

Section 10.8

AUGER CAST PILES

10.8.1 Purpose

To establish a procedure for the approval of the Contractor's Auger Cast Pile (ACP) Installation Plan, inspection and approval of mixing, pumping and demonstration of cement grout, and inspection and approval of piles installed in accordance with **Section 455, Structures Foundations, Standard Specifications** and any supplements thereto. This chapter also provides the procedure for the documentation of pile installation. This procedure applies to conventional projects; for Design Build projects refer to **Section 10.12**.

10.8.2 Authority

Sections 20.23(3)(a), and 334.048(3), Florida Statutes (F.S.)

10.8.3 References

Section 455, Standard Specifications for Road and Bridge Construction and Supplements thereto.

10.8.4 Scope

The principal users of this document include the State Construction Office District Materials and Research Offices (DMRO), District Construction Offices (DCO), District Operations Centers, the State Materials Office (SMO), and Construction Engineering and Inspection (CEI) firms working for the Department.

10.8.5 Definitions

District Construction Engineer (DCE): The authority for the entire construction activity in the District.

Construction Engineering and Inspection (CEI): In this procedure, it refers to the Consultant personnel performing CEI services or the Department's personnel group performing CEI services.

Geotechnical Engineer: In this procedure, the Geotechnical Engineer may be the District Geotechnical Engineer (DGE), any Department Engineer assigned to the project by the DGE, the Consultant Geotechnical Engineer working directly for the DGE, or the Geotechnical Engineer employed by the Department's Consultant CEI and performing under the direction of the DCE and DGE.

Resident Engineer (RE): The Engineer supervising the Project Administrator and is responsible for the construction activity in the residency.

Project Administrator (PA): The employee responsible for the everyday construction activity at the project under the direction of the Resident Engineer/Senior Project Engineer.

Demonstration Pile: The pile which the Contractor is asked to construct to demonstrate the dependability of the equipment, techniques, and source material prior to the start of production pile installation to the satisfaction of the Engineer (**Section 455-39.1**).

10.8.6 Approval of Pile Installation Plan- Non-Bridge Foundations

(A) Resident Level Responsibilities

The RE (or PA) shall receive from the Contractor at the preconstruction conference or at least 30 days prior to the construction of a demonstration pile a completed **Auger Cast Pile Installation Plan (ACPIP)**. Within one (1) working day, the RE (or PA) shall forward the ACPIP to the Geotechnical Engineer for review and recommendations. The RE (or PA) shall perform a concurrent separate review of the ACPIP and incorporate their own comments to the ones received from the Geotechnical Engineer. The ACPIP shall be evaluated and approved separately from other Quality Control Plans submitted by the Contractor. If the Contractor includes the ACPIP in the Quality Control Plan submittal, the PA shall detach the ACPIP from the Quality Control Plan submittal and notify the Contractor in writing of such action.

The RE (or PA), within one (1) working day of receipt of the Geotechnical Engineer's comments and/or recommendations shall notify the Contractor of acceptance/ rejection or request additional information and/or changes that may be necessary for pile construction in accordance with the contract documents. The letter of rejection shall contain the reason(s) for rejection of the ACPIP.

(B) District Materials and Research Office (DMRO) Level Responsibilities

The Geotechnical Engineer shall make comments and/or recommendations to the RE of the acceptance or rejection of the proposed pile installation equipment and techniques within five (5) working days of receiving the ACPIP.

10.8.7. Demonstration Pile Installation- Non-Bridge Foundations

(A) Resident Level Responsibilities

Demonstration pile installation shall be documented by the inspectors on the ***Auger Cast-in-Place Pile Installation Record, Form Number 700-011-03***. As soon as the Contractor's schedule for installation of the demonstration pile is known, the PA shall notify the Geotechnical Engineer of the schedule so the Geotechnical Engineer may observe the installation of the demonstration pile and approve the suitability of equipment, techniques, and source of materials.

The comments section of ***Form Number 700-011-03*** shall describe any occurrences during the installation of the pile or any information the recorder feels may be beneficial to the Geotechnical Engineer or the PA.

