



Earthwork – Structure Excavation and Backfill – Construction – Structure Backfill

Revision and Approval

Revision	Date	Nature of Changes	Approved By
0	11-12-2021	Original Issue	Richard Foley

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Background

This process establishes Structure Construction (SC) responsibilities and procedures for construction of structure backfill work, including accepting completed structure backfill, and the construction of structure backfill work for Soldier Pile walls.

Additional unique requirements for structure backfill are detailed in:

- *Construction Manual, [Chapter 6](#), Sampling and Testing*
- *Construction Manual, [Section 4-68](#), Construction Details – Subsurface Drains*

Prior to reviewing this Bridge Construction Memo (BCM), it is essential to review the [Contract Specifications](#), Section 19-3.03E, *Earthwork – Structure Excavation and Backfill – Construction – Structure Backfill*, that this BCM is based on as identified in the title block above. The information in the contract specification(s) typically will not be repeated in the text of this BCM.

Process Inputs

1. Authorized backfill material
2. Contractor work schedule for this item of work

Procedure

1. All work associated with this process is charged as [Project Direct – Construction](#).
2. Inspection of field work for this process is:
 - a. [Intermittent](#) for structure backfill material placement.
3. Before construction begins:
 - a. Discuss drainage, backfill, and testing operations with the contractor.
 - b. Prior to placing structure backfill material, verify concrete finish is completed, compressive strength attained, and the drainage system is in place per *Construction Manual*, Chapter 4, *Construction Details*, Section 68, *Subsurface Drains*.
 - c. Arrange for gradation and cleanliness tests with the District Materials testers per *Construction Manual*, [Section 6-107](#), *Sampling and Testing – Sample Types and Frequencies – Materials Acceptance Sampling and Testing*.
 - i. Accept or reject proposed structure backfill material in accordance with test results and *Contract Specifications*, Section 19-3.02, *Earthwork – Structure Excavation and Backfill – Materials*.
 - d. Verify structure backfill material is onsite and available for backfill operations.
 - e. Verify the drainage system is in place per the *Construction Manual*, Chapter 4, *Construction Details*, Section 68, *Subsurface Drains*.
 - f. Check weep hole locations and elevations. If weep holes are placed at wrong elevations and/or missing, core through the concrete and place at proper locations.
 - g. Authorize start of backfill operations when all the above is satisfactory.
4. During construction:
 - a. Verify the contractor's structure backfill placement operation complies with excavation safety requirements per [BCM 7-1.02K\(6\)\(b\)](#), *Legal Relations and Responsibility to the Public – Occupational Safety and Health Standards – Excavation Safety*.
 - b. Verify that backfill material and the contractor operation is appropriate to provide the required compaction. For example, excessively wet material may cause pumping (heaving of material) and improper compaction equipment may not achieve uniform compaction.
 - c. Confirm placement of temporary bumpers per [BCM 51-1.03E](#), *Concrete Structures – General – Miscellaneous Construction*.
 - d. Monitor structure backfill placement progress such that:

- i. Unequal loading is not induced on the structure, as required to bring backfill up uniformly on all sides of structures or drainage facilities. (Example: both sides of a pier wall concurrently.)
 - ii. Compaction testing is performed at intervals to validate method used is meeting the specifications. Arrange for compaction, gradation, and cleanliness tests with the District Materials Testers per the *Construction Manual*, Section 6-107, *Materials Acceptance Sampling and Testing*.
 - iii. Accept or reject structure backfill in accordance with test results.
- e. Enter results in Backfill Log and file Materials Test reports [Form SC-3701](#), *Test Results Summary*, in the project records. Record remediation efforts for failing tests on this log and the Daily Report.
 - f. Document all inspection, construction, and quality assurance activities, pertinent to this BCM, in the daily reports per [BCM C-7](#), *Daily and Weekly Reports*.
 - g. Measure and pay for work in accordance with *Contraction Specifications*, Section 19-3.04, *Earthwork – Structure Excavation and Backfill – Payment*, and [BCM 19-3.01A](#), *Earthwork – Structure Excavation and Backfill – General – Summary*. Provide monthly payment estimate based on estimates of work completed with passing compaction. For earthwork unit price calculations, refer to existing [BCM C-9](#), *Preparation of Progress Payment Documents*.
5. Mechanically Stabilized Embankment walls will have additional backfill inspection, sampling, and testing requirements. Refer to [BCM 47-2](#), *Earth Retaining Systems – Mechanically Stabilized Embankment*.
 6. File all materials acceptance documentation 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. Materials test reports
2. Daily Reports
3. Monthly Estimate Sheets

Attachments

None