

SP4550000DB STRUCTURES FOUNDATIONS
COMMENTS FROM INTERNAL/INDUSTRY REVIEW

Pete Kelley

Comment: (10-26-12) From the proposed 455 revision – “*The GFDEOR shall also supervise and certify the constructed foundations.*”

This does not sound like a provision that should be in any spec. A geotech EOR supervising foundation construction is an unreasonable expectation.

Response:

Keith Waugh

Comment: (10-29-12) 455-5.19 addresses frequency for VT as “in any and all”. Shouldn't VT be to verify the process and not to second-guess the FGDEOR's judgement? "Any and all" is far too broad of a term. 455-10 states that PIP is due “At the preconstruction conference or at least 30 days prior to driving the first pile, submit.” If the FGDEOR has to submit certified concurrence as listed in Item 18, why would FDOT still need 30 days to review? At a maximum, the PIP should be submitted 15 days prior to driving. This would be consistent with plan review times.

Response:

Wing Heung

Comment: (11-9-12)

1./ 455-1.1 (Adobe file page 3 of 77) shows “When shown in the Contract Documents or when authorized by the Engineer, install the piling to the depth required to minimize the effects of vibrations or ground heave on adjacent structures by approved methods other than driving (preformed holes, predrilling, jetting, etc.)” For consideration, suggest to modify and show “..... or when authorized by Geotechnical Foundation Design Engineer of Record, install the piling” This would be consistent with the current proposed changes on preformed pile holes per 455-5.9.1 and jetting per 455-5.7.

Response:

2./ 455-5.10.7 (Adobe file page 20 of 77) shows items (a) through (g). Specifically, items (e) and (f) are really under item (d) when it refers to “one of the following sets of dynamic load testing conditions”. Is this a format issue when the numberings were assigned? Should items (e) and (f) become say, i or ii under item (d)?

Response:

3./ Is there a reason why “Method of Measurement” and “Basis of Payment” sections of the 455 specifications (455-11, 455-12, 455-23, 455-24, 455-36, 455-37, 455-49, 455-50), are not removed for Design-Build projects, which have lump sum contracts?

Response:

4./ 455-10.1, Item 17 and 455-15.1.2, Item 20 indicate that the Contractor's representative shall be available within “hours notice”. Is there a missing number of hours or is it on purpose? Without defining the number of hours, it may not work as intended.

Response:

5./ Several locations in 455-10.1 & 455-17.6.1.5 have typo errors and show “Foundation Geotechnical Design Engineer of Record” instead of “Geotechnical Foundation Design Engineer of Record” (the word “Geotechnical” and “Foundation” are transposed). Please do a word search on “Foundation Geotechnical”.

Response:

Woerner, Bert

Comment: (11-15-12)

Design Build Projects are Lump Sum contracts. The Method of Measurement and the Basis of Payment appear to be written for a standard pay item project. The way these items should be written is “The quantity to be paid for will be at the Contract lump sum price.” If there is any additional work needed that could not be anticipated by the contractor, then it should be paid as unforeseeable work.

Response:

.....
Kathy Gray

Comment (10-09-12)

455-5.18 – Recommend revising the 4th sentence of the 1st paragraph to: “A foundation unit is defined as all the piles within one bent or pier for a specific bridge for each phase of construction.”

Response:

455-15.1.2 – Recommend revising format of heading to match 455-10, and changing Drilled Shaft Installation Plan to “DSIP.”

Response:

455-15.1.2, Item 20 – How many hours of notice? Suggest a 2 hour time frame.

Response:

455-16.1 – It might be better to just say “inspects the shaft excavation . . .”

Response:

455-22.2 – What about Cantilever and Overhead Sign structures which may not be at an intersection/interchange?

Response:

455-22.3 – What is the difference between choosing shafts for verification in this and item 455-22.1 above which allows 2 days to decide?

Response:

.....
Trey Tillander

24 Comments (11-5-12)

1. Need usage Note for this SP.

Response:

2. Define GFDEOR at first instance of use.

Response:

3. 455-2.11 – Move requirement for TSP from the Specs. Recommend moving to RFP or SDG.

Response:

4. 455-5.7 – This not the first instance of GFDEOR.

Response:

5. 455-5.10.3 – Is the sentence “