type: none"> <li>• Form SC-4803, <i>Pile Quantity &amp; Driving Record (Driven Piles)</i></li> <li>• Form SC-4805, <i>Log Pile Sheet</i></li> <li>• Form SC-4806, <i>Pile Layout Sheets</i></li> </ul>	<p>Submit immediately after piles are driven for a bridge.</p> <p>Submit using file name as follows:            PILE RECORDS BRIDGE NAME (BRIDGE NUMBER) (LOCATION AND LOCATION NUMBER): Example: PILE RECORDS SULTANA DRIVE OC (39-0218) (ABUTMENT #1).</p>
3	Cast-In-Drilled Hole (CIDH) Piling Records	<ul style="list-style-type: none"> <li>• Form SC-4804, <i>Pile Quantity &amp; Drilling Record (CIDH Pile)</i></li> <li>• Form SC-4806, <i>Pile Layout Sheet</i>, for each support location</li> <li>• Form SC-3803, <i>Drilled Shaft Excavation Log</i>, for all CIDH concrete piling 5 feet in diameter or larger AND one CIDH concrete pile per support location for CIDH concrete piles less than 5 feet in diameter</li> </ul>	<p>Submit immediately after all piles are placed for a bridge. If there are multiple bridges on a contract, submit the pile records for each bridge.</p> <p>Submit using file name as follows:            PILE RECORDS BRIDGE NAME (BRIDGE NUMBER) (LOCATION AND LOCATION NUMBER): Example: PILE RECORDS SULTANA DRIVE OC (39-0218) (ABUTMENT #1).</p>



	<b>Required Document</b>	<b>What is Submitted</b>	<b>When to Submit</b>
4	Joint Seal Calculations	Form DSD-D-0129, <i>Joint Movement Calculations</i>	<p>Submit immediately after all joint seal(s) are placed for a structure.</p> <p>Submit using file name as follows: JMC BRIDGE NAME (BRIDGE NUMBER): Example: JMC SULTANA DRIVE OC (39-0218).</p>
5	Paint Records	Form SC-6305, <i>Paint Record</i>	<p>Submit immediately after structure is painted.</p> <p>Submit using file name as follows: PAINT RECORD BRIDGE NAME (BRIDGE NUMBER): Example: PAINT RECORD SULTANA DRIVE OC (39-0218)</p>
6	Permanent Vertical Clearance	<ul style="list-style-type: none"> <li>• Form TR-0019, <i>Notice of Change in Clearance or Bridge Weight Rating</i></li> <li>• Form TR-0020, <i>Notice of Change in Vertical or Horizontal Clearance</i></li> <li>• Form TR-0029, <i>Notice of Change in Clearance or Bridge Weight Rating</i></li> </ul>	<p>Submit 15 days before implementing the proposed permanent changes. Submit per direction in the Forms and copy <a href="mailto:sc.office.associates@dot.ca.gov">sc.office.associates@dot.ca.gov</a></p> <p>Submit using file name as follows: PVC BRIDGE NAME (BRIDGE NUMBER): Example: PMC SULTANA DRIVE OC (39-0218)</p>
7	Report of Completion for a Structure	<ul style="list-style-type: none"> <li>• Form SC-6303, <i>Report of Completion – Bridges</i></li> <li>• Form SC-6304, <i>Report of Completion – Building Projects</i></li> </ul>	<p>Submit immediately when structure is complete</p> <p>Submit using file name as follows: ROC BRIDGE NAME (BRIDGE NUMBER): Example: ROC SULTANA DRIVE OC (39-0218)</p>

	<b>Required Document</b>	<b>What is Submitted</b>	<b>When to Submit</b>
8	Structure Completion Notification	Structures Maintenance & Investigation (SM&I) notification per Attachment 2, <i>Guidance for Completing Required Documents Submitted to SC HQ.</i>	Submit 30 days prior to expected completion of all new, widened, replaced, rehabilitated, and temporary structures.
9	As-built CPM Schedule	Transmittal email to SC HQ of as-built CPM Authorized as-built CPM is completed by the contractor and verified by the Structure Representative.	Submit immediately after SR verification of the final updated schedule -Submit using file name as follows: CPM EA, Example: CPM 10-3169E4
10	As-built Structure Project Plan Sheets	As-built structure project plan sheets For guidance refer to Attachment 3, <i>Guidance for Completing As-Built Project Plans.</i> If a project has more than one structure, submit as-built structure project plan sheets when each structure is complete.	Submit within 30 days after all structure work is complete.  Submit using file names as follows: ABP BRIDGE NAME (BRIDGE NUMBER): Example: ASB SULTANA DRIVE OC (39-0218)
11	Project Status Final	The following information is entered in VISION: <ul style="list-style-type: none"> <li>• Construction End Date (3.275)</li> <li>• Structure Amount Paid</li> <li>• Structure Contract Change Order Amount.</li> </ul>	Submit PSF data when all structure work is complete and after the Task 275 end date in VISION. <i>Project Status Final</i> data for projects with pending claims must be entered at this time with known costs and updated with the final costs after all claims are resolved. Enter a note in the comment field in VISION that the project has pending claims.
12	Confirmation of Sending Report of Permanent Horizontal and Vertical Clearances to Permits	“Written confirmation” can be an email response saying “confirmation”.	Submit immediately after confirmation of sending the report.

	<b>Required Document</b>	<b>What is Submitted</b>	<b>When to Submit</b>
13	Authorized Shop Drawings	Transmittal email or memorandum authorizing the shop drawings and authorized shop drawings	<p>Submit when authorized</p> <p>Submit using file names as follows:  FSD (TYPE OF FINAL SHOP DRAWING BRIDGE NAME (BRIDGE NUMBER) (LOCATION AND LOCATION NUMBER)  For type use:</p> <ul style="list-style-type: none"> <li>• P/S for POST-TENSIONING</li> <li>• JSA (MR=?) for JOINT SEAL ASSEMBLY</li> <li>• SS for STRUCTURAL STEEL</li> </ul> <p>Example: FSD (P/S SULTANA DRIVE OC (39-0218)</p>
14	As-built of Authorized Shop Drawings	<ul style="list-style-type: none"> <li>• Transmittal email to SC HQ of as-built authorized shop drawings</li> <li>• Authorized shop drawings completed by the contractor and verified by the Structure Representative</li> </ul>	<p>Submit immediately after the component is place.</p> <p>Submit using file name as follows:  AB-FSD (TYPE OF FINAL SHOP DRAWING BRIDGE NAME (BRIDGE NUMBER) (LOCATION AND LOCATION NUMBER)  For type use:</p> <ul style="list-style-type: none"> <li>• P/S for POST-TENSIONING</li> <li>• JSA (MR=?) for JOINT SEAL ASSEMBLY</li> <li>• SS for STRUCTURAL STEEL</li> </ul> <p>Example: AB-FSD (P/S SULTANA DRIVE OC (39-0218).</p>

	<b>Required Document</b>	<b>What is Submitted</b>	<b>When to Submit</b>
15	Complaint, Summons and Subpoena	Letter of transmittal to SC HQ with a copy of the complaint and subpoena where employee is named as defendant. <i>NOTE: Do not accept a complaint subpoena which names the State as the defendant, which should be served to the Attorney General or Director of Transportation.</i>	Submit immediately after receipt.
16	Potential Damage Claim	Letters, bills or other informal written communications in connection with accidents involving the operation of State-owned motor vehicles, or referring to an alleged dangerous or defective condition of the highway, or an alleged negligent act or omission of a State employee.	Submit immediately after receipt.  NOTE: Such letters should not be acknowledged by the employee.

Submit the following required documents to the SC Substructure Engineer at SC HQs by email to [SC.Substructure.Engineer@dot.ca.gov](mailto:SC.Substructure.Engineer@dot.ca.gov).

**Table 2. Required Document Submitted to the SC Substructure Engineer.**

	<b>Required Document</b>	<b>What is Submitted</b>	<b>When to Submit</b>
1	Completed Pile Design Data Form	Completed Pile Design Data Form for anomalous sections of rejected CIDH piles	Submit immediately after all sections of the form are completed.
2	Authorized CIDH Pile Mitigation Plan	CIDH pile mitigation plan authorized by the DES CIDH Pile Mitigation Plan Review Committee	Submit immediately after plan is authorized.
3	Authorized Mitigation Report (per 2015 and current Contract Specifications) CIDH Pile Post Mitigation Plan (per Contract	Mitigation Report per 2018 SS 49-3.02A(3)(h)	Submit immediately after the contractor submits a complete Mitigation Report.
4	<i>CIDH Pile Information for Piles Tested by the Foundation Testing Branch (FTB) memo</i>	<a href="#">Form SC-3812</a> , <i>CIDH Pile Information for Piles Tested by the Foundation Testing Branch (FTB) memo</i>	Submit following completion of the project work.

Submit the following required document to the SC Falsework Engineer by email to the email address [sc.office.associates@dot.ca.gov](mailto:sc.office.associates@dot.ca.gov).

**Table 3: Required Document Submitted to the SC Falsework Engineer.**

	<b>Required Document</b>	<b>What is Submitted</b>	<b>When to Submit</b>
1	<p>Authorized temporary structures shop drawings for:</p> <ul style="list-style-type: none"> <li>• Falsework</li> <li>• Column guying</li> <li>• Bridge removal work plan</li> <li>• Shoring</li> <li>• Support systems for portions of permanent bridges that are temporarily unstable</li> <li>• Contractor-designed temporary bridges or other facilities</li> <li>• Etc.)</li> </ul>	<p>Per guidance in <a href="#">BCM C-11</a>, <i>Shop Drawing Review of Temporary Structures</i>, submit:</p> <ul style="list-style-type: none"> <li>• Transmittal Letter</li> <li>• Stamped and signed Temporary Structure Analysis Report</li> <li>• Stamped authorized Shop Drawings</li> <li>• Contractor’s calculations</li> <li>• SC reviewer’s calculations</li> <li>• Railroad authorization when railroad is involved</li> <li>• Manufacturer’s catalogue, data sheet.</li> </ul>	<p>Submit when the Submittal is authorized.</p> <p>Submit using the naming convention specified in the <i>Falsework Manual</i>, <a href="#">Chapter 2</a>, Section 2-11.04, <i>File Naming Convention</i>.</p>

Submit the following required document to the SC Administrative Staff by email to the email address [osc.administration@dot.ca.gov](mailto:osc.administration@dot.ca.gov).

**Table 4. Required Document Submitted to the SC Administrative Staff.**

	<b>Required Document</b>	<b>What is Submitted</b>	<b>When to Submit</b>
1	Change of Address for Check Disbursement	Form SC-0102, <i>Change of Address for Check Disbursement</i>	Submit immediately when starting work for SC Submit immediately when any information changes, such as a change to the home address or emergency contact.
2	Letter confirming loss or theft of non-expendable equipment	Email detailing lost or stolen non-expendable equipment.	Submit immediately when the loss or theft occurs.

# Guidance for Completing Required Documents Submitted to SC HQ

This attachment includes guidance, expectations, and background information for completing required documents that are submitted to Structure Construction (SC) headquarters (HQ), listed in BCM C-6, Attachment 1, *List of Required Documents Submitted to SC HQ*. For examples of completed required documents refer to Attachment 4, *Samples of Required Documents Submitted to SC HQ*.

## **1 - Project Status Initial & Project Status Final**

The SC Oversight Engineer or Structure Representative (SR) must submit Project Status Initial (PSI) and Project Status Final (PSF) data for all projects administered by SC.

Structure Construction (SC) uses the PSI and PSF information in numerous ways, including checking resource needs against the project cost, to provide the current status of the project, and to establish completion of the project for final records.

The SC project management web application, VISION, is used to complete and submit PSI and PSF data. VISION automatically notifies SC Headquarters Office Associates via email when PSI or PSF data has been submitted.

The SR is responsible for entering PSI and PSF data in VISION. If a SR is unable to submit PSI and PSF data for the project that they are assigned to, then the project Bridge Construction Engineer must verify that the SR is currently assigned to the project in VISION and the project working calendar is current. If the SR is not assigned and/or the project working calendar is not current, the BCE will update VISION.

The PSI and PSF web forms can be accessed through VISION on the SC Intranet website.

1. The *Project Status Initial* data is to be submitted after the Task 275 start date in VISION and after the Division of Work memo has been written. Refer to [BCM C-5](#), *Division of Project Work*.
2. The *Project Status Final* data is to be submitted when all structure work is complete and after the Task 275 end date in VISION. *Project Status Final* data for projects with pending claims must be entered at this time with known costs and updated with the final costs after all claims are resolved. Enter a note in the comment field in VISION that the project has pending claims.



3. More detailed instructions on how to submit PSI and PSF data in VISION can be found by clicking the VISION guidance link on the VISION home page.

## **2 - Driven Pile Records**

The SR is responsible to provide pile inspection and to develop pile records during the construction of the project.

The following forms are used to record the required data for driven piles:

1. Form SC-4803, *Pile Quantity & Driving Record (Driven Piles)*
2. Form SC-4805, *Log Pile Sheet*
3. Form SC-4806, *Pile Layout Sheet*

Preparation and completion of these forms is performed as described in [BCM 49-2](#), *Piling – Driven Piling*.

The driven pile records will become a permanent part of the files maintained by the Office of Geotechnical Services.

### **2.1 Form SC-4803, *Pile Quantity & Driving Record (Driven Piles)***

When using [Form SC-4803](#), list only one bridge or structure per form. Form SC-4803 provides a basis of payment to the Contractor for each item of work; therefore, one form should be prepared for each class or type of pile within the bridge or structure.

The pile number shown on Form SC-4803 corresponds to the pile numbers on Form SC-4806, *Pile Layout Sheet*.

### **2.2 Form SC-4805, *Log Pile Sheet***

[Form SC-4805](#) is used for driven piles to log the blow count for each foot of penetration. The penetration must be referenced to some known elevation to establish the actual pile tip elevation.

Form SC-4805 is prepared for each pile logged. All piles are logged.

Additional piles should be logged when significant changes in the driving conditions are encountered within an individual footing.

## **2.3 Form SC-4806, *Pile Layout Sheet***

Each pile number on Form SC-4806, *Pile Layout Sheet*, corresponds to the pile number on Form SC-4803, *Pile Quantity & Driving Record (Driven Piles)* or Form SC-4804, *Pile Quantity & Drilling Record (CIDH Piles)*.

Information shown on Form SC-4806 must be sufficient to enable SC Staff to verify the Contractor's layout for the unit of work to be done.

## **2.4 Disposition of Pile Records**

Form SC-4803, *Pile Quantity & Driving Records (Driven Piles)*, is filed in the job records in Category 48, *Contract Item Quantity Documents*, to serve as a source document for progress payment purposes.

For driven piles, a copy Form SC-4803, *Pile Quantity & Driving Records (Driven Piles)*, along with copies of each Form SC-4805, *Log Pile Sheet*, and each Form SC-4806, *Pile Layout Sheet*, for the driven piles, must be sent to SC HQ immediately after a structure or major portion of the work is complete. Refer to Attachment 1, *List of Required Documents Submitted to SC HQ*, for details on how to submit pile records.

Upon receipt by SC HQ, the pile driving records will be logged into VISION and then forwarded to Office of Geotechnical Services for inclusion in the permanent records. Do not send pile records directly to Office of Geotechnical Services. The pile driving records are used for future design of structure rehabilitation or replacement reference on ongoing and future projects.

# **3 - Cast-In-Drilled-Hole (CIDH) Piling Records**

The following forms are used to record the required data for CIDH piles:

1. Form SC-3803, *Drilled Shaft Excavation Log*
2. Form SC-4804, *Pile Quantity & Drilling Record (CIDH Piles)*
3. Form SC-4806, *Pile Layout Sheet*

Refer to [BCM 49-3](#), *Piling – Cast-in-Place Concrete Piling*, for procedures for CIDH piling. Form SC-3803, Form SC-4804, and Form SC-4806 will become a permanent part of the files maintained by the Office of Geotechnical Services.

### **3.1 Form SC-4804, *Pile Quantity & Drilling Record (CIDH piles)***

When using Form SC-4804, list only one bridge or structure per form. Form SC-4804 provides a basis of payment to the Contractor for each item of work; therefore, one form should be prepared for each class or type of pile within the bridge or structure.

The layout of the piles on Form SC-4806, *Pile Layout Sheet*, corresponds to the layout shown in the project plans and are referred to by a number which corresponds to the pile number on Form SC-4804.

### **3.2 Disposition of Pile Records**

Form SC-4804, *Pile Quantity & Drilling Records (CIDH piles)*, are filed in the job records in Category 48, *Contract Item Quantity Documents*, and serves as the source document for progress payment purposes.

Upon receipt by the SC-HQ, the CIDH pile records will be logged into VISION and then forwarded to the Office of Geotechnical Services for future design of structure rehabilitation or replacement reference for ongoing and future projects inclusion in the permanent records. Do not send pile records directly to the Office of Structural Foundations.

After a test report from the Foundation Testing Branch (FTB) is sent to the SR, the CIDH Pile Mitigation Committee Chair will send an electronic copy of Form SC-3812, *CIDH Pile Information for Piles Tested by the Foundation Testing Branch*, to the SR.

When all of the CIDH piles are complete for a given contract, the SR will make one submittal of the final results to the CIDH Pile Mitigation Committee Chair. A sample of a completed Form SC-3812 is shown in Attachment 4.

If there are piles for a contract that require mitigation, wait to complete this form until after mitigation is completed and the piles are accepted. Refer to the Table 2, *Required Documents Submitted to the SC Substructure Engineer*, for the three documents that are submitted to the SC Substructure Engineer in addition to Form SC-3812 for mitigating piles.

## **4 - Joint Seal Calculations**

Form DSD-D-0129, *Joint Movement Calculations*, is furnished by the designer, the contract manager (for consultant contract managed projects), or the liaison engineer (for externally financed projects), upon request by the SR, if Form DSD-D-0129 is not included in the RE Pending File.

Note that a separate Form DSD-D-0129, *Joint Movement Calculations*, should be completed for a structure when a Type B Joint Seal or Joint Seal Assembly is used. Refer to [BCM 51-2](#), *Concrete Structures – Joints*, for guidance. Each form should be submitted as soon as all joint seal placements are completed on that structure. Do not wait until the completion of all the structures or completion of the contract.

Upon receipt by SC-HQ, Form DSD-D-0129 will be logged into the project management data base and then forwarded to the Structure Maintenance and Investigations (SM&I) for inclusion in the permanent records. Do not send Form DSD-D-0129 directly to SMI. Form DSD-D-0129 is referenced for ongoing and future projects.

## **5 - Paint Records**

Review [BCM 59-2](#), *Structural Steel Coatings – Painting Structural Steel*, Attachment 1, *Cleaning and Painting of Structural Steel*, which includes a section titled, *Paint Records and Reports*. Submit [Form SC-6305](#), *Paint Record*, immediately after the structure is painted to SC-HQ. Upon receipt by SC-HQ, the paint record will be logged into VISION, and then forwarded to the SM&I Paint Specialist and inclusion in the permanent records.

## **6 - Permanent Vertical Clearance**

The change in clearance or permit rating of a structure can affect the issuance of transportation permits and the routing of oversize and overweight vehicles. The notification procedures for changes in the clearance or permit rating of a structure are addressed in the Caltrans [Construction Manual](#), Section 3-703, *Public Safety*. The clearance changes addressed by Section 3-703 are not limited to bridge structures, but also include the clearance changes caused by the installation or modification of sign structures. Any changes in existing clearances or permit rating, even if the resulting clearance or permit rating satisfies legal clearance or load limitations, must be documented. The timely reporting of changes in clearance or permit rating on a statewide basis is essential to maintaining the accuracy of the clearance and permit rating database and ultimately the safety of the traveling public. Refer to [Deputy Directive 57](#), *Route Information for Oversize and Overweight Vehicles*.

Permanent Vertical Clearance forms must be completed when:

1. A physical object (permanent or temporary) encroaches toward or over the traveled roadway.
2. There is a theoretical vertical and/or horizontal clearance change noted in the authorized falsework shop drawings.
3. Changes to a bridge's permit rating specified in the contract *Special Provisions* or by the designer.

Tasks to be completed for permanent vertical clearance documents are as follows:

1. Review the contract documents for potential temporary and permanent impairments to the travelled way. Typically, these involve construction of overhead sign structures or falsework for permanent structures. However, this can also include less common items, such as temporary containment systems for bridge painting or substructure rehabilitation work requiring a temporary permit load reduction. Temporary construction clearances and notifications will be specified in the *Railroad Relations and Insurance Requirements*. The railroad must be notified prior (typically 25 day prior) to any construction that affects clearance to railroad property. The notification must be given to the Regional/Railroad Agents through the Resident Engineer. The minimum permanent vertical and horizontal clearances to the railroad tracks must be noted on the structure as-built General Plan sheet. Vertical clearance is measured from the top of rail to the structure. Horizontal clearance is measured to the centerline of the tack to the structure.
2. Discuss Transportation Permits Branch (TPB) notification protocols with the Resident Engineer (RE).
3. Discuss requirements for temporary impairment notifications at the preconstruction conference and with the Contractor as work progresses.
4. For temporary impairments to the travelled way:
  - a. Upon receipt of falsework shop drawings or other submittals that temporarily impair the travelled way:
    - i. Estimate the impending clearance.
    - ii. Complete [Form TR-0019](#), *Notice of Change in Clearance or Bridge Weight Rating*, [Form TR-0020](#), *Notice of Change in Vertical or Horizontal Clearance*, or [Form TR-0029](#), *Notice of Change in Clearance or Bridge Weight Rating*, as appropriate.
    - iii. Notify TPB at least 15 calendar days prior to construction of the impairment.
    - iv. Notify the affected agency in writing if the clearance change is on a local jurisdiction roadway.
    - v. Take appropriate action if the measured clearance is less than that previously reported.
  - b. Upon construction of the temporary impairment:
    - i. Verify actual dimensions of clearance.
    - ii. Update forms TR-0019, TR-0020, or TR-0029.
    - iii. Notify TPB.
  - c. Notify the RE when a temporary impairment is removed when applicable.

5. For permanent impairments to the travelled way:
  - a. Follow procedure for construction of the temporary impairment (Step 4b).
  - b. Send form(s) for permanent changes in impairments to SC HQ. Refer to Attachment 1, *List of Required Documents Submitted to SC HQ*, for details on how to submit the forms.
6. For temporary changes of bridge permit rating specified in the contract *Special Provisions* or by designer:
  - a. Notify RE in writing and the Bridge Rating Engineer (BRE) 15 days before implementing proposed bridge permit rating changes
    - i. Complete Form TR-0019 or TR-0029 as appropriate.
    - ii. Notify TPB.
  - b. Notify RE in writing and the BRE within three days of rescinding the temporary bridge permit rating.
7. For permanent changes of bridge permit rating specified in the contract *Special Provisions* or by designer:
  - a. Notify RE in writing and the BRE 15 days before implementing proposed bridge permit rating changes.
    - i. Complete Form TR-0019 or TR-0029 as appropriate.
    - ii. Notify TPB.
8. Place a copy of all notification forms in the project records.

## **7 - Report of Completion for Structures**

All structures, including buildings and earth retaining structures, which have been assigned a structure/bridge number on the contract project plans require a Report of Completion.

The SR must complete [Form SC-6303](#), *Report of Completion – Bridges*, and [Form SC-6304](#), *Report of Completion – Buildings*, immediately upon completion of a structure. Refer to Attachment 1, *List of Required Documents Submitted to SC HQ*, for details on how to submit the form. This form is completed for new construction, widenings, deck replacement, joint seal replacement, retrofit, etc. of bridges, MSE walls, retaining walls, etc.

Do not wait until completion of all the structures or completion of the contract before submitting the individual structure completion reports. After SC Headquarters logs the receipt of the completion report, the report is forwarded to the SM&I and entered in the

Bridge Inspection Records Information System (BIRIS). SM&I keeps bridge books for every individual bridge in the State Highway inventory, thus creating the need to have individual completion reports for each structure. For structures in the seismic retrofit program, Form SC-6303 is also sent to the Office Earthquake Engineering.

The following provides guidance to assist the SR when preparing Form SC-6303 and Form SC-6304:

1. Total cost recorded should include contract change orders. (Do not delay the report submittal while waiting for final accounting information. Enter the estimated final cost and indicate "Estimated Cost").
2. List only the materials incorporated into the structure covered by the report.
3. The resin manufacturer's name should be listed under Deck Seal when methacrylate treatment is used on a structure.
4. If there are more than two items in the same classification, then the "Other" category at the bottom of the list should be used.
5. When the structure is an earth retaining structure, the following should be used as a guide for classification of the non-standard material:
  - a. Tieback anchors:
    - i. Strand is under Prestressing Systems
    - ii. Grout is under Cement
    - iii. Bearing plate is under Structural Steel
  - b. Mechanically Stabilized Embankment (MSE):
    - i. Manufacturer of the system is under Other
    - ii. Soil reinforcement is under Structural Steel
    - iii. Structural Backfill is under Fine Aggregate
  - c. Soil Nail:
    - i. Soil Nail is under Reinforced Steel, Grade
    - ii. Grout is under cement.
6. List the name of the utility owner and encroachment permit number.
7. List only construction details that are unusual or of special interest and use additional sheets if necessary. Include any attachments that are deemed appropriate by the SR and identify them in the Attachments section of the report.

## **8 - Structure Completion Notification**

To comply with Federal Highway Administration (FHWA) regulations, SM&I must perform an initial inspection for each new, widened, replaced, rehabilitated, and temporary structure as soon as practical, but within 3 months of the bridge opening to traffic. Note that a structure completion notification is not required for retaining walls.

Tunnels must be inspected after all construction is complete and prior to opening to traffic.

Completion for all new, widened, replaced, rehabilitated or temporary structures will be defined as:

1. Bridges constructed and ready for traffic loading regardless of temporary or final configuration
2. Tunnel construction is complete and prior to opening to traffic
3. Barrier rail completed
4. Stream bed in final configuration
5. Final surface finishing need not be completed.

Rehabilitation is defined by FHWA as:

1. The major work required to restore the structural integrity of a bridge as well as work necessary to correct major safety defects.
  - a. Examples of rehabilitation are a replacement of deck, superstructure, substructure or culvert elements, barrier replacements, scour projects, or any repairs required to reopen a bridge closed for safety reasons.
  - b. An initial inspection is not required for projects such as spall repairs, column wraps, deck sealing or overlays and paint projects (without structural repairs).

### **8.1 Responsibilities When Caltrans is the Implementing Agency**

#### **8.1.1 Structure Representative:**

Notifies the following by email: SM&I ([BridgeInfo@dot.ca.gov](mailto:BridgeInfo@dot.ca.gov)), the Bridge Design Structure Project Engineer ([Structure.Design.Quality@dot.ca.gov](mailto:Structure.Design.Quality@dot.ca.gov)), and SC ([SC.Office.Associates@dot.ca.gov](mailto:SC.Office.Associates@dot.ca.gov)), 30 days prior to the expected completion of all new, widened, replaced, rehabilitated, and temporary structures with the following information:

1. Bridge Name
2. Bridge Number
3. County



4. Route
5. Post Mile
6. Short description of the completed work (e.g., new structure, bridge widening)
7. Copy of the structure General Plan sheet from the project plans.

## 8.2 Responsibilities When Caltrans is not the Implementing Agency

### 8.2.1 Agency Representative:

1. Completes the form, [Request to Add Structure to the National Inventory](#), 30 days prior to the expected completion of all new, widened, rehabilitated, replaced, and temporary structures.
2. Submits (by email) the above-mentioned form and a copy of the structure General Plan sheet from the project plans to SM&I ([BridgeInfo@dot.ca.gov](mailto:BridgeInfo@dot.ca.gov)), the Oversight SR, and SC ([SC.Office.Associates@dot.ca.gov](mailto:SC.Office.Associates@dot.ca.gov)).

### 8.2.2 Department:

1. Confirms Caltrans Division of Maintenance, SM&I, has been notified of structure completion. When Caltrans is the implementing agency, the SC HQ Office Associate will verify that SM&I has been notified of structure completion.

### **Email Notification Template**

The following is an example email to SM&I, the Bridge Design Project Engineer, and SC, informing them of structure completion:

To: [BridgeInfo@dot.ca.gov](mailto:BridgeInfo@dot.ca.gov), [Bridge.Design.Quality@dot.ca.gov](mailto:Bridge.Design.Quality@dot.ca.gov) and [SC.Office.Associates@dot.ca.gov](mailto:SC.Office.Associates@dot.ca.gov)

Subject: Structure Completion (Br. No. XX-XXXX)

### **For all project types:**

Bridge Name: <Insert Bridge Name>  
Bridge Number: <Insert Bridge Number XX-XXXX>  
County: <Insert County Name>  
Route: <Insert Route Number>  
Post Mile: <Insert Post Mile>

The construction of the above-named structure is complete. The General Plan showing the work performed for this structure is attached for your use.

I.M. Engineer  
Structure Representative  
(XXX) XXX-XXXX

## **9 - As-Built CPM Schedule**

The Structure Office Engineer – Cost Estimates Branch obtains as-built progress schedule from SC. The as-built progress schedule information is used to improve the accuracy of the Engineer’s estimates to better determine duration of construction activities.

Progress schedules are required to be submitted by the Contractor per the *Contract Specifications*. For contracts that use a critical path method (CPM) schedule, the SR must submit a copy of the most accurate version of the as-built CPM progress schedule to the SC HQ. The most accurate CPM schedule should depict the actual sequence and duration of activities during the life of the contract. The initial baseline CPM schedule does not properly represent the actual work duration of each contract item over the life of the project. Typically, the last update of the CPM schedule prior to the project completion is the most accurate progress schedule to submit to SC HQ. Refer to Attachment 1, *List of Required Documents Submitted to SC HQ*, for details on how to submit the schedule.

If the as-built CPM schedule is not available due to claims or other special circumstances, the most accurate CPM schedule may be submitted instead. However, once claims or special circumstances are resolved, a revised CPM schedule should be submitted.

The *Contract Specifications*, Section 8-1.02, *Prosecution and Progress – General – Schedule*, generally discusses progress schedules. In addition, progress schedules should be filed in Category 26, *Progress Schedules*.

## **10 - As-built Structure Project Plan Sheets**

Accurate, detailed, and informative as-builts are essential for the design and construction of future rehabilitation and/or demolition projects.

To complete the as-built project plans, before construction begins, procure a complete set of structure project plans that will be used as a working set to document as-built changes.

During construction:

1. The SR or delegate:
  - a. Accurately documents change order (CO) work affecting structure work on designated as-built structure project plans. If new structure project plan sheets have been provided for a CO, insert the new project plan sheets into the as-built project plan set in front of the project plan sheet it is replacing. On the project plan sheet being replaced, strike across the sheet and note that the project plan sheet is replaced by project plan sheet XXXRX.
  - b. Accurately documents as-built changes on the designated working set of structure project plans continuously as work is completed with red-colored markings.
  - c. Accurately records necessary supplemental information on as-built structure project plans per the requirements of Attachment 3, *Guidance for Completing As-Built Project Plans*.
2. The Bridge Construction Engineer (BCE) verifies that the SRs and Assistant SRs are progressively recording as-built changes on the designated working set of as-built project plans, and documents this on [Form SC-6301](#), *Project Record Review*.

Refer to the *Contract Specifications*, Section 99-1, *Building Construction – General Requirements*, for contract requirements and [BCM 99-1](#), *Building Construction – General Requirements*, for guidance on the review and authorization of as-built drawings for building construction.

Following construction, the SR or delegate must:

1. Stamp the as-built project plans with as-built stamp and fills in the required information. A digital as-built stamp for use in Adobe Acrobat is available on the SC web page.
2. Submit as-built project plans to SC HQ no later than 30 days after completion of structure work per Attachment 3, *Guidance for Completing As-Built Project Plans*. Refer to Attachment 1, *List of Required Documents Submitted to SC HQ*, for details on how to submit as-built project plans.

The SR and the BCE verifies in [VISION](#) that the as-built structure project plans are marked as received. If they have not been received contact the [SC HQ Office Associate](#).

## **11 – Project Status Final**

See list item #1, *Project Status Initial & Project Status Final*, on page 1.

## **12 - Confirmation of Sending Report of Permanent Horizontal and Vertical Clearances to Permits**

The SR must submit written confirmation which can be an email response saying “confirmation”. This is needed for quality assurance to verify this is done.

## **13 - Authorized Shop Drawings**

The SR must submit a copy of the authorized shop drawings to SC HQ immediately after authorization. If the as-built of authorized shop drawings are not submitted, the authorized shop drawings will be noted as-designed authorized shop drawings and submitted to SM&I for inclusion in the permanent records.

