



# Slope Protection – Slope Paving

## Revision and Approval

Revision	Date	Nature of Changes	Approved By
0	10-15-2021	Original Issue	Richard Foley

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## Background

This process establishes Structure Construction (SC) responsibilities and procedures for review and authorization of submittals, quality assurance, materials, construction, and payment for concrete slope paving, including exposed aggregate slope paving and slope paving with concrete pavers.

Concrete slope paving is generally constructed with minor concrete or shotcrete, so processes for minor concrete or shotcrete also apply to this process.

Additional unique requirements for slope paving are detailed in:

- [BCM 19-3.03E](#), *Earthwork – Structure Excavation and Backfill – Construction – Structure Backfill*
- BCM 51-2, *Concrete Structures – Joints*, for expanded polystyrene and premolded joint filler requirements
- [BCM 52-1](#), *Reinforcement – General*
- BCM 53-1, *Shotcrete – General*

Prior to reviewing this Bridge Construction Memo (BCM), it is essential to review [Contract Specifications](#), Section 72-11, *Slope Protection – Slope Paving*, that this BCM is based on as identified in the title block above, as well as *Contract Specifications*, Section 72-1, *Slope Protection – General*. The information in the *Contract Specifications* typically will not be repeated in the text of this BCM.

## Process Inputs

1. Contract work requiring slope paving

## 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 construction of slope paving foundation, construction of forms, and placement of bar reinforcing steel.
  - b. [Intermittent](#) for placement of concrete pavers (including grouting) and/or placement of pipe down drains under concrete slope paving.
  - c. [Continuous](#) during shotcrete application and placement of minor concrete.
3. Before construction begins:
  - a. Review the contract documents to determine:
    - i. The types of slope paving to be constructed: shotcrete, minor concrete, minor concrete with exposed aggregate, or concrete pavers.
    - ii. Whether a slope paving test panel will be required.
    - iii. Whether there are color and/or surface texture requirements for slope paving.
  - b. Review the *Construction Manual*, [Section 4-72](#), *Construction Details – Slope Protection*.
  - c. Verify that [Form CEM-3101](#), *Notice of Materials to be Used*, has been submitted to the Resident Engineer (RE).
  - d. Review and authorize the following contractor submittals:
    - i. For shotcrete, review the shotcrete mix design in accordance with BCM 53-1, *Shotcrete – General*.
    - ii. For minor concrete, review the minor concrete mix design for compliance with the *Contract Specifications*, Section 90-2, *Concrete – Minor Concrete*. If applicable, review the *Contract Specifications*, Section 72-11.02B, *Slope Protection – Slope Paving – Exposed Aggregate Slope Paving – Materials*.
    - iii. For concrete pavers, review the manufacturer's data to ensure compliance with *Contract Specifications*, Section 72-11.03B, *Slope Protection – Slope Paving – Slope Paving with Concrete Pavers – Materials*.

- e. For concrete pavers, verify the Contractor's means and methods can produce the grout lines required in the contract documents.
  - f. If a test panel is required per the contract documents, coordinate with the Contractor for viewing the Department's sample panel.
  - g. Coordinate with the Landscape Architect regarding any color and/or surface texture requirements for slope paving.
  - h. Coordinate with the Contractor to verify that the application of shotcrete or minor concrete placement (including finishing and curing work) can be completed on the same day that the work is started.
  - i. Verify with the Contractor and RE that an authorized traffic control plan is in place.
  - j. Verify that concrete curbs and sidewalks have been constructed before constructing slope paving.
4. During construction:
- a. For all types of slope paving:
    - i. If a test panel is required per the contract documents, inspect the Contractor's completed test panel. Invite the Landscape Architect to this inspection. If the test panel does not meet the contract requirements, reject the test panel. Do not allow production slope paving work to begin until a test panel is authorized.
    - ii. Verify that foundations are evenly graded and compacted and are free of surface water. Refer to BCM 19-3.03E, *Earthwork – Structure Excavation and Backfill – Construction – Structure Backfill*.
    - iii. Verify that pipe materials under slope paving foundations follow *Contract Specifications*, Section 69-1.02A, *Overside Drains – General – Materials – General*.
  - b. For slope paving constructed with shotcrete or minor concrete:
    - i. Inspect the placement of bar reinforcing steel in accordance with BCM 52-1, *Reinforcement – General*.
    - ii. Be present throughout shotcrete application or minor concrete placement to verify and/or perform the following:
      - 1. Verify materials delivered comply with the authorized shotcrete/minor concrete mix design.
      - 2. Collect shotcrete/minor concrete tickets and corresponding certificates of compliance.
      - 3. Verify all finishing and curing operations meet contract requirements, which includes using curing compound number 6 for slope paving.

- iii. For exposed aggregate surfaces, verify that additional finishing and curing procedures are performed in accordance with the contract documents.
- c. For slope paving with concrete pavers:
  - i. Verify that the bond coat and/or mortar bedding has been placed and cured in accordance with the contract documents.
  - ii. Inspect placement of concrete pavers to verify that joints between the paving units are straight and have uniform widths.
  - iii. Verify that the specified waiting period (48 hours after installation of concrete pavers) has elapsed before grouting work begins.
  - iv. Verify that the concrete pavers are kept continuously damp for 72 hours after grouting work is completed.
- d. 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:
  - a. Compute payment quantities for slope paving bid items as described in the contract documents and provide these quantities to the RE.
6. File all test results and daily reports in the appropriate category in the project records as specified in the *Construction Manual*, [Section 5-1.02](#), *Contract Administration – Project Records and Reports – Organization of Project Documents*.

## **Process Outputs**

1. Authorized slope paving submittals
2. Authorized slope paving test panel, if required
3. Completed slope paving

## **Attachments**

None