During the demonstration pile installation, the inspector and the PA must verify the equipment and techniques described in the approved ACPIP were used to install the demonstration pile and sign the form in the appropriate place documenting this. The original is retained in the project files. A completed form is to be sent to the Geotechnical Engineer within 24 hours of field work completion for review and acceptance.

Upon receipt of the letter from the Geotechnical Engineer recommending approval of the Contractor's means and methods of installation, the RE shall approve the recommendation and send it to the Contractor within one (1) working day.

(B) DMRO Level Responsibilities

Within two (2) working days of the receipt of the demonstration pile data, the Geotechnical Engineer shall review the demonstration pile data and give recommendations regarding the acceptance of the equipment, techniques and materials used during the demonstration pile installation. A letter, electronically signed, shall be

sent to the RE with the recommendations. Refer to **Guidance Documents 10-8-A, 10-8-B** for **Sample Letters**.

10.8.8 Production Pile Installation- Non-Bridge Foundations

Production pile installation shall be documented in the **Auger Cast-in-Place Pile Installation Record, Form Number 700-011-03**. Inspectors monitoring and documenting ACP installation, including demonstration and production piles, shall be **Construction Training & Qualification Program (CTQP)** qualified as **Auger Cast Pile Inspector**, or have taken and passed the Department's Computer Based Training (CBT) **Auger Cast Pile Inspector's Qualification Course**, before the beginning of the pile installation. The course is available at the following webpage:

<http://wbt.dot.state.fl.us/ois/AugerCastPileCBT/index.shtm>

10.8.9 Approval of Pile Installation Plan- Bridge Foundations

The Plans may include ACP for bridge foundations. In that situation, unless indicated otherwise in the Contract Documents, Developmental Specification Dev455ACP shall be followed for both bridge and non-bridge structures in the project.

A separate ACPIP must be submitted by the Contractor for bridge structures and non-bridge structures.

Approval, procedures and responsibilities shall be in accordance with section 10.8.5.

10.8.10 Demonstration Piles, Load Test Piles, and Pilot Holes- Bridge Foundations

As soon as the Contractor's schedule for pilot holes and installation of demonstration piles and load test piles is known, the PA shall notify the Geotechnical Engineer of the schedule so the Geotechnical Engineer can be present.

(A) Resident Level Responsibilities

A drilling log shall be maintained during pilot hole operations on the **Pilot Hole Log, Form No. 700-010-35** by the Contractor's Consultant performing the soil borings to record the soils and rocks encountered, and document rock core measurements during the drilling of the pilot hole.

Demonstration piles and load test piles shall be documented as described in section 10.8.6. Approval, procedures and responsibilities regarding the demonstration piles shall be in accordance with section 10.8.6.

Completed installation forms of the pilot holes, demonstration piles and load test piles shall be sent to the Geotechnical Engineer within 24 hours of field work completion for review and use in the analysis and recommendations of the authorized production tip elevations

(B) DMRO Level Responsibilities

A representative of the DGE office shall be available on site or over the phone to assist the CEI and resolve questions during these initial phases of the ACP construction. The DGE office shall assist the inspectors to monitor the ACP and fill the inspection logs properly.

10.8.11 Authorized Pile Tip Elevations- Bridge Foundations

Authorized production ACP tip elevations are established utilizing the results of the pilot holes, demonstration piles, load tests, rock core information and contract documents. Actual ACP depths may vary from those shown on the Plans depending on the subsurface soil/rock conditions encountered during ACP installation. If no new information is available since the Plans were developed, tip elevations on the Plans are the authorized tip elevations and no authorization letter is required.

(A) Resident Level Responsibilities

Upon receipt of the Authorized ACP Tip Elevations letter from the Geotechnical Engineer, the RE shall approve the recommendation and send it to the Contractor within one (1) working day.

Completed forms of demonstration piles, load test piles and pilot holes shall be sent to the Geotechnical Engineer within twenty-four (24) hours of field work completion for review and use in recommending the production ACP lengths. All load test data, pilot hole logs and core boring reports, if any, shall also be sent to the Geotechnical Engineer within twenty-four (24) hours after being received from the Contractor. Installation of all ACP including Demonstration Piles, Load Test Piles and production ACP for bridges must be inspected by personnel with **CTQP Qualification in Auger Cast Pile Inspector**.