## **14 - As-Built of Authorized Shop Drawings**

The SR should review the contract documents to ensure that required as-built shop drawings are sent to SC-HQ by email to [sc.office.associates@dot.ca.gov](mailto:sc.office.associates@dot.ca.gov) prior to contract acceptance. The SR should take administrative deductions per the *Construction Manual*, Section 3-907, *Payment After Contract Acceptance*, until all outstanding job records (including as-built of authorized shop drawings) have been received.

Typical submittals requiring final or as-built shop drawings include:

1. Alternative Column Casings
2. Joint Seal Assemblies
3. Mechanically Stabilized Embankment (MSE) Walls
4. Micropiles
5. Prestressing Cast-in-Place Concrete
6. Prestressed Girders
7. Precast/Prestressed (PC/PS) Concrete Deck Panels
8. PTFE Bearings
9. PTFE Spherical Bearings
10. Falsework
11. Shoring
12. Seismic Isolation Bearings
13. Shock Transmission Devices
14. Soil Anchors
15. Steel Column Casings – Flared columns only
16. Structural Steel
17. Viscous Dampers
18. Proprietary Alternative Retaining Wall Systems
19. Proprietary Alternative Pile Systems
20. Proprietary Soundwalls (Carsonite, Port-O-Wall)
21. Column Guying

It is important that the SR reviews the contract documents for project specific requirements. If the shop drawings are sent directly to the SR, the SR should review for accuracy, then if complete, forward the drawings to SC-HQ by email to [sc.office.associates@dot.ca.gov](mailto:sc.office.associates@dot.ca.gov). Effective July 2020, the *Contract Specifications*, Section 5-1.23B(2), *Control of Work – General – Submittals – Action Submittals – Shop Drawings*, was revised to add the following requirements:

Do not submit paper copies to OSD, Document Unit. For submittals to OSD, Documents Unit, e-mail shop drawings and calculation sheets electronically to [sc.office.associates@dot.ca.gov](mailto:sc.office.associates@dot.ca.gov) . . .”

If contracts do not include this requirement in the *Special Provisions*, a Change Order should be issued as the OSD Documents Unit is no longer processing submittals.

Upon receipt by SC-HQ, the as-built shop drawings are reviewed by the SC HQ Office Associates will be logged into the project management data base and then forwarded to SM&I for inclusion in the permanent records.

## **15 - Complaint, Summons, and Subpoena**

If a complaint, summons, subpoena, or potential damage claim is received, contact the [SC HQ Office Associate](#) for the district the document was received, and submit a copy to the SC HQ immediately. Refer to the reference document, *Complaint, Summons, Subpoena and Potential Damage Claim*, on the SC intranet under the [Field Resources tab](#). A member of the SC HQ staff will outline the proper procedures to follow.

## **16 – Potential Damage Claim**

Same guidance as list item #15, *Complaint, Summons, and Subpoena*.

## **17 – Completed Pile Design Data Form**

For guidance refer to BCM 49-3, [Attachment 2](#), *CIDH Concrete Piling – Contract Administration and Department Acceptance*.

## **18 - Authorized CIDH Pile Mitigation Plan**

For guidance refer to BCM 49-3, [Attachment 2](#), *CIDH Concrete Piling – Contract Administration and Department Acceptance*.

## **19 - CIDH Pile Post Mitigation Plan**

For guidance refer to BCM 49-3, [Attachment 2](#), *CIDH Concrete Piling – Contract Administration and Department Acceptance*.

## **20 - CIDH Pile Information for Piles Tested by the Foundation Testing Branch FTB memo**

For guidance refer to BCM 49-3, [Attachment 2](#), *CIDH Concrete Piling – Contract Administration and Department Acceptance*.

## **21 - Authorized Temporary Support Shop Drawings (for Falsework, Column Guying, Bridge Removal Plan, Shoring, etc.)**

Review and authorize the shop drawings per guidance in [BCM C-11](#), *Shop Drawing Review of Temporary Structures*, and the *Falsework Manual*, [Chapter 2](#), *Review of Shop Drawings*. As soon as the shop drawings are authorized, the SR will submit a copy of the shop drawings and transmittal letter to SC HQ. If the as-built shop drawings are not received, the authorized shop drawings will be submitted to Structure Design as the “As-Designed As-Builts”.

## **22 – Change of Address for Check Disbursement**

Complete all sections for [Form SC-0102](#), *Change of Address for Check Disbursement and Other Mailings*, as this information is used to mail any checks received, and information that must be mailed. This information is for use by SC HQ only.

Form SC-0102 is not used by Caltrans Human Resources and does not take the place of Form STD 686, *Employee Action Request (EAR)*.

# Guidance for Completing As-Built Project Plans

Structure Construction (SC) is responsible for the preparation of as-built structure project plan sheets as specified in the *Construction Manual*, [Section 5-104D\(2\)](#), *Procedure on As-Built Plans for Bridges and Structures*. The current practice is to submit as-built project plans electronically to SC Headquarters (HQ). The as-built project plans can be prepared on a pdf document, or a paper-based copy may be used and converted to PDF prior to submitting to SC HQ. Past practice required as-built project plans to be completed on full-sized (22" x 36") project plan sheets. It is no longer necessary to provide as-built drawings on full-sized sheets. Full-sized project plan sheets may be used; however, it is acceptable to use half-sized (11" x 17") sheets. Procure a complete set of structure project plans that will be used as a working set to document as-built changes. The as-built project plans shall be in pdf format. Regardless of the sheet size used, it is imperative that all red-lined changes are legible. Some changes may require additional sketches to be attached to clearly show the details of the change.

All changes in dimension, elevation, detail, etc. must be shown on the as-built project plans as follows:

1. Accurately document change order work affecting structure work on designated as-built structure plans. If new structure plan sheets have been provided for a change order, insert the new plan sheets into the as-built plan set in front of the plan sheet it is replacing. On the plan sheet being replaced, strike through the sheet and specify that the sheet is replaced by sheet xxxRx. The change order number shall be shown where applicable.
2. Accurately document as-built changes on designated working set of structure plans continuously as work is completed with red-colored markings. All corrections must be made in red. This is necessary so that the corrections can be easily distinguished on the as-built drawings. Superseded data should be lined out. Do not eradicate original figures, nor make corrections over them. Extensive changes, which cannot be shown clearly on the as-built project plan, should be furnished by Structure Design as detailed in #4.
3. The as-built project plan sheets should be stamped "As-Built" with the as-built stamp. Each sheet will include the following identifying information: district, county, post mile, contract number, change order number, bridge number and name, sheet title (general description of change), name of person who designed change, name of person who checked design, date, and the signature and license number of the responsible registered engineer. Normally, if extensive changes are made, Structure Design will provide revised or supplemental project plan sheets.

4. Where revised, supplemental, or additional project plan sheets have been furnished by Structure Design, use these project plan sheets to record as-built changes. See *Bridge Design Details*, [Section 1-20](#), *Revisions to Contract Plans*. Revised project plan sheets will replace the original project plan sheet; however, while as-built project plans are in progress, the original project plan sheet is kept with the as-built project plans, and lined through with a note that states “superseded by project plan sheet R1”; if project plan sheet R1 is replaced by project plan sheet R2, project plan sheet R1 is kept with the as-built project plans, lined through with a note that states “superseded by sheet R2”, etc. Supplemental and additional project plan sheets should be added to the master as-built project plan set.
5. For precast/prestress superstructures, document any adjustments to the superstructure depths at the supports.

If no changes are made to a project plan sheet, state “No As-Built Changes” in red ink or red pencil, to eliminate any confusion.

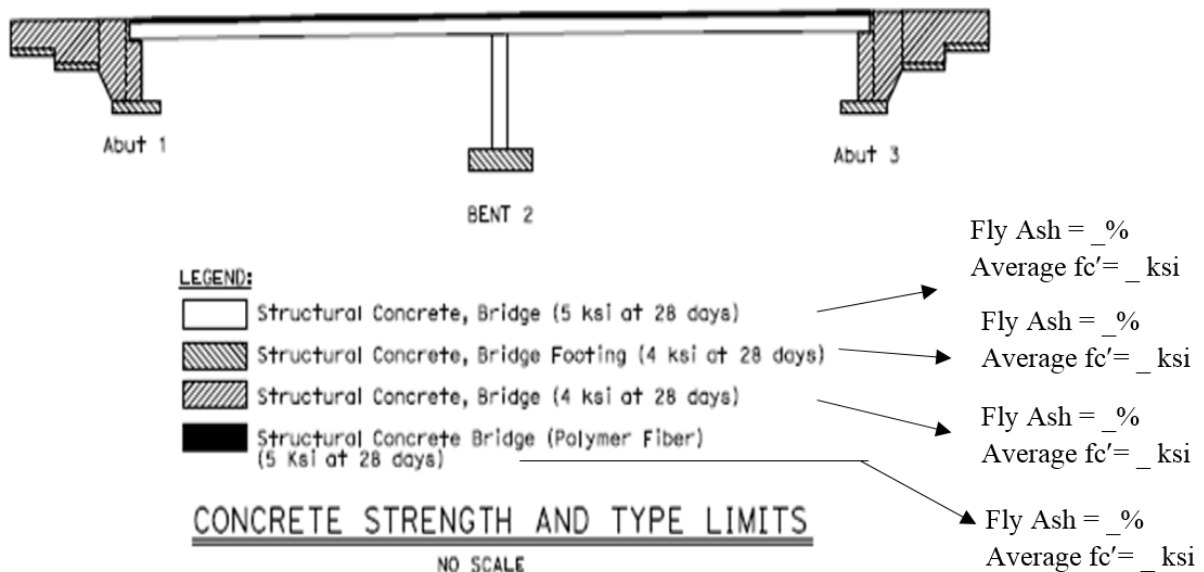
In addition to changes and corrections, the following supplemental information must be shown on the as-built project plans:

1. Elevation and location of all permanent reference points. If possible, show this on the bridge General Plan (GP) of the project plan sheets. (Refer to the *Bridge Construction Records and Procedures Manual*, [BCM C-13](#), *Permanent Reference Elevations*, for additional information relative to permanent reference elevations.)
2. For all bridges over a highway, street, or railroad, show the minimum vertical clearance above the roadway surface or top of rail. (See the last paragraph of this section for additional information.)
3. For stream crossings, show the approximate dimension from the bridge soffit to the deepest part of the channel.
4. For structures on pile foundations, show the type of pile and average tip elevation for each bent or footing. At locations where variations in penetration are extreme (greater than 10% of the average penetration) show the highest and lowest tip elevation as well as the average. Show this information on the bridge GP of the project plans.
5. For footings with seal course, show the horizontal dimensions of the seal course (on the GP plan view). Show the bottom elevation of the seal course if different than planned (on the GP elevation or typical section). At footings designated to have a seal course and where no seal course is placed, make a note that “No



Seal Course Was Placed.” This information is important for future widening or any future retrofit scheme that would involve footing work.

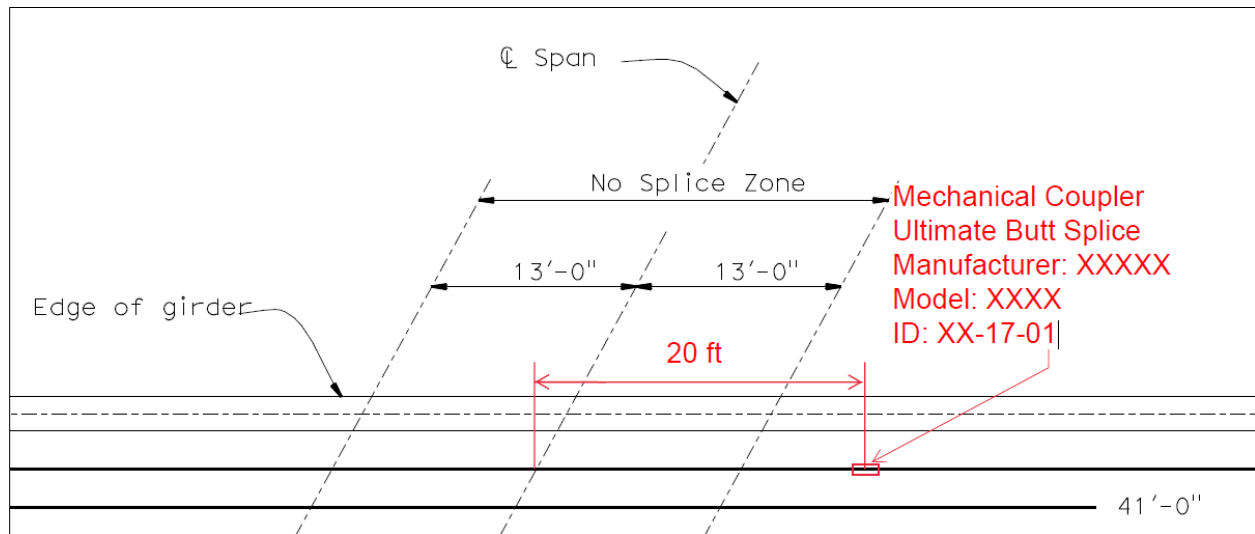
6. For footings that are poured neat, indicate and draw outline of neat pour. This information is important for work involving the existing footing.
7. Where a utility encroaches on a structure, it will be necessary to show the following information on the as-built project plans:
  - a. Description of the utility or utilities, i.e., 24” Welded steel pipe or 2-4” ABS Conduits.
  - b. Name of Owner, i.e., Pacific Gas and Electric or Pacific Bell.
  - c. Location or distance right or left of centerline.
  - d. Show number of encroachment permit. This can be found in the project records.
8. For structures with structural concrete, show the actual percentage of mineral admixture (i.e. fly ash, silica fume) and actual average compressive strength in each element of the structure on the “Concrete Strength and Type Limits” detail shown on the project plans. See Figure 1, *Actual Fly Ash Content and Actual Average Concrete Compressive Strength on the As-Built Project Plans*, for an example of the information that needs to be shown.



**Figure 1. Actual Fly Ash Content and Actual Average Concrete Compressive Strength on As-Built Project Plans.**

9. For reinforced concrete structures, show the exact location and type of all:
  - a. Ultimate butt splices except for bar reinforcing hoops.

- b. Reinforcing steel splices that are not placed in accordance with the project plans and [Contract Specifications](#). Refer to Figure 2, *Example of As-Built Project Plan with Coupler Notes*.



**Figure 2. Example of As-Built Project Plan with Coupler Notes**

The Structure Representative (SR) should complete the as-built project plans for structure work and return them to the [SC Office Associate](#) in SC Headquarters (HQ) in Sacramento as soon as possible after all structure work is finished on the project and no later than 30 days after completion of the structure. On contracts with more than one structure, all as-built structure project plans should be submitted together at the completion of structure work. Stamp completed as-built project plans with the as-built stamp and fill in all required information. A digital as-built stamp for use in Adobe Acrobat is available on the SC website. Each sheet of the as-built structure project plans must be dated and signed by the SR. The SR's name should also be printed in cases where the signature is not legible. As-built project plans submitted by consultant SRs should include the name of their firm on the "Corrections By" line of the stamp. Firm names may be printed by hand.

The preferred method of submission of as-built project plans to SC HQ is by email. Email as-built project plans to [sc.office.associates@dot.ca.gov](mailto:sc.office.associates@dot.ca.gov) and cc the Office Associate assigned to your geographical area.

On contracts where pavement overlays are placed, or sign structures are erected, the minimum vertical clearance might be changed on existing structures that may not be part of the contract bridge work. Even if these structures are not detailed on the project plans, the SR must report the new permanent clearances to the Resident Engineer. The notification procedures for changes in the clearance or permit rating of a structure are addressed in the *Construction Manual*, [Section 3-703](#), *Public Safety*, and in this BCM.

# Samples of Required Documents Submitted to SC HQ

This attachment includes examples of or links for some of the completed required documents referenced in Attachment1, *List of Required Documents Submitted to SC HQ*, as follows:

1. Form SC-3812, CIDH Pile Information for Piles Tested by the FTB:  
See Figure 1
2. Form SC-4803, Pile Quantity & Driving Record: See Figure 2 and see the link for [Bridge No. 12-0204](#), Flag Canyon Creek Bridge
3. Form SC-4804, Pile Quantity and Drilling Record (CIDH Piles): See Figure 3
4. Form SC-4805, Log Pile Sheet: See Figure 4
5. Form SC-4806, Pile Layout Sheets: See Figure 5
6. Form SC-6303, Report of Completion – Bridges: See link for [Bridge No. 27-0019](#), San Antonio Creek Bridge
7. Form SC-6304, Report of Completion – Building Projects: See link for [Building No. 33-BLD-80-PM2.2](#), SFOBB Maintenance Complex
8. Form SC-6305, Paint Record: See Figure 6 and link for Bridge No. 23-0024, Sacramento River (Rio Vista) Bridge
9. Form DSD-D-0129, Joint Movement Calculations: See Figure 7 and the link for [Bridge No. 02-0202](#), Hilt Road OC (Replace)
10. Form TR-0019, Notice of Change in Clearance or Bridge Weight Rating: See link for structures for [Contract 04-2640N4](#)
11. Form TR-0020, Notice of Change in Vertical or Horizontal Clearance: See link for structures for [Contract 04-260N4](#)
12. As-built CPM Schedule: See link for [Contract No. 04-264094](#)
13. As-built project plans: See link for [Bridge No. 27-0119](#), San Antonio Creek Bridge.

**M e m o r a n d u m**

*Flex your power!  
Be energy efficient!*

**To:** RICHARD FOLEY  
DEPUTY DIVISION CHIEF  
OFFICE OF STRUCTURE CONSTRUCTION  
DIVISION OF ENGINEERING SERVICES, MS 9-2/11H

**Date:** July 11, 2022

ATTENTION: CHAIRMAN – PILE MITIGATION COMMITTEE

**From:** Jordan Jarosz/Mohamed Kaddoura  
Structure Representative  
5675 B Gibraltar Drive  
Pleasanton, Ca, 94588  
510-393-1493

**Subject:** CIDH Pile Information for Piles Tested by the Foundation Testing Branch (FTB)

Project No.: 04-297634		Project Name/ Location: 04-Ala-84/680-17.9/R22.9, R10.3/R15.3			
Bridge/Structure No.:33-0352		Bridge/Structure Name: Scotts Comer Separation (Widen)			
Abut/Bent/RW/SW No: Bents NB&SB		Prime Contractor: Bay Cities Inc, and Bridgeway			
Const. Phase: (if applicable)		Drilling Contractor: Pacific Coast Drilling Company			
Slurry Type: (water, SlurryPro, etc) Slurry Pro		Concrete Mfr & Mix Design No.: Cemex 1617357		Max. Concrete Aggregate Size: 3/8"	
PILE No.	From Acceptance Test Report, PILE was ACCEPTED (A) OR REJECTED (R)?	IF Pile was REJECTED, List ANOMALY X-Sections (A-A,B-B, etc)	FOR ANOMALY X-SECTIONS		
			Was MITIGATION REQUIRED? (Yes/No)	IF Mitigation Required, was Mitigation DUE to GEOTECH (G), STRUCTURE DESIGN (S), and/or CORROSION (C) concerns?	Describe Repair Method (simple repair, excavate/chip/concrete, waterblast/grout, etc) OR Amount of Administrative Deduction Taken (\$\$)
Bent 2 (NB)	A		N		
Bent 2 (SB)	R	A-A	Y	S	Simple repair
Bent 3 (NB)	A		N		
Bent 3 (SB)	A		N		

Sheet 1 of 1 pages

*"Provide a safe and reliable transportation network that serves all people and respects the environment"*

Form SC-3801, CIDH Pile Information for Piles Tested by the Foundation Testing Branch (FTB) NEW 12/22/2022

**Figure 1. Form SC-3812, CIDH Pile Information for Piles Tested by the FTB**



DEPARTMENT OF TRANSPORTATION

PILE QUANTITY & DRILLING RECORD  
(CIDH PILES)

FORM DC-378A (8/78)

JOB STAMP  
11- Imp-86-64.2/67.8  
11-195814

SHEET NO. 48 - 28-1

BRIDGE NO. 58-0721

ITEM DESCRIPTION 16" CIDH PILING

BRIDGE NAME Sparosa

ABUT OR BENT NO. 2 FTG Center FTG TYPE \_\_\_\_\_ BOTTOM FTG ELEV. 310.0

PILE DRILLING INSPECTED BY F. I. Travelot

REINFORCING STEEL INSPECTED BY F. I. Travelot

CONCRETE PLACING INSPECTED BY F. I. Travelot

QUANTITY CALCULATIONS BY F. I. Travelot DATE 10/9/81

QUANTITY CALCULATIONS CHECKED BY I. L. Stayawae DATE 10/19/81

PILE NO.	DATE PILE DRILLED	DATE REBAR PLACED	DATE CONCRETE PLACED	(1) SPEC. TOP OF PILE ELEV.	(2) SPEC. PILE TIP ELEV.	(3) THEOR. LENGTH OF PILE (1)-(2)	(4) MEAS. LENGTH OF PILE	(5) ACTUAL PILE TIP ELEV. (7)-(4)	(6) PAY LENGTH TO BE NOTE BELOW	REMARKS	LENGTH OF REBAR FEED
1	10/8/81	10/9/81	10/9/81	310.3	278.0	32.3	32.5	277.8	32.3	hard drilling	
2							32.8	277.5			
3							33.0	277.3		12" cobbles at Elev. 290 ±	
4							32.9	277.4	↓		
5							32.0	278.3	32.0		
6							32.3	278.0	32.3		
7							32.7	277.6		Core barrel used Elev. 280-285	
8							33.1	277.2			
9	↓	↓	↓	↓	↓	↓	32.6	277.7	↓	groundwater at tip - minor seepage	
SHEET TOTAL				ITEM NO. <u>28</u>	<u>290.4 LF.</u>						

\* THE PAY LENGTH (6) IS THE THEORETICAL LENGTH (3) EXCEPT THAT IF THE MEASURED LENGTH (4) IS LESS THAN THE THEORETICAL LENGTH (3) THE MEASURED LENGTH (4) WILL BE THE PAY LENGTH (6)

FILE CATEGORY 48

Figure 3. Form SC-4804, Pile Quantity & Drilling Record (CIDH Piles)

JOB STAMP  
 Big Bypass  
 Contract No. 01-263004  
 01-Men-101-69.4/78.9

Bridge Name Quail Meadows UC Sheet No. 1/16  
 Bridge No. 10-0173 Abut/Bent No. Abut 1 Pile No. 1  
 Hammer Make Delmag Model D30-32 Energy (ft-lbs) = 82,625 (max)  
 Reference Descr Bottom of Footing Reference Elev 1345.00 Pile Type HP14x89  
 Pile Length 50.33 Pile Tip Elev 1285.00 Pile Cutoff Elev 1345.33  
 Date(s) Driven 6/3/2015 Inspected by B. Bet

Penetration (ft)	Tip Elev (ft)	Blows/ft	Blows/Min	Equiv Stroke	Time	Remarks
15.00	1330.00	2				Start - Pile tap to 15'
20.00	1325.00	3				
25.00	1320.00	6				
30.00	1315.00	10				
31.00	1314.00	11				
32.00	1313.00	10				
33.00	1312.00	13				
34.00	1311.00	12				
35.00	1310.00	14				
36.00	1309.00	14				
37.00	1308.00	14				
38.00	1307.00	15	46	6.8		
39.00	1306.00	16				
40.00	1305.00	15				
41.00	1304.00	16				
42.00	1303.00	18				
43.00	1302.00	19				
44.00	1301.00	18				
45.00	1300.00	20	44	7.5		
46.00	1299.00	20				
47.00	1298.00	23				
48.00	1297.00	27				
49.00	1296.00	28				
50.00	1295.00	30	42	8.2		Finish - Pile tip

Figure 4. Form SC 4805, Log Pile Sheet

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

# PILE LAYOUT SHEET

SC-4806 (Formerly DH-OS C80) (REV. 12/17/13)

JOB STAMP  
Big Bypass  
Contract No. 01-263004  
01-Men-101-69.4/78.9

DRAWN BY B. Bet DATE 4/23/2015 SHT NO 1/2  
CHECKED BY R. Deo DATE 4/24/2015  
BRIDGE NO. 10-0173 FTG \_\_\_\_\_  
ABUTMENT OR BENT NO 1 FTG TYPE \_\_\_\_\_  
BOTTOM FTG ELEV 1345

PER PLAN	AS-BUILT	DATE REVISED
Pile Type: HP 14x89	_____	_____
Cutoff Elev: 1345.33	_____	_____
Tip Elev: 1295	_____	_____
Pile Length: 50.33	_____	_____

Abutment 1, looking up station

SCALE: NTS

Figure 5. Form SC-4806, Pile Layout Sheet



# PAINT RECORD

SC-6305 (Formerly DH-OS M11) (REV. 12/17/13)

BRIDGE NAME Eel River BOH	BRIDGE NUMBER 04-0015	DIST - CO - RTE - PM 01-HUM-283-0.1	DATES COVERED - THIS RPT (INC) 1/23/18 → 8/6/18
CONTRACT NUMBER 01-0E8404	COST OF JOB (PAINT ONLY) \$2,136,000	PAINT INSPECTOR Mike McCracken, Jacob Hurd	
CONTRACTOR Murphy Industrial Coatings		SUBCONTRACTOR	
DATE STARTED 1/23/18	DATE COMPLETED 8/6/18	WORKING DAYS ALLOWED 115	
DAYS WORKED 94	DAYS LOST-WEATHER 42	DAYS LOST-OTHER	DAYS OVERRUN

TYPE OF STRUCTURE - NUMBER AND LENGTH OF SPANS  
 Continuous riveted steel through truss in Spans 7-9 (240', 322', & 240' respectively).  
 Steel hand rail in spans 1-12.  
 Concrete "end posts" at south approach. See routine inspection rept for addtl details.

TOTAL AREA SQFT 93,000	AREA BLASTED SQFT (spot blast SSPC-SP6) 2,000	TOTAL TONS 30
---------------------------	--	------------------

DESCRIPTION OF PAINT SYSTEM  
 Brushoff blast clean (SSPC-SP7) of existing 2003 coating system, with application of a new PUWB coating system. Handrail has white PUWB 174 finish coat.

REMARKS  
 The 15" exterior face of each sidewalk was hand-scrubbed with water (no SSPC-SP7), & two finish coats of PUWB were applied.

OPERATION	METHOD	SUPPLIER	SPEC NO	AMOUNT USED	SQ FT AREA	SQ FT/GAL	TOTAL COST	SQ FT COST
pressure wash	pressure wash	Murphy Industrial Coatings performed the work	std. spec. 59-2.01C(4)(6)	N/A	91,000	N/A	\$511,000	\$5.62/SQFT
brush-off blast	SSPC-SP7	abrasive: Kleen Blast 30/60 Murphy Industrial Coatings performed the work	std. spec. 59-2.01C(4)(6)	29	89,000	N/A	\$511,000	\$5.74/SQFT
spot-blast clean	SSPC-SP6 & SSPC-SP11	abrasive: Kleen Blast 30/60 Murphy Industrial Coatings performed the work	std. spec. 59-2.01C(4)(6)	1	2,000	N/A	\$32,000	\$16/SQFT
hand clean	SSPC-SP1	Murphy Industrial Coatings performed the work	N/A - Extra work	N/A	2,000	N/A	\$50,000	\$25/SQFT
under coats	~28% spray ~12% brush & roller	Stiles	std spec. 59-2.01C(4)(6) spec. prov. 59-2.01A(1)	617 gal	93,000	151 SQFT/gal	\$344,000	\$3.70/SQFT
finish coats	~86% spray ~12% brush & roller	Stiles	std spec. 59-2.01C(4)(6) spec. prov. 59-2.01A(1)	1,252 gal	186,000	149 SQFT/gal	\$688,000	\$3.70/SQFT
Note: "SQFT Area" column represents sum of area of each coat.				TOTALS:	N/A	N/A	\$2,136,000	N/A

REPORT BY Mike McCracken	TITLE Structure Rep	DATE 10/15/18
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Figure 6. Form SC-6305, Paint Record

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION  
**JOINT MOVEMENTS CALCULATIONS**<sup>a</sup>

DSD-D-0129 (REV. 5/93)

EA 01-0H6401	DISTRICT 01	COUNTY MEN	ROUTE 101	PM 25.72	BRIDGE NAME AND NUMBER COTTON WOOD OH 10-0199L
TYPE STRUCTURE CIP/PS BOX GIRDER			TYPE ABUTMENT SEAT		TYPE EXPANSION (2 elast. pads, etc.)
① TEMPERATURE EXTREMES (from Preliminary Report)					
Maximum	115 °F	Steel	Range ( _____ °F)	(0.0000065 x 1,200) =	0.00
- Minimum	13 °F	Concrete (Conventional)	Range ( _____ °F)	(0.0000060 x 1,200) =	0.06
		Concrete (Pretensioned)	Range ( _____ °F)	(0.0000060 x 1,200) =	0.12 <sup>g</sup>
= Range	102 °F	Concrete (Post Tensioned)	Range ( _____ °F)	(0.0000060 x 1,200) =	0.63 <sup>g</sup>
ITEM ① DESIGNER M. LYNCH		DATE 07/10/2018		ITEM ② CHECKED BY R. WILSON	DATE 08/08/2018

To be filled in by Office of Structures Design<sup>b</sup> : P. CARROL Date: 10/02/2019

Location	Skew (degrees) Do not use in calculation	④ Contributing Length (feet)	Calculated Movement (inches) ③ x ④ / 100	M.R. (inches) (Round up to 1/2")	Seal Type A, B or Open Joint	Seal Width Limits <sup>d</sup>			Groove (saw cut) Width or Installation Width <sup>e</sup>	
						W1 (inches) Maximum	W2 (inches) Min. @ Max. Temperature	⑤ Adjust from Maximum Temp. (inches) Δ' / ① x ② x ④ / 100	Width at Temp. Listed (inches) w = ⑤ + ⑥	
Abutment 1	17	121	1.65	2	B	4.293	2.240	66	0.427	2.667
Abutment 2	19	121	1.65	2	B	4.293	2.240	58	0.496	2.736

- a Project Designer: Send to RE or SR with Preliminary Report.
- b Show line drawing of structure on reverse side; show points of no movement and contributory lengths. Retain copy for design calculations file.
- c RE or SR: Complete and return to Structure Construction with final report.
- d Type B information from TransLab reports.
- e Groove width adjustment based on Δ' = (maximum temperature extreme) minus (superstructure temperature).
- f Measure superstructure temperature by placing bulb of concrete thermometer ± 6 inches into expansion joint.
- g When MR is greater than 4 inches, increase anticipated shortening 25%.

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Figure 7. Form DSD-D-0129, Joint Movement Calculations



# Daily and Weekly Reports

## Revision and Approval

Revision	Date	Nature of Changes	Approved By
2	08-31-2023	Revised and added Attachment 5	Richard Foley
1	10-30-2020	Original Issue	Richard Foley

[Click here](#) to request previous versions      Contact [SC Technical Team P](#) for questions

## Background

This process establishes Structure Construction (SC) roles, responsibilities, and procedures for completing daily and weekly reports, which includes taking and filing construction photos, to document project construction progress.

