4550502 STRUCTURES FOUNDATIONS
COMMENTS FROM INTERNAL/INDUSTRY REVIEW

Randy Cropp
Cone & Graham
561-727-3939
Rcropp@conegraham.com

Comments: (2-16-15)

1. 455-5.10.1: Suggest highlighted edits.

> → → → ~~Ensure the~~ pile has achieved minimum penetration, the blow count is generally *the same* ~~increasing~~ and the minimum required bearing capacity obtained for 24 inches of consecutive driving with less than 1/4 inches rebound per blow, or the minimum penetration is achieved and driving has reached practical refusal in firm material.¶

Response:

2. 455-5.15.5: Suggest highlighted edits.

> → → **455-5.15.5 Deviation From Above Tolerances:** *Have the Contractor's ~~Specialty~~ Engineer or Specialty Engineer perform an evaluation of the as built foundation to determine whether a foundation redesign or an increase in the loading requirements of the piles is needed. ~~Include the signed and sealed evaluation as part of the certification package submitted in accordance with 455-5.18.~~ If the evaluation indicates the foundation or the pile load requirements must be modified,* ~~P~~propose a redesign to incorporate out of tolerance piles into pile caps or footings, at no expense to the Department. Submit signed and sealed redesign drawings and computations to the Engineer for review and acceptance. ~~Do not begin any proposed construction until the redesign has been reviewed and accepted by the Engineer.~~ *Contractor may continue construction at his own risk.* ¶

Response:

3. 455-5.17: Suggest highlighted edits.

> → **455-5.17 Recording:** Inspect and record all the pile installation activities, including but not limited to ~~handling~~, jetting, predrilling, preforming and driving on the Department's Pile Driving Record form. *Steel piles and dynamically tested concrete piles in accordance with 455-5.13 will not require inspection during handling.* Keep a pile driving log for each pile installed whether it is, or is not, instrumented. Within one working day after completing the installation of a pile, submit the Pile Driving Record to the Engineer.¶

Response:

4. 455-5.18: Suggest highlighted edits.

→ **455-5.18 Foundation Certification Packages:** Submit *electronically or* two copies of a certification of pile foundations to the Engineer prior to Pile Verification Testing. A separate Foundation Certification Package must be submitted for each foundation unit. A foundation unit is defined as all the piles within one bent or pier for a specific bridge for each phase of construction. Each Foundation Certification Package shall contain an original certification letter signed and sealed by the GFDEOR certifying the piles have the required axial capacity including compression and uplift, lateral stability, pile integrity, and settlement will not affect the functionality of the structure. The package shall also include clearly legible copies of all pile driving logs, EDC records, all supplemental dynamic testing raw data and analyses for the foundation unit, ~~*and the signed and sealed evaluation performed to address out of tolerance piles under in accordance with 455-5.15.5.*~~ The certification shall not be contingent on any future testing or approval by Engineer.¶

Response:

****

Robert Robertson
414-4267
robert.robertson@dot.state.fl.us

Comments: (2-19-15)
Comments on Cropp comments:

1. 455-5.15.5: First sentence – the evaluation must be by the Contractors EOR. The specialty engineer is not adequate unless he is prequalified as defined under contractors EOR. There is no "contractors engineer" in the definitions.

Response:

2. 455-5.18: if the certification package is completed prior to knowing if all piles not only meet the plan requirements but how they are affected by the actual position then the risk will grow for proceeding. Some piles will pick up substantial load when out of place, others will not. If we are good with this risk then ok but it will take a real fight to force repairs after caps/footings are in place.

Response:

****

Matthew Musante
407-264-3443
matthew.musante@dot.state.fl.us

Comments: (2-19-15)
Shouldn't this say "20 blows" before the word per again. While I understand what it means, it reads a little confusing and would be more clear if revised?

