



Self-Consolidating Concrete

Revision and Approval

Revision	Date	Nature of Changes	Approved By
0	12-31-2020	Original Issue	Richard Foley

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

Background

This process works in conjunction with other Bridge Construction Memos (BCMs) to establish Structure Construction (SC) responsibilities and procedures for fulfillment of general requirements for submittals, quality assurance, and materials for self-consolidating concrete (SCC).

Review and authorization of a basic SCC mix design submittal is performed per [BCM 90-1, Concrete – General](#).

Self-Consolidating Concrete construction is performed per [BCM 51-1.03C-D, Concrete Structures – General – Construction – Preparation and Placing Concrete](#), with modifications as specified in Standard Specifications (SS) section 90-5, *Concrete – Self-Consolidating Concrete*, and contract special provisions.

This process covers the planning work required prior to the actual SCC placement and preparation of quality assurance concrete strength test cylinders used for the trial batch test report. The Materials Engineering and Testing Services (METS) Representative and/or the local District materials lab representative may assist in submittal review and quality assurance activities.

Prior to reviewing this BCM, it is essential to review the *Contract Specifications*, Section 90-5, *Concrete – Self-Consolidating Concrete*, 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.

Process Inputs

1. SCC Mix design submittal
2. Concrete placement procedure
3. Mix design prequalification trial batch test report
4. Aggregate gradation information submittal
5. Mock-up submittal (if applicable):
 - a. Details (falsework, formwork drawings) and placement procedure.
 - b. Field Quality Control test sampling and results including:
 - i. Fine Aggregate moisture control
 - ii. Slump flow test
 - iii. Visual stability test

Procedure

1. All work associated with this process is charged as [Project Direct – Construction](#).
2. Inspection of field work for this process is [continuous](#) inspection for all SCC placement and quality assurance activities at the jobsite.
3. Before construction begins:
 - a. Prepare for upcoming construction activities. Review contract documents for SCC requirements and the [Concrete Technology Manual](#), Chapters 7, *Caltrans Advancements/High Performance Concrete*, and 9, *Job Control Sampling and Testing*, to develop an understanding of SCC mixes, forming, and testing.
 - b. Review and authorize/reject the SCC mix design. In addition, verify admixtures are chemically compatible and do not augment or counteract desired qualities. Notify the Contractor in writing.
 - c. Review and authorize/reject the SCC placement procedure. Verify that the contractor is aware that SCC self levelling flow characteristics can vary with the temperature and that the admixtures may need periodic adjustment to maintain specified flow characteristics. The Contractor should also realize that forms for sloped shapes may need a top lid to contain the SCC until it sets. Notify the Contractor in writing.
 - d. Review and authorize/reject the SCC Trial Batch test report based on conformance to the *Contract Specifications*, Section 90-5.01D(2)(c), *Concrete*

- Self-Consolidating Concrete – General – Quality Assurance – Quality Control – Prequalification of Mix Design.* Notify the Contractor in writing.
- e. Review the certificates of compliance for cementitious materials and aggregate gradations. Notify the Contractor in writing when rejecting unacceptable gradations.
4. During construction:
- a. If a mock-up is specified:
 - i. Authorize or reject mock-up details and placement procedures. Notify the Contractor in writing.
 - ii. Determine if temperature controls are needed and if the forms require insulation.
 - iii. Plan for matching environmental conditions of the mock-up pour with those of the actual pour.
 - iv. Authorize the mock-up design details, concrete placement procedures, and testing plan.
 - v. Authorize or reject the mock-up forms based on field inspection for contractual requirements, such as dimensions and mortar tightness. Notify the Contractor in writing.
 - vi. Inspect SCC placement during mock-up placement activities. Verify that the flow characteristics meet specified requirements.
 - vii. Verify test results meet requirements of the contractual documents.
 - viii. Inspect mock-up saw-cutting to verify no anomalies with the mock-up such as partially filled forms or voids and honeycombing are found. Reject mockup in writing if anomalies are found.
 - ix. Authorize or reject mock-up quality control tests for fine aggregate moisture control, slump flow, and visual stability. File the test results and notify the Contractor in writing.
 - b. Administer SCC use in construction under [BCM 51-1.03C-D](#), *Concrete Structures – General – Construction – Preparation and Placing Concrete*.
 - c. Verify the authorized mix design is delivered to the project.
 - d. Verify the SCC flow characteristics meet specification requirements.
 - e. Verify the SCC quality control field testing is performed in accordance with and meets the requirements of the contract documents.
 - f. Collect the certification information for each concrete delivery truck.
 - g. Document all inspection, construction, and quality assurance activities in the daily reports per [BCM C-7](#), *Daily and Weekly Reports*.

- h. Pay the estimated quantity. Refer to [BCM C-9](#), *Preparation of Progress Payment Documents*.
5. Following construction:
 - a. File all test results and daily reports in the appropriate category in the project records as specified in the *Construction Manual*, [Section 5-102](#), *Contract Administration – Project Records and Reports – Organization of Project Documents*.

Process Outputs

1. Authorized SCC mix design
2. Authorized trial batch test report
3. Authorized mock-up design/procedure submittals
4. Mock-up acceptance or rejection
5. Field testing and analysis results

Attachments

None