## Process Inputs

1. Daily labor and equipment employed by the Contractor
2. Mobilization and demobilization
3. Contract item work
4. Change order (CO) work
5. Potential claim work, including notification of differing site condition
6. Department staff work (surveying, material testers, etc.)
7. Visitors and/or stakeholders
8. Quality assurance work
9. Safety issues and resolutions
10. Contract compliance issues and resolutions
11. Project photos
12. Discussions with the Contractor, District, designers, and/or other stakeholders
13. Quantity measurements

# Procedure

1. All work associated with this process is charged as [Project Direct – Construction](#).
2. Structure Representative (SR):
  - a. Prepares a SR daily report to document activities for contract administration on [Form CEM-4501](#), *Resident Engineer’s Daily Report*, per:
    - i. The *Construction Manual*, Chapter 5, [Section 5-004](#), *Contract Administration – Conduct of the Work – Resident Engineer’s Daily Report*.
    - ii. [Attachment 1](#), *Guidance on Writing Daily and Weekly Reports*.
  - b. Distributes the SR daily report as follows:
    - i. Sends original to the Resident Engineer for project file, Category 45, *Resident Engineer’s Daily Reports*. Refer to the *Construction Manual*, Chapter 5, [Section 5-102C](#), *Contract Administration – Project Records and Reports – Organization of Project Documents – Description of Categories*.
    - ii. Sends copy to the Bridge Construction Engineer (BCE) if required by the BCE
  - c. Sends copy to the Area Construction Manager (ACM) if required by the ACM
  - d. For an example of a completed SR daily report (Form CEM-4501, *Resident Engineer’s Daily Report*), see [Attachment 2](#), *Structure Representative’s Daily Report – Example*.
  - e. If no Assistant Structure Representative (ASR) is assigned to provide field inspection, completes an ASR daily report according to the guidelines listed in Section 3.a. below.
  - f. Reviews and distributes ASR daily reports as follows:
    - i. Verifies ASR daily reports are sufficient for:
      1. Contract administration
      2. Labor compliance
      3. Extra work payment
      4. Progress payment
      5. Dispute resolution and potential claims
      6. State/Federal audits.
    - ii. Verifies the ASR daily reports are complete and in conformance with the *Construction Manual*, Chapter 5, *Contract Administration*, [Section 5-004](#),

*Resident Engineer's Daily Report, and Attachment 1, Guidance on Writing Daily and Weekly Reports.*

- iii. Distributes as follows:
    - 1. Sends original to the Resident Engineer for project file, Category 46, *Assistant Resident Engineer's Daily Reports*.
    - 2. Sends a copy to the BCE if required by the BCE.
    - 3. Sends a copy to the ACM if required by the ACM.
  - g. Trains and mentors SC staff regarding expectations and continual improvement in writing daily reports, to ensure accuracy and completeness.
  - h. If an assigned project is utilizing the ProDMS database for daily reports, instructs assistants to attend and complete training in the use of the same; see Attachment 1, *Guidance on Writing Daily and Weekly Reports*, for additional information.
  - i. Takes photos of progress and issues. See [Attachment 5](#), *Construction Photos and Videos*, for guidance on how to take and file photos.
  - j. Completes and distributes the SC Weekly Newsletter on [Form SC-2701A](#) or [Form SC-2701B](#), *SC Weekly Newsletter*, if required by the ACM as follows:
    - i. Per Attachment 1, *Guidance on Writing Daily and Weekly Reports* and [Attachment 4](#), *SC Weekly Newsletter – Example*.
    - ii. Distributes the SC Weekly Newsletter as follows:
      - 1. Sends original to the Resident Engineer for the project file, Category 28, *Weekly Newsletter*, at the BCE's direction.
      - 2. Sends a copy to the BCE if required by the BCE.
      - 3. Sends a copy to the ACM if required by the ACM.
3. Assistant Structure Representative (ASR):
- a. Prepares a daily report to document construction activity each day on [Form CEM-4601](#), *Assistant Resident Engineer's Daily Report*, per the following guidance:
    - i. The *Construction Manual*:
      - 1. Chapter 3, *General Provisions*:
        - a. [Section 3-903](#), *Payment –Force Account*
        - b. [Section 3-521D](#), *Control of Work – Requests for Information and Potential Claim Records –Documentation Guidelines for Disputes*
      - 2. Chapter 5, *Contract Administration*:

- a. [Section 5-004](#), *Conduct of the Work –Resident Engineer’s Daily Report*
    - b. [Section 5-005](#), *Conduct of the Work – Assistant Resident Engineer’s Daily Report.*
  - ii. [Attachment 1](#), *Guidance on Writing Daily and Weekly Reports*
  - iii. [Attachment 3](#), *Assistant Structure Representative’s Daily Report – Example*
  - iv. The [Contract Specifications](#), Section 9-1.04D(3), *Payment – Force Account –Equipment Rental – Equipment Not On the Job Site and Not Required for Original-Contract Work.*
  - v. For additional information regarding daily reports that supplement the information in this BCM and the *Construction Manual*, review the [Field Engineer Training](#), Section 10, *ASR Daily Reports*.
  - vi. If an assigned project is utilizing the ProDMS database for daily reports, attend and complete training in the use of the same; see Attachment 1, *Guidance on Writing Daily and Weekly Reports*, for additional information.
  - vii. Distribute the *ASR Daily Report* as follows:
    - a. Send original to the SR by the end of the following working day.
    - b. Takes photos of project progress and issues per guidance in Attachment 5, *Construction Photos and Videos*.
4. Bridge Construction Engineer (BCE):
- a. Verifies that daily reports are being completed for each project.
  - b. If an assigned project is utilizing the ProDMS database for daily reports, verifies staff training and compliance.
  - c. Performs periodic review of Form CEM-4501, *Resident Engineer’s Daily Report*, for accuracy and completeness. Provide comments and training to SC staff for any needed improvement.
  - d. Performs periodic review of Form CEM-4601, *Assistant Resident Engineer’s Daily Report*, for accuracy and completeness. Provide comments and training to SC staff for any needed improvement.
  - e. Verifies SC Weekly Newsletters are being completed for each project, if required by the Area Construction Manager (ACM).
  - f. Performs periodic review of SC Weekly Newsletters, for accuracy and completeness. Provide comments and training to SC staff for any needed improvement.

- g. Uses information from the daily reports and newsletters to complete the BCE's Bi-Monthly Report for the ACM.
5. Area Construction Manager:
  - a. Ensures that one project record review is performed annually for each SR by the SC supervisor or the ACM. For details refer to [BCM E-2, Project Record Review](#).
  - b. Determines if SC Weekly Newsletters are required and direct SC staff accordingly.

## **Process Outputs**

1. Completed Form CEM-4501, *Resident Engineer's Daily Report*
2. Completed Form CEM-4601, *Assistant Resident Engineer's Daily Report*
3. Completed Form SC-2701A or SC-2701B, *SC Weekly Newsletter*
4. Adequate number of progress photos filed in Category 14, *Photo Records*, of the project records to document project construction progress

## **Attachments**

1. [Attachment 1](#): *Guidance on Writing Daily and Weekly Reports*
2. [Attachment 2](#): *Structure Representative's Daily Report - Example*
3. [Attachment 3](#): *Assistant Structure Representative's Daily Report – Example*
4. [Attachment 4](#): *SC Weekly Newsletter – Example*
5. [Attachment 5](#): *Construction Photos and Videos*

# Guidance on Writing Daily and Weekly Reports

A daily report documenting progress and significant developments in structure work will be prepared each day by the Structure Representative (SR) and Assistant Structure Representatives (ASR). The Area Construction Manager (ACM) may require the submission of a SC Weekly Newsletter by the SR.

Reports must be numbered according to the *Caltrans Working Day Calendar*. Caltrans non-working day reports are numbered as the last working day followed by A, B, C, etc. For example, Friday, January 13, 2023, is report No. 444; Saturday, January 14, 2023, is report No. 444A; Sunday, January 15, 2023, is report No. 444B; Monday, January 16, 2023 (Holiday – Martin Luther King Jr. Day) is report No. 444C; Tuesday, January 17, 2023, is report No. 445, etc. Daily reports with multiple pages must be numbered as sheet 1 of 2, 2 of 2, etc.

The reports are official documents which may be used to settle claims, cost adjustments, and lawsuits. These reports must be sensible, factual, and use proper grammar. If a daily report is hand-written, it must be legible.

When Structure Construction (SC) staff is assigned as the Resident Engineer (RE), the SR must follow District policies for submittal of the reports.

## **1 - Structure Representative's Daily Report**

The SR (or lead worker for large projects) will prepare a daily report for each working day.

The following guidance is provided to assist in the preparation of the SR's daily report:

1. Use [Form CEM-4501](#), *Resident Engineer's Daily Report/Assistant Resident Engineer's Daily Report*, to prepare the SR's daily report. Note that:
  - a. Equivalent forms created in Microsoft Word or Excel are acceptable.
  - b. For an example, refer to [Attachment 2](#), *Structure Representative's Daily Report – Example*
  - c. When no ASR is assigned to the project the SR has the following two options to complete the SR daily report:
    - i. Option 1: Use Form CEM-4601, *Assistant Resident Engineer's Daily Report*, to document the information for the SR's daily report and the ASR's daily report. The guidance in Section 1 and Section 2 must be



followed and the SR must note at the top of Form CEM-4601 that this daily report is a combination of the SR's and the ASR's daily report

- ii. Option 2: Complete the SR's daily report using Form CEM-4501 and complete the ASR's daily report using Form-4601.
2. When there is no work, a SR's daily report is written to document that there is no work and why. If a SR's daily report is not written, it is not clear if the SR's daily report was misplaced or lost.
  3. Note the effects of weather on job progress. Include stream gauge readings for structures over waterways.
  4. Do not include a description of routine operations. This information is included in the Assistant Structure Representative's daily report (ASR's daily report), on Form CEM-4601, *Assistant Resident Engineer's Daily Report*, described in section 2 of this attachment.
  5. Document significant discussions with the Contractor, Department staff, and other stakeholders.
  6. Include information regarding any instructions given to Contractor's personnel. In the case of verbal instructions, describe the instruction given, to whom the instruction was given, and whether there were any comments or objections by the person or persons to whom the instructions were given. Verbal instructions must be confirmed in writing.
  7. Document justification for field changes and when Change Orders (CO) and submittals are authorized.
  8. Take photos or videos according to the guidelines in [Attachment 5](#), *Construction Photos and Videos*.
  9. Document significant incidents or accidents.
  10. List names of visitors to the jobsite and their connection to the project such as the District Safety Officer, FHWA auditor, ACM, etc.
  11. Document overtime worked by SC personnel as described in [BCM A-3](#), *Overtime*. The ACM may also require that overtime is documented on daily reports by including the following information:
    - a. Employee's name
    - b. Starting and ending time that the employee worked overtime
    - c. Total net hours of overtime worked by the employee
    - d. Reason the overtime work was necessary.
  12. Sign and print name legibly.

## **2 - Assistant Structure Representative's Daily Report**

The Assistant Structure Representative must prepare a daily report for each day. The purpose of the ASR's daily report is to establish the labor and equipment employed for each operation or phase of the work. In the event of a claim or similar situation, the ASR's daily report is essential and may be reviewed by Caltrans Legal Division. The SR daily report and the ASR's daily report complement each other well, when completed correctly.

The following guidance is provided to assist in preparation of the ASR's daily report:

1. Use [Form CEM-4601](#), *Assistant Resident Engineer's Daily Report*, to prepare the ASR's daily report. Note that:
  - a. Equivalent forms created in Microsoft Word or Excel are acceptable.
  - b. For an example refer to [Attachment 3](#), *Assistant Structure Representative's Daily Report – Example*.
2. When there is no structure work, an ASR's daily report is written to document that there is no work and why. If an ASR's daily report is not written, it is not clear if the ASR's daily report was misplaced or lost.
  - a. The curing of concrete elements prior to stripping is a consideration that may be included in the ASR's daily report on days when there is no structure work.
3. Under "Location & Description of Operation," include a succinct description of the location and operation such as "Continued installation of CIDH piles at Abutment 4." Additional details are included in the narrative section below the equipment and labor columns.
4. In some cases, segregating equipment and labor by contract item may not provide sufficient detail. For instance, showing all labor and equipment employed on concrete work under the concrete item may be too general. This work could be further segregated into sub-groups, such as falsework, formwork, curing, surface finishing, etc. Furnishing prestressed girders is another item where it is often necessary to break down the work into separate operations.
5. SC staff must include sufficient detail to document project progress, project issues, contract compliance, labor compliance, extra work payment (if any), progress payment, dispute resolution and potential claim, State/Federal audits, etc. If in doubt, coordinate with the SR to verify the desired level of detail.
6. For idle equipment, include a description of why the equipment is idle, as this is a factor when determining CO payments. For CO work, equipment is considered idle when the Contractor is performing routine repairs and maintenance, and is not paid for by the Department. However, use engineering judgement to

consider each unique situation. For example, on an emergency contract using force account as the payment mechanism, replacing drilling teeth on very hard drilling may be valid for consideration as CO work.

- a. Refer to the [Contract Specifications](#), Section 9-1.04D(3), *Payment – Force Account – Equipment Rental – Equipment Not on the Job Site and Not Required for Original-Contract Work*, for unique requirements on this topic.
7. If labor and equipment move between different operations involving multiple ASR's, coordination will be needed to ensure the hours do not conflict. In a claim, the daily reports could be deemed unreliable if there is conflicting information.
8. Document when a labor compliance interview was performed.
9. Document important conversations with Department staff or other stakeholders.
10. Document compliance with the contract, COs, and authorized submittals.
11. Include materials delivered and incorporated into the work and mobilization or demobilization of equipment and subcontractors.
12. Document quality assurance and acceptance activities performed.
13. Use active words such as *verified*, *measured*, and *surveyed* to describe work performed by SC staff for quality assurance activities.
14. The ASR's daily reports should be purpose-driven and results-driven and written in a way that anticipates their value in case of a future claim.
  - a. For example, when drilling or driving piles, daily production rates can be determined for the typical soils encountered and verified against the boring logs. If an unanticipated hard layer of soil or cobbles are encountered, a new production rate should be established along with any changes made by the Contractor, i.e., switch a drilling auger with a core-barrel, to assist with a potential claim.
  - b. Another example could be for cold-planing. If the specifications require tungsten-carbide grinding bits with a certain dimension, this should be verified and documented at the required intervals.
15. Write facts and not opinions. Be professional; though sometimes construction work can be emotional, remember to keep emotions out of the daily report. Our records are subject to public release through the Freedom of Information Act and are discoverable in a trial.
16. Document non-conforming work including discussions with Contractor's personnel and SC staff. Take photos and follow up with the corrective actions taken; document the corrective action in subsequent ASR's daily report.
17. Document if existing conditions are different than presented in the [contract documents](#). For example, if soil encountered in excavations or drilled holes differs from the log of test borings.
18. For CO work:

- a. Either include a separate column for hours of equipment and labor or complete a separate ASR's daily report. In either instance, include a narrative account of the CO work performed.
  - b. For payment of rental equipment brought onto the jobsite specifically for CO work, follow the chart in the *Contract Specifications*, Section 9-1.04D(3), *Payment – Force Account – Equipment Rental – Equipment Not On the Job Site and Not Required for Original Contract Work*. Use two columns on the daily report such as “hours worked” and “hours paid” to eliminate confusion.
  - c. Any tentative agreement (TA) which is prepared using [Form CEM-4907](#), *Tentative Daily Extra Work Agreement*, (or an equivalent form) is signed by the Engineer inspecting the work no later than the shift after the work was completed, per the *Construction Manual*, [Section 3-903C](#), *General Provisions – Payment – Force Account - Tentative Agreements*. The signed TA is attached to the daily report. It is best practice to come to an agreement with the foreman on the hours prior to completing the daily report. Extra work bills that do not match the hours on the ASR's daily report cannot be paid until they are resolved. If agreement cannot be reached, inform the SR. Use engineering judgement when evaluating the hours presented; extra work includes the hours required for clean-up, procurement of materials, and other preparation activities.
  - d. For CO work that is extra work at force account, document any instructions given to Contractor's personnel. In the case of verbal instructions, describe the instruction given, to whom the instruction was given, and whether there were any comments or objections by the person or persons to whom the instructions were given. Verbal instructions must be confirmed in writing. Caution must be used when directing the Contractor's means and methods for CO work, and it must be done under the direction of the SR.
19. Pay attention to the Contractor's verbal communication. If he or she mentions that specific work should be paid for as extra work, discuss with the SR and track work separately; it may evolve into disputed work at a future date. Remind the Contractor of their obligations if they choose to pursue a potential claim, outlined in the *Contract Specifications*, Section 5-1.043, *Control of Work – Potential Claims and Dispute Resolution*. If the Contractor mentions a differing site condition, document this on the daily report and notify the SR immediately.
  20. Take daily project progress photos. Refer to Attachment 5, *Construction Photos and Videos*, of this BCM for guidelines on how to take and file photographs.
  21. Document unsafe conditions and who was notified of the unsafe condition. If the matter is urgent, do not merely document it; discuss with the Contractor and the SR. In such cases, refer to the *Construction Manual*, [Section 2-1.03A](#), *Safety and Traffic – Safety – Managing Safety Hazards – Imminent Hazards*. Take photos and follow up with the resolution to the unsafe situation identified.
  22. Sign and print name legibly.

23. If an assigned project is utilizing the ProDMS database for ASR's daily reports, attend and complete training in the use of the same.
  - a. Resources for [ProDMS](#) can be found on the Caltrans intranet through the DES website.
  - b. ProDMS is a data management system which was developed in house by SC to handle construction administration tasks, including the creation of daily reports. It is in the process of being rolled out to Districts across the State.

### **3 - SC Weekly Newsletter**

The SC weekly newsletter is completed by the SR only when required by the ACM. The SC weekly newsletter is intended to present a brief, concise summary of the work performed during the week and work planned for the next week. The following guidance is provided to assist in preparation of the weekly newsletter:

1. Use [Form SC-2701A](#) or [Form SC-2701B](#), *Weekly Newsletter*, to prepare the weekly newsletter.
2. Provide a general summary of the work performed during the week and work planned for the next week; a detailed description of operations is not required.
3. Include a minimum of two progress photos.
4. Document current week overtime and anticipated overtime for the next week, for SC field staff.
5. Document the following (as applicable):
  - a. Significant project issues
  - b. Contractor complaints
  - c. Delays
  - d. Notice of potential claim, or claims
  - e. Major accidents
  - f. Opening of structures.

# Structure Representative's Daily Report - Example

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION  
**RESIDENT ENGINEER'S DAILY REPORT**  
**ASST. RESIDENT ENGINEER'S DAILY REPORT**  
 CEM-4501 (REV 11/2006) CT# 7541-3506-1

- RESIDENT ENGINEER'S DAILY REPORT  
 ASST. RESIDENT ENGINEER'S DAILY REPORT

JOB STAMP
03-291104
03-NeV-80
Project ID 0300000487
Truckee River Bridge

REPORT NUMBER 46-283	DATE 05/15/2018	S	M	<input checked="" type="radio"/>	W	T	F	S	(Circle Day)
SHIFT HOUR: START 7:00 AM STOP 3:30 PM	TEMPERATURE MIN 66 degree F	MAX 91 degree F							

WEATHER  
Windy

Work Performed: (1) Excavate down to bottom of footing at Retaining Wall 1 & 3, (2) Started placing forms for Abut 1 and 2, for stage 1 construction, & (3) Drilling piles at Pier 2.

Conversations:  
 Discussed the Z-2 ADL soil requirements with John Banks, and let him know that we cannot bury material onsite. Discussed "slow" drilling at Pier #2 with John Banks as well. John B. informed me that he believes the drilling is slow at RW 2 due to "hard rock". John and I reviewed the Log of Test Borings together and i pointed out the numerous locations where hard rock is shown. John B. insisted that the rock isn't "hard", it's "super hard" and he "didn't bid the job that way".

After the discussion, I notified the RE and ASR of possible NOPC for DSC. ASR and I reviewed the existing ASR drill logs from RW2. The drill logs appear to closely reflect the Log of Test Borings.

RE request ASR start tracking the drilling at Pier #2 separately and have the ASR and Superintendent sign off on the daily production rates, equipment and personnel in preparation for a possible claim.

Wind starting to pick up onsite today, with gusts at 15mph (+-) as reported by the National Weather Service. Weather report predicts wind gusts at 30mph next week. Reminded John B. of 25mph gust limitation for picks per his COSP.

Received aggregate test results for the aggregates at Mathews Ready Mix in Oroville, CA. The 3/8" pea gravel was outside of operating range on the #4 sieve. I sent the contractor a letter suspending the use of the aggregate until further information is submitted showing that it is back in operating range. Testing was performed and within operating range.

Submittals: None

Correspondence: RE sent follow up email to John Banks regarding "hard drilling" at Pier 2.

OT Hours: Aaron Paul 1.5 hours			<input checked="" type="checkbox"/>
PRINT NAME Structure Rep's Name	SIGNATURE	TITLE Structure Representative	

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**Figure 1. Example of Structure Representative's Daily Report**

# Assistant Structure Representative's Daily Report - Example

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION  
**ASSISTANT RESIDENT ENGINEER'S  
 DAILY REPORT**  
 CEM 4601 (REV 4/1999) CT# 7541-3504-6

JOB STAMP	
03-291104	Report No. <u>283</u>
03-Nev-80	Date <u>5/15/18</u>
Project ID 0300000487	S <u>  </u> M <u>  </u> <u>  </u> W <u>  </u> T <u>  </u> F <u>  </u> S <u>  </u> Circle Day
Truckee River Bridge	Shift Hours Start <u>7:00 AM</u> Stop <u>3:30 PM</u>

**ASSISTANT RESIDENT ENGINEER'S DAILY** \_\_\_\_\_ **Structures** \_\_\_\_\_ **REPORT**

Location and Description of Operation MCM continued with Pier #3 excavation to bottom of footing. Agra completed drilling on Pier #2, Pile #35 and began drilling Pier #2, Pile#36. Drilling for Pile #36 is very slow (rate = 1 ft/hr) consistent with other piles at this Pier.

Drill Op says he's drilling through "unexpected hard rock". Drill Op and I agreed to collect a representative sample of the "hard rock".  
 Each of us took a sample at 10ft. See drill logs for additional detail.

MCM Placed forms for Abut #1, struct. conc.

	HOURS - ITEM NO.	WEATHER
	#75 Struct Ex	Hot AM/PM
	#76 Drilling Piles	Clear AM/PM
	#76 Place Pile Conc	Windy 15mph gusts
	#53 Struct Conc Forms	

**EQUIPMENT AND LABOR:**

EQUIPMENT NO.	NO. PERSONS	DESCRIPTION (Equipment or Labor)	HOURS								IDLE OR DOWN	REMARKS (Reason for Idleness or other remarks)	
			1	2	3	4	5	6	7	8			
231		3/4 Util Truck	6							2		Ford F-250 w/ Util Box	
229		1/2 Ton Pick Up	4								4	Ford F-150 / Flat tire (idle)	
		Superintendent	3	1	1						3	John Banks	
		Foreman	6							2		T. Johnson	
		Laborer	6							2		Todd Harris	
E33		Track Excavator	8									Cat 235 w/ Bucket	
		Operator	8									Tom Harris	
A21		1 Ton Util Truck		7	2							Dodge 3500 Crew Cab w/ Util Box	
		Foreman		7	2							S. Powell	
		Oiler		8	1							K. Peterson	
		Operator		8	1							S. Thomas	
DR02		Drill Rig		8								BG 24H	

Continuous inspection for drilling and intermittent inspection on all others.

Reminded MCM that all excavations shall be done in accordance with the approved shoring plans and thus directed MCM to rework the slope of Pier 3 excavation to a 1:1 slope, maximum. MCM complied with the direction and reworked the slope.

Concrete placed at pile#35 met all QA requirements

Quantities:

Item #75 - 75 CY (by truck count)

Item#76 - 22 FT drilled total (See drill log for details) ; 48CY poured (Pile #35 - see conc placement record)

MCM PM, Bob Odenkirk, onsite today watching drilling at Pile #36.

1.5 HR OT 330 to 500 - Overtime required for conc pour

PRINT NAME Aaron Paul	SIGNATURE	TITLE ASR
--------------------------	-----------	--------------

**ADA Notice** For individuals with sensory disabilities, this document is available in alternate formats. For information, call (916) 445-1233, TTY 711, or write to Records and Forms Management, 1120 N Street, MS-89, Sacramento, CA 95814.

**Figure 1. ASR Daily Report, Page 1 of 2 (Description of Work)**

EA	03-291104		
Co-Rte-KP (PM)	03-Nev-80		
Asst. Structure Rep.	Aaron Paul		
<div style="border: 1px solid black; height: 200px; width: 100%;"></div>		<div style="border: 1px solid black; height: 200px; width: 100%;"></div>	
Date: 05/15/2018	By Int: [REDACTED]	Date: [REDACTED]	By Int: [REDACTED]
<div style="border: 1px solid black; height: 200px; width: 100%;"></div>		<div style="border: 1px solid black; height: 200px; width: 100%;"></div>	
Date: [REDACTED]	By Int: [REDACTED]	Date: [REDACTED]	By Int: [REDACTED]

Page No. [REDACTED]

**Figure 2. Page 2 of 2 (Photos)**



# SC Weekly Newsletter – Example

SC-2701B (Rev. 12/17/13)

STATE OF CALIFORNIA . DEPARTMENT OF TRANSPORTATION

## SC WEEKLY NEWSLETTER

### Job Stamp:

03-291104 (Project ID 0300000487)  
03-Nev-80  
Truckee River Bridge

## Weekly Newsletter 7

REPORT FOR WEEK ENDING: May 18, 2018  
CONTRACTOR: MCM  
STRUCTURE REPRESENTATIVE: Jo Smith  
STRUCTURES WORK: Bridge Replacement and Retaining Walls

Project Milestones		Progress & Time	
<i>Original Advertise:</i>	<i>04/10/17</i>	<i>Contract Time Elapsed:</i>	<i>11%</i>
<i>Bid Opening:</i>	<i>06/07/17</i>	<i>Estimated % of Work Complete:</i>	<i>23%</i>
<i>Award:</i>	<i>11/30/17</i>		<i>&lt;--Includes Mob Cost</i>
<i>Approved:</i>	<i>02/02/18</i>	<i>Original Contract Working Days</i>	<i>315</i>
<i>Start of Work:</i>	<i>04/03/18</i>	<i>CCO Days</i>	<i>0</i>
<i>Work Completed:</i>	<i>TBD</i>	<i>Total Working Days:</i>	<i>315</i>
<i>Recommend Acceptance:</i>	<i>TBD</i>	<i>First Contract Working Day:</i>	<i>04/03/18</i>
<i>Contract Acceptance:</i>	<i>TBD</i>	<i>Last Working Day per WSWD:</i>	<i>08/21/19</i>
<i>PFE Sent:</i>	<i>TBD</i>	<i>Estimated Date of Completion:</i>	<i>12/17/19</i>
			<i>&lt;--Per CPM sch. Update</i>

### THIS PAST WEEK THE FOLLOWING WORK WAS COMPLETED:

Completed Pier 1 drilling; Started Pier 2 drilling.  
Completed excavation at Abutment 1 and formwork at Abutment 1 & 2, for Stage 1 construction.  
Started placing rebar for Abutment 1, Stage 1.

### ANTICIPATED WORK TO BE PERFORMED NEXT WEEK:

Continue Pier 2 drilling.  
Install temporary creek diversion system to work at existing Pier 4.  
Start to place rebar at Abutment 2 for Stage 1.  
Place concrete for Abutment 1, Stage 1.

### MEETINGS:

Tuesday meeting with Superintendent, John Banks, to discuss job schedule and details.

### ENVIRONMENTAL/SWPPP/PERMITS

### CONTRACT CHANGE ORDERS:

Finished putting together CCO #8. This will allow the contractor to use an alternative concrete stain.  
Sent off to district.

### SUBMITTALS:

Received the Temporary Creek Diversion System Plan - Stage 1B. I sent over to Ted McDonald for his review as well. He informed us that he was fine with it. I authorized the plan.

Received the Stage 1 Falsework submittal. I talked to Jim Nicholls regarding the welding of the falsework piles and the capacity of the piles. I informed the contractor about the paperwork and inspection needed to weld the piles together and I informed them that they need to come up with a procedure to determine the actual capacity of the piles. I performed my initial review and sent back comments.

Figure 1. Example of SR Weekly Newsletter

**NOPC'S:**

Expect NOPC shortly regarding "hard drilling" at Pier#2 due to:

Drilling at Pier 2 is slow. MCM Project Manager was onsite taking photos. Superintendent informed me that the drilling at Pier 2 is "very hard" and he "didn't bid it this way". RE and ASR were notified. AT RE's request we began a Tentative Agreement with MCM to provide daily report for this operation. Requesting Senior provide additional ASR.

**PROJECT PHOTOGRAPHS:**



Abutment 1, Formwork Start



Drilling at Pier 2

**OT REQUEST / NOTIFICATION (COMBINED DISTRICT/STRUCTURES OT REQUEST):**

**Employee:**  
Aaron Paul

**OT Worked This Week:**  
12 hours

**OT Anticipated Next Week:**  
15 hours

**Level of Priority per Construction Activity Inspection Priority Chart:**

Benchmark:                      Intermittent:    X                      Mandatory:                      X

**OT Substantiation for Next Week:**

OT required for: (1) possible concrete pours that occur outside of normal shift hours; (2) To log drilling at Pier 2 in preparation of DSC claim.

**Measures Taken To Reduce OT Usage:**

Sent request to Senior for additional ASR due to anticipated NOPC and concurrent operations.

\_\_\_\_\_  
Resident Engineer/Structure Representative

**Figure 2. Page 2 for Example of SR Weekly Newsletter**

# Construction Photos and Videos

The Structure Representative (SR) and Assistant Structure Representatives (ASR's) are to take photos to record the progress of structure construction work. Typically, many photos are taken as it is not always clear at the time what, and how much photo documentation will be useful in the future. This attachment provides guidance on when and how to take photos, how to file photos, and which photos to include in the daily and weekly reports. The use of the term photographic records includes video records and/or drone photos.

Multiple sections of the *Construction Manual* detail the utility of photographic and video records which may be used to support administrative decisions made during the progress of the project. The information in the following sections of the *Construction Manual* will typically not be repeated in the text of this attachment and it is the responsibility of the SR and ASR to be familiar with these sections. The sections most commonly applicable to Structure Construction (SC) staff are as follows:

1. Chapter 2, *Safety and Traffic – Safety – Duties and Responsibilities – Division of Occupational Safety and Health*:
  - a. [Section 2-104D\(1\)](#), *Elements of a Cal/OSHA Inspection*
  - b. [Section 2-104D\(2\)](#), *Participation in the Inspection*
2. Chapter 3, [Section 3-523D](#), *General Provisions – Requests for Information and Potential Claim Records – Documentation Guidelines for Disputes*
3. Chapter 4, *Construction Details*:
  - a. [Section 4-1502](#), *Existing Facilities – Before Work Begins*
  - b. [Section 4-1903A\(3\)](#), *Earthwork – During the Course of Work – Roadway Excavation – Slides and Slipouts*
4. Chapter 5, Section 1, *Contract Administration – Project Records and Reports*:
  - a. [Section 5-102](#), *Organization of Project Documents – Description of Categories – Category 14 Photo Records*
  - b. [Section 5-102C](#), *Description of Categories – Category 62 Disputes*
  - c. [Section 5-104C](#), *Final Construction Project Records – Disposition of Construction Project Records, Table 5-1.1 Construction Records Retention Schedule, Item 14 – Photos Records*
5. Chapter 5, Section 4, *Contract Administration – Disputes*:
  - a. [Section 5-413](#), *Preliminary Construction Claim Findings and Category 62 Preparation and Guidelines*

6. Chapter 5, Section 4, *Contract Administration – Disputes – Construction Claim Findings Preparation and Guidelines*:
  - a. [Section 5-414A\(10\)](#), *Format – District’s Position*
  - b. [Section 5-414A\(15\)](#), *Format – Exhibits*
  - c. [Section 5-414B](#), *Helpful Hints*
  - d. [Section 5-414C](#), *Things to Avoid*.

## **1 - Guidance on When to Take Photos**

The purpose of taking photographs includes, but is not limited to, the following: to show progress, show critical elements, support claim resolution, and to document constructability, quality, and safety issues. Some examples of when to take photographs are as follows:

Pre-construction:

1. Document existing conditions before the start of construction.
2. Include views from all approach directions as well upstream and downstream when applicable.
3. If adjacent property will be disturbed during construction, include photos of the existing conditions, such as existing sidewalks, curbs, and gutters, where construction access driveways are constructed. Photos are useful to facilitate restoration as required in *Contract Specifications*, Section 5-1.36, *Control of Work – Property and Facility Preservation*, and to settle disputes.

During Construction:

1. Progress photos noting new conditions, contractor operations, and new workmanship and methods employed.
2. Photos of notable incidents, such as accidents, lane closure signage, and demarcation.
3. Photos of poor workmanship and items not constructed per plan. Document resolution of the issue in the daily report. If possible, photos should be used to document the correction of poor workmanship and items not constructed per plan.
4. Photos of notable features, paying special attention to those that will not be visible later, such as:
  - a. Reinforcement including:
    - i. Location of couplers

- ii. Added rebar around utility openings
  - iii. Completed rebar prior to concrete pour.
- b. Falsework including:
  - i. Erection stages
  - ii. Connections
  - iii. Soil conditions surrounding falsework pads
  - iv. Traffic openings.
- 5. Soil conditions encountered during drilling or excavation.
- 6. Change order work.
- 7. Disputed items that could lead to a claim.
- 8. Buried man-made objects.
- 9. Safety issues. Document resolution in daily report. If possible, document the resolution of the safety issues with more photos.