→ → **455-5.10.3 Practical Refusal**: Practical refusal is defined as 20 blows per inch, ~~or~~ or per less than one inch ~~(or less penetration,)~~ with the hammer operating at the highest setting ~~or setting~~ determined by the Engineer and less than 1/4 inches rebound per blow. Stop driving as soon as the Engineer determines that the pile has reached practical refusal. ~~The Engineer will generally make this determination within 2 inches of driving.~~ When the required pile penetration cannot be achieved by driving without exceeding practical refusal, use other penetration aids such as jetting or preformed pile holes.¶

¶

Response:

****

Michael Kim
FDOT
954-677-7030

Comments: (2-20-15)
455-5.10.3 Practical Refusal: Practical refusal is defined as 20 blows per inch, or per less than one inch penetration, with the hammer operating at the "highest" setting. Comments: Recommend to delete "highest". It doesn't have to be highest. The Engineer will decide the appropriate stoke height.

Response:

455-5.11.7 Structures Without Test Piles: For structures without test piles or "100% dynamic testing", the Engineer will dynamically test the first pile(s) in each bent or pier at locations shown in the Plans to determine the "blow count criteria" for the remaining piles. When locations are not shown in the Plans, allow for dynamic load tests at 5% of the piles at each bent or pier (rounded up to the next whole number). If the Engineer requires additional dynamic load tests for comparison purposes, the Contractor will be paid for an additional dynamic load test as authorized by the Engineer in accordance with 455-11.5. Comments: It states "100% dynamic testing" in the beginning of sentence, and it mentions "blow count criteria" later. 100% dynamic testing does not require the blow count criteria. It may be confusing.
Response:

****

Mohamad
MHGRLFL@aol.com

Comments: (2-25-15)
With a design phi-factor of 0.65, the NBR is 1.53 times the factored design load, I am not sure why the hammer needs to be oversized to the extent of 2 times. There are situations where the pile would encounter resistance higher than the required NBR during the process of getting to required minimum tip elevation, but these are special cases and should not dictate general specs Requirements.
Response:

****

Jose Kandarappallil (via Deborah Ihsan)
FDOT, D4
772-429-4936

Comments: (3-16-15)
1. For Section 455-5.2 Pile Hammers – Recommend removing the statement “and without reaching or exceeding 20 blows per inch”, which is being added via this specification change and either fully leaving it out or by instead stating “and without reaching practical refusal”.
Response:

2. For Section 455-5.8 Penetration Requirements – Recommend adding the following statement to the end of the last sentence in the third paragraph, “in consultation with the Engineer and per specification 455-5.7.”
Response:

3. For Section 455-5.10.3 Practical Refusal – Recommend revising the first sentence that with this specification change would state, “Practical refusal is defined as 20 blows per inch, or per less than one inch penetration,” to instead state, “Practical refusal is defined as penetration of one inch or less for 20 blows of hammer,”
Response:

4. For Section 455-5.10.3 – Recommend adding the following statement to the end of the last sentence in the first paragraph, “in consultant with the Engineer.”
Response:

****

Brian Hermany (via Deborah Ihsan)
FDOT, D4
561-370-1140

Comments: (3-16-15)
Consider deleting “per” from the text.
Response:

****

Sastry Putcha
214-385-1994
sastry.putcha@radise.net

Comments: (3-18-15)
1: 455-5.2 Pile Hammers: Suggest adding the paragraph below into the section 455-5.2 as the last paragraph: For a pile with embedded top and tip (EDC) instrumentation, hammer application compliance with the specifications is determined by the dynamic test data. The UF method using EDC instrumentation provides accurate estimate of static resistance based on a calculated damping factor for every hammer blow obtained from the measured stress wave characteristics. Therefore, selection of Hammer shall be up to the Contractor when EDC instrumented piles are installed.
Response:

2: 455-5.10.1 General: Suggest adding the paragraph below into the section 455-510.1 as the second paragraph: For 100% dynamic testing install instruments prior to driving and assist the Engineer in monitoring all blows delivered to the pile (455-5.13)
Response:

****