



# Concrete Structures – General – Construction – Finishing Concrete – Finishing Roadway and Pedestrian Overcrossing Surfaces

## Revision and Approval

Revision	Date	Nature of Changes	Approved By
0	12-08-2022	Original Issue	Richard Foley

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## Background

This process establishes Structure Construction (SC) responsibilities and procedures for:

- Finishing roadway surfaces of structures, including establishment of elevation control points, checking clearances to concrete finishing machines, and smoothness and crack intensity requirements.
- Applying longitudinal surface texture to roadway surfaces of structures. Longitudinal surface textures for roadway surfaces are used to improve surface drainage and reduce travel noise. Longitudinal surface texturing is achieved using the grooving and grinding method or longitudinal tining method.
- Finishing pedestrian overcrossing structures, including establishment of deck elevation control points, and verifying ADA requirements.

Use this Bridge Construction Memo (BCM) in conjunction with the following:

- [BCM 51-1.01](#), *Concrete Structures – General*
- [BCM 51-1.03\(C-D\)](#), *Concrete Structures – General – Construction – Preparation and Placing Concrete.*

Prior to reviewing this BCM, it is essential to review the [Contract Specifications](#), Sections 51-1.03F(5), *Concrete Structures – General – Construction – Finishing Concrete – Finishing Roadway Surfaces*, and 51-1.03F(6), *Concrete Structures – General – Construction – Finishing Concrete – Finishing Pedestrian Overcrossing Surfaces*, 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. “4-scale” drawings and corresponding MicroStation (.dgn) files
2. Submittals

## **Procedure**

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 field surveying.
  - b. [Intermittent](#) during form construction, while rails and headers for finishing equipment are being set, and while finishing concrete.
  - c. [Continuous](#) during Bidwell grading, concrete placement, inspection of longitudinal tining, and during grinding and grooving operations.
3. Before construction begins the Structure Representative (SR) or delegate must:
  - a. Review the *Reinforced Concrete Construction Manual*, [Chapter 7](#), *Bridge Deck Construction*.
  - b. Review [Attachment 1](#), *Quieter Bridge Deck Construction*.
  - c. For Pedestrian Overcrossings review the [Permanent Pedestrian Facilities ADA Compliance Handbook](#).
  - d. Review and authorize the submittals, including:
    - i. Falsework shop drawings
    - ii. Deck placement work plan
    - iii. Concrete form design and materials data for each forming system, if requested.
    - iv. Shop drawings for precast concrete members.
  - e. Attend the pre-concrete placement meeting to discuss the deck placement work plan per the *Reinforced Concrete Construction Manual*, *Chapter 7*.

- f. Verify that reference stakes/temporary benchmark elevations have been established by the Caltrans Surveying group in accordance with the Contractor survey requests.
4. During construction the SR or delegate must:
- a. Before concrete placement:
    - i. Using the “4-scale” drawings and in accordance with the [SC Bridge Construction Survey Manual](#), establish elevation control points on formwork and/or deck dowels for the Contractor’s use, spaced no less than 8 feet longitudinally and 24 feet transversely to the structure centerline or layout line, with permanent marker and/or duct tape.
    - ii. For bridge deck surfaces to be textured under the grinding and grooving method, ensure that 1/4-inch has been added to the finished grade to account for the required amount of sacrificial cover. Bridge deck drains and other permanent fixtures must be set at the finished grade without this added 1/4-inch figure.  
  
For pedestrian overcrossings, check longitudinal and cross slopes for Americans with Disabilities Act (ADA) compliance with ADA Federal Standards for Pedestrian Overcrossing (POC). Refer to the following for guidance:
      - 1. [Permanent Pedestrian Facilities ADA Compliance Handbook](#)
      - 2. [Design Information Bulletin 82-06](#), *Pedestrian Accessibility Guidelines for Highway Projects*
      - 3. *Construction Manual*, [Section 4-73](#), *Concrete Curbs and Sidewalks*
    - iii. Discuss contract requirements for surface finishing and texture and the Contractor’s means and methods for attaining proper surface finishes.
    - iv. Observe the Contractor test-run of the surface finishing equipment (Bidwell grading) along the length of section to be poured to verify that vertical and horizontal clearances meet contract requirements, such as:
      - 1. Clearances to embedded items such as deck drains, falsework blockouts, etc.
      - 2. Visually check Bidwell rails for profile smoothness.
    - v. For bridge deck surfaces to be textured under the grinding and grooving method, locate loop detectors and/or other sub-deck utilities and verify that the clearance is sufficient to avoid impact from grinding operations.
  - b. During and after concrete placement:
    - i. Verify that the concrete surface has been struck off to the established grades.

- ii. Verify that concrete cure is being implemented timely and per contract requirements; refer to [BCM 51-1.03H](#), *Concrete Structures – General – Construction – Curing Concrete Structures*, for guidance.
  - iii. Verify that concrete finishing and texturing is performed per contract requirements.
    1. Note that on POC deck surfaces, a broom finish is applied perpendicular to the path of travel.
  - iv. Perform initial smoothness testing and verify that the bridge deck surfaces comply with contract requirements for crack intensity per [BCM 51-1.01](#), *Concrete Structures–General*, before grinding operations begin.
  - v. Inspect grinding and grooving operations and perform additional smoothness testing per BCM 51-1.01.
  - vi. 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. Following construction, the SR or delegate must:
- a. Verify that completed bridge/pedestrian overcrossing deck surface textures meet contract requirements for smoothness, crack intensity, texture, and friction coefficient.
  - b. Use the appropriate check list from the *Permanent Pedestrian Facilities ADA Compliance Handbook* to verify compliance with ADA.
  - c. For pedestrian facilities, complete the Resident Engineer Section of [Form CEM-5773](#), *Americans with Disability Act (ADA) Project Compliance Certification*, with the assistance of the District ADA Officer. Verify that the RE files a completed copy of the form in the project records and sends the form with attachments to the email address at the end of the form.
6. File all project documentation (materials acceptance documentation, correspondence, Daily Reports, etc.) in the appropriate category in the project records as specified in the *Construction Manual*, [Section 5-102](#), *Organization of Project Documents*.

## **Process Outputs**

1. Deck elevation control points with spacing as required by the contract documents.
2. Completed bridge deck surface textures that comply with specifications, provides a smooth ride with no aesthetic deficiencies, and meets smoothness, crack intensity, and coefficient of friction requirements.

3. Finished Pedestrian Overcrossing deck surface
4. Completed form CEM-5773, *Americans with Disability Act (ADA) Project Compliance Certification*

## **Attachments**

1. [Attachment 1](#), *Quieter Bridge Deck Construction*