After Construction:

- 1. Photos demonstrating completed work. Show the best view possible of the feature being photographed.
- 2. Include at least one photo of each completed structure in its entirety.

## **2 - Guidance on How to Take Photos**

It is good practice when using a State-issued iPhone to have a date and time stamp on the photo. On State-issued iPhones, the “Hub” (formerly “Workspace”) application can be used to find State-approved applications for download. “Timestamp Camera Basic” is a photo app that will imprint metadata directly on the photo with little effort by the user. Some customization is possible; the user should explore the app to learn the capabilities. Following download, this app will be used to take photos instead of the iPhone camera app. Photos taken through “Timestamp Camera Basic” will be stored in the same location as photos taken through the iPhone camera app, in the Photos app. See Figure 2-1 below for an example of the automatic imprinted photo information.



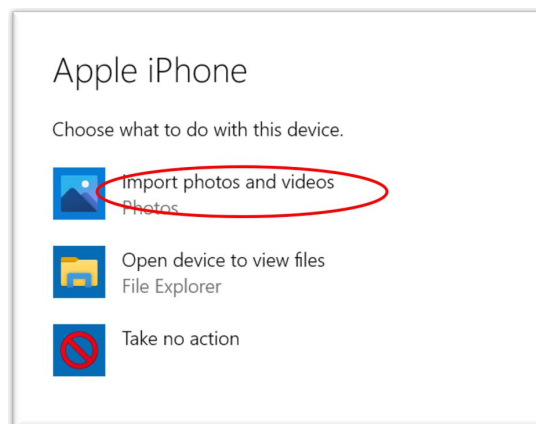
**Figure 2-1. Example of metadata imprinted on photo**

Other examples of good practices include:

1. Include an item to show scale if it would enhance the viewer's understanding of what the photographer is intending to show. An example of this would be to use a tape measure alongside a crack in concrete.
2. Consider lighting when composing the picture.
3. Multiple photos may be necessary to communicate location and intent on larger jobs.
4. Consider taking notes for the photos to convey the intended topic and include in a photo template such, as shown in [Attachment 3](#), *Assistant Resident Engineer's Daily Report – Example*.

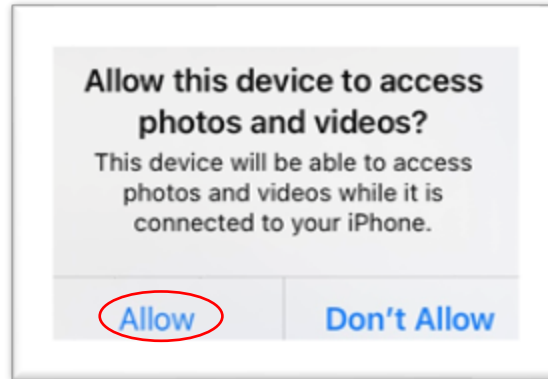
### **3 - Guidance on Downloading Photos**

For photos on iPhone's, download photos to a computer hard drive using a USB cable. After connecting the USB cable, the following message shown in Figure 3-1 will appear on the computer screen:



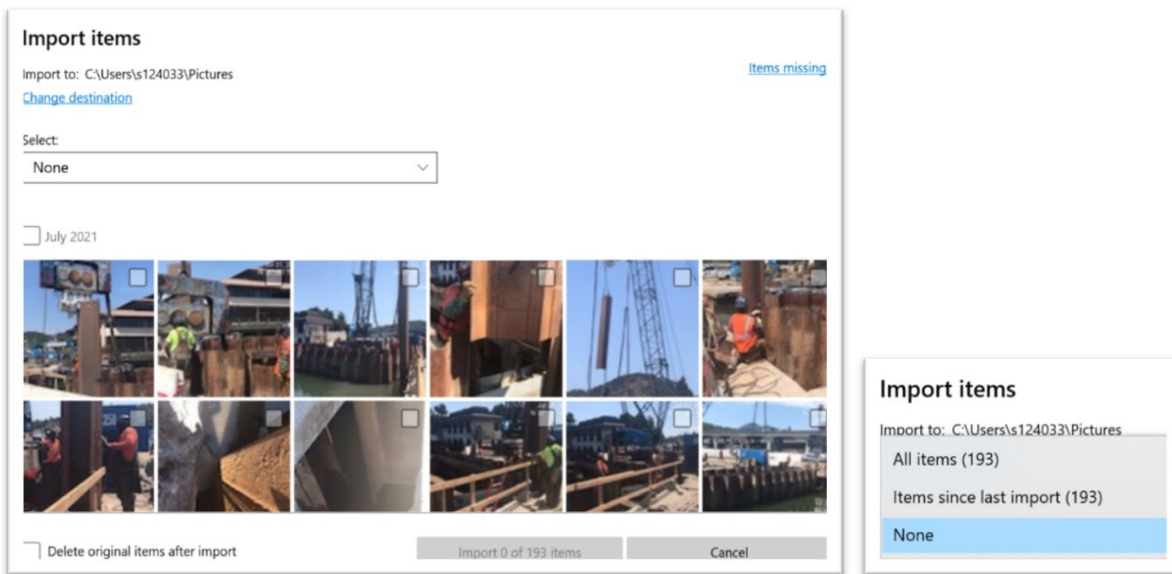
**Figure 3-1. iPhone message 1 when downloading photos**

Select “Import photos and videos.” The following message shown on Figure 3-2 will appear on the iPhone:



**Figure 3-2. iPhone message 2 when downloading photos**

Select “Allow.” Next, the following import window shown in Figure 3-3 will appear on the computer screen. The import file location can be changed if desired; “All items” or “Items since last import” can be chosen as shown below.



**Figure 3-3. iPhone message 3 when downloading photos**

Photos should be periodically deleted from the iPhone to avoid device storage capacity issues.

## 4 - Filing Photos

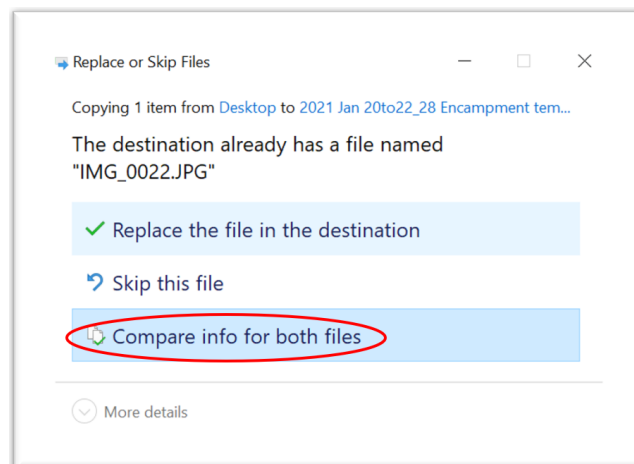
File all photographic records in project records Category 14, *Photo Records*, per *Construction Manual*, [Section 5-102C](#), *Description of Categories*. Suggested subcategories are:

- Before Construction
- During Construction
- After Construction.

The SR/ASR should comply with any District instructions and policy in connection with identifying and filing SC photographs. In the absence of District policy, use the guidelines contained in this section. Several factors may influence the most appropriate method of storing photos.

If the project is large, it may be helpful to create subcategories by structure. ASR's should consult both the SR and Bridge Construction Engineer (BCE) regarding what additional file structure, if any, should be used above and beyond placement in Category 14.

If the District has a common server available, place photos in the digital Category 14. Place photos in the server allowing the metadata to sort photos by date. The ASR/SR need not rename photos unless requested by the Resident Engineer/BCE. It is recognized that a more detailed photo management process may be desired, and that must be weighed with the time expenditure required. Use care to not over-write another engineer's photos. Automated naming by the device may be a duplicate of that from another device. If so, the following pop-up window shown in Figure 4-1 will appear on the computer screen:



**Figure 4-1. iPhone potential message 4 when downloading photos**



Choose “Compare info for both files.” A prompt will appear asking which file is correct to keep. Different photos will have different metadata. In such a case, both photos should be selected as shown below in Figure 4-2. This will add a number to the end of the file name to differentiate the two files.

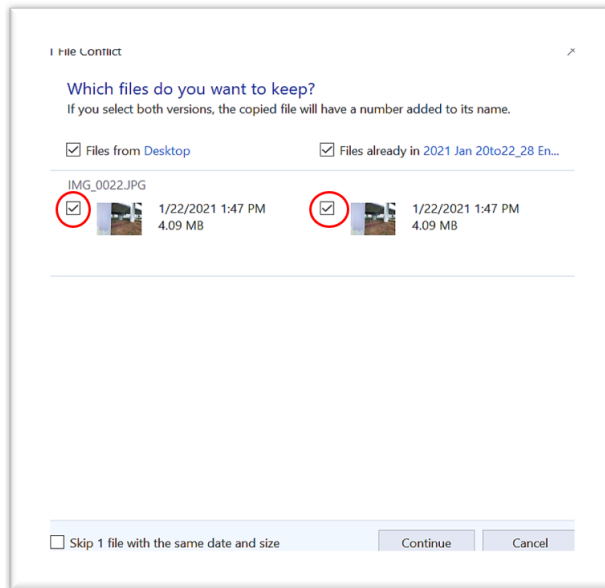


Figure 4-2. iPhone potential message 5 when downloading photos

Searching for photos by date can be performed by clicking the “Date modified” button shown in Figure 4-3.

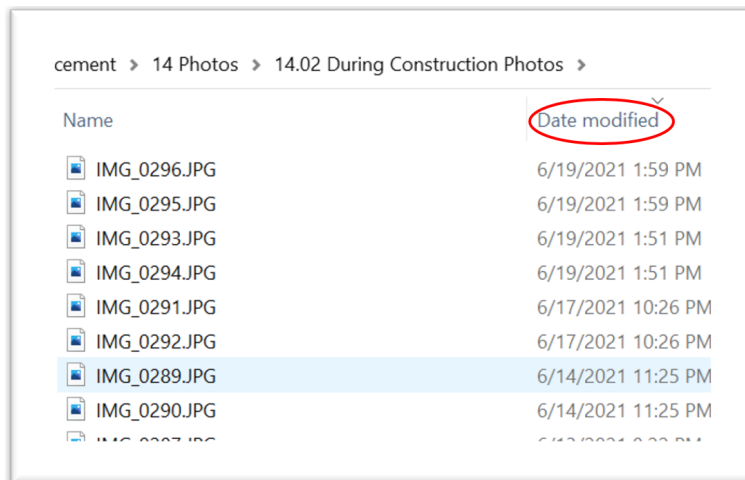


Figure 4-3. iPhone message 6 when downloading photos

If the District does not have a common server available, consult the BCE for direction regarding how digital photos are to be stored and/or transferred. This may include an external thumb drive, external hard drive, or other mechanism, as directed.

## **5 - Guidance on Selection of Photos for Daily and Weekly Report**

Though many photos are taken, it is not necessary to attach all photos to the daily or weekly report. Choose a representative number that will show progress and communicate any issues. While all pictures may not be attached to the report, it is important to follow the procedure of filing all photos in Category 14, *Photo Records*. Often in a dispute situation, the SR and BCE will find pictures in Category 14 that will help the State defend its position.

## **6 - ProDMS and Photos**

The rollout of the ProDMS web-based application will change the process by which SC attaches photos to daily reports. The rollout is phased; until it is complete, the above method will provide the structure for photo management and storage. For projects using ProDMS, see the following link for adding photos to daily reports:

[QC9-Daily Report Attachments](#)

## **7 - Falcon and Photos**

The rollout of the Division of Construction's Falcon File Storage will change the process by which SC stores photos. Falcon is intended for ***final*** file disposition only; working documents are to be stored on local servers. At this time, there are some differences between Districts regarding how to apply this to the large volume of photos taken during construction. Follow local District policies.



# Correspondence with the Contractor

## Revision and Approval

Revision	Date	Nature of Changes	Approved By
0	07-15-2021	Original Issue	Richard Foley

[Click here](#) to request previous versions      Contact [SC Technical Team P](#) for questions

## Background

This process establishes Structure Construction (SC) roles, responsibilities, and procedures for written correspondence with the Contractor. Written correspondence includes letters and other paper documentation as well as electronic correspondence capable of being downloaded and printed.

## Process Inputs

1. Contractor activities and discussions
2. Contractor submittals
3. Contractor correspondence (requests for information)

## Procedure

1. All work associated with this process is charged as [Project Direct – Construction](#).
2. Structure Representative will:
  - a. Prepare project correspondence for structure work. Before preparing any project correspondence, meet with the Resident Engineer (RE) and obtain an electronic copy of the RE's current authorized letterhead and format for official correspondence with the Contractor. Although letter format may vary slightly with each RE, the format will include the [current authorized letterhead](#) and the RE's name at the bottom of each letter. As stated in the *Construction Manual*, [Section 3-502](#), *General Provisions – Control of Work – Engineer's Authority*, the RE is the lead for contact and correspondence with the

contractor. Structure Construction is responsible for the technical control of structure work per the *Construction Manual*, [Section 1-104](#), *Caltrans Construction Organization – Construction Organization – Structure Construction Organization*.

- b. Address all correspondence between the State and the Contractor to the primary Contractor, even when the subject matter is of direct concern only to a subcontractor. Written instructions are given to the subcontractors by means of copies of letters to the primary Contractor.
- c. Prepare and send documentation to the Contractor as needed to document the following:
  - i. Concurrence with Contractor activities.
  - ii. Deficiencies with Contractor activities.
  - iii. Discussions with the Contractor. As a follow-up to Contractor activities and discussions with the Contractor, prepare and send a letter that documents the key points of the discussion.
  - iv. Response to Contractor submittals.
  - v. Response to information requests.
  - vi. For assistance in defending and mitigating disputes with the Department, correspondence should accurately establish and document current submittal status and project conditions, along with advisements, warnings, and prohibitions for future operations.
- d. When preparing correspondence:
  - i. Include references to contract documents as needed to emphasize correspondence.
  - ii. Review the *Construction Manual* and the *SC Bridge Construction Records and Procedures Manual* for technical guidance to assist correspondence preparation. For example, [BCM C-11](#), *Shop Drawing Review of Temporary Structures*, includes a template for the *Temporary Structure Analysis Report*.
  - iii. Include the project EA (Expenditure Authorization) in the subject heading when sending correspondence by email.
  - iv. Review correspondence with the RE prior to sending correspondence to the Contractor.
- e. Inform the RE when correspondence is sent the Contractor.
- f. Assist the RE as needed to maintain complete and accurate project records for Structure Construction activities. All correspondence must go through the RE and be filed according to the RE's protocol and as specified in the

*Construction Manual, [Section 5-102C](#), Contract Administration – Project Records and Reports – Organization of Project Documents – Description of Categories.*

3. SC Supervisors:
  - a. Periodically review correspondence for adherence to format, tone, and content requirements.
4. SC Managers:
  - a. Audit staff communications as needed.

## **Process Outputs**

1. Timely, accurate, and complete project correspondence

## **Attachments**

None

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# Preparation of Progress Payment Documents

## Revision and Approval

Revision	Date	Nature of Changes	Approved By
0	02-16-2023	Original Issue	Richard Foley

[Click here](#) to request previous versions      Contact [SC Technical Team P](#) for questions

## Background

This process establishes Structure Construction (SC) roles, responsibilities, and procedures for preparing progress payment documents for completed and accepted structure work detailed on the SC Division of Work Memo.

Progress payment documents quantify and detail completed structure work necessary for the Resident Engineer (RE) to prepare progress payments. This includes all payments for contract bid item work, including partial payments as described herein, and change order work.

## Process Inputs

1. SC Division of Work Memo
2. Contract bid item work completed and accepted with material inspection documentation
3. Change order work
4. [Form CEM-5101](#), *Request for Payment for Materials on Hand*

## Procedure

1. All work associated with this process is charged as [Project Direct – Construction](#).

2. Review the following documents before proceeding as these documents provide the authority and details to understand how to efficiently prepare progress payment documents that meet the contract requirements:
  - a. [Contract Specifications](#) (CS):
    - i. Section 9-1.01, *Payment – General*
    - ii. Section 9-1.02A, *Payment – Measurement – General*
    - iii. Section 9-1.02C, *Payment – Measurement – Final Pay Item Quantities*
    - iv. Section 9-1.03, *Payment – Payment Scope*
    - v. Section 9-1.04, *Payment – Force Account*
    - vi. Section 9-1.05, *Payment – Extra Work Performed by Specialists*
    - vii. Section 9-1.06, *Payment – Changed Quantity Payment Adjustments*
    - viii. Section 9-1.15, *Payment – Work-Character Changes*
    - ix. Section 9-1.16, *Payment – Progress Payments*
    - x. Section 9-1.17, *Payment – Payment After Contract Acceptance*
  - b. *Construction Manual* (CM):
    - i. Chapter 3, *General Provisions*, [Section 3-9](#), *Payment*
    - ii. Chapter 5, *Contract Administration*, [Section 5-103](#), *Project Records and Reports – The Contract Administration System*
  - c. Review the SC Division of Work Memo to identify all structure bid items of work that will require progress payment documents. Refer to [BCM C-5](#), *SC Division of Project Work*, to understand how the SC Division of Work Memo was prepared.
  - d. In addition to the requirements listed in CS, Section 8-1.03, *Prosecution and Progress – Preconstruction Conference*, and CM, Chapter 5, *Contract Administration*, [Section 5-003](#), *Conduct of Work – Preconstruction Conference With the Contractor*, discuss the following topics at the preconstruction conference:
    - i. Materials on hand, and Form CEM-5101, *Request for Payment for Materials on Hand*.
    - ii. Material certifications required for payment.
    - iii. Payment based on work completed up to and including the 20<sup>th</sup> day of the month per CM, Chapter 3, *General Provisions*, [Section 3-906](#), *Payment – Progress Payments*.
    - iv. Schedule of values:
      1. Request a schedule of values when required for lump sum bid items, per requirements in CS, Section 9-1.16B, *Payment – Progress Payments – Schedule of Values*, and guidance in CM, Chapter 3, *General Provisions*, [Section 3-906B](#), *Payment – Progress Payments – Schedule of Values*.



- v. Discuss if the Contractor would like to submit requested bid item quantities, commonly referred to as a “wish list”, and when it will be submitted.
3. Assistant Structure Representative (ASR):
- a. Document with sufficient detail the contract quantities of completed work, in the daily report.
  - b. Prepare payment quantity sheets and any accompanying calculations (commonly referred to as a Q-Sheet) for each bid item with work satisfactorily completed by the 20<sup>th</sup> day of each month by performing the following tasks:
    - i. Gather relevant documents such as concrete pour records, daily reports, etc.
    - ii. Review previous payment Q-sheets, located in Category 48, *Bid Item Quantity Documents*, for bid items to be paid.
      - 1. Because payments are projected through the 20<sup>th</sup> of a given month, verify the current month payment accurately reflects cumulative quantity of work performed and paid to date.
    - iii. Complete the Q-Sheets per [Attachment 1](#), *Guidance on Preparation of Monthly Progress Payment*.
    - iv. Complete partial payments per [Attachment 2](#), *Guidance on Preparation of Partial Payments*.
    - v. Compare quantities with monthly payment requests submitted by the Contractor (i.e., “wish list”). Resolve any differences by reviewing documents and communicating with the Contractor.
    - vi. Print initiator’s name and sign initials in the “Calculated by” field at the top of form; print date after an independent quantity check is complete.
    - vii. Arrange for another SC staff member to perform an independent check of the calculated quantities and pay sheet.
    - viii. Submit the completed and checked Q-sheets to the Structure Representative (SR) prior to the due date.
  - c. If checking Q-sheets:
    - i. Perform an independent check of the payment quantity sheet and calculations and review payment history to avoid overpayment.
    - ii. Notify the SC staff who prepared the Q-sheet of any discrepancies found or questions resulting from the check.
    - iii. Following resolution of any discrepancies, print name and sign initials in “Checked by” field at top of form, and print date.
    - iv. Return to SC staff who prepared the Q-sheets.

- d. Assist the SR with preparation of materials on hand payments for eligible bid items. See [Attachment 3](#), *Guidance on Preparation of Materials on Hand Payments*, for more guidance. Coordinate an independent check, prior to turning in with other Q-sheets.
  - e. Assist the RE as requested, with review of extra work bills for change order work.
4. Structure Representative:
- a. If the Structure Representative is acting as the RE, complete [Form CEM-6003](#), *Progress Pay-Estimate Project Initiation or Update*. See guidance in [BCM 6-2.0](#), *Instructions for Projects in the Automated Progress Pay System (PISA)*.
  - b. Provide training or guidance on progress payments to ASRs as needed.
  - c. Assist with preparing material on hand payments; coordinate with the RE or Office Engineer as needed.
  - d. Assign responsibility for checking calculations.
  - e. Receive and review the accuracy of progress pay quantity sheets submitted by SC staff.
    - i. Authorize the quantity sheets prior to submitting to the RE.
  - f. Verify payment due dates with RE and/or the Office Engineer.
  - g. Compile and submit quantity sheets to the RE by the due date.
  - h. Assist the RE with reviewing extra work bills for change order work when requested.
5. SC Supervisors:
- a. Verify that the SC Division of Work Memo is being followed, and that change orders are being paid properly.
  - b. Assist with questions that may arise on topics such as partial payments and materials on hand.
  - c. Assist with any required coordination with District staff; on large projects, this may include a Senior RE or a Construction Engineer.
  - d. Perform periodic reviews of progress pay estimate documentation.
  - e. Perform project file review at intervals as specified in [BCM E-2](#), *SC Project Record Review*.
6. SC Managers:
- a. Verify that SC supervisors are performing periodic reviews of the progress pay estimate documentation.

## **Process Outputs**

1. Completed monthly progress payment quantity sheets

## **Attachments**

1. [Attachment 1](#), *Guidance on Preparation of Monthly Progress Payment*
2. [Attachment 2](#), *Guidance on Preparation of Partial Payments*
3. [Attachment 3](#), *Guidance on Preparation of Materials on Hand Payments*

# Guidance on Preparation of Monthly Progress Payment

This attachment provides guidance to Structure Construction (SC) staff on how to prepare monthly progress payment estimates, to meet the requirements of the *Contract Specifications (CS)*, Section 9-1.16, *Payment – Progress Payments*.

The Department makes monthly payments to compensate the Contractor for work completed during the pay period. Per the *Construction Manual*, Chapter 3, *General Provisions*, [Section 3-906](#), *Payment – Progress Payments*, each progress pay estimate must include payment for work completed up to and including the 20<sup>th</sup> day of the month.

Quantity calculation sheets are typically required for each contract bid item. Quantities for each Structure bid item is calculated by SC field staff assigned to the project. This is typically performed by the Assistant Structure Representative (ASR). These calculations must be checked by another ASR or the Structure Representative (SR) prior to submission. Often a supplemental sheet, referred to as a “Q-sheet,” is prepared in Microsoft Word or Excel and becomes the first sheet of the payment documents for a bid item.

Because bid items include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in constructing the work, some bid items are appropriate for partial payment to compensate the Contractor for work done in advance of the completed work. Information on partial payments can be found in [Attachment 2](#), *Guidance on Preparation of Partial Payments*.

## **1 - Methods of Payment**

The following methods of payment will be reviewed in this attachment:

- 1.1 Bid item work at unit price
- 1.2 Bid Item work at lump sum
- 1.3 Final pay bid items
- 1.4 Payments for Furnishing Materials - Distinction between Furnish and Install
- 1.5 Adjustments to contract prices
- 1.6 Payment for change order work
- 1.7 Deductions and withholds

## 1.1 Bid Item Work – Unit Price

Payment for bid items designated as unit price may be based on field measurement, scale weight or a calculated quantity.

Examples include:

- 24" CAST-IN DRILLED HOLE CONCRETE PILING (SOUND WALL), paid per linear foot
- REMOVE UNSOUND CONCRETE, paid per cubic foot

The quantity paid will be that which was incorporated into the work. The following information is presented to aid SC staff in making quantity calculations and to provide uniformity. Bid items not designated as final pay must be field measured each month for payment; see discussion of final pay bid items in Section 1.3 of this attachment. Unit price is full compensation including materials, labor, equipment, etc.

To follow are special considerations when calculating the pay quantity for the following unit price bid items:

### 1.1.1 Bar Reinforcing Steel:

Reinforcing steel is typically paid as a final pay bid item. [Form SC-4802, Bar Reinforcing Steel Placing Record](#), may be used for determining reinforcing steel quantities. Pay for bar reinforcing steel that is complete and in place in the forms. It does not have to be encased in concrete before payment is made. Payment for bar reinforcing steel is rounded to the nearest pound (1.0) as shown in the example below.

To follow are three methods used for calculating the payment quantity for bar reinforcing steel:

1. Rebar Factor: This is the preferred method for calculating payment quantities. The ratio of concrete to reinforcing steel can be calculated at the beginning of the project by dividing the pounds of bar reinforcing steel by the cubic yards of concrete for a particular bid item. A corresponding amount of rebar would be paid when the concrete bid item has been poured and paid. Include certificate of compliance (COC) numbers on the Q-sheet, and verify that the amount paid does not exceed the amount of rebar with COCs. See the example below.

Example: Given the following:

Bid item 113(F): STRUCTURAL CONCRETE, BRIDGE = 3548 CY

Bid item 133(F): BAR REINFORCING STEEL, BRIDGE = 2,369,529 LB

23 CY of concrete was poured and paid as bid item 113(F)

Rebar Factor Calculation:

$$2,369,529 \text{ LB} / 3548 \text{ CY} = 667.85 \text{ LB/CY}$$

### Monthly Progress Payment Calculation:

23 CY (667.85 LB/CY) = 15,361 LBS are paid for bid item 133(F)

2. Resident Engineer (RE) Pending File: The RE Pending File includes quantity take-offs and can be used to determine the amount of bar reinforcing steel for a given component.
3. Payment using COC's: Using the COC's is not the preferred method of calculating payment quantities. Additional steel not included for payment, such as buried bars, are included in the COC's. Paying by COCs will typically result in an overpayment of the bid item. If this method is used, 10% should be withheld from each progress payment estimate to avoid overpayment and reconciled as the work is nearing completion.

#### 1.1.2 Concrete:

Deduct all chamfers over 2 inches and all openings over 2 inches except weep holes, deck drains, and similar small openings. Do not deduct for the volume occupied by reinforcing steel, embedded structural steel, or for the volume of expansion joint filler, rubber waterstops, etc. Payment for concrete is rounded to the nearest hundredth (0.01) of a cubic yard.

#### 1.1.3 Earthwork:

When original ground elevations must be determined and used, elevation to the nearest 0.1 foot is adequate. Payment for earthwork is rounded to the nearest hundredth (0.01) of a cubic yard.

#### 1.1.4 Piling:

1. Variations exist between different editions of the payment clause of the CS, Section 49, *Piling*. SC staff must be familiar with payment of both furnish and drive clauses, contained in the edition specified for the project.
2. Driven pile quantities must be calculated on [Form SC-4803 Pile Quantity and Driving Record \(Driven Piles\)](#). See [BCM 49-2, Piling – Driven Piling](#), for guidance and instructions on completing the form.
3. For pile tip revisions - the CS, Section 49, *Piling*, specifies how piles are paid for when the Engineer revises the pile tip. Typically, this is paid for as change order work. SC staff must be familiar with the language of the applicable CS for each project as it may vary.
4. The following, which applies to Cast-in -Drilled-Hole (CIDH) piles:
  - a. CIDH piles must be calculated on [Form SC-4804 Pile Quantity and Drilling Record \(CIDH Piles\)](#). See [BCM 49-3, Piling – Cast-in-Place Concrete Piling](#), for guidance and instructions on completing the form.

- b. Permanent casing is paid as a separate bid item for CIDH pile, but temporary casing is included and fully compensated in the piling bid item.
  - c. Rock sockets are paid as a separate CIDH (Rock Socket) bid item.
  - d. For piles using the wet construction method discussed in BCM 49-3, *Piling – Cast-in-Place Concrete Piling*, payment for the CIDH concrete piling bid item and rock socket bid item (if applicable) will be made after the concrete is placed. If the pile is rejected after receipt of gamma-gamma testing, 30% will be withheld subject to mitigation.
5. Bar reinforcing steel for cast-in-place concrete piling greater than or equal to 24 inches in diameter is paid as a separate bid item. For smaller diameter cast-in-place concrete piling, bar reinforcing steel is included in the cast-in-place concrete piling bid item.
  6. For payment information related to cast-in-steel-shell piles, see BCM 49-3, [Attachment 7](#), *Cast-In-Steel-Shell Concrete Piling – Measurement and Payment*.
  7. Payment for CIDH piling is rounded to the nearest tenth (0.1) of a lineal foot.

#### 1.1.5 Miscellaneous Bid Items:

Bid items such as railings, pipe, conduit, waterstops, joint seal, etc., are paid for by the lineal foot and are typically field measured. Payment for these bid items is rounded to the nearest tenth (0.1) of a lineal foot.

Bid items such as protective covers, membrane waterproofing, texture panels, chipped surfacing, contrast treatment, etc., are paid for by the square yard. Quantities may be field measured or calculated. Payment for these bid items is rounded to the nearest tenth (0.1) of a square yard.

#### 1.1.6 Miscellaneous Metal:

The pay quantity for miscellaneous metal is determined by scale weights from documentation provided by the Contractor. Payment for miscellaneous metal is rounded to the nearest pound (1.0).

#### 1.1.7 Structural Steel:

Structural Steel is typically paid as a final pay bid item. Tabular weights, as given in the AISC Handbook, may be used in making calculations of weights of rolled shapes and structural plates. The RE Pending File may also be used to determine weights for payment. Additional details concerning measurements for structural steel quantities are given in CS, Section 55-1.04, *Steel Structures – General – Payment*. Withhold a sufficient amount to cover incidental work such as additional bolting and welding. Payment for structural steel is rounded to the nearest pound (1.0).

## 1.2 Bid Item Work – Lump Sum Bid Item Calculations

Lump sum (LS) bid items may be paid in one single payment or incrementally as a partial payment as the project progresses. MOBILIZATION, TEMPORARY SUPPORT, BRIDGE REMOVAL, and PRESTRESSING CAST-IN-PLACE CONCRETE are typical examples of lump sum bid items.

If specified in the contract documents, a schedule of values is submitted by the Contractor to assist with determining milestones for payment. The SR must authorize the schedule of values. If no schedule of values is specified in the contract documents, agreements may be made between the SR and the Contractor on a payment schedule based on milestones.

For a single payment, the unit and amount shown on the Quantity Sheet is “One Lump Sum.” Partial payments of LS bid items can be shown on the Quantity Sheet as a fraction of the LS payment such as: 0.35 LS.

Often LS bid items warrant a partial payment to compensate the contract for work performed prior to bid item completion. Additional guidance on partial payments is provided in [Attachment 2, Guidance on Preparation of Partial Payments](#).

## 1.3 Final Pay Bid Items

Some bid items are designated in the contract documents as final pay. The CS, Section 1-1.07, *General – Definitions*, defines a final pay bid item as:

*“Bid item whose quantity shown on the Bid Item List is the quantity paid.”*

At or before the time of the final estimate, this exact number will be paid regardless of any variations determined by field measuring. Bar reinforcing steel, structure excavation and backfill, and some structure concrete are examples of final pay bid items. Bid items designated as final pay are measured and paid each month in which they are incorporated into the work. Final pay bid items are designated in the contract documents with the letter (F) following the bid item number, for example:

- Bid item 113(F): STRUCTURAL CONCRETE (BRIDGE)

If authorized changes increase or decrease a fixed final pay quantity, calculation sheets must be prepared to substantiate the increase or decrease, and the changes must be formalized in a change order. The bid item summary sheet lists these quantities in addition to the final pay quantity shown on the project plans.



## 1.4 Payments for Furnishing Materials - Distinction between Furnish and Install

To compensate the Contractor for select structure materials with long lead times, two distinct payment bid items are created. The contract documents allow for payment upon fabrication of the bid items by including a furnish bid item in addition to a corresponding bid item for erect, drive, or install. Precast members and complete piling (defined below) are examples of materials which have a furnish bid item for payment.

Complete vs Incomplete elements: when steel, precast concrete, or timber piling of proper length are delivered to the job site ready for driving, the specification requirements for the furnish bid item has been met, as these are complete elements. Payment for the furnish bid item is paid on the progress pay estimate.

