Earthwork – Structure Excavation and Backfill – Construction – Structure Excavation – Water Control and Foundation Treatment

Revision and Approval

Revision	Date	Nature of Changes	Approved By
1	06-30-2022	Updated references	Richard Foley
0	12-31-2021	Original Issue	Richard Foley

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Background

This process establishes Structure Construction (SC) responsibilities and procedures for removing and control of water as well as foundation treatment during structure excavation operations.

Removal of water may be performed using well point systems, pumping systems, cofferdams, concrete seal courses, or a combination of these methods. Control of water removed is addressed in the *Contract Specifications*, Section 13-4, *Water Pollution Control – Job Site Management*, and BCM A-1, *Communicating SC Staff Responsibilities*, Attachment 2, *SC Staff Responsibilities for Performing Standard Construction Activities*.

Foundation treatment includes work necessary to mitigate foundation material disturbed by the Contractor as well as mitigating undisturbed foundation material that is unsuitable for the planned use.

Prior to reviewing this Bridge Construction Memo (BCM), it is essential to review the *Contract Specifications*, Section 19-3.03B(5), *Earthwork – Structure Excavation and Backfill – Construction – Structure Excavation – Water Control and Foundation*

Treatment, that this BCM is based on as identified in the title block above. The information in the *Contract Specifications* (*CS*) typically will not be repeated in the text of this BCM.

Process Inputs

1. Contract documents requiring use of a seal course.
2. Dewatering and discharge work plan if needed.
3. Original foundation material in the excavation is unsuitable, requiring a change order.

Procedure

1. All work associated with the process should be charged to Project Direct Construction, unless otherwise directed.
2. Inspection of field work for this process is:
   a. Benchmark for structure excavation, removing and control of water, and foundation treatment.
   b. Intermittent for change order work.
3. Before construction begins, the Structure Representative (SR) or delegate must:
   a. Review the contract documents, including the foundation report and Permits, Licenses, Agreements and Certifications (PLACs), for seal course and dewatering requirements.
   b. Review the jobsite and contract documents for groundwater table information. Refer to BCM 19-3.01A, *Earthwork – Structure Excavation and Backfill – General – Summary*, for letters to be written to the Contractor ahead of the anticipated work. Preliminary seal course thickness calculations (*Foundation Manual*, Appendix I, *Coffer Dams and Seal Courses*) should be done based on anticipated water levels and compared to the planned thickness.
   c. Review with the Resident Engineer the Contractor's dewatering and discharge work plan per *CS*, Section 13-4, *Water Pollution Control – Job Site Management,* and the *Foundation Manual*, Chapter 4, *Footing Foundations*, Section 4-7.3, *Wet Excavations.*
      i. If dewatering is not in the authorized Stormwater Pollution Prevention Plan/Water Pollution Control Program (SWPPP/WPCP), an amendment to that document will be required per the *CS*, Section 13-2, *Water Pollution Control – Water Pollution Control Program*, or the *CS*, Section 13-3, *Water Pollution Control – Stormwater Pollution Prevention Plan*.

ii. When the dewatering and discharge work plan includes a cofferdam, remind the Contractor to comply with the *CS*, Section 19-3.01C(2), *Earthwork – Structure Excavation and Backfill – General – Submittals – Cofferdams*.

4. During construction, the SR or delegate must:

   a. Review daily the dewatering operations to verify work is performed per the authorized SWPPP/WPCP or amendments to the SWPPP/WPCP if applicable, including sampling and testing of water when required. Advise the Contractor and the Resident Engineer of the results.

   b. Inspect construction of cofferdams, if used, per BCM 19-3.03B(1-4), *Earthwork – Structure Excavation and Backfill – Construction – Structure Excavation.* Review *Foundation Manual,* Appendix K3, *Cofferdam and Seal Course Construction Checklist,* for cofferdam and seal course checklists.

   c. When a seal course is shown on the contract documents:

      i. Determine whether a seal course is required according to *Foundation Manual*, Chapter 12, *Cofferdams and Seal Courses*, *Section 12-6 Engineer's Responsibility*.

         1. Eliminate the seal course by change order if not needed.

      ii. Verify the required thickness of the seal course. Refer to the *Foundation Manual*, Section 12-4.3, *Thickness of Seal Course*.

   d. When seal course is not shown on the contract documents and the Contractor chooses to use a seal course in the dewatering and disposal work plan:

      i. Review and authorize the Contractor's work plans for construction of the seal course. Refer to the *Foundation Manual*, Chapter 12, *Cofferdams and Seal Courses*, Section 12-5, *Contractor's Responsibility.*

      ii. All work to construct the seal course must comply with *CS*, Section 19-3.01C(2), *Earthwork – Structure Excavation and Backfill – General – Submittals – Cofferdams*.

   e. For foundations not supported on piles:

      i. Review the suitability of the foundation material:

         1. For original foundation material rendered unsuitable by the Contractor's means and methods for excavation, verify the Contractor takes action to restore the foundation per the *Foundation Manual*, Section 4-8, *Foundation Problems and Solutions.*

         2. For undisturbed original foundation material found to be unsuitable, prepare a change order to specify a foundation treatment. See BCM 19-1.03B, *Earthwork – General – Construction – Unsuitable Material,*

for additional information on this process. When preparing the change order:

a. Discuss methods for foundation treatment with Geotechnical Services Geoprofessional.

b. Review the *Foundation Manual*, Section 4-8, *Foundation Problems and Solutions.*

f. Document all inspection, construction, and quality assurance activities in the daily reports per BCM C-7, *Daily and Weekly Reports*.

g. Document dimensions and thickness of seal courses and any foundation treatments in the as-built project plans. See *Foundation Manual*, Appendix K3, *Cofferdam and Seal Course Construction Checklist*, Section IX, *Project Completion/As-Builts*.

h. Authorize payment in accordance with contract documents and guidance in BCM 19-3.01A, *Earthwork – Structure Excavation and Backfill – General – Summary*.

i. Full compensation for seal course concrete not shown on the plans for excavations, unless ordered by the engineer, is considered to be included in the price paid for structure excavation or the contract price paid for the item of work requiring excavation, and no separate payment is made.

5. Following construction, the SR or delegate must:

a. Document any unusual conditions and corrective actions in the Form SC-6303, *Report of Completion – Bridges.*

6. File all project documentation (correspondence, materials, acceptance documentation, daily reports, etc.) in the appropriate category in the project records as specified in the *Construction Manual,* Chapter 5, Section 5-102, *Organization of Project Documents.*

Process Outputs

1. Authorized dewatering and disposal work plan, if needed
2. Foundation treatment change order, if needed
3. As-built project plans
4. Daily reports

Attachments

None