



Soil Nails

Revision and Approval

Revision	Date	Nature of Changes	Approved By
0	11-16-2018	Original issue.	Steve Altman

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Background

This process establishes Structure Construction (SC) responsibilities and procedures for review and authorization of quality assurance testing, materials, and construction of soil nails.

Review and authorization of specific submittals for soil nails is usually performed in conjunction with the general submittals identified in [BCM 46-1](#), *Ground Anchors and Soil Nails – General*.

Process Inputs

1. Authorized shop drawings per BCM 46-1, *Ground Anchors and Soil Nails – General*
2. Test boring report and revised shop drawings when necessary

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 Material Field release.
 - b. Intermittent for drilling holes for soil nails.
 - c. Continuous for insertion, and grouting of soil nails.
3. Before construction begins:
 - a. Review authorized shop drawings.
 - b. Coordinate material inspection for soil nails with Materials Engineering and Testing Services (METS).

- c. Coordinate a pre-operation meeting with the Contractor to discuss the construction of soil nails. Consider inviting the METS Representative, Geotechnical Engineer, and Structure Design Engineer to the pre-operation meeting.
 - d. Verify the Contractor submitted a certified calibration chart for each jack and gauge system proposed for use.
 - e. Review [Foundation Manual](#), Appendix K-7, *Soil Nail Wall Construction Checklist*.
 - f. Review [Foundation Manual](#), Section 11-5, *Soil Nails*.
4. During construction:
- a. Verify construction methods are in accordance with contract documents:
 - i. Water and grout control methods
 - ii. Drilling methods and contingencies for caving and hard drilling
 - iii. Ground anchor or soil nail installation methods:
 - 1. Use of centralizers
 - 2. Installation adjacent to traffic if applicable
 - 3. Grouting methods and contingencies for secondary grouting
 - b. Verify soil nail materials delivered to the job site have been released for construction:
 - i. Match orange tags to [Form TL-29](#), *Report of Inspection of Material*.
 - c. For load testing:
 - i. Review certified calibration chart for each jack and gauge system proposed for use by the Contractor and verify contract requirements are met.
 - ii. Verify jacking equipment and movement measuring system are stable.
 - iii. Verify load increments are held for the specified time frames and measurements taken per the requirements of the contract documents.
 - iv. Request and review test data in accordance with the requirements of the contract documents.
 - d. Accept or reject soil nails based on the results of load testing:
 - i. For soil nails rejected during verification testing:
 - 1. Consult with the designers to determine the cause of failure.
 - 2. If the cause of failure is the Contractor's installation methods, require revised shop drawings per the requirements of the contract documents.
 - 3. If the cause of failure is inadequate length of the soil nail, write a Change Order to:
 - a. Revise soil nail lengths or design pullout resistance values.

- b. Require horizontal borings and test boring report submittal.
 - ii. For soil nails rejected during proof testing:
 - 1. Require revised shop drawings per the requirements of the contract documents.
 - iii. For soil nails rejected during supplemental testing:
 - 1. Apply the deduction specified in the contract documents to the soil nails represented by the supplemental test.
 - iv. For pullout failure, the Contractor must submit the pullout failure load with test data.
 - e. Document all inspection, construction, and quality assurance activities in the daily reports per [BCM C-7](#), *Daily and Weekly Reports* .
5. Following construction:
- a. File all submittals in the project records as specified in the *Construction Manual*.
 - b. Record information necessary for final completion records:
 - i. Any as-built changes
 - ii. Project final report

Process Outputs

- 1. Reports and testing results for accepted soil nails (material & function)
- 2. Contract Change Order when specified
- 3. Daily reports

Attachments

None