However, incomplete elements or portions of piling, such as steel shells for cast-in-place concrete piles, are not complete piling, from a payment perspective. When delivered, the specification requirement for the furnish bid item has not been met. In this example, the furnish bid item is paid when the steel shells have been driven and the concrete and reinforcing steel have been placed to provide a complete pile. Also in this example, the furnish and drive bid items are paid in the same estimate. Material not eligible for Furnish payment may be eligible for payment as materials on hand; see [Attachment 3](#), *Guidance on Preparation of Materials on Hand Payments*.

Consider the following when preparing piling payment, with furnish and drive bid items:

- For steel pipe piling, full payment on the furnish bid item will not be made until the piling is on site and all field welds are completed and approved. This work includes welding of splices and shear rings, when shown on the project plans or required in the *Special Provisions*.
- The concrete filling material for cast-in-steel-shell concrete piling is paid under the furnish bid item while the placement of said material is paid under the drive bid item. This is particularly important when making item adjustments.

## 1.5 Adjustments to Contract Prices

The Contractor or the State may request an adjustment to the cost per unit when the total pay quantity varies from the Bid Item List by more than 25 percent. When the bid item exceeds the quantity in the Bid Item List by more than 25%, an economy of scale reduction may be requested by the State. Conversely, when the total pay quantity less than 75% of the quantity shown on the Bid Item List, the Contractor may request the bid item price be increased to cover costs not reflected in the lower total pay quantity. The following references discuss adjustments in further detail:

- *Construction Manual*, Chapter 3, *General Provisions*, [Section 3-904A](#), *Payment Adjustments – Changed Quantity Payment Adjustments*
- CS, Section 9-1.06, *Payment - Changed Quantity Payment Adjustments*

## 1.6 Payments for Change Order Work

The CS, Section 1-1.07, *General – Definitions*, defines extra work as “any work, desired or performed, but not included in the original Contract”. An executed change order is required for extra work requested by the Department. A discussion of developing change orders is outside of the scope of this BCM. The change order may compensate the Contractor for the extra work in one of the following methods:

1. Increase or decrease of bid items
2. Agreed price (lump sum)
3. Force Account, commonly referred to as Time & Materials
4. Specialist billing

Quantity calculations for change order work follow the same procedures as those calculated for bid item work. The *Construction Manual* and the *Contract Specifications* contain many details SC staff must be familiar with related to calculation and payments for change order work. These include but are not limited to:

1. *Contract Specifications*:
  - a. Section 9-1.03, *Payment – Payment Scope*
  - b. Section 9-1.04, *Payment – Force Account*
  - c. Section 9-1.05, *Payment – Extra Work Performed by Specialists*
2. *Construction Manual*, Chapter 3, *General Provisions*:
  - a. [Section 3-903F](#), *Force Account – Billing for Extra Work at Force Account*
  - b. Section 3-903G, *Force Account – Labor*
  - c. Section 3-903H, *Force Account – Material*
  - d. Section 3-903I, *Force Account – Equipment Rental*
  - e. Section 3-903J, *Force Account – Extra Work Performed by Specialists*

For information on proper documentation for force account, refer to [BCM C-7](#), *Daily and Weekly Reports*, and *Construction Manual*, Chapter 3, *General Provisions*, [Section 3-903B](#), *Force Account – Force Account Records*.

In addition to the information listed below in Section 2, *Calculating and Checking Quantities*, the following details must be included on the quantity sheet:

- The change order number
- Totals shown including the net increase or decrease due to the change.

## 1.7 Deductions and Withholds

Deductions and withholds are temporarily or permanently deducted from the progress payments. A deduction is permanently taken from a progress payment or the final payment. When deductions are warranted, discuss with the SC Supervisor. Examples of deductions involving SC work include:

1. Source inspections in excess of specified distances per CS, Section 6-2.01E, *Control of Materials – Quality Assurance - General - Material Source Inspection and Testing*
2. Low concrete compressive strength per CS, Section 53-2.01D(5)(c), *Shotcrete – Structural Shotcrete – General – Quality Assurance – Department Acceptance – Compressive Strength* and Section 90-1.01D(5)(a), *Concrete – General – Quality Assurance – Compressive Strength – General*
3. Low cementitious material content per CS, Section 90-1.01D(2), *Concrete – General – Quality Assurance – Cementitious Material Content*
4. Aggregate noncompliance per CS, Section 90-1.02C(1), *Concrete – General – Materials – Aggregates - General*
5. CIDH anomalies per CS, Section 49-3.02A(4)(d)(iii), *Piling – Cast-in-Place Concrete Piling – Cast-in-Drilled-Hole Concrete Piling – General – Quality Assurance – Department Acceptance – Rejected Piles.*

Per CS, Section 9-1.16(E), *Payment – Progress Payments – Withholds*, the Department may withhold payment for noncompliance. Withholds are temporary, cumulative, and independent of deductions. Withholds are administered by the RE. If a withhold is appropriate for SC work, discuss with the RE. An example of a temporary withhold could include:

1. Progress withholds
2. Performance failure withholds
3. Stop notice withholds
4. Penalty withholds

## **2 - Calculating and Checking Quantities**

[Form CEM-4801](#), *Quantity Calculations*, or an equivalent form, is used for calculations unless a specific form is required as described elsewhere in this BCM or in a Technical Manual.

To facilitate checking and auditing, and to simplify original calculations:

1. Discuss with the SR and the RE, when the completed estimates are due to the RE or Office Engineer. Dates may vary due to weekends and holidays.

2. If the SR is acting as the RE, additional steps are required to input project information. See [BCM 6-2.0](#), *Instructions for Projects in the Automated Progress Pay System (PISA)*, and *Construction Manual*, Chapter 5, *Contract Administration*, [Section 5-103](#), *Project Records and Reports – The Contract Administration System*, for guidance.
3. Determine if the Contractor will submit bid item quantity requests monthly, commonly referred to as “wish lists”. If so, discuss with the Contractor when the request will be submitted; “wish lists” must be submitted sufficiently in advance of the due date to be useful.
  - a. Note: the bid item quantities requested from the Contractor facilitates partnering, improves communication, minimizes misunderstandings arising from payments, and minimizes processing of supplemental payments. However, SC staff must prepare calculations independently.
4. Before starting the calculations for any bid item, review the CS payment clauses for payment and measurement information specific to the payment bid items.
5. If prior payments have been made on the bid items, review prior payment history information to ensure cumulative payments accurately reflect work performed to date.
  - a. Refer to Figure 1, *Example of a Project Record – Item Sheet*, below. The Project Record - Item Sheets from previous estimates can be found in Category 60, *Project Status Sheets* of the project files, and are an invaluable resource for this purpose.
6. Refer to Figure 2, *Example of a Quantity Sheet (Q-Sheet)*, below. Quantity Sheets must contain the following information:
  - a. Contract number; use the job identification stamp where possible
  - b. Bid item number
  - c. Name of the bid item
  - d. Pay quantity shown on the project plans
  - e. Names of the SC staff which calculated the quantity and performed the independent check. Initials are not sufficient.
7. All calculations should be legible and not crowded on the sheet.
8. Provide sufficient detail for the checker or an auditor to follow. Checkers and auditors may be less familiar with the details than the SC staff making the original calculations, so work must be clear.
9. Only one bid item per sheet.
10. Quantity calculations for complex features can be augmented by sketches.
11. On any sheets on which dimensions differ from the original project plans, include an appropriate reference to explain the change. Notations such as “As-built”, “Field Measured”, “See CCO No. 6”, etc., will suffice.

12. When computations will be repeated, the use of a spreadsheet will facilitate both the calculation and the checking.
13. On contracts with two or more structures, the calculations for each structure should be further identified in some way, such as bridge name or number.
14. Per the *Construction Manual*, [Section 3-906A](#), *Payment – Progress Payments – Bid Items*, do not pay for material placed or installed for which the required evidence of acceptability has not been obtained, such as:
  - a. [Form TL-0029](#), *Report of Inspection of Material*
  - b. [Form TL-0624](#), *Inspection Release Tag*
  - c. Certificates of Compliance
  - d. Acceptance tests.
15. Withhold enough units from the calculated payment quantity to cover the value of any incomplete incidental work. For example, it is typical to withhold 5% of the concrete bid item until surface finish work is complete. See [Attachment 2](#), *Guidance on Preparation of Partial Payments*, for more examples.
16. When the quantity calculations are complete, request an independent check from another SC staff member on the project. On small projects, in consultation with the RE, District personnel may be used to assist in preparing or checking quantity calculations. If no other personnel are available to check quantity calculations, work with the SC Supervisor to have the quantities checked.
17. Following resolution of any discrepancies noted by the checker, turn in the quantity calculations to the SR. Coordinate with the RE for due date and time.

ITEM NO.	DESCRIPTION	UNITS	PRICE	QUANTITY	LF	ESTIMATE NO	ITEM STATUS	75% =	125% =
165	60" CAST-IN-DRILLED-HOLE CONCRETE PILE (SIGN FOUNDATION)		\$840.7300	260.0			ACTIVE	195.000	325.000
	049-24 11/19 48-165-01	50.000				22	ITEM PAYMENT		
	051-24 12/19 48-165-02	66.000				23	ITEM PAYMENT		
NET ITEM QUANTITY PAID THROUGH EST. NO. 41		116.000	\$97,524.68				+45%		
166	PRESTRESSING CAST-IN-PLACE CONCRETE		\$1,031,997.8400	1.0			ACTIVE	0.750	1.250
	056-20 03/20 48-166-01	0.040				26	ITEM PAYMENT		
	059-02 04/18 48-166-02	0.040				27	ITEM PAYMENT		
	062-23 06/13 48-166-03	0.230				29	ITEM PAYMENT		
	064-16 07/18 48-166-04	0.030				30	ITEM PAYMENT		
	066-21 08/20 48-166-05	0.130				31	ITEM PAYMENT		
	069-09 09/17 48-166-06	0.030				32	ITEM PAYMENT		
NET ITEM QUANTITY PAID THROUGH EST. NO. 41		0.500	\$515,998.92				+50%		
167	STRUCTURAL CONCRETE, BRIDGE FOOTING (F)		\$323.3600	1,793.0			ACTIVE	1,344.750	2,241.250
	027-06 01/18 48-167-01	190.000				12	ITEM PAYMENT		
	030-02 02/20 48-167-02	262.000				13	ITEM PAYMENT		
	033-18 04/19 48-167-03	180.000				15	ITEM PAYMENT		
	038-07 06/14 48-167-05	332.000				17	ITEM PAYMENT		
NET ITEM QUANTITY PAID THROUGH EST. NO. 41		964.000	\$311,719.04				+54%		
168	STRUCTURAL CONCRETE, BRIDGE (F)		\$1,253.2500	15,634.0			ACTIVE	11,725.500	19,542.500
	009-19 06/15 48-168-1	50.000				5	ITEM PAYMENT		
	012-09 07/20 48-168-02	748.000				6	ITEM PAYMENT		
	014-24 08/17 48-168-03	375.000				7	ITEM PAYMENT		
	017-12 09/20 48-168-04	390.400				8	ITEM PAYMENT		

Figure 1. Example of a Project Record- Item Sheet

Job Stamp:  
 11-2T2174 11-SD-5-37.4/46.5  
 Fed-Aid Project CMSTPL 6211(131)  
 Various loc. from Lomas Santa Fe UC to  
 0.5 mi So. Of Palomar Airport Rd. OC  
 CMGC

Item # 167 - STRUCTURAL CONCRETE, BRIDGE FOOTING  
 LOC: Abutment 4 LT Stage 2  
 CALC BY: R. Auer Date: 07/17/20  
 CHECKED BY: J. Woody Date: 07/17/20

CCO Work ?

ESTIMATE NO. 42 Date: 07/20/20

QUANTITY CALCULATIONS

Abutment 4 LT for Stage 2 is ready, and expected to be poured on 07/20/20.

L=82.813 ft, W= 15 ft, H = 4.5 ft

Vol = (LxWxH) = (82.813x15x4.5) = 5589.88 ft<sup>3</sup> / (27 ft<sup>3</sup>/CY)

Vol = 207 CY

**PAY EACH BID ITEM:**

ENGINEER'S ESTIMATE	<u>1,793</u> CY
PAY THIS ESTIMATE	<u>207</u> CY
PREVIOUS PAID	<u>964</u> CY
PAID TO DATE	<u>1,171</u> CY

Quantity Determined By:  
Calculated

Return to: Dept. of Transportation

Inspected By: Tyler Jones scheduled  
 Date: 07/20/20 plan  
 Release No.: tbd

Posted Sheet \_\_\_\_\_  
 Checked \_\_\_\_\_

\* SEE ATTACHED WORKSHEET

\* SEE CERTIFICATE OF COMPLIANCE IN FILE NO. 41-167

Engineers Estimate: 1,793.00 CY  
 Previously Paid: 964.00 CY  
 Pay this Estimate: 207.00 CY  
 Paid to Date: 1,171.00 CY

Checked Against Printout  
 BY: \_\_\_\_\_  
 Date: \_\_\_\_\_

**PAY**  
207.00 CY

Figure 2. Example of a Quantity Sheet (Q-Sheet)

# Guidance on Preparation of Partial Payments

This attachment provides guidance to Structure Construction (SC) staff on how to prepare quantity sheets for partial payments.

Bid items include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing the work. Significant expenses may occur prior to the completion of a final pay for a bid item. Partial payments compensate the Contractor as work progresses. The *Construction Manual*, Chapter 3, *General Provisions*, [Section 3-906A](#), *Payment – Progress Payments – Bid Items*, establishes the policy concerning partial payments. This attachment provides guidelines and establishes uniform practice for partial payments to compensate the Contractor for work done in advance of the completed work.

## 1 – Partial Payment of Unit Price and Lump Sum Bid Items

Both unit price and lump sum bid items are appropriate candidates for partial payments.

### 1.1 Prestressing Cast-In-Place Concrete – Lump Sum

If there are multiple structures included in the bid item for prestressing cast-in-place concrete, use a ratio of the deck area of each structure to the total deck area of all cast-in-place prestressed structures on the contract to obtain the appropriate fraction of the lump sum bid item for each structure. Other logical and equitable methods of determining this proportion may be used with approval of the SC Supervisor.

Make partial payments using the percentages detailed in Table 1.

**Table 1. Percentage Breakdown of Partial Payments for Prestressing Cast-In-Place Concrete**

<b>Operation</b>	<b>Partial Payment</b>
<b>Ducts:</b> Complete in place with distribution plates and required vents, for all tendons in the structure	30%
<b>Prestressing Steel:</b> Complete in place in all ducts; free and unbonded; protected from corrosion if required; and acceptable	50%
<b>Prestressing:</b> Including the work on stressing (jacking) and anchoring all tendons in the structure; with ends trimmed and ready for grouting	10%
<b>Grouting:</b> Including grouting all tendons in the structure, and completing all work required by the bid item	10%



## 1.2 Tieback and Tiedown Tendons – Unit Price

Make partial payments for tieback and tiedown tendons which are a unit price bid item using the percentages detailed in Table 2.

Table 2. Percentage Breakdown of Partial Payments for Tiebacks and Tiedown Tendons

Operation	Partial Payment
After completion of drilling, installing the tendon and initial grouting	60%
After satisfactory completion of the testing and if the Contractor provides temporary corrosion protection for the tendon and anchorage assembly on any anchor where final grouting is not completed	30%
After completion of final grouting	10%

## 1.3 Column Casings – Unit Price

Make partial payments for column casings which are a unit price bid item using the percentages detailed in Table 3.

Table 3. Percentage Breakdown of Partial Payments for Column Casing

Operation	Partial Payment
When casing is erected and fully welded	70%
When the casing is fully grouted	15%
When the casing is fully painted and has met all other contract requirements	15%

## 1.4 Building Construction – Lump Sum

The *Contract Specifications* require the Contractor to submit a schedule of values for each lump sum bid item.

Make partial payments according to the approved schedule of values.

## 1.5 Structural Concrete, Bridge – Unit Price

Few bid items on a Caltrans project require the extent of effort and time to produce a unit of the contract bid item, as does STRUCTURAL CONCRETE, BRIDGE. Analysis has shown falsework costs can easily be 35 – 50% of the STRUCTURAL CONCRETE, BRIDGE bid item.

When supported on falsework, make partial payments as outlined in the *Construction Manual*, Chapter 3, *General Provisions*, [Section 3-906A](#), *Payment – Progress Payments – Bid Items*, and as detailed in Table 4.

**Table 4. Percentage Breakdown of Partial Payments for Structural Concrete, Bridge**

<b>Operation</b>	<b>Partial Payment</b>
Falsework erection – soffit plywood is in place	35%
Placement of concrete	60%
Removal of falsework materials and final finishing of concrete	5%

### 1.5.1 Structural Concrete, Bridge – Partial Payment Example:

Consider the following for determining a partial pay quantity of the STRUCTURAL CONCRETE, BRIDGE bid item for falsework.

Given:

- Two span box girder bridge
- The bridge is constructed over a four-month period
- Distance between abutment faces = 187.1 feet
- Distance abutment face to face of bent = 89.55 feet
- Width of deck = 41.9 feet

Calculate:

- Volume of concrete in various elements as illustrated in Figure 1 below:

Element	Volume		Length	
soffit/stems	225.9	CY	1.26	CY/ft
bent cap	34.4	CY	4.30	CY/ft
<b>Total</b>	<b>260.3</b>	<b>CY</b>		
Deck	200.8	CY	1.07	CY/ft
<b>Total</b>	<b>461.1</b>	<b>CY</b>		

**Figure 1. Calculations for Partial Payment for Structural Concrete, Bridge**

For simplicity, the concrete previously placed for abutments and columns is not included in this example.

Month X estimate: Falsework is erected and soffit plywood is in place full width for 48 linear feet (26.8%) of the soffit/stems. Paid as detailed in Figure 2 below.

Soffit/stems: (1.26 CY/ft)(48 ft)(35%)	=	21.2	CY
Deck: (1.07 CY/ft)(48 ft)(35%)	=	18.0	CY
	Pay this estimate:	39.2	CY
	Previously paid	0.0	CY
	Total to date:	39.2	CY

**Figure 2. Calculations for Month X Estimate**

Month X+1 estimate: All soffit plywood in place and stem/soffit concrete is complete. Paid as detailed in Figure 3 below.

Total concrete for soffit/stems/bent cap:	260.3	CY
Remaining deck: (200.8)(35%)	70.3	CY
Less amount paid previously:	-39.2	CY
Less removal and finishing: (260.3)(5%)	-13.0	CY
	Pay this estimate:	278.4
	Previously paid	39.2
	Total to date:	317.6

**Figure 3. Calculations for Month X+1 Estimate**

Month X+2 estimate: Deck concrete poured. Paid as detailed in Figure 4 below.

Deck:	200.8	CY
Less amount previously paid for deck FW	-70.3	CY
Less removal and finishing: (200.8)(5%)	-10.0	CY
	Pay this estimate:	120.5
	Previously paid	317.6
	Total to date:	438.1

**Figure 4. Calculations for Month X+2 Estimate**

Month X+3 estimate: Final finish is applied to all concrete surfaces and falsework is removed. Paid as illustrated in Figure 5 below.

Pay this estimate:	23.0	CY
Previously paid	438.1	CY
Total to date:	461.1	CY

**Figure 5. Calculations for Month X+3 Estimate**

## 1.6 Bridge Painting – Lump Sum

Table 5 and Table 6 below details the suggested partial payment breakdown amounts for each phase of a typical bridge painting operation for paint systems.

Should the phases of work differ from what is shown below, partner with the Contractor to determine and agree on a schedule of values.

### 1.6.1 Shop Blast with Inorganic Zinc Water-borne Finish

**Table 5. Calculations for Partial Payment for Shop Blast with Inorganic Zinc Water-Borne Finish**

<b>Operation</b>	<b>Partial Payment</b>
Blast Clean	40%
Shop undercoats	30%
Spot clean and undercoats in field	12%
First finish coat	9%
Final finish coat	9%

### 1.6.2 100% Repaint with Water-borne Paint

**Table 6. Calculations for Partial Payment for 100% Repaint with Water-borne Paint**

<b>Operation</b>	<b>Partial Payment</b>
Blast Clean	60%
First undercoat	10%
Second undercoat	10%
First finish coat	10%
Second finish coat	10%

# Guidance on Preparation of Materials on Hand Payments

This attachment provides guidance to Structure Construction (SC) staff on how to prepare materials on hand payments.

In addition to payment for work done, the [Contract Specifications](#), Section 9-1.16C, *Payment – Progress Payments – Materials On Hand*, provides guidance for payment of materials furnished by the Contractor but not yet incorporated into the work. Payment for materials on hand is an advance payment which may be anticipated for high-dollar materials, but can also be requested for other materials that meet the conditions outlined below. A material on hand payment is temporary and will be deducted by the Department when the material is incorporated into the work and paid for at contract bid item prices.

The material must be delivered to the job site or stored subject to, or under State control. Only materials meeting the criteria outlined in the *Contract Specifications* are eligible for payment as materials on hand.

Since many bid items include both furnishing and placing of material (e.g., bar reinforcing steel, rubber waterstop, etc.) the maximum payment for materials on hand must not exceed the contract price less the estimated cost of handling (e.g., trucking), installation or other work necessary, to complete the bid item.

Materials on hand payments are considered only when requested by the Contractor on [Form CEM-5101](#), *Request for Payment for Materials on Hand*, prior to the monthly progress payment.

## **1 – Steps for the Materials on Hand Paperwork**

Before a given material can be paid as materials on hand, the following steps must be performed:

1. Verify Form CEM-5101, *Request for Payment for Materials on Hand*, is filled out properly for each bid item and for each month in which the payment is requested. Note that a new request must be submitted each month, even though the quantity of materials on hand has not changed since the previous month's estimate. If the request is not submitted by the Contractor and approved by the Resident Engineer, the payment will be deducted from the estimate.
2. Materials on hand payments are processed by the same deadlines as progress pay estimates. Verify the material meets the eligibility requirements for payment

as materials on hand as described in the aforementioned *Contract Specifications*, Section 9-1.16C, *Materials on Hand*.

3. Verify the material meets contract requirements and is released by the method as outlined in the *Contract Specifications* including:
  - a. Certificate of Compliance, or
  - b. Form TL-0029, *Report of Inspection of Material*.
4. The material must be stored within the State of California, and subject to or under State control as follows:
  - a. For material at or near the project, comply with the requirements of *Construction Manual*, Chapter 3, *General Provisions*, [Section 3-906E\(1\)](#), *Payment – Progress Payments – Materials on Hand – Materials at the Project*.
  - b. For material stored away from the jobsite but within California, comply with the requirements of the *Construction Manual*, Chapter 3, *General Provisions*, [Section 3-906E\(2\)](#), *Payment – Progress Payments – Materials on Hand – Materials Not at the Project*. The Materials Engineering and Testing Services (METS) Representative ([METS Rep](#)) can assist with verifying the storage and acceptability of the material. Forms submitted by the METS Rep to the RE for verification include:
    - i. Form TL-0649, *Report of Material on Hand*
    - ii. Form TL-6037, *Fabrication Progress Report*
5. Verify the material is unused. Once material has been paid for as materials on hand, it cannot be used by the Contractor except in the manner contemplated by the contract. For example, steel H-piles paid for as materials on hand for a piling bid item may not be used as falsework beams.
6. Verify the payment amount for materials on hand does not exceed the total of the bid item payment less the estimated cost to complete the bid item. The purpose of this is to leave sufficient funds in the bid item to complete the work.
7. Once the material is incorporated into the work, the materials on hand payment will not be renewed. The material can then be paid as bid item work and the amount previously paid as material on hand will be deducted from the estimate. Verify that the bid item is not requested for payment as materials on hand in addition to bid item payment.
8. Prepare a quantity sheet for payments of materials on hand and include the invoices from the Contractor. Identify the corresponding bid item number on the quantity sheet.

9. As with any other progress payment, obtain an independent check of the prepared payment documentation.
10. Submit the quantity sheet and invoice paperwork to the Structure Representative.

Records of materials on hand payments are kept in File Category 51, *Materials on Hand*. For additional guidance on this topic, refer to the *Construction Manual*, Chapter 3, *General Provisions*, [Section 3-906E](#), *Payment – Progress Payments – Materials on Hand*.

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# Change Orders

## Revision and Approval

Revision	Date	Nature of Changes	Approved By
0	06-30-2020	Original Issue	Richard Foley

[Click here](#) to request previous versions Contact [SC Technical Team P](#) for questions

## Background

This process establishes Structure Construction (SC) roles, responsibilities, and procedures for the preparation, review, and concurrence of change orders for structure work on field construction projects. This applies to all change orders whether they are initiated in the field or by the designer.

Caltrans policy for change orders is in the:

1. *Construction Manual*, [Section 5-3](#), *Contract Administration – Change Orders*.

Prior to reviewing this Bridge Construction Memo (BCM), it is essential to review any policy documents referenced above. The information in the policy documents typically will not be repeated in the text of this BCM.

## Process Inputs

1. An occurrence on the project requiring a change to the contract documents such as:
  - a. A plan conflict, unknown as-built or field condition, or situation.
  - b. A Designer of Record request, a contractor request, or public or private agencies request.
  - c. Division of Construction, [Construction Procedure Directives](#) (CPDs).

## Procedure

1. All work associated with this process is charged as [Project Direct-Construction](#).

2. SC Structure Representative (SR) and/or Assistant Structure Representative responsibilities include:
  - a. Review the need for a change order (CO) based on:
    - i. An unknown as-built or field condition, issue, occurrence, or situation at the job site.
    - ii. Review of contract documents for plan conflicts.
    - iii. An established need or reason for a change order.
    - iv. Additional item(s) requested by the Designer of Record.
    - v. Request for Information or Potential Claim Record from the contractor.
  - b. SR will determine if “prior authorization to proceed” is needed per the *Construction Manual*, [Section 5-311C](#), *Contract Administration – Change Orders – Change Order Approval Process – Authorization to Proceed*.
  - c. SR will discuss SC findings with the Resident Engineer, the Bridge Construction Engineer (BCE), and/or the Area Construction Manager.
  - d. SR will review Caltrans’ original agreement with the contributing agency for locally funded state highway projects to verify the changes are within scope of the agreement.
  - e. Determine whether the proposed change requires input from the Designer of Record:
    - i. For changes that require a change to the contract documents:
      1. Discuss the proposed change with the Designer of Record and come to an agreement on the basis and scope of the change.
      2. Verify the Designer of Record and/or Specification Engineer generates and submits the change order package (revised contract documents, revised cost estimates, and [Form SC-4902](#), *Request for Change Order*) to the SC HQ office. The SC HQ office reviews the change order package, and, if concurs, sends the change order package to the Structure Representative.
      3. Include the change order package with the initial draft change order.
    - ii. For changes that do not require submittal from the Designer of Record or Structures Specifications:
      1. Obtain SC concurrence from the BCE via [Form SC-4901](#), *SC Concurrence for Change Orders Involving Structure Work*.
  - f. Determine the terms of the change order with the contractor.

- g. Complete the initial draft change order and change order memorandum using [Form CEM-4900](#), *Change Order*, and [Form CEM-4903](#), *Change Order Memorandum*, and:
    - i. Establish and file cost estimate data associated with the change order.
    - ii. Complete a time impact analysis to justify any time adjustment.
    - iii. Include names and correspondence of persons who concur with the change order on the change order memorandum.
  - h. Provide the initial draft Form CEM-4900, *Change Order*, and Form CEM-4903, *Change Order Memorandum*, to the Resident Engineer.
  - i. Assist the Resident Engineer to finalize Form CEM-4900, *Change Order*, and Form CEM-4903, *Change Order Memorandum*, and gain approval of the change order from/through District construction office/HQ as specified in the *Construction Manual*, Section 5-311A, *Division of Construction Approval*.
  - j. Review the change order for accuracy and design intent before it is sent to the contractor for review and timely response.
  - k. Discuss and distribute the change order to Assistant SRs and stakeholders.
3. SC Supervisor will:
- a. Review with the SR on the need for change order for structure work.
  - b. Review and provide change order concurrence via Form SC-4901, *SC Concurrence for Change Orders Involving Structure Work*, or Form SC-4902, *Request for Change Order*.
4. SC Manager will:
- a. Review and provide change order concurrence via Form SC-4901, *SC Concurrence for Change Orders Involving Structure Work*, or Form SC-4902, *Request for Change Order* when requested.
5. Document all discussions pertinent to this BCM, in the Daily Reports per [BCM C-7](#), *Daily and Weekly Reports*.
6. File all change order documents and Daily Reports in the appropriate category in the project records as specified in the *Construction Manual*, [5-102](#), *Contract Administration – Project Records and Reports – Organization of Project Documents*.

## **Process Outputs**

- 1. Draft change order and change order memorandum.
- 2. Completed Form SC-4901, *SC Concurrence for Change Orders Involving Structure Work* and Form SC-4902, *Request for Change Order*.

# **Attachments**

None



# Shop Drawing Review of Temporary Structures

## Revision and Approval

Revision	Date	Nature of Changes	Approved By
0	04-30-2021	Original Issue	Michael Francis

[Click here](#) to request previous versions      Contact [SC Technical Team P](#) for questions

## Background

This process establishes Structure Construction (SC) roles, responsibilities, and procedures for the review and authorization or rejection of shop drawings and calculations for temporary structures.

SC staff perform an independent engineering analysis of contractor-submitted shop drawings for any temporary structure that requires the drawings to be signed by an engineer who is registered as a civil engineer in the State of California. The findings of the analysis are to be presented to the contractor in a *Temporary Structure Plan Analysis Report* that has been signed and sealed by the licensed engineer performing the review. This is in accordance with the *Streets and Highways Code*, [Section 137.6](#), and the *Business and Professions Code*, [Section 6735](#).

Additional unique requirements for the review and authorization of shop drawings are detailed in:

- [Contract Specifications](#), Section 5-1.23, *Control of Work – General – Submittals*
- *Falsework Manual*, [Chapter 2](#), *Review of Shop Drawings*.

## Process Inputs

1. Contractor's shop drawing submittal for temporary structures, which includes, but is not limited to:
  - Falsework
  - Column Guying

- Trestles
- Trenching & Shoring
- Temporary Supports
- Decking
- Jacking superstructures

## Procedure

1. All work associated with this process is charged as [Project Direct – Construction](#).
2. Before construction begins:
  - a. When temporary structure submittals are received, create, and maintain a record of chronological review of the submittal. Refer to the *Falsework Manual*, Section 2-9, *Chronological Record of Shop Drawing Review*.
  - b. Perform an initial review of the temporary structure submittal for completeness. Refer to the:
    - i. *Falsework Manual*, Section 2-4.01, *Initial Review*.
    - ii. Following applicable sections (including but not limited to) of the *Contract Specifications* that details what must be included in the submittal:
      1. Section 48-2.01C, *Temporary Structures – Falsework – General – Submittals*
      2. Section 48-3.01C, *Temporary Structures – Temporary Supports – General – Submittals*
      3. Section 48-4.01C, *Temporary Structures – Temporary Decking – General – Submittals*
      4. Section 48-5.01C, *Temporary Structures – Jacking Superstructure – General – Submittals*
  - c. When shop drawings for more than one unit of work (two or more bridges, for example) are received at the same time, perform reviews per the contractor's designated order or sequence. Refer to *Falsework Manual*, Section 2-2, *General Information*.
  - d. Perform engineering review of temporary structure submittal for compliance with applicable requirements and/or guidance, which includes, but is not limited to the:
    - i. Design requirements in the *Contract Specifications*, Section 48, *Temporary Structures*
    - ii. Guidance provided in the *Falsework Manual*
    - iii. Guidance provided in the [Trenching and Shoring Manual](#)

- iv. Local and state permitting agency requirements as stated in the Information Handout in the bid package
  - v. Railroad requirements as stated in the Information Handout
  - vi. Requirements of the *Contract Specifications*, Section 7-1.04, *Legal Relations and Responsibility to the Public – Public Safety*
  - vii. Cal-OSHA requirements.
- e. When the temporary structure does not comply with all requirements, reject the temporary structure submittal in accordance with *Falsework Manual*, Section 2-6.02, *Shop Drawing Rejection*. Additionally, resolve any non-compliant issues by discussing the issues with the contractor, contractor's engineer, Structure Representative, Bridge Construction Engineer, and/or SC Falsework Engineer. Document events in the Chronological Record log.
- f. When the temporary structure submittal is ready for authorization:
- i. If there is no railroad involvement, proceed to Step 2.f.iii.
  - ii. If there is railroad involvement:
    - 1. Before authorizing the temporary structure submittal, send the submittal and your calculations to the SC Falsework Engineer. The SC Falsework Engineer sends the submittals to the railroad company for approval. Once approved by the railroad, the SC Falsework Engineer sends the approval to the Structure Representative. Refer to *Falsework Manual*, Section 2-6.01B, *Authorization When Railroad Company is Involved*.
  - iii. Authorize the temporary structure submittal as follows:
    - 1. Stamp and sign the temporary structure shop drawings with the Caltrans authorization stamp. Refer to *Falsework Manual*, Section 2-6.01, *Shop Drawing Authorization*.
    - 2. When the Contractor submits temporary structure shop drawings, which are required to be stamped and signed by a registered engineer; complete, stamp, and sign the *Temporary Structure Analysis Report* in accordance with the requirements of the California Professional Engineers Act. Refer to *Falsework Manual*, Section 2-4.03, *Engineering Analysis*.
  - iv. Complete the transmittal letter. Refer to *Falsework Manual*, Section 2-10.03, *Sample Transmittal Letter*.
  - v. Send the Transmittal Letter, including the stamped and signed *Temporary Structure Analysis Report* and stamped authorized shop drawings, to the Contractor.