(B) DMRO Level Responsibilities

Within four (4) working days of receipt of the completed Demonstration Logs, Pilot Hole Logs, rock core samples, and any Load Test Reports, the Geotechnical Engineer shall send an **Authorized Auger Cast Pile Tip Elevations** letter to the RE or higher authority recommending the ACP tip elevations to be used on the project. The RE or higher authority shall send this letter to the Prime Contractor authorizing production ACP tip elevations as indicated in section 10.8.10 (A). A sample letter is included in this chapter. Refer to Guidance Document 10-8-C for sample letter and distribution.

If requested by RE or PA, the Geotechnical Engineer may make a telephone call or send an electronic mail to notify the PA of the ACP tip elevations.

10.8.12 Training

All FDOT, CEI personnel performing inspections of auger cast pile installation for bridges must hold the Construction Training Qualification Program (CTQP) as Auger Cast Pile Inspector. All FDOT and CEI personnel performing inspections of auger cast pile installation for non-bridges must either hold the Construction Training Qualification Program (CTQP) as Auger Cast Pile Inspector, or have taken and passed the FDOT CBT class for Auger Cast Pile Inspector.

10.8.13 Forms

The following forms are available from the Policy & Process Management Forms Library at [Procedural Document Library \(fdot.gov\)](https://www.fdot.gov/procedural-document-library):

700-011-03, Auger Cast-in-Place Installation Record

Guidance Document 10-8-A

**SAMPLE LETTER NO. 1
PRODUCTION AUGER CAST PILE INSTALLATION**

(ADDRESSEE)

(DATE)

Financial Project ID:

FAP No.:

Contract No.:

County:

Dear (_____):

The District (put in which District, 1-7, Turnpike Enterprise) Geotechnical Office has completed its review of the demonstration pile data of the Auger Cast Piles and recommends acceptance of the installation of Production Piles with the equipment, techniques, and source of materials utilized during installation of the Demonstration Pile.

If you have any questions or require further information, please let us know.

Recommended for acceptance by:

District Geotechnical Engineer/Geotechnical Engineer

Authorized for contract administration purpose by:

Resident Engineer

Guidance Document 10-8-B

**SAMPLE LETTER No. 2
PRODUCTION AUGER CAST PILE INSTALLATION**

(ADDRESSEE)

(DATE)

Re: Financial Project ID:
FAP No.:
Contract No.:
County:

Dear (_____):

The District (put in which District, 1-7, Turnpike Enterprise) Geotechnical Office has completed its review of the demonstration pile data of the Auger Cast Piles and recommends acceptance of the installation of Production Piles with the equipment, techniques, and source of materials utilized during installation of the Demonstration Pile.

If you have any questions or require further information, please let us know.

Recommended for acceptance by:

Consultant Geotechnical Engineer

Concurrence by: _____
District Geotechnical Engineer (if required by District)

Authorized for contract administration purpose by:

Resident Engineer

Guidance Document 10-8-C

AUTHORIZED AUGER CAST PILE TIP ELEVATIONS

(ADDRESSEE)

(DATE)

Re:
Financial Project ID:
Contract No.:
County:
Structure #

Dear ()::

This office (or the Geotechnical Engineering Form) has completed its review of the test load/core boring data for the subject bridge. Recommended Auger Cast Pile Tip Elevations and rock socket lengths are as follows:

LOCATION	PILE SIZE	RECOMMENDED PILE TIP ELEVATION	MINIMUM SOCKET LENGTH
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If you have any questions or require further information, please let us know.

Recommended by: _____
District Geotechnical Engineer/ Geotechnical Engineer

Recommended for acceptance by: (when consultant generates the letter)

District Geotechnical Engineer

Authorized for contract administration purpose by:

Resident Engineer

(INITIALS/INITIALS)

cc: State Construction Geotechnical Engineer
State Structures Design Engineer's Office (State Design Geotechnical Engineer)
FHWA (only if Federal Aid oversight project)