



# SC Responsibilities for Constructability Review

## Revision and Approval

Revision	Date	Nature of Changes	Approved By
0	03-30-2021	Original Issue	Michael M Francis

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## 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*