- vi. Immediately after authorizing the submittal, send the complete submittal package to the [SC HQ Office Associates](#); it includes the:
    1. Transmittal Letter
    2. Stamped and signed Temporary Analysis Report
    3. Stamped authorized shop drawings
    4. Contractor's calculations
    5. SC reviewer's calculations
    6. Railroad Authorization when railroad is involved.
  - vii. SC HQ Falsework Engineer files the complete submittal package in VISION.
3. During construction:
    - a. Review and authorize revisions to temporary structure submittals using the procedure described above.
  4. Following construction:
    - a. File all correspondence and daily reports in the appropriate category in the project records as specified in the *Construction Manual*, [Section 5-1.02](#), *Organization of Project Documents*.

## **Process Outputs**

1. Authorized temporary structure shop drawings
2. Temporary Structure Analysis Report
3. Transmittal Letter
4. Chronological Record of Temporary Structure Review

## **Attachments**

None





# Permanent Reference Elevations

## Revision and Approval

Revision	Date	Nature of Changes	Approved By
0	09-30-2021	Original Issue	Richard Foley

[Click here](#) to request previous versions      Contact [SC Technical Team O](#) for questions

## Background

This process establishes Structure Construction (SC) roles, responsibilities, and procedures for establishing permanent reference elevation points on bridge structures.

Permanent reference elevation points are required at designated locations on structures on the State highway system to determine future settlements and deflection.

## Process Inputs

1. Completed bridge structure(s)

## Procedure

1. All work associated with this process is charged as [Project Direct – Construction](#).
2. Inspection of field work for this process is [Benchmark](#).
3. SC Staff:
  - a. Secure safe access to the work in accordance with the *Contract Specifications*, including the use of traffic control, if required. Complete [Fall Protection Training](#) prior to performing work on a bridge where fall hazards exist.
  - b. Perform the following tasks to establish permanent reference elevations:
    - i. Unless otherwise instructed, permanent reference points must be established along both sides of the structure at pier and abutment

centerlines, at the mid-point of all spans over 50 feet in length, and at the ends of cantilevered wingwalls.

- ii. Permanent reference elevation points must be placed so that they can be easily located such that a level rod can be placed on the point when making future elevation determinations.
- iii. Obtain copper nails (Catalog Item Number 5315-2240-1) through the local District warehouse.
- iv. To promote uniformity of locating permanent reference points, comply with the following guidelines:
  1. On barrier railings having a metal rail element, use the top of the outside rail anchor bolt nearest the designated location as a permanent reference point. Bolts used as reference points must be marked by chiseling a cross (x) in the top of the bolt.
  2. Where structures have other types of rail with no vertical anchor bolts, or where the anchor bolts will be inaccessible, use copper nails as permanent elevation points. Place these nails in the top of the sidewalk or curb, in the top of deck, or in the top of a concrete barrier rail. If located in curbs or sidewalks, place the nails about six inches from the curb face. If located in the deck surface, set the nails about six inches from the edge of deck.
  3. The elevation and location of all permanent reference elevation points must be documented on the as-built plans. Document on the bridge general plan if possible; otherwise, add a reference note on the general plan to indicate the sheet where the permanent reference elevations are documented.
- v. At the completion of the job, the Structure Representative must take survey elevations accurate to 0.005 foot on all permanent reference elevation points using a peg-tested level. The level circuit taken must be tied to a permanent benchmark; do not use assumed elevations. If safe access is not available, District survey crews may be called to establish safe access and complete the survey.
- vi. On new construction, prior to concrete placement, inform the contractor that SC staff will need to place permanent reference elevation points (copper nails) at the time of concrete placement. The copper nail should be placed after final finish, but prior to set of concrete.
- vii. On structures where a special deflection study is required, instructions concerning the location of permanent reference elevation points and accuracy and frequency of reading elevations will be given to the Resident Engineer or Structure Representative at the beginning of the job. Since

the purpose of these deflection studies is to provide information for the Research Section, the special instructions must be strictly followed.

- c. Perform surveys in accordance with best practices identified in the [Bridge Construction Survey Manual](#).
  - d. Document permanent reference locations and elevations on the as-built plans.
4. SC Supervisors:
- a. Verify that staff received Fall Protection Training prior to performing tasks.
  - b. Provide training to SC staff as necessary to perform the tasks for this process.

## **Process Outputs**

1. Permanent reference elevations (physical)
2. Document permanent reference elevations on the as-built plans

## **Attachments**

None

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# SC Administration of Projects by Other Implementing Agencies

## Revision and Approval

Revision	Date	Nature of Changes	Approved By
0	04-25-2023	Original Issue	Richard Foley

[Click here](#) to request previous versions      Contact [SC Technical Team P](#) for questions

## Background

This process establishes SC responsibilities and procedures for the administration of structure work for projects advertised, awarded, and administered by the implementing local agency. Types of projects include:

1. Local sales tax measure projects
2. Locally funded projects (non-tax measure)
3. Privately funded projects
4. Toll road projects
5. Jointly funded or cooperative projects
6. Encroachment permit program projects.

This process addresses traditional design, bid, build projects, and does not address projects delivered using alternative delivery methods.

## Process Inputs

1. Cooperative agreement or highway improvement agreement (HIA) notification from the Project Manager
2. Encroachment permit notification from permit writer

# Procedure

1. All work associated with this process is charged as:
  - a. [Project Direct – Preconstruction](#), for cooperative agreement or HIA and encroachment permit development, project development team (PDT) meetings, constructability reviews, and other duties as requested.
  - b. [Project Direct – Construction](#) for oversight of construction activities.
2. Inspection of field work for this process is:
  - a. [Benchmark](#) for reviewing project progress with sponsoring local agency's staff.
  - b. [Intermittent](#) for oversight of field work.
  - c. [Continuous](#) presence of oversight operations is generally not required. The SC Oversight Representative should however consider the experience of the local agency's Oversight Structure Representative and risk level of the operation to determine the appropriate amount of oversight. Operations affecting public safety, like constructing falsework that will stand over traffic, setting precast elements, jacking or lowering bridge elements justify additional effort. This could take the form of being an active participant in the pre-operations meetings, requesting additional supervision from the Local Agency's Oversight Representatives' firm, to additional in-person presence by the SC Oversight Representative.
3. Oversight Structure Representative:
  - a. Review the following to gain familiarity with the project and contract administration requirements prior to start of project. Note that cooperative agreement will always be attached to an encroachment permit; however, an encroachment permit will not always have a cooperative agreement.
    - i. Cooperative agreement or HIA, and [Cooperative Agreement Handbook](#)
    - ii. Encroachment permit
    - iii. Contract documents
    - iv. [Local Agency Structure Representative Guidelines](#)
    - v. [Construction Manual Supplement for Local Agency Resident Engineers](#)
    - vi. [Oversight Resident Engineer Guidelines](#)
  - b. Provide oversight of the structure work in cooperation with the District Construction Oversight Engineer.

- c. When there is a cooperative agreement with the local agencies, provide oversight of structure work in accordance with the cooperative agreement.
- d. When there is a HIA with private entities, provide oversight of structure in accordance with the HIA.
- e. When there is no cooperative agreement attached to the encroachment permit, provide oversight of the structure work per [Attachment 1](#), *Guidance for Administration of Projects by Other Implementing Agencies*.
- f. Verify the local agency or the private entity complies with the requirement that structure work is completed in accordance with the details provided in:
  - i. The cooperative agreement or the HIA
  - ii. (Or) the encroachment permit (if there is no cooperative agreement or HIA)
  - iii. (And) per Attachment 1 if there is no cooperative agreement.
- g. Discuss project requirements and expectations with the sponsoring local agency's primary contact person. This person may be the Project Manager, Project Engineer or Administrator for the local agency.
- h. Review Contractor submittals, work, and project records as necessary to verify conformance.
- i. Note instances of nonconformances with the requirements of the contract documents, or governing agreements. Discuss with the SC Supervisor and the implementing agency's representative (usually this means the consultant that is hired for contract administration) all nonconformance items and maintain a log of these items through the resolution of each item.
- j. Record work progress, conversations, and events on standard construction forms (e.g., [Form CEM-4601](#), *Assistant Resident Engineer's Daily Report*, [Form CEM-4501](#), *Resident Engineer's Daily Report* or *Assistant Resident Engineer's Daily Report*). Use [Form TR-0130](#), *Encroachment Permit Report (Diary)*, to report inspections of the work performed if requested by the Permit Engineer.
- k. Perform independent quality assurance (IQA) by auditing the Structure Representative's (SR) project records to verify the SR is maintaining the project records.
- l. Discuss submission of project completion records with the implementing local agency or private entity to meet requirement from sponsoring funding entities.
- m. All project completion records must be submitted to and approved by Caltrans prior to close out of the encroachment permit and oversight projects.

#### 4. SC Supervisors:

- a. Review or participate in the development of the cooperative agreement and encroachment permit for the project with the sponsoring local agency as requested by permit writer/project engineer.
  - b. Participate in project development by attending PDT meetings and type selection meetings, and complete constructability reviews.
  - c. Assist the sponsoring local agency in assigning, reviewing, and evaluating the qualifications of possible consultant structure staff for the project. Duties may include:
    - i. Participate in the selection or hiring interviews conducted by the sponsoring local agency.
    - ii. Authorize the local agency consultant Structure Representative.
  - d. Assist Structure Representative with resolution of contract disputes.
  - e. Assign the Oversight Structure Representative in [WEAT](#).
  - f. Perform field review of the installations, together with the SC Oversight Structure Representative before concrete is placed per the *Falsework Manual*, Chapter 9, [Section 9-3.27](#), *Inspection - Erection – Bridge Construction Engineer Review*.
5. SC Managers:
- a. Participate in partnering and dispute meetings as appropriate.

## **Process Outputs**

1. Complete project files
2. Daily reports per Procedure step 3.j
3. Project completion records

## **Attachments**

1. [Attachment 1](#), *Guidance for Administration of Projects by Other Implementing Agencies*



# Guidance for Administration of Projects by Other Implementing Agencies

Local agencies, such as a city, county, or private entity, may enter into an agreement with the State of California to provide improvements to a State highway within the State right-of-way. Generally, when these projects are funded entirely by the local agency, the local agency will administer the design and construction of the project and the State will provide oversight of the work administered by the local agency under the terms of a cooperative agreement and/or encroachment permit. When these projects are funded with a combination of local and State funds, the responsibilities for administration of the design and construction of the project will be shared under the terms of a cooperative agreement and/or encroachment permit.

In general, projects that are special funded in the amount of \$1,000,000 or more will be performed under the terms of a cooperative agreement and an encroachment permit. Projects that are special funded in the amount \$1,000,000 or less will generally be performed under the terms of an encroachment permit only.

## **1 – Types of Projects**

Types of special funded projects include the following:

### **1.1 Local Sales Tax Measure Projects**

Includes projects with funding of 100 percent from local sales tax revenues with estimated construction costs greater than \$1,000,000 that are in the State right-of-way, but not in a State programming document, such as the State Transportation Improvement Program (STIP) or State Highway Operation and Protection Program (SHOPP). These projects require a cooperative agreement and an encroachment permit. State construction contract administration responsibility is usually limited to oversight, depending on the terms of the cooperative agreement and encroachment permit.

### **1.2 Locally Funded Projects**

Includes projects with funding of 100 percent from local funds (other than sales tax revenues) with estimated construction costs greater than \$1,000,000 that are in the State right-of-way, but not in a State programming document. These projects require a cooperative agreement and an encroachment permit. State construction contract administration responsibility is usually limited to oversight, depending on the terms of the cooperative agreement and encroachment permit.

### **1.3 Privately Funded Projects**

Includes projects that are sponsored by a nonpublic agency with estimated construction costs greater than \$1,000,000 that are in the State right-of-way. These projects require a cooperative agreement and an encroachment permit. State construction contract administration responsibility is usually limited to oversight, depending on the terms of the cooperative agreement and encroachment permit.

### **1.4 Toll Road Projects**

Includes projects that are sponsored by a nonpublic agency that are in the existing or future State right-of-way. These projects require a cooperative agreement and an encroachment permit. State construction contract administration responsibility is usually limited to oversight, depending on the terms of the cooperative agreement and encroachment permit.

### **1.5 Jointly Funded or Cooperative Projects**

Includes projects that involve combinations of special funds and State funds with estimated construction costs greater than \$1,000,000 that are in the State right-of-way. These projects require a cooperative agreement and an encroachment permit. State construction contract administration responsibility depends on the terms of the cooperative agreement and encroachment permit.

### **1.6 Encroachment Permit (EP) Program Projects**

Includes projects that are 100 percent funded and constructed by either a local agency or private developer with estimated construction costs of \$1,000,000 or less that are in the State right-of-way. These projects do not require a cooperative agreement but do require an EP. State construction contract administration responsibility is usually limited to oversight, depending on the terms of the encroachment permit.

## **2 – Responsibilities**

The [Headquarters Encroachment Permit Office](#) in Sacramento is responsible for implementing policy and procedure for providing oversight of the administration of projects by local agencies that require an encroachment permit. The EP Office develops the various EP forms and is responsible for maintenance and updating of the Caltrans [Encroachment Permits Manual](#). The EP Office website includes additional EP background information, procedures, and forms.

The District Permit Engineer (DPE) has overall responsibility for administration of projects that require an EP. The DPE is referred to as the “State’s Representative.” However, for capital projects involving structure work, the DPE will enlist the assistance of the Districts and the Division of Engineering Services to administer or provide oversight of the administration of the construction of these types of projects. In these

cases, the District Construction Oversight Engineer represents the DPE and acts as the “State’s Representative” on the behalf of the DPE.

Generally, a design consultant under the administration of the local agency prepares plans and specifications for these projects. These plans are reviewed and authorized through the [Office of Special Funded Projects \(OSFP\)](#) prior to project advertisement. The identity of the OSFP Liaison Engineer is shown on the lower left corner of the project structure plans. The Liaison Engineer has responsibility for design oversight of the structures portion of the plans and provides oversight of the consultant’s design support during the construction of the project. Any changes to the plans made during construction must be reviewed and approved by the Liaison Engineer.

Structure Construction (SC) cooperates with the District Construction Oversight Engineer in the administration of the construction of special funded projects when the project includes structure work.

## **3 – Forms**

### **3.1 Form TR-0120, *Encroachment Permit***

The [Form TR-0120, \*Encroachment Permit\*](#), is submitted to the Caltrans District Encroachment Permit Engineer by the local agency. Submission and approval of the encroachment permit is required by statute before a local agency can begin any work in the State right-of-way. Items on this form that are of interest to SC employees include the “Permit No.” and the checkboxes for “As-Built Plans Submittal Route Slip for Locally Advertised Projects.”

Proposals for placing any encroachments on or near bridges, whether existing or planned, are approved by the Office of Structure Maintenance and Investigations prior issuance by the District.

The District Encroachment Permit Engineer will notify the appropriate SC Area Construction Manager when an EP for construction of projects with capital improvement work involving structures has been submitted. At the beginning of the contract work, the Structure Representative (SR) should review the plans for encroachments and determine that a permit has been issued for each encroachment on or near a structure. The District Encroachment Permit Branch should be informed of any encroachments which are shown on the plans, but for which no permit has been issued. No encroachments are to be placed on or near bridges until the required permit has been obtained. The Structure Representative is to enforce the provisions of the permit for such details as supports, casings, vents, etc. Problems of a structural nature should be referred to the Office of Special Funded Projects.

### **3.2 Form TR-0129, *Progress Billing/Permit Closure***

The [Form TR-0129, \*Progress Billing/Permit Closure\*](#), is used to report the status of the work that requires an EP. The District Encroachment Permit Engineer or District Construction Oversight Engineer must fill out this form whenever the fieldwork at the site is complete, the final project completion records for structure or roadway portions of the work have been submitted, and when the completed as-built project plans for structure or roadway portions of the work have been submitted. For projects with structure work, Structure Construction staff may be designated as representatives of the DPE. However, this is usually the responsibility of the District Construction Oversight Engineer.

### **3.3 Form TR-0130, *Encroachment Permit Report (Diary)***

The [Form TR-0130, \*Encroachment Permit Report \(Diary\)\*](#), is used to report inspections of the work performed on an oversight project. SC employees who perform oversight of construction contract administration must use this form to report their observations of the work at the site, if requested by the Permit Engineer.

Prior to advertisement, the EP package including the construction contract plans and specifications, is submitted to the DPE for review and approval. When capital improvement projects include SC, the EP also includes the *Special Provisions* for structure work, which contain requirements for contract document submittal and project completion record submittal. Refer to the *Encroachment Permits Manual*, [Appendix K, \*Special Provisions\*](#), K-40, *Structure Work*, for the current version of the *Special Provisions*.

## **4 – Instruction for SC Staff**

The following instructions apply to SC staff assigned to special funded projects. The amount and type of staffing required depends on the terms of the cooperative agreement and/or EP. These instructions refer to forms listed above. The instructions cover the following conditions.

1. Special funded projects for which SC provides full or partial staffing for contract administration
2. Special funded projects for which SC provides oversight of local agency contract administration
3. Construction oversight
4. Project closeout

## **4.1 Special Funded Projects for Which SC Provides Full or Partial Staffing for Contract Administration**

When the terms of a cooperative agreement require the State to provide all construction contract administration services, SC must provide all staffing required to administer the structure portion of the project. SC generally provides full staffing for jointly funded or cooperative projects, although SC may also provide full staffing for local sales tax measure projects, locally funded projects, privately funded projects, or public toll road projects, depending on the terms of the cooperative agreement.

When the terms of a cooperative agreement require the State to provide partial construction contract administration services, SC must provide some of the staffing required to administer the structure portion of the project. For these projects, the State typically provides the Resident Engineer (RE), the SR, and the Materials Engineer. The local agency provides the remainder of the people necessary to staff the project.

In some cases, the cooperative agreement may require the State to provide Assistant REs and Assistant SRs as well. Types of projects that SC generally provides partial staffing for include jointly funded or cooperative projects, although SC may also provide partial staffing for local sales tax measure projects, locally funded projects, privately funded projects, or public toll road projects, depending on the terms of the cooperative agreement.

The State usually (but not always) advertises these projects. For these types of projects, the responsibilities of SC staff are virtually the same as with typical State-funded projects. Table 1 and Table 2 addresses some of the responsibilities.

**Table 1. Responsibilities for Special Funded Projects for Which SC Provides Full or Partial Staffing for Contract Administration**

<b>Responsibility</b>	<b>State Advertised Projects</b>	<b>Locally Advertised Projects</b>
Encroachment Permit between State & local agency	Required	Required. Locally advertised consultant designed projects are submitted by email to the SC Office Associates at <a href="mailto:osc.administration@dot.ca.gov">osc.administration@dot.ca.gov</a> .
Encroachment Permit between State & Project Contractor	<u>Not</u> Required	Required
Project advertisement	Advertised by Caltrans Office Engineer	Advertised by the local agency
RE Pending File	Assembled by the consultant designer, reviewed by the OSFP Liaison Engineer, and forwarded to the SR.	Assembled by the consultant designer, reviewed by the OSFP Liaison Engineer, and forwarded to the SR.
Time Charging Practices	SC staff assigned to the project typically charge to the Project Code for the District where the project is located.	SC staff assigned to the project typically charge to the Project Code for the District where the project is located.
Inspection	Normal process as described in the <i>Bridge Construction Records and Procedures (BCR&amp;P) Manual and Construction Manual (CM)</i> .	Normal process as described in the <i>BCR&amp;P Manual and CM</i> .
Record keeping	Normal process as described in the <i>BCR&amp;P Manual and CM</i> .	Normal process as described in the <i>BCR&amp;P Manual and CM</i> .
Documentation (diaries, newsletters, etc.)	Normal process as described in the <i>BCR&amp;P Manual and CM</i> .	Normal process as described in the <i>BCR&amp;P Manual and CM</i> .
Shop Drawings	Shop drawings are submitted for review as described in the contract documents. Shop drawing review is provided by the consultant designer, through the OSFP Liaison Engineer.	Shop drawings are submitted for review as described in the contract documents. Shop drawing review is provided by the consultant designer, through the OSFP Liaison Engineer.

Responsibility	State-Advertised Projects	Locally Advertised Projects
Change Orders	Normal process as described in <a href="#">Bridge Construction Memo (BCM) C-10</a> , <i>Change Orders</i> , and the <i>CM</i> , Section 5-33 through 5-35. The OSFP Liaison Engineer approves all proposed design changes to the structure portion of the work.	The local agency initiates, authorizes and approves the change order. The OSFP Liaison Engineer approves all proposed design changes to the structure portion of the work.
Notice of Potential Claim	Normal process as described in the Caltrans Standard Specifications and the <i>CM</i> , Section 5-35.	Response to Notice of Potential Claim is as described in the contract documents and the contract administration procedures of the local agency.
Progress Payments	Normal process as described in <a href="#">BCM C-9</a> , <i>Preparation of Progress Payment Documents</i> , and the <i>Construction Manual</i> , Section 3-906.	Progress payments are made in conformance with the contract documents and the procedures of the local agency.
Final Payment and Claims	Normal process as described in the Caltrans Standard Specifications and the <i>CM</i> , Section 3-907D.	Final Payment and responses to formal claims are as described in the contract documents and the contract administration procedures of the local agency.
Project Completion Records: As-Built Corrections	The SR is responsible for completing the as- built corrections in accordance with <a href="#">BCM C-6</a> , <i>Required Documents to be Submitted During Construction</i> . The SC SR must provide a cover letter and forward the as-built project plans to the SC Office Associates at <a href="mailto:osc.administration@dot.ca.gov">osc.administration@dot.ca.gov</a> and The Office Associates will forward the as-built project plans to the Office of Specially Funded Projects.	The SR is responsible for completing the as-built corrections in accordance with <a href="#">BCM C-6</a> , <i>Required Documents to be Submitted During Construction</i> . The SR must submit the as-built project plans for locally advertised, consultant designed structure projects by email to the SC Office Associates at <a href="mailto:osc.administration@dot.ca.gov">osc.administration@dot.ca.gov</a> .

**Table 2. Responsibilities for Special Funded Projects for Which SC Provides Full or Partial Staffing for Contract Administration (Continuation of Table 1)**

Responsibility	State-Advertised Projects AND Locally Advertised Projects
Cooperative Agreement between State & local agency	Required. Structure Construction Bridge Construction Engineers must be involved during the negotiation of the cooperative agreement for construction contract administration. Contact the project manager for additional information.
Project Completion and Acceptance	Upon acceptance of the construction contract, the SR must notify the RE that the section titled “To the best of my knowledge, field work was completed...” of Form TR-0129, <i>Progress Billing/Permit Closure</i> , can be completed and submitted to the DPE as notification that EP field work is complete.
Project Completion Records: General Notes	For projects with capital improvement work involving structures, the EP between the State and the local agency includes the General Provisions and the <i>Special Provisions</i> for structures. Refer to the <i>Encroachment Permits Manual</i> , <a href="#">Appendix K</a> , <i>Special Provisions</i> . The <i>Special Provisions</i> for structures contain requirements for project completion record submittal. Failure to fulfill these requirements can result in the local agency being required to obtain a bond for any subsequent EP until the requirements of the EP for this project have been fulfilled. Structure Representatives must complete all project completion records within the 60-day period following contract acceptance.
Project Completion Records other than As-Built corrections	The SR is responsible for completing the project completion records listed in <a href="#">BCM C-6</a> , Attachment 1, <i>List of Required Documents Submitted to SC HQ</i> , and forwarding them to the SC Headquarters in Sacramento. Once the project completion records have been completed, the SR must notify the RE that the section titled “Required final project completion records for structures...” of Form TR-0129, <i>Progress Billing/Permit Closure</i> , can be completed and submitted to the DPE signifying that the EP requirement for the submission of project completion records for the structure portion of the project has been fulfilled.



## **4.2 Special Funded Projects for which SC Provides Oversight of Local Agency Contract Administration**

When the terms of a cooperative agreement require the local agency to provide all the staffing for construction contract administration services, or if there is no cooperative agreement for the project, SC must provide oversight of the structure work administered by the local agency. For this type of project, SC provides one staff member, which is usually the SC Bridge Construction Engineer or designated representative, as the SC Oversight Engineer to oversee the structure work performed by the local agency in the State right-of-way. The State does not advertise these projects. For these projects, the responsibilities of SC staff are limited to approval of the SR provided by the local agency, periodic field reviews of the structure work in progress, and acquisition of the applicable completion records.

One of the most important responsibilities of the SC Oversight Engineer is to make contact and establish a working relationship with the local agency's primary contact person. This person may be the project manager, project engineer or administrator for the local agency. Approval of the local agency consultant SR is the responsibility of the SC Oversight Engineer. The SC Oversight Engineer must assist the local agency in assigning, reviewing, and evaluating the qualifications of possible candidates for the project. The SC Oversight Engineer may become involved in the selection or hiring interviews conducted by the local agency. The major concern is that the engineer selected to be in responsible charge has the qualifications to properly administer the structure portion of the project.

Table 3 addresses some of the other basic responsibilities of the local agency and SC staff who act as oversight engineers.

**Table 3. Responsibilities for Special Funded Projects for Which SC Provides Oversight of Local Agency Contract Administration**

<b>Responsibility</b>	<b>Encroachment Permit Program Projects</b>	<b>All other Special Funded Projects</b>
Cooperative Agreement between State & local agency	Not required	Required. Structure Construction Bridge Construction Engineers must be involved during the negotiation of the cooperative agreement for construction contract administration. Contact the project manager for additional information.
Encroachment Permit between State & local agency	Required. For locally advertised, consultant-designed projects are submitted by email to the SC Office Associates at <a href="mailto:osc.administration@dot.ca.gov">osc.administration@dot.ca.gov</a> .	Required. For locally advertised, consultant-designed projects are submitted by email to the SC Office Associates at <a href="mailto:osc.administration@dot.ca.gov">osc.administration@dot.ca.gov</a> .
Encroachment Permit between State & Project Contractor	Required	Required
Project advertisement	Advertised by the local agency	Advertised by the local agency
RE Pending File	Assembled by the consultant designer, reviewed by the OSFP Liaison Engineer, and forwarded to the consultant SR.	Assembled by the consultant designer, reviewed by the OSFP Liaison Engineer, and forwarded to the consultant SR.
Time Charging Practices	SC staff assigned to the project typically charge to the Project Code for the District where the project is located. When the project does not have a project code, SC staff shall charge under Project 0000020505, Phase N, and Activity Code 037.	SC staff assigned to the project must charge to the District Expenditure Authorization for the project.

### 4.3 Construction Oversight

Construction oversight will consist of periodic field reviews of the structure work in progress by the SC Oversight Engineer. The purpose of these reviews is to verify the structure work complies with the approved plans and specifications and that the completed project will function as intended.

Table 4 addresses specific guidelines for field reviews.

**Table 4. Guidelines for Field Reviews for Construction Oversight**

<b>Responsibility</b>	<b>Encroachment Permit Program Projects AND All Other Special Funded Projects</b>
Field Reviews	<p>As a minimum, the SC Oversight Engineer must perform the following field reviews.</p> <ol style="list-style-type: none"> <li>1. The SC Oversight Engineer must hold an initial meeting with the consultant RE, consultant SR, and the project field staff, prior to the usual preconstruction conference. The contract requirements and enforcement procedures must be reviewed, and special attention given to traffic control, notification of impaired clearance and other features involving public safety. Falsework review and approval, trenching and shoring review and approval, welding procedures, materials inspection, testing procedures, and unusual foundation types must also be discussed.</li> <li>2. The SC Oversight Engineer must attend the normal preconstruction conference with the construction contractor.</li> <li>3. Upon award or approval of the construction contract by the local agency, the SC Oversight Engineer must enter the information needed for the Project Status Initial under the project in Vision. When the work starts, the project should be reviewed a minimum of once every two weeks. The project should also be reviewed when important items of work are starting, such as pile construction, column construction, or falsework erection and removal.</li> </ol>

<b>Responsibility</b>	<b>Encroachment Permit Program Projects AND All Other Special Funded Projects</b>
Specific Items to Review	<p>The following is a partial list of items to review. In cooperation with the District Construction Oversight Engineer, additional items not listed, such as enforcement of compliance with the terms of the EP or cooperative agreement and other items that are normally a District responsibility, shall be reviewed as necessary. The SC Oversight Engineer shall perform a project record review per <a href="#">BCM E-2, SC Project Record Review</a>, at least once per job to verify the project records are being correctly maintained.</p> <ol style="list-style-type: none"> <li>1. Look at the work itself. Does it comply with the plans and specifications? Is the workmanship satisfactory?</li> <li>2. Do the RE, SR, and the project staff appear to know what is going on? Do they have the work under proper control?</li> <li>3. Are you being kept up to date on major project problems even when you are not on the project?</li> <li>4. Has the RE developed a project-specific Code of Safe Practices for the project field staff?</li> <li>5. Verify that public and project safety is being adhered to in accordance with the safety procedures of the Construction Safety Orders, Caltrans, and the local agency.</li> <li>6. Verify that public and project safety incidents are being properly documented.</li> <li>7. Review any proposed changes to the approved plans and specifications.</li> <li>8. Verify that all storm water pollution prevention plan (SWPPP) measures pertaining to structure work are satisfactory and that any deficiencies are corrected immediately.</li> <li>9. Review the status of shop drawing submittals and verify that the shop drawings are approved in accordance with the terms of the encroachment permit and contract documents.</li> <li>10. Verify that the falsework plans have been designed by the Contractor and reviewed and approved by the RE or design consultant.</li> <li>11. Is the falsework or shoring built to meet approved designs, of satisfactory workmanship, and does it meet best general practice criteria?</li> <li>12. Verify that there are proper materials certificates of compliance, material releases or test results for materials being used in the work and that they are being incorporated into the project records.</li> <li>13. Review project records such as concrete pour records, as-built changes, pile driving records, welding records, and prestressing records and verify that they are being properly kept.</li> <li>14. Review backup records for progress payments. The cooperative agreement or encroachment permit for the project may require progress payments to be approved by a State representative.</li> </ol>

Responsibility	Encroachment Permit Program Projects AND All Other Special Funded Projects
Actions to take	<ol style="list-style-type: none"> <li>1. Point out work that is not up to Caltrans standards and discuss possible remedies.</li> <li>2. Point out potential safety problems.</li> <li>3. Discuss pending change orders affecting the work with the RE and SR and indicate technical concurrence if appropriate. For pending changes that affect the design of the structure, the OSFP Liaison Engineer must authorize the change in writing and a concurrence letter issued from SC Headquarters. For other changes, the SC Oversight Engineer may use <a href="#">Form SC-4901, Structure Construction Concurrence for Change Orders Involving Structure Work</a>, to indicate technical concurrence with the proposed change. Documents indicating technical concurrence shall be filed in the project records.</li> <li>4. If there are major problems with the structure work that are not being rectified, suspend that portion of the work affected, per the terms of the encroachment permit. Allow work to resume when agreement is reached on proper procedure to be followed and the remedial work to be performed.</li> </ol>
Reports	<p>After each field review, the SC Oversight Engineer shall write a short report on what was observed, using Form TR-0130, <i>Encroachment Permit Report (Diary)</i>. The SC Oversight Engineer shall send the original to the DPE one copy to the Area Construction Manager and one copy to SC Headquarters in Sacramento.</p>
Project Completion and Acceptance	<ol style="list-style-type: none"> <li>1. At the end of the project, the SC Oversight Engineer shall be involved in the final inspection prior to project acceptance.</li> <li>2. When the SC Oversight Engineer has verified that the project has been satisfactorily completed, the SC Oversight Engineer shall notify the District Construction Oversight Engineer that the section titled "To the best of my knowledge, field work was completed..." of Form TR-0129, <i>Progress Billing/Permit Closure</i>, can be completed and submitted to the DPE signifying that the Encroachment Permit requirement for notification of completion of the field work has been fulfilled.</li> <li>3. When the SC Oversight Engineer has verified that the project has been satisfactorily completed, the SC Oversight Engineer shall enter the information needed for the Project Status Final under the project in Vision.</li> </ol>

## 4.4 Project Closeout

Completion of the fieldwork of the project does not mean that the responsibilities of the local agency have been fulfilled for the purposes of closeout of the EP. All project completion records must be submitted to and approved by Caltrans prior to closeout of the EP. The responsibilities for submission of project completion records of the local agency's contract administrator and SC are addressed in Table 5.

