

ORINATION FORM

Proposed Revisions to the Specifications

(Please provide all information - incomplete forms will be returned)

Date:

Office:

Originator:

Specification Section:

Telephone:

Article/Subarticle:

email:

****Will the proposed revision require changes to:**

Publication	Yes	No	Office Staff Contacted and date contacted
Standard Plans Index			
Traffic Engineering Manual			
FDOT Design Manual			
Construction Project Administration Manual			
Basis of Estimate/Pay Items			
Structures Design Guidelines			
Approved Product List			
Materials Manual			

**This section must be completed prior to processing proposed revisions.

Will this revision necessitate any of the following:

Design Bulletin

Construction Bulletin

Estimates Bulletin

Materials Bulletin

Are all references to external publications current?

Yes

No

If not, what references need to be updated? (Please include changes in the redline document.)

Why does the existing language need to be changed?

Summary of the changes:

Are these changes applicable to all Department jobs?

Yes

No

If not, what are the restrictions?

Contact the State Specifications Office for assistance in completing this form.

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RON DESANTIS
GOVERNOR

KEVIN J. THIBAUT, P.E
SECRETARY

MEMORANDUM

DATE: July 2, 2020
TO: Specification Review Distribution List
FROM: Daniel Strickland, P.E., State Specifications Engineer
SUBJECT: Proposed Specification: **4550512 Structures Foundations.**

In accordance with Specification Development Procedures, we are sending you a copy of a proposed specification change.

This change was proposed by Larry Jones by the Structures Design Office to determine whether dual monitoring of test piles adds value to Department. Proposed changes include square prestressed concrete test piles will be monitored by EDC and PDA.

Please share this proposal with others within your responsibility. Review comments are due within four weeks and should be sent to Mail Station 75 or online at <http://fdotwp1.dot.state.fl.us/programmanagement/development/industryreview.aspx> . Comments received after **July 30, 2020**, may not be considered. Your input is encouraged.

DS/rf

Attachment

STRUCTURES FOUNDATIONS**(REV 6-30-20)**

SUBARTICLE 455-5.12.1 is deleted and the following substituted:

455-5.12.1 General: Dynamic load tests using an externally mounted instrument system and signal matching analyses or ~~embedded~~^{internal} gauges will determine pile capacity for all structures or projects unless otherwise shown on the Plans. Notify the Engineer two working days prior to placement of piles within the template and at least one working day prior to driving piles.

SUBARTICLE 455-5.13.1 is deleted and the following substituted:

455-5.13.1 General: All test piles will have dynamic load tests. All square prestressed concrete test piles will be monitored with an external gauge system and an embedded gauge system concurrently. Drive piles of the same cross-section and type as the permanent piles shown in the Plans, in order to determine any or all of the following:

1. installation criteria for the piles.
2. nature of the soil.
3. lengths of permanent piles required for the work.
4. driving resistance characteristics of the various soil strata.
5. amount of work necessary to obtain minimum required pile penetration.
6. ability of the driving system to do the work.
7. need for point protection.

Because test piles are exploratory in nature, drive them harder (within the limits of practical refusal), deeper, and to a greater bearing resistance than required for the permanent piling. Except for test piles which are to be statically or Statnamically load tested, drive test piles their full length or to practical refusal. Splice test piles which have been driven their full length without achieving the required bearing, and proceed with further driving unless otherwise directed by the Engineer.

As a minimum, unless otherwise directed by the Engineer, do not cease driving of test piles until obtaining the required bearing capacity continuously, where the blow count is increasing, for 10 feet unless reaching practical refusal first. Drive test piles which are to be statically or Statnamically load tested as anticipated for the production piles.

When test piles attain practical refusal prior to attaining minimum penetration, perform all work necessary to attain minimum penetration and the required bearing. Where practical, use water jets to break the pile loose for further driving. Where jetting is impractical, extract the pile and install a preformed pile hole through which driving will continue. The Department will consider the work of extracting the pile to be Unforeseeable Work.

When driving test piles other than low displacement steel test piles, have preforming equipment available at the site and water jets as specified in 455-5.8 when jetting is allowed, ready for use, before the test pile driving begins.

The Engineer may elect to interrupt pile driving up to four times on each test pile, two times for up to two hours and two additional times during the next working day of initial driving to determine time effects during the driving of test piles.

SUBARTICLE 455-5.14 is deleted and the following substituted:

455-5.14 Dynamic Load Tests: The Engineer will take dynamic measurements during the driving of piles designated in the Plans or authorized by the Engineer. For concrete piles, install instruments prior to driving and assist the Engineer in monitoring all blows delivered to the pile. For steel production piles, the Engineer may accept instrumented set-checks or redrives. The Engineer will perform dynamic load tests to evaluate any or all of the following:

1. Suitability of the Contractor's driving equipment, including hammer, capblock, pile cushion, and any proposed follower.
2. Pile capacity.
3. Pile stresses.
4. Energy transfer to pile.
5. Distribution of soil resistance.
6. Soil variables including quake and damping.
7. Hammer-pile-soil system for Wave Equation analyses.
8. Pile installation problems.
9. Other.

~~Either install internal gauges in the piles in accordance with Standard Plans, Index 455-003 or attach~~ For all square prestressed concrete test piles, install embedded gauges in the piles in accordance with Standard Plans, Index 455-003 and attach external instruments (strain transducers to measure force and accelerometers to measure acceleration) with bolts to the pile for dynamic testing. For other types of piles, either install embedded gauges in the piles in accordance with Standard Plans, Index 455-003, or attach external instruments (strain transducers to measure force and accelerometers to measure acceleration) with bolts to the pile for dynamic testing.

Make each follower and pile to be dynamically tested with externally attached instruments available to drill holes for attaching instrumentation and for wave speed measurements. Support the pile with timber blocks placed at appropriate intervals. Ensure that the pile is in a horizontal position and does not contact adjacent piles. Provide a sufficient clear distance at the sides of the pile for drilling the holes. The Engineer will furnish the equipment, materials, and labor necessary for drilling holes and taking the wave speed measurements. If the Engineer directs dynamic load testing, instrumented set-checks or instrumented redrives, provide the Engineer safe access to the top of the piles for drilling the attachment holes. After placing the leads provide the Engineer safe access to the piles to attach the instruments and for removal of the instruments after completing the pile driving.

The Engineer will monitor the stresses in the piles with the dynamic test equipment during driving to ensure the Contractor does not exceed the maximum allowed stresses. If necessary, add additional cushioning, replace the cushions, or reduce the hammer stroke to maintain stresses below the maximum allowable. If dynamic test equipment measurements indicate non-axial driving, immediately realign the driving system. If the cushion is compressed to the point that a change in alignment of the hammer will not correct the problem, add cushioning or change the cushion as directed by the Engineer.

Drive the pile to the required penetration and resistance or as directed by the Engineer.

When directed by the Engineer, perform instrumented set-checks or redrives. Do not use a cold diesel hammer for a set-check or redrive unless in the opinion of the Engineer it is impractical to do otherwise. Generally, warm up the hammer by driving another pile or applying at least 20 blows to a previously driven pile or to timber mats placed on the ground.

SUBARTICLE 455-7.2 is deleted and the following substituted:

455-7.2 Manufacture: Fabricate piles in accordance with Section 450. ~~When internal gauges will be used for dynamic load testing,~~ Supply and install top and tip embedded gauges in all square prestressed concrete test piles and either top or top and tip, embedded gauges in square prestressed concrete production piles monitored with an embedded gauge system, in accordance with Standard Plans, Index 455-003. Ensure the internal gauges are installed by personnel approved by the manufacturer.