**Table 5. Responsibilities for Project Closeout Records of Local Agency's Contract Administrator and SC**

Responsibility	Encroachment Permit Program Projects AND All Other Special Funded Projects
Project Completion Records: General Notes	<p>For projects with capital improvement work involving structures, the EP between the State and the Local agency includes the General Provisions and the "Structure Work" special provisions. Refer to the <i>Encroachment Permits Manual</i>, <a href="#">Appendix K</a>, <i>Special Provisions</i>. The <i>Special Provisions</i> for structures contain requirements for project completion record submittal. Failure to fulfill these requirements can result in the local agency being required to obtain a bond for any subsequent EP until the requirements of the EP for this project have been fulfilled.</p>
Project Completion Records: Structure As-Built Plans	<p>Structure as-built project plans must be submitted by email to the SC Office Associates at <a href="mailto:osc.administration@dot.ca.gov">osc.administration@dot.ca.gov</a>. SC staff who act as oversight engineers must take the following actions:</p> <ol style="list-style-type: none"> <li>1. Review the structure as-built corrections with the local agency's contract administrator to verify that all revisions were made in accordance with Caltrans policies.</li> <li>2. Verify that the local agency's contract administrator has sent the as-built corrections to the SC Office Associates by email to <a href="mailto:sc.office.associates@dot.ca.gov">sc.office.associates@dot.ca.gov</a>.</li> </ol> <p>A memorandum from SC will be issued to the SC Oversight Engineer acknowledging receipt of the as-built corrections for structures. The OSFP will notify the Design Consultant and the District Construction Oversight Engineer or the District Encroachment Permit Office when the as-built project plans for structures have been approved by Caltrans.</p>

Responsibility	Encroachment Permit Program Projects AND All Other Special Funded Projects
Project Completion Records other than As-Built Plans	<p>The local agency's contract administrator is responsible for completing the applicable project completion records listed in applicable project completion records for each structure must be issued from SC Headquarters. Structure Construction staff who act as oversight engineers must take the following actions:</p> <ol style="list-style-type: none"> <li>1. Review the applicable project completion records with the local agency's contract administrator to verify that they were completed in accordance with the requirements of the <i>BCR&amp;P Manual</i>.</li> <li>2. Receive the completed project completion records from the local agency's contract administrator and transmit them to SC Headquarters. A memorandum from SC Office Associates must be issued to the SC Oversight Engineer acknowledging receipt of the project completion records.</li> <li>3. Once the SC Oversight Engineer has received the memorandum from the SC Office Associates acknowledging receipt of the project completion records, the SC Oversight Engineer shall must notify the District Construction Oversight Engineer that the section titled "Required final project completion records for structures..." of Form TR-0129, <i>Progress Billing/Permit Closure</i>, can be completed and submitted to the DPE signifying that the EP requirement for the submission of project completion records for the structure portion of the project has been fulfilled.</li> </ol>

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# Table of Contents

## Revision and Approval

Revision	Date	Nature of Changes	Approved By
1	03/30/2021	Added BCMs D-1, D-2, and D-3	Richard Foley
0	12/05/2017	Added BCM D-4	Steve Altman

Memo No	Issue Date	Title
D-1	03/30/2021	SC PROJECT DEVELOPMENT TEAM PARTICIPATION
D-2	03/30/2021	SC RESPONSIBILITIES FOR CONSTRUCTABILITY REVIEW
D-3	03/30/2021	SC TASK MANAGEMENT
D-4	12/05/2017	SC FIELD REVIEW OF TEMPORARY STRUCTURES

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# Project Development Team Participation

## Revision and Approval

Revision	Date	Nature of Changes	Approved By
0	03-30-2021	Original Issue	Mike Francis

[Click here](#) to request previous versions      Contact [SC Technical Team P](#) for questions

## Background

This process establishes Structure Construction (SC) roles, responsibilities, and procedures for participation as a Project Development Team (PDT) member on projects with structure work.

Project Development Teams are established for each project by the Project Manager and include representatives from all units involved in the delivery of the project. These representatives work together as part of the PDT to report individual progress and address issues and concerns that arise during project development and construction. Project issues and concerns include cost, scope, quality, constructability, and project risk management. Active participation as a PDT member is an SC priority as it enables SC to identify and resolve constructability issues during the design phase, prior to advertisement.

Bridge Construction Engineers (BCE) are typically assigned projects early in the design phase of a project. The BCE is responsible for SC participation on PDTs but may delegate responsibilities to SC staff.

PDT meetings help with identifying and defining project scope along with developing a better understanding of the entire project for team members. PDT meeting attendance will help the BCE understand what the project resources needs for the project will be. Relationship building with other project stakeholders and partners is an important auxiliary benefit of project development team participation.

## **Process Inputs**

1. Project scoping documents
2. New project on the District's Authorized Projects List

## **Procedure**

1. All work associated with this process is charged as [Project Direct – Preconstruction](#).
2. Area Construction Managers:
  - a. Actively promote SC services through management contacts in Project Delivery (District Construction, Design, Project Management, etc.)
  - b. Ensure that the roles and responsibilities of SC PDT members are fulfilled. PDT function and individual member responsibilities are covered in the following documents:
    - i. Deputy Directive [\(DD\) 34-R1](#), *Program and Project Management for Capital Outlay Projects*
    - ii. *Project Management Manual*, [Chapter 1](#), *Project Management Introduction*
    - iii. *Project Development Procedures Manual*, [Chapter 8](#), Section 4, *Project Development Team*
3. Bridge Construction Engineers:
  - a. Verify that SC is included in all relevant PDTs by reviewing upcoming projects and coordinating with project managers:
    - i. Review new projects in VISION that are added to the Actively Managed Projects list.
    - ii. Contact the project manager for projects that are on the District's Authorized Project List and inform them of the SC PDT member(s) that will be involved on the project.
  - b. Ensure timely receipt of all scoping documents:
    - i. Establish contact with the DES Project Liaison Engineer to identify yourself as SC's PDT member and Task Manager.
  - c. Maintain periodic contact with the project manager prior to the initial PDT meeting.
  - d. Review the contract documents and visit the proposed project location to assess initial project constructability.

- e. Review existing VISION resource estimates and project documentation prior to scheduled PDT meetings.
- f. Attend each PDT meeting, preferably in person. Assign a prospective Structure Representative to attend if other obligations prevent personal attendance.
- g. During the PDT Meeting be prepared to discuss any of the following topics:
  - i. Bridge construction techniques
  - ii. Falsework construction
  - iii. Trestle construction
  - iv. Shoring considerations
  - v. Wall construction techniques and standards
  - vi. Foundation investigations and construction
  - vii. Design, scope, and proposed construction schedule reviews
  - viii. Development of workplan and resource estimates
  - ix. Risk register items related to structure work. Refer to the [Project Risk Management Handbook: A Scalable Approach](#) for information on identifying risks.
- h. Structure Construction PDT members are also expected to assist and collaborate with other project development team members on the following topics:
  - i. Identification of new project issues and risks and resolution of ongoing project issues and risks.
  - ii. Advise and assist the project manager in directing the course of studies.
  - iii. Make recommendations to the project manager and district management.
  - iv. Participate in major meetings, public hearings, and community involvement when requested.
  - v. Help facilitate decision-making, document, and adhere to decisions made by the PDT.
  - vi. Pay attention to project scope change proposals and be ready to address workplan and resource concerns.
  - vii. Follow workplans that have been previously agreed to and help meet project milestones and deadlines.
  - viii. Participate in any outcome of a PDT meeting, e.g. Value Engineering Studies, focus group meetings, constructability reviews, safety reviews, and maintenance reviews.

- ix. Revise VISION scope, schedule, and estimate as needed based on PDT meetings.
- 4. SC Staff:
    - a. Request opportunities to participate on PDTs for career development.
    - b. When assigned as a PDT member, collaborate closely with your BCE to resolve project issues as they arise.

## **Process Outputs**

- 1. Project Resource Estimates
- 2. Project constructability issue resolution

## **Attachments**

None



# SC Responsibilities for Constructability Review

## Revision and Approval

Revision	Date	Nature of Changes	Approved By
0	03-30-2021	Original Issue	Michael M Francis

[Click here](#) to request previous versions      Contact [SC Technical Team P](#) for questions

## Background

This process establishes Structure Construction (SC) Bridge Construction Engineer (BCE) roles, responsibilities, and procedures for performing constructability reviews (CR) on projects with structure work. Constructability reviews are an integral part of project delivery and are performed on all major projects on the State Highway System that exceed the Minor A limit as defined by the California Transportation Commission. The purpose of a CR is to improve overall constructability and reduce contract change orders, claims, and traffic delays.

Constructability review is defined as a validation process that assures the plans, specifications, and estimate effectively define the project so that it can be built by a competent contractor. The CR process is an iterative, multidisciplinary review of project quality.

SC participates in two general processes for constructability reviews:

1. The District process - This formal CR process is an iterative, multidisciplinary review at defined stages of the project development process. The number of CRs is based on the project's complexity. Members of the Division of Engineering Services (DES) Project Delivery Team will participate in the District CRs in accordance with the policies and practices already in place in each District. Details of the formal CR process are outlined in the Project Development Procedures Manual (PDPM), [Chapter 8](#), Section 6, *Project Alternatives*.

2. The Division of Engineering Services and the Structure Maintenance and Investigations (SM&I) process - This internal D.E.S. process involves additional CR checkpoints implemented for the development of Structures Plans Specifications & Estimates (SPS&E) in accordance with the guidelines in Memo to Designers ([MTD](#)) 1-31, *Constructability Reviews for Structures Projects*, and DES policy memo, [Constructability Reviews for Structures](#).

Each CR process may be requested and performed at different timelines during project development, but SC's roles, responsibilities, and procedures are similar for both general processes. In addition, for consultant designed projects, the review package may include preliminary specification contents at the Unchecked Details checkpoint. The timeline relationship between these two processes are depicted in [Attachment 1](#), *DES and District Constructability Review (CR) Timeline in the PS&E Development*.

The BCE is responsible for performance and completion of CRs but may delegate responsibilities to SC staff.

## **Process Inputs**

1. Constructability review request from Structure Design, SM&I, or Districts

## **Procedure**

1. All work associated with this process is charged as [Project Direct – Preconstruction](#)
2. The following references are applicable for CR performed by SC:
  - a. Various chapters in the [Construction Manual](#), [Bridge Construction Records and Procedures Manual](#), [Memo to Designers](#) (MTD), and [Bridge Design Details](#).
  - b. [Office Associate Manual](#)
  - c. DES policy memo, [Constructability Reviews for Structures](#).
  - d. DES [MTD 1-31](#), *Constructability Reviews for Structures Projects* and [Attachment 1](#), *Constructability Reviews for Structures*, of MTD 1-31
  - e. *PDPM* Chapter 8 Section 5, *Project Development Categories* and Section 6, *Project Alternatives*
  - f. [DES Constructability Review Checklists](#)
  - g. [BIRIS](#)
  - h. District-specific CR resources available at:
    - i. [North Region Construction](#)



- ii. [District 4 Construction](#)
  - iii. [Central Region](#)
  - iv. [District 7 Directive DD-13](#)
  - v. [District 8 Construction](#)
  - vi. District 9 – (*Constructability Review resource not found at this time*)
  - vii. [District 11](#)
  - viii. [District 12](#)
3. Structure Design Task Managers (TM) or District Project Manager (PM) will:
- a. Determine the level of review for each milestone during project development per:
    - i. MTD 1-31 for DES Constructability Review.
    - ii. PDPM Chapter 8, Section 5, *Project Development Categories* for District Constructability Review.
  - b. Coordinate reviews within DES and/or Districts.
4. SC constructability reviewers:
- a. Perform CRs using the review resources listed in item 2 above.
  - b. Ensure compliance with the processes and desired outcomes listed in Attachment 1 of MTD 1-31.
  - c. Provide comments using the [Form SC-010](#), *DES Structures Constructability Review Comment and Responses Feedback*, and additional comments by redlining project plans for clarity.
  - d. Use *DES Constructability Review Checklists* to assist with the review. For bridge widenings, obtain as-builts from BIRIS to assist with the review.
5. SC Managers (ACM):
- a. Ensure area staff is aware of CR roles and responsibilities.
  - b. Determine whether the Senior Specialist or area BCE conducts the CR.
  - c. Maintain performance records on DES CR status for projects in the ACM's area.
  - d. Participate as appropriate, i.e. in large complex projects.
6. SC Supervisors (BCE) or Senior Specialist:
- a. Ensure timely CR is performed when a CR is requested for a project in the BCE's area.
  - b. Assign staff to provide or assist with the review if necessary.

- c. Ensure the SC HQ Office Associate for the BCE's area receives the completed *DES Constructability Review Feedback Form*. The SC HQ Office Associate is the liaison between Structure Design, SM&I Design, or Office of Special Funded Liaison and SC for DES CR distribution. If Design/Field Construction distributes directly, the SC HQ Office Associate must receive a copy for tracking purposes.
  - d. Ensure the appropriate staff is present to facilitate the safe field review of the project limits when a project field review is requested, i.e. from Design prior to the Type Selection meeting. Depending on the project, encourage participation by District personnel such as Traffic or Environmental staff.
  - e. Ensure participation on all DES CR requests and meetings. If SC staff are unable to attend a Type Selection meeting in Sacramento, encourage participation by teleconference or request SC HQ liaison senior to represent SC. Provide the SC HQ liaison senior with the field CR comments.
  - f. Discuss unresolved constructability issues with the Designer and the Design Branch Chief and work towards resolution.
  - g. Discuss alternative staging or structures selection (e.g. implementing accelerated bridge construction method) with the Designer and the Design Branch Chief to accelerate project completion if applicable.
  - h. Review and sign the [Constructability Review Concurrence Memo](#) when all constructability issues are resolved.
  - i. Discuss performing a closeout meeting with Structure Design staff particularly on Level 1 projects and when applicable on Level 2 projects.
7. SC Staff:
- a. Know the basic milestones of project delivery and when CRs take place. The flowchart in Attachment 1 depicts the various checkpoints or milestones during the PS&E process when the CR occurs.
  - b. Perform CR as assigned.
  - c. Discuss CR findings with the BCE.
  - d. Provide CR comments on the *DES Constructability Review Feedback Form* and attach any additional comments from the *DES Constructability Review Checklists* or project plan document.
  - e. Coordinate with the BCE in submitting all CR feedback to the SC HQ Office Associate.
  - f. Participate in a CR related event such as a project field review meeting or Type Selection meeting when requested.
  - g. Be aware of the CR process employed by the District.

8. SC HQ Senior Liaisons:
  - a. Attend Type Selection meetings when requested by the BCE. Prior to the meeting, review the Type Selection Meeting package and discuss constructability issues with the BCE. Ensure field comments are discussed and addressed in the meeting.
  - b. Ensure SC HQ Office Associates are documenting receipt of CRs and distributing in a timely manner.
9. SC HQ Office Associates:
  - a. Follow duties as outlined in the *Office Associate Manual*, Section 1-1, *Constructability Review* (e.g., tracking distribution, process review comments received from SC field staff, etc.).
  - b. Attend Type Selection meetings if requested by BCE or SC HQ Senior Liaisons. Prior to the meeting, review Type Selection Meeting package and discuss constructability issues with the BCE or SC HQ Senior Liaisons. Ensure field comments are discussed and addressed in the meeting.
10. For District CRs, District Project Engineers or District Office Engineers are responsible to combine Structures and District Plans, Specifications, and other pertinent contract documents available at each project development milestones (i.e., Project Initiation Document, 30% PS&E, 60% PS&E, 95% PS&E) and will submit CR request directly to the field staff. Field staff must:
  - a. Verify in VISION whether DES CR has been initiated or performed for the Structure Plans provided. In most cases, due to the timeline between DES plan distribution and the District preparing the combined District CR package, it is likely that SC has already performed or in the process of completing the DES CR for the particular PS&E phase (e.g., Advanced Planning Study, General Plan, unchecked details, draft SPS&E). Coordinate with the BCE to ensure that there is no overlapping effort in the review as sometimes there may be two different SC reviewers.
  - b. Review compatibility between Structure Plans and Roadway Plans and Specifications for items such as alignment, grades and super-elevations, bridge widths, construction staging, width of traffic openings, horizontal and vertical clearances, bid quantities, quantity of temporary railings, drainage tie-ins, sign structures, and electrical installations.
  - c. Refer to District CR resources (see item 2.h) for any District-specific requirements when performing CRs.
  - d. Provide timely review and copy SC Office Associates when submitting comments to the District requestor.
  - e. Provide signed *DES Constructability Review Concurrence Memo* to the District requestor when available.

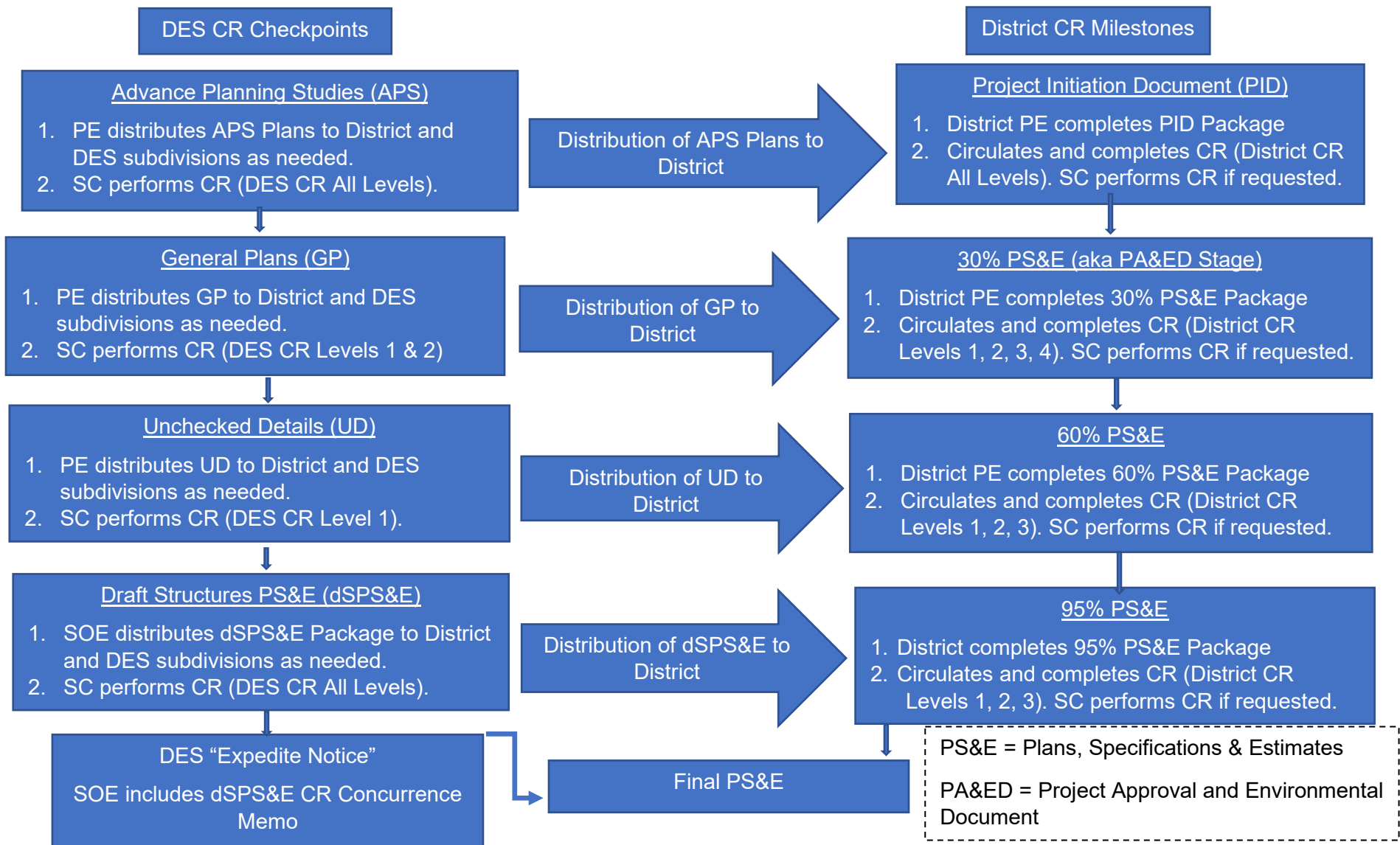
## **Process Outputs**

1. DES Constructability Review Feedback Form and Constructability Review Checklists
2. District Constructability Review Feedback Form
3. DES Constructability Review Concurrence Memo
4. Supporting documentation for District Constructability Review Concurrence Memo

## **Attachments**

[Attachment 1](#), *DES and District Constructability Review (CR) Timeline in the PS&E Development*

# DES and District Constructability Review (CR) Timeline in the PS&E Development



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# SC Task Management

## Revision and Approval

Revision	Date	Nature of Changes	Approved By
0	03-30-2021	Original Issue	Michael Francis

[Click here](#) to request previous versions      Contact [SC Technical Team P](#) for questions

## Background

This process establishes Structure Construction (SC) roles, responsibilities, and procedures for Task Management of all Work Breakdown Structure (WBS) activities required for delivery of transportation structures.

Task Management is defined in Deputy Directive [\(DD\) 93-R1](#), *Task Management*, as the assignment of individuals (Task Managers) to manage the production and completion of a discrete deliverable, or work package, on a project within a defined schedule and support budget.

SC policy is to actively manage WBS Task 275 through the life of a project using VISION and through effective communication with the project manager, project liaison engineer, and other parties affecting or influencing the resourcing of WBS Task 275, Construction Engineering, and General Contract Administration of Structures Work.

SC also supports Task Managers of other WBS tasks during planning, design, and construction of projects by providing an estimate of resources required to complete activities supporting WBS tasks. The “Resource Summary” tab for each project in VISION provides a list of WBS tasks and the associated project phase that may involve SC participation for the duration of the project.

## Process Inputs

1. Project workload resource estimates (work plans) requests or draft Division of Engineering Services (DES) Service Agreement

2. Project calendar baseline and updates
3. Staff assignments

## **Procedure**

1. All work associated with this process is charged as (1) [Project Direct – Construction](#), and (2) [Project Direct – Preconstruction](#)
2. References and utilities for managing project resources:
  - a. [VISION](#) tool and VISION Support (online guidance-click on “?” icon in upper right, once VISION is open)
  - b. [Project Management Manual](#), Chapter 6, *Task Management*
  - c. [Workplan Standards Guide](#)
  - d. Deputy Directive [DD-93-R1](#), *Task Management*
  - e. Project Management Directive ([PMD](#)) -01. *Project Management Definitions* and [PMD](#) -03, *Project Management Roles*.
  - f. Project Resource and Schedule Management ([PRSM](#))
  - g. SC Project Management Branch (PMB) Desk Manual (working document for OA use)
  - h. Bridge Construction Memo, ([BCM](#)) C-6, *Required Documents to be Submitted During Construction*.
3. Area Construction Manager (ACM):
  - a. Review references and utilities listed in previous item no. 2 to perform project resourcing tasks.
  - b. Participate in District Resource Meeting as needed.
  - c. Work with District counterparts and Project Managers (PMs) to identify SC’s services and risks associated with projects not being adequately resourced.
  - d. Identify and assign Bridge Construction Engineer (BCE) to projects in area.
  - e. Ensure BCEs receive training to actively perform task management.
  - f. Work with staff to resolve resource related conflicts.
  - g. Actively manage projects in area by monitoring VISION and discussing with BCEs when it appears resources, calendars, and/or records are not submitted or being kept up to date.
  - h. Elevate to DES Deputy Division Chief for Program/Project Management and Office Engineer projects that are not being adequately resourced.



4. Bridge Construction Engineer:
  - a. Review references and utilities listed in item no. 2 to perform project resourcing tasks.
  - b. When assigned to a project and/or when requested, create and submit an initial project resource estimate using the resource estimating tools in VISION.
  - c. Generate a project working calendar in VISION.
  - d. Submit to SC HQ when resource estimate is complete.
  - e. Monitor VISION and/or PRSM to verify status of resource allocation.
  - f. If resource allocation is inadequate, notify PM and discuss solution.
  - g. Revise resource estimate when project or conditions change; provide justification and submit to SC HQ or project manager.
  - h. Monitor VISION and/or PRSM to verify status of revised resource request.
  - i. Make staff assignments before start of construction.
  - j. Maintain project working calendar throughout life of project.
  - k. On a regular basis, monitor time charges and communicate resourcing status/issues with the ACM and PM as project progresses.
  - l. Work with SC HQ PRSM liaison, aka, Task Manager Alternate (TMA) to manage projects in PRSM.
  - m. When requested, respond timely to task and resource inquiries from HQ and other entities.
  - n. Coordinate with Task Managers of other WBS tasks to ensure SC is adequately resourced to provide support work for those tasks.
5. Senior Bridge Engineer (Specialist):
  - a. When assigned by ACM, assist BCEs in task management roles.
6. Structure Representative (SR):
  - a. When requested, provide input to BCE on resource questions during project resource estimating or revision.
  - b. Use the VISION web tool to submit project status initial and final data in accordance with [BCM C-6](#), *Required Documents to be Submitted During Construction*, in a timely and accurate manner.
    - i. Note that Attachments 1- 4 of BCM C-6, provide additional guidance and examples on required documents to be submitted.
  - c. Monitor project resource expenditures in VISION as the project proceeds and notify the BCE if resources are expected to exceed resources provided.
  - d. Charge time accurately and timely.

7. Assistant Structure Representative (ASR):
  - a. When requested, provide input to BCE and SR on resource questions during project resource estimating or revision.
  - b. Charge time accurately and timely.
8. SC HQ Office Associates:
  - a. Review *SC PMB Desk Manual* and references and utilities listed in item 2 to perform project resourcing tasks.
  - b. Review resource estimates when submitted to SC HQ by the BCE in VISION.
  - c. Submit the resource estimate to the Project Liaison Engineer (PLE) through VISION.
  - d. Check status of resource request to ensure resource is allocated.
  - e. Assist with VISION related issues and training.
9. SC HQ Project Management Branch Chief:
  - a. Serves as Task Manager Alternate for WBS 275.
  - b. Provides PRSM support and technical assistance as required.
  - c. When needed, working with PMs, PLEs and others to resolve resource conflicts in PRSM and re-allocate resources as requested and with authorization of TM.

## **Process Outputs**

1. Resource estimates
2. Project working calendar

## **Attachments**

None



# SC Field Review of Temporary Structures (Falsework)

## Revision and Approval

Revision	Date	Nature of Changes	Approved By
0	12-05-2017	Original issue.	Steve Altman

[Click here](#) to request previous versions      Contact [SC Technical Team P](#) for questions

## Background

This process establishes Structure Construction (SC) Bridge Construction Engineer's (BCE) roles, responsibilities, and procedures for field review of temporary structures (falsework) prior to loading.

Contractors design, construct, and maintain falsework to support state highway structures during construction. The falsework must be safe and adequate, provide the necessary rigidity, support the imposed loads, and produce a completed structure that conforms to the lines and grades shown on the structure plans. Failure of falsework could be catastrophic. SC uses all contract requirements, staff experience, and *best engineering practices* to prevent falsework failures.

Structure Representatives (SR)/Assistant Structure Representatives (ASR) review and authorize the falsework shop drawings, inspect falsework for conformity to authorized plan, and verify that the falsework is inspected and certified by the licensed engineer signing the falsework drawings, or his representative, before concrete is placed. Refer to:

- [Bridge Construction Memo \(BCM\) 48-2, Temporary Structures – Falsework](#)
- [BCM D-4, SC Field Review of Temporary Structures](#)
- [Chapter 2, Review of Shop Drawings, of the Falsework Manual.](#)

SC BCEs perform field reviews of falsework as a second level of review of Quality Assurance (QA) prior to concrete placement.

## **Process Inputs**

1. Authorized falsework shop drawings, highlighted to show elements inspected.
2. Falsework in place, ready for review prior to concrete placement.
3. Falsework punch list completed by Structure Representative.

## **Procedure**

1. Verify that the authorized shop drawings (including railroad if applicable) have been uploaded to VISION.
2. Schedule day and time to meet with the SR in the field to perform field review.
  - a. The best time to perform a review is after a field review of the falsework by the Contractor's falsework engineer or approved delegate.
3. Review authorized falsework shop drawings prior to performing the field review to get familiar with the plans.
4. Verify the Structure Representative has coordinated with the Contractor to provide safe access to the falsework for inspection. Use Caltrans Personal Protective Equipment (PPE) and necessary equipment such as a tape measure, level, laser pointer, and binoculars.
5. Meet with the SR at the job site and discuss status of the constructed falsework.
  - a. Any current falsework issues?
  - b. What issues are being addressed?
  - c. Is there anything I need to know prior to performing the review?
  - d. Any last minute revisions? If so, when do we expect these revisions to be authorized?
6. Perform a global field review of the falsework. Things to look for include:
  - a. Falsework layout is consistent with the authorized plans.
  - b. Longitudinal, transverse, internal, and external stability.
  - c. Are bents plumb, etc.?
  - d. Things you can see from afar.
7. Perform closer review of each falsework bent and element (see [Falsework Manual, Chapter 9](#)).

- a. Look for consistency with authorized falsework shop drawings.
- b. Visualize load path, from joists and stringers to pad. Check pad conditions and footing protection from softening and undermining.
- c. Check all connections.
- d. Check the condition of each element.
- e. Check for full bearing between each element (post to cap, cap to sand jack, etc.).
  - i. Suggest having a laborer present during the review to shim gaps in the falsework as the review is performed.
- f. Check transverse and longitudinal bracing for that particular location.
- g. Check for tale-tales.
8. Check falsework cap buildup and bent stability of constructed falsework and compare to authorized falsework shop drawing details.
9. Check falsework in special locations over or adjacent to roadways for conformity to the requirement specified in *Contract Specifications*, Section 48-2.02B(4), *Temporary Structures – Falsework – Materials – Design Criteria – Special Locations*.
10. Discuss any deficiencies and plans for resolution of them with the SR.
11. Send an email to the SR summarizing the BCE's falsework review and any corrective actions needed prior to the concrete pour. Document in your diary.
12. Confirm that the SR and ASR note in their daily reports that the BCE was on site and performed a falsework review.

The Structure Representative will verify that the Contractor has corrected all the deficiencies prior to the concrete pour and report to the BCE.

## **Process Outputs**

1. Stable falsework.
2. Completed BCE review of constructed falsework.
3. E-mail to the Structure Representative summarizing BCE review (non-conformance).
4. Daily Reports.

## **Attachments**

None

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# Table of Contents

## Revision and Approval

Revision	Date	Nature of Changes	Approved By
2	05-31-2022	Added BCM E-3	Richard Foley
1	08-31-2020	Added BCM E-1	Richard Foley
0	01-21-2022	Original issue. Added BCM E-2	Richard Foley

Memo No	Issue Date	Title
E-1	08/31/2020	Establishing Headquarters for SC Staff
E-2	01/21/2022	SC Project Record Review
E-3	05/31/2022	Staff Assignments

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# Establishing Headquarters for SC Staff

## Revision and Approval

Revision	Date	Nature of Changes	Approved By
0	08-31-2020	Original issue	Richard Foley

[Click here](#) to request previous versions      Contact [SC Technical Team P](#) for questions

## Background

This process establishes Structure Construction (SC) Bridge Construction Engineer (BCE) and Area Construction Manager (ACM) roles, responsibilities, and procedures for establishing the headquarters address for all SC staff.

Structure Construction staff are required to have a headquarters address, which "...is where employees spend the largest part of their regular working time, or where the employee returns upon completion of a special assignment..." per the [State Administrative Manual](#), Section 0710, *Terms and Definitions*.

The primary reason for establishing a headquarters address is to establish if SC staff is eligible for reimbursement under the Fair Labor Standards Act for short-term and long-term travel, per their respective Bargaining Unit Memorandum of Understanding (MOU).

## Process Inputs

1. New SC staff with no assigned headquarters
2. Current headquarters building closed
3. SC staff permanently transferred to SC
4. SC staff's currently assigned headquarters
5. SC staff's assignment location and duration
6. Unit workload forecast

# Procedure

1. SC Staff will:
  - a. Meet with your SC Supervisor as appropriate to discuss:
    - i. Your designated headquarters address and how it was established/determined.
    - ii. Changes, when necessary, to your headquarters address within 50 miles of your current headquarters address.
    - iii. Changes, when necessary, to your headquarters address exceeding 50 miles of your current headquarters address.
  - b. Upon written authorization, report to your designated headquarters address as directed.
2. SC Supervisors will:
  - a. Review future workload trends in your unit and confer with your SC manager.
  - b. Review California Code of Regulations [§599.616.1\(a\)](#), *Definitions – Headquarters*, which states in part: “Headquarters shall be established for each state officer and employee ....”
  - c. Review current Bargaining Unit MOU requirements.
  - d. For new SC staff:
    - i. Meet with new SC staff to explain the purpose of a headquarters address.
    - ii. Assign the new SC staff’s headquarters address prior to any project assignment.
    - iii. Complete [Form SC-0103](#), *New Headquarters Address Notification* and forward to the ACM.
  - e. For current SC staff, when proposing a change to an employee’s headquarters address within 50 miles of their primary residence:
    - i. Be aware of potential closures of field offices within your unit that require SC staff to relocate to a different field office. This often requires a relocation of SC staff’s current headquarters address if the field office address was also the headquarters address.
    - ii. Consider a change of headquarters address for current SC staff, by determining whether travel reimbursements are required under the Fair Labor Standards Act.
    - iii. Meet with the SC employee and SC manager, if applicable, to discuss the new headquarters address prior to any project assignment when circumstances require a change of headquarters address.

- iv. Answer the questions in the Form SC-0103, *New Headquarters Address Notification* and forward the request to the ACM.
  - f. For current SC employees, when proposing a change to an employee's headquarters address that exceeds 50 miles from their primary residence:
    - i. Determine if the proposed change to the SC employee's headquarters address requires relocation expenses that are to be covered by the State.
    - ii. Discuss and provide details for reimbursement of relocation expenses with the employee and ACM if the decision is made to relocate an SC employee. For procedures regarding travel expense claims and reimbursements, refer to the [Caltrans Travel Guide](#).
  - g. Answer the questions in the Form SC-0103, *New Headquarters Address Notification* and send a notification recommending the change of headquarters address for the SC employee to the SC manager.
3. SC managers will:
- a. Review Form SC-0103, *New Headquarters Address Notification*, when received from SC Supervisor and will:
    - i. Revise if necessary.
    - ii. Discuss revisions with the SC Supervisor.
    - iii. Submit Form SC-0103, *New Headquarters Address Notification* to SC headquarters at [osc.administration@dot.ca.gov](mailto:osc.administration@dot.ca.gov).

## **Process Outputs**

- 1. SC employees have assigned headquarters addresses consistent with the Bargaining Unit MOU, Duty Statement, and State Administrative Manual.

## **Attachments**

None

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# SC Project Record Review

## Revision and Approval

Revision	Date	Nature of Changes	Approved By
0	01-21-2022	Original Issue	Richard Foley

[Click here](#) for previous versions

Contact [SC Technical Team O](#) for questions

## Background

This process establishes Structure Construction (SC) roles, responsibilities, and procedures for scheduling, performing, and disposition of project record reviews.

The project record review is used to fulfill the requirements of a project audit per [BCM F-3, SC Audit Program](#), by evaluating if project records are completed and filed as required by the SC business process detailed in the *Bridge Construction Records and Procedures Manual*.

## Process Inputs

1. Form [SC-6301](#), *Project Record Review*
2. Project records

## Procedure

1. All work associated with this process is charged as [Project Direct – Construction](#).
2. SC Staff:
  - a. Create and maintain complete project records per *Construction Manual, Section 5-102, Organization of Project Documents*.
  - b. Ensure that project records are accessible for review.
  - c. File completed [Form SC-6301](#), *Project Record Review*, in Category 63, *Project Completion Documents*.

3. SC Supervisors:
  - a. Perform one annual project record review for each Structure Representative per BCM F-3, *SC Audit Program*:
    - i. Evaluate if project records are being completed and filed as required by the SC processes (BCMs) detailed in the *Bridge Construction Records and Procedures Manual*.
  - b. If the project record review results in a score less than 70%, perform another record review within thirty days to verify deficiencies are corrected. Submit completed Form SC-6301, *Project Record Review*, to the Structure Representative for the project files, and a copy to the SC HQ Office Associate by email to [sc.office.associates@dot.ca.gov](mailto:sc.office.associates@dot.ca.gov).
4. SC Managers:
  - a. Confirm that SC Supervisors are completing project record reviews.
5. SC HQ Office Associates:
  - a. Receive and record project record reviews.
  - b. Track and report project record review.

## **Process Outputs**

1. Completed Form SC-6301, *Project Record Review*.

## **Attachments**

None



# Staff Assignments

## Revision and Approval

Revision	Date	Nature of Changes	Approved By
0	05-31-2022	Original Issue	Richard Foley

[Click here](#) for previous versions

Contact [SC Technical Team P](#) for questions

## Background

This process establishes Structure Construction (SC) roles, responsibilities, and procedures for creating and maintaining staff assignments with WEAT (Web-Enabled Assignment Tool).

Structure Construction uses WEAT to manage their workload needs on projects and corporate activities by creating assignment letters whenever a staff assignment is created or modified. Additionally, WEAT is used to manage rotation assignments, loan assignments, headquarters assignment, and consultant assignments to projects.

There are different types of staff assignments: project assignment, loan assignment, rotation assignment, office assignment, and headquarters assignment. WEAT also manages staff assignments for consultant staff working on SC projects. All assignment letters include information regarding employee's supervisor, project, work location, and the period of time they will be on their assignment.

A project assignment is the assignment of an employee to a specific project. It may be a new project or ongoing.

A loan assignment is the assignment of an employee from their permanent supervisor to another within SC. They occur whenever there is a workload imbalance. SC staff are informed prior to employment thru their Duty Statement of the possibility for moving during periods of fluctuating workload.

A rotation assignment is the assignment of an employee to another sub-division within Division of Engineering Serviced (DES). This is a mandatory assignment to expand the employee's knowledge and experience. Employees working for DES are informed of the rotation assignment prior to employment thru their Duty Statement. Rotation assignments are included in WEAT since they can add or decrease the available staff.

An office assignment occurs when an employee is assigned to an area where they are tasked with performing office duties for multiple projects or in SC Headquarters.

Permanent headquarters addresses are assigned to all permanent SC staff to help with Travel Expense Claims (TEC).

Consultants on A&E contracts are assigned to projects in WEAT since they are part of the available workforce to administer projects. Their assignment letter serves as documentation they have been authorized to work and charge to a project within their A&E contract.

SC is unique from most other subdivisions in DES where staff must physically move from one project location to another. In order to effectively manage staff and workload needs in all twelve districts and headquarters, staff assignments are required by all supervisors and management. Ideally, staff are assigned to projects within their supervisor's area. Whenever there are workload imbalances between supervisors, staff are assigned to projects in other areas via a loan assignment. The supervisor meets with the employee to discuss the loan assignment and issues an assignment letter. Workload imbalances are beyond SC's control, thus the need for loan assignments.

## **Process Inputs**

1. New employee to Structure Construction
2. New project
3. Loan Assignment
4. Rotation Assignment
5. Changes in employment status
6. Consultants working on SC projects

## **Procedure**

1. All work associated with this process is charged as [Overhead](#).
2. SC Supervisors and Managers:



- a. Refer to [Proposed Business Process for Keying Assignments into the OSC Web-Enabled Assignment Tool \(WEAT\)](#) when there are changes due to:
  - i. New employee to Structure Construction
  - ii. New project
  - iii. Loan Assignment
  - iv. Rotation Assignment
  - v. Changes in employment status
  - vi. Consultants working on SC projects
- b. All staff assignments are made using the WEAT tool.
- c. Discuss all new assignments with the employee prior to sending the WEAT generated assignment notification email.
- d. New assignments shall be made 15 days prior to the assigned reporting date.
- e. Assignments are made based with consideration of the following criteria:
  - i. Project staffing needs
  - ii. Employee experience and expertise.
  - iii. Employee professional development goals and objectives.
  - iv. Forecasted Area/Unit workload needs.
- f. Assignments made to a different SC Unit needs to be discussed and agreed on by all managers (ACMs) affected.
- g. The unit loaning staff to a different unit is responsible for making the official assignment in WEAT.
- h. Contact SC Administration Branch Chief or SC Project Management Branch Chief for:
  - i. Assistance with WEAT
  - ii. Questions regarding staff assignments
  - iii. Request to update HQ addresses for staff. Refer to [BCM E-1](#), *Establishing Headquarters for SC Staff*

## **Process Outputs**

1. Project Assignment Letter
2. Office Assignment Letter
3. Loan Assignment Letter
4. Rotation Assignment Letter

5. Headquarters Address

**Attachments**

None



# Table of Contents

## Revision and Approval

Revision	Date	Nature of Changes	Approved By
1	07/31/2020	Added BCMS F-1, F-2, F-3, and F-5	Richard Foley
0	06/30/2020	Original. Added BCM F-4	Richard Foley

Memo No	Issue Date	Title
F-1	07/31/2020	SC QMS MANAGEMENT REVIEW
F-2	07/31/2020	SC QMS COMMUNICATIONS
F-3	07/31/2020	SC AUDIT PROGRAM
F-4	06/30/2020	INTAKE PROCESS FOR PROPOSED CHANGES TO THE SC QMS
F-5	07/31/2020	MANAGING CHANGES TO THE SC QMS

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# SC QMS Management Review

## Revision and Approval

Revision	Date	Nature of Changes	Approved By
0	07-31-2020	Original Issue	Richard Foley

[Click here](#) to request previous versions    Contact [SC Technical Team Q](#) for questions

## Background

This process establishes Structure Construction (SC) roles, responsibilities, and procedures for Quality Management System (QMS) Management Review as described in the *SC Quality Manual*, Section 9.3, *Management Review*.

Management Review is an essential activity for the “Check” and “Act” parts of the QMS Plan-Do-Check-Act cycle. SC Top Management is responsible for conducting management reviews, using the inputs described in the *SC Quality Manual* and makes decisions resulting in outputs described in the *SC Quality Manual*.

Additional unique requirements for Management Review are detailed in:

- [BCM F-5](#), *Managing Changes to the SC QMS*

Prior to reviewing this Bridge Construction Memo (BCM), it is essential to review any policy documents referenced above. The information in the policy document(s) typically will not be repeated in the text of this BCM.

## Process Inputs

1. Agenda and attachments compiled by the SC Quality Management Representative (QMR), including:
  - a. Current and proposed changes to legislation or regulations.

- b. Current and proposed changes to specifications, standard plans, AASHTO amendments, FHWA mandates, Department Policies, and information from other interested parties.
  - c. Referrals from functional units, e.g., Division of Construction, committees, subdivisions, and Accounting.
  - d. Quarterly reports from SC technical teams per [BCM A-2](#), *SC Technical Team Operation*, that identify need for organizational change.
  - e. SC Management Review inputs listed on Attachment 3, *SC Quality Manual Management Review*.
2. Ad hoc agenda items brought for Management Review.

## **Procedure**

1. All work associated with this process is charged as [CapCorp](#).
2. SC Quality Management Representative (QMR) will:
  - a. Schedule SC Management Review meeting with SC Top Management.
  - b. Develop the SC Management Review meeting agenda, compile attachments, and distribute to SC Top Management per [Attachment 1](#), *SC Management Review Meeting Agenda*.
  - c. Facilitate SC Management Review meetings with SC Top Management per [Attachment 2](#), *SC Management Review Meeting*.
3. SC Managers will:
  - a. Review meeting agenda and attachments prior to the SC Management Review meeting.
  - b. Participate in SC Management Review meetings per [Attachment 2](#), *SC Management Review Meeting*.
  - c. Make decisions and provide direction as needed.
4. SC Deputy Division Chief:
  - a. Chairs SC Management Review Meetings.
  - b. Ensures decisions made at SC Management Review are implemented.
  - c. Makes final determinations.
  - d. Periodically reviews the documented information from SC Management Review including:
    - i. Decisions regarding continual improvement of the SC QMS.
    - ii. Timely and effective guidance or management direction to staff.

- iii. Adequate Budget/Staff/Training Priorities and needs.

## **Process Outputs**

1. SC Management Review meeting agenda
2. SC Management Review meeting minutes

## **Attachments**

1. [Attachment 1](#), *SC Management Review Meeting Agenda*
2. [Attachment 1.1](#), *SC Quality Manual Management Review*
3. [Attachment 2](#), *SC Management Review Meeting*

# SC Management Review Meeting Agenda

The Structure Construction (SC) Quality Management Representative (QMR) is tasked with developing the SC Management Review meeting agenda. Agenda items may include:

1. Status of action items from previous management reviews.
2. Suggested priority of new action items based on:
  - a. Risk and Impact
  - b. Staffing
  - c. Budgets
  - d. QMS/Guidance
  - e. Ongoing Construction Projects.
3. Regularly scheduled SC Management Review inputs per [Attachment 1.1](#), *SC Quality Manual Management Review*.
4. Current and proposed changes to the contract standards, Caltrans Strategic Direction, AASHTO amendments, FHWA, legislation, regulations, and information from other interested parties.
5. Changes in external and internal issues that are relevant to the QMS:
  - a. Compliance with laws, regulations, or contract standards
  - b. Department Policies and Directives
  - c. Alignment with Caltrans and DES Strategic Direction
  - d. SC Quality Policy
  - e. Industry Standard Practices
6. Deliverables from SC Quality Management Team, which may include:
  - a. Audit reports
  - b. Analysis and evaluation of Key Performance Indicators (KPIs) and other measurables
  - c. Action Items from previous SC Management Review meetings
7. Quarterly reports from SC Technical Teams per [BCM A-2](#), *SC Technical Team Operation*. Technical team reports may include:
  - a. Project challenges
  - b. Lessons learned
  - c. Status of documented information
  - d. Work plans



8. Requests, policies, and directives from Division of Construction.
9. Requests from Industry
10. Need for additional budget/staff/training to meet quality expectations.

# SC Quality Manual Management Review

List the inputs for SC Management Review. These include, but are not limited to, the following:

SC QM SECTION	SC MANAGEMENT REVIEW INPUT	SC MANAGEMENT REVIEW INTERVAL
4.1	Changes that affect the context of the organization	Scheduled: 2 yr Ad hoc: as needed
4.2	Changes that affect the needs and expectations of interested parties	Scheduled: 2 yr Ad hoc: as needed
4.3	Changes to the QMS scope, SC customers, products and services	Scheduled: 2 yr Ad hoc: as needed
4.4.1	Changes that affect QMS processes	Scheduled: 1 yr Ad hoc: as needed
5.1.1	Changes that affect leadership and commitment	When CBSSP is updated
5.2.1	Changes that affect the Quality Policy	Scheduled: 2 yr
5.3.1	Changes that affect QMR roles and responsibilities	Scheduled: 1 yr with Performance evaluation
6.1.1	Changes to risks and opportunities	Scheduled: 1 yr
6.2.1	Changes that affect Quality objectives	Scheduled: 1 yr Ad hoc: as needed
6.3	The need for changes to the QMS	Scheduled: 2 yr Ad hoc: as needed
7.1	Changes that affect the availability of resources	Scheduled quarterly
7.2	Changes to competency requirements	Scheduled: 1 yr Ad hoc: as needed
7.4	Changes that affect the <i>SC Communication Plan</i>	Scheduled: 1 yr Ad hoc: as needed
7.5	Changes that affect the SC Document Management System	Scheduled: 1 yr Ad hoc: as needed
9.1.1	Results from monitoring and measurement, analysis and evaluation	Scheduled quarterly
9.1.2	Results from monitoring of customers perceptions	Scheduled quarterly
9.2	Results of audits and review of the audit program	Scheduled: 1 yr Ad hoc: as needed
10.2	Identify need for corrective actions. Results of previous corrective actions	Scheduled quarterly

List the outputs for SC Management Review. These include, but are not limited to, the following:

<b>SC QM SECTION</b>	<b>SC MANAGEMENT REVIEW OUTPUT</b>	<b>SC MANAGEMENT REVIEW INTERVAL</b>
4.1	Actions to improve the context of the organization	Scheduled: 2 yr Ad hoc: as needed
4.2	Actions to improve the needs and expectations of interested parties	Scheduled: 2 yr Ad hoc: as needed
4.3	Changes to the QMS scope, SC customers, products and services	Scheduled: 2 yr Ad hoc: as needed
4.4.1	Actions to improve QMS processes	Scheduled: 1 yr Ad hoc: as needed
5.1.1	Actions to address Leadership and commitment improvements	When CBSSP is updated
5.2.1	Updated Quality Policy	Scheduled: 2 yr
5.3.1	Actions to improve QMR roles and responsibilities	Scheduled: 1 yr with Performance evaluation
6.1.1	Updated Risk register	Scheduled: 1 yr
6.1.2	Actions to improve risk management planning	Scheduled: 1 yr
6.2.1	Actions to improve or change Quality objectives	Scheduled: 1 yr Ad hoc: as needed
6.2.2	Actions to improve or change plans for achieving Quality objectives	Scheduled: 1 yr Ad hoc: as needed
6.3	Plans for making changes to the QMS	Scheduled: 2 yr Ad hoc: as needed
7.1	Actions to address changes in resources	Scheduled quarterly
7.1.1	Review of the means for determining the adequacy of Resources	Scheduled quarterly
7.2	Training	Scheduled: 1 yr
7.4	Changes to <i>SC Communication Plan</i>	Scheduled: 1 yr Ad hoc: as needed
9.1.1	Actions resulting from Monitoring, Measurement, Analysis, and Evaluation	Scheduled quarterly
9.1.2	Actions to improve methods of monitoring customer perceptions	Scheduled quarterly
9.2	Actions to improve the audit program	Scheduled: 1 yr Ad hoc: as needed
10.1	Actions to address opportunities for continual improvement	Scheduled: 1 yr
10.2	Implement corrective actions	Scheduled quarterly

# SC Management Review Meeting

The Structure Construction (SC) Quality Management Representative (QMR) is tasked with facilitating the SC Management Review meeting with SC Top Management and following up with action items and decisions made at the meeting.

1. During the SC Management Review meeting:
  - a. SC QMR:
    - i. Facilitates the SC Management Review meeting.
    - ii. Tracks status of action items.
    - iii. Writes meeting minutes.
  - b. SC Top Management:
    - i. Approves or rejects previous meeting minutes.
    - ii. Provides direction and makes decisions for SC Management Review meeting agenda items.
2. Following the SC Management Review meeting, the SC QMR:
  - a. Notifies affected interested parties of SC Top Management decisions:
    - i. To resolve immediate issues.
    - ii. To resolve technical issues.
  - b. Posts on the SC Intranet and/or in J2 database:
    - i. Meeting minutes as evidence of the actions and results of SC management reviews.
    - ii. SC Management Review decisions regarding scheduled output of [Attachment 1.1](#), *SC Quality Manual Management Review*.
    - iii. SC Management Review decisions for changes reflecting:
      1. Opportunities for improvement.
      2. Mandatory change requirement in law/regulations/requirements.
    - iv. Guidance or management direction to staff or customers.
    - v. Notifications to impacted parties (internal and/or external parties).



# SC QMS Communications

## Revision and Approval

Revision	Date	Nature of Changes	Approved By
0	07-31-2020	Original Issue	Richard Foley

[Click here](#) to request previous versions      Contact [SC Technical Team Q](#) for questions

## Background

This process establishes Structure Construction (SC) roles, responsibilities, and procedures for organizational communication of the Quality Management System (QMS) through the *SC Communication Plan* as required in the [SC Quality Manual](#), Section 7.3, *Awareness*.

The *SC Communication Plan*, in coordination with the [DES Communication Plan](#), addresses communication internally within the organization and with external stakeholders.

The *SC Communication Plan* is a summation of the communication requirements within each Bridge Construction Memo (BCM), the Area Construction Manager (ACM) Desk Manuals, and this BCM.

## Process Inputs

1. *SC Quality Manual* requirements for Section 7.3, *Awareness*.

## Procedure

1. All work associated with this process is charged as [Project Direct – Construction](#) or [Overhead](#) as appropriate.
2. SC Deputy Division Chief:

- a. Promotes QMS awareness by communicating the purpose of the SC Quality Policy, Quality Objectives, benefits of the QMS and risks of not using the QMS, in the following ways:
    - i. At meetings with stakeholders, such as:
      - 1. Other Division of Engineering Services Managers.
      - 2. Caltrans Headquarters and District management.
      - 3. Local agency management.
      - 4. The public.
    - ii. Internally within Structure Construction:
      - 1. At annual Winter Training.
      - 2. At annual BCE meeting.
      - 3. At monthly ACM meetings.
  - b. Encourages questions from SC staff regarding the purpose of the QMS.
  - c. Develops examples of how the QMS benefits SC staff and communicate them.
3. SC Managers:
- a. Promote QMS awareness by communicating the purpose of the SC Quality Policy, Quality Objectives, benefits of the QMS and risks of not using the QMS, in the following ways:
    - i. At meetings with stakeholders, such as:
      - 1. Other Division of Engineering Services Managers.
      - 2. Caltrans Headquarters and District management.
      - 3. Local agency management.
      - 4. The public.
    - ii. Internally within Structure Construction:
      - 1. At staff meetings.
      - 2. At field office meetings with staff.
  - b. Deliver a consistent message of how the QMS benefits SC staff.
4. SC Supervisors:
- a. Promote QMS awareness by communicating the purpose of the SC Quality Policy, Quality Objectives, benefits of the QMS and risks of not using the QMS, in the following ways:
    - i. At meetings with stakeholders such as District Management.

- ii. Internally within Structure Construction:
  - 1. At safety meetings.
  - 2. At annual performance reviews.
- b. Deliver a consistent message of how the QMS benefits SC staff.
- 5. SC Staff:
  - a. Know the SC Quality Policy, the Quality Objectives, and where they can be found.
  - b. Gain an understanding of the benefits of the QMS, how you contribute to the effectiveness of the QMS, and the risks of not using the QMS.
  - c. Participate in review of QMS processes and expectations with supervisor and/or ACM at meetings and during performance reviews.
- 6. SC QMR:
  - a. Coordinates continual improvement of the SC QMS communication messaging at Management Review meetings per [BCM F-1](#), *SC Management Review*.
  - b. Conducts audits and surveys of SC staff per the *SC Quality Manual*, Section 7.4, *Communication*, and Section 9.2.2, *Audit Program*, and [BCM F-3](#), *SC Audit Program*, that measure the effects of the SC Communication Plan.

## **Process Outputs**

- 1. Audit and survey results of the *SC Communication Plan*
- 2. Continual improvement of the *SC Communication Plan*

## **Attachments**

None

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# SC Audit Program

## Revision and Approval

Revision	Date	Nature of Changes	Approved By
0	07-31-2020	Original Issue	Richard Foley

[Click here](#) to request previous versions      Contact [SC Technical Team Q](#) for questions

## Background

This process establishes Structure Construction (SC) roles, responsibilities, and procedures for establishment and operation of an Audit Program (AP) as directed in the [SC Quality Manual](#), Section 9.2, *Internal Audit*.

Audits are an essential activity in the “Check” part of the QMS Plan-Do-Check-Act cycle. SC Top Management is responsible for the effective operation of an Audit Program that provides evidence of whether SC business processes are functioning as intended. The audit assesses staff competency, organization knowledge, and project delivery skills and identifies areas where process improvement is warranted to effectively deliver project commitments.

### SC Audit Program

This process encompasses three types of internal audits performed under the SC Audit Program:

1. Organizational Audits
2. Office Audits
3. Project Audits

SC internal audits may be coordinated with cross-functional audits initiated by the Division of Engineering Services (DES) Audit Program.

Organizational audits, performed at the direction of the SC Audit Program Manager (APM), in response to SC Top Management direction, assess conformance with quality

objectives across multiple construction offices within SC. The SC APM-directed audits assess:

1. Safety knowledge and practices.
2. Training norms, standardized knowledge, and opportunity to train and advance in ability to administer construction projects.
3. Availability and stewardship of tools and equipment.
4. If there exists incomplete knowledge or inadequate resources, breaks in the chain of command, conflicts between SC and stakeholder directions, and inefficient operations.
5. Adherence to product delivery standards and utilization of management performance indicators.

Office audits are typically performed using [Form SC-6301](#), *Project Record Review*, per [BCM E-2](#), *SC Project Record Review*, by the Bridge Construction Engineer (BCE) Senior Specialist representing the Area Construction Manager to assess:

1. Safe operations throughout an office.
2. Training and staff competency.
3. Adherence to and effectiveness of SC processes.

Project audits are typically performed using Form SC-6301, *Project Record Review* per BCM E-2, *SC Project Record Review*, by a BCE on an individual project or group of projects on a scheduled basis as a training tool to assess adherence to SC processes.

Prior to reviewing this Bridge Construction Memo (BCM), it is essential to review any policy documents referenced above. The information in the policy document(s) typically will not be repeated in the text of this BCM.

## **Process Inputs**

1. Request for audit from SC Top Management
2. Audit schedule for the fiscal year

## **Procedure**

1. All work associated with this process is charged as:
  - a. [Project Direct – Construction](#) for Project and Office audits
  - b. [CapCorp](#) for organizational audits.
2. Inspection of field work for this process is:

- a. [Intermittent](#), occurring when an audit involves field work.
3. Review the [DES Audit Program Manual](#) for roles and responsibilities for auditors and auditees.
4. SC Managers:
  - a. Provide resources as needed for SC staff and supervisors to complete project, office, and organizational audits.
  - b. Ensure SC staff and supervisors participate as auditors or auditees.
  - c. Select topics for organizational audits.
  - d. Provide direction for addressing audit results per [BCM F-1](#), *SC QMS Management Review*.
5. SC Audit Program Manager:
  - a. Manages the SC Audit Program in accordance with guidelines established in the *DES Audit Program Manual* including:
    - i. Review annual schedule of project audits.
    - ii. Assess SC Top Management audit requests and determine audit level needs including:
      1. Organizational.
      2. Office.
      3. Project.
    - iii. Schedule audits.
    - iv. Develop audit objectives, scope, criteria, and resource needs.
    - v. Assign Audit Teams, audit duties, methods of collecting audit evidence and determining conformity.
    - vi. Monitor Audit Team performance to:
      1. Verify auditors follow audit procedures.
      2. Verify audit objectives are met.
    - vii. Review and assess management performance indicators and process data.
    - viii. Present audit reports to SC Top Management.
6. SC Audit Teams:
  - a. Contact auditee to schedule audit activities including:
    - i. Request access to relevant documentation.

- ii. Determine site specific requirements for access, security, and safety considerations.
  - b. Conduct audits.
  - c. Develop audit findings and audit reports.
  - d. Deliver audit reports to the SC Audit Program Manager.
7. SC Staff and Supervisors will:
- a. As members of SC Audit Teams, perform audit duties as directed by SC Audit Program Manager including:
    - i. Attend team briefings.
    - ii. Review information relevant to work assignment.
    - iii. Assist with preparation of working documents.
    - iv. Perform audit inspections as requested.
    - v. Safeguard confidential audit information.
  - b. As member of auditee staff will:
    - i. Cooperate with SC Audit Team.
    - ii. Provide project records as requested.
    - iii. Provide field access as requested.

## **Process Outputs**

- 1. Audit Reports

## **Attachments**

None



# Intake Process for Proposed Changes to the SC QMS

## Revision and Approval

Revision	Date	Nature of Changes	Approved By
0	06-30-2020	Original Issue	Richard Foley

[Click here](#) to request previous versions Contact [SC Technical Team Q](#) for questions

## Background

This process establishes general procedures for the intake of proposed changes to the Structure Construction (SC) Quality Management System (QMS).

Prior to reviewing this Bridge Construction Memo (BCM), it is essential to review any policy documents referenced above. The information in the policy document(s) typically will not be repeated in the text of this BCM.

## Process Inputs

1. Proposed improvement to existing SC QMS
2. Missing tribal knowledge/lessons learned from SC staff
3. Errors or omissions discovered in SC QMS

## Procedure

1. All work associated with this process is charged as [Project Direct - Construction](#).
2. SC Staff:
  - a. Identify:
    - i. Better ways to perform a task that improves quality, project delivery, efficiency, or safety.

- ii. Changes that are necessary to the existing SC QMS due to errors, omissions, missing tribal knowledge, and project-level lessons learned.
  - b. Discuss the proposed change's feasibility with peers and supervisor.
  - c. Draft the proposed change using concise language. When proposing a significant change, include all necessary details. Before submitting the proposed change, submit the draft change proposal to your supervisor to review.
  - d. Submit the proposed change using the Change Management database:
    - i. If unsure where or how to submit the proposed change, seek assistance from [SC.Office.Associates@dot.ca.gov](mailto:SC.Office.Associates@dot.ca.gov).
3. SC Quality Management Representative (QMR):
- a. Reviews the proposed change with SC Quality Management Team (QMT).
  - b. Records results of the review of Change Management database.
  - c. Notifies the originator of the proposed change of its disposition.
4. If the proposed change is implemented, and if warranted, SC Top Management gives recognition to the initiator through the [Caltrans Employee Recognition Program](#) or other suitable means of recognition.

## **Process Outputs**

- 1. Ideas submitted for proposed changes to SC documented information
- 2. Initial review of submitted proposed changes
- 3. Transparency of disposition of proposed changes

## **Attachments**

None



# Managing Changes to the SC QMS

## Revision and Approval

Revision	Date	Nature of Changes	Approved By
0	07-31-2020	Original Issue	Richard Foley

[Click here](#) for previous versions

Contact [SC Technical Team Q](#) for questions

## Background

This process establishes Structure Construction (SC) roles, responsibilities, and procedures for organizational change management of the SC Quality Management System (QMS), including acquiring and converting additional knowledge into organizational knowledge.

Organizational knowledge is defined as documented information made available to the organization for use. For SC, this includes documented information contained in the *Bridge Construction Records and Procedures* and SC's technical manuals.

Additional knowledge is defined as undocumented information, also known as tribal knowledge, that is known to individuals within the organization, but is not part of SC's documented information.

Change management includes procedures for changes to the following documentation:

1. *SC Quality Manual*
2. SC processes
3. SC technical manuals
4. SC forms
5. Other SC documented information.

Changes to the SC Quality Management System are managed using the following:

1. The SC Change Management database

2. [BCM F-1](#), *SC Management Review*
3. [BCM A-2](#), *SC Technical Team Operation*
4. Actions of the SC Quality Management team.

Procedures for SC Top Management authorization of what information becomes organizational knowledge are in BCM F-1, *SC Management Review*. Procedures for managing changes resulting from conversion of additional knowledge into organizational knowledge are in BCM A-2, *SC Technical Team Operation*, and [BCM F-4](#), *Intake Process for Proposed Changes to the SC QMS*.

Prior to reviewing this BCM, it is essential to review any policy documents referenced above. The information in the policy document(s) typically will not be repeated in the text of this BCM.

## **Process Inputs**

1. SC staff change proposals per [BCM F-4](#), *Intake Process for Proposed Changes to the SC QMS*
2. Output from SC management review per BCM F-1, *SC Management Review*
3. Output from SC Technical Teams per BCM A-2, *SC Technical Team Operation*

## **Procedure**

1. All work associated with this process is charged as follows:
  - a. [Project Direct – Construction](#) during the proposed change intake process per BCM B-2.04, *Intake Process for Proposed Changes to the SC QMS*.
  - b. [Overhead](#) during SC Top Management review and authorization of the proposed change per BCM F-1, *SC Management Review*.
  - c. [CapCorp](#) for revision to SC processes or SC technical manuals per BCM A-2, *SC Technical Team Operation*.
2. The SC change management process is described in [Attachment 1](#), *SC Change Management Process Flowchart*.

## **Process Outputs**

1. Responses to proposed changes in change management database
2. Change issue referrals to entities outside of SC for joint review
3. Updated organizational knowledge



# **Attachments**

1. [Attachment 1](#), *SC Change Management Process Flowchart*

# SC Change Management Process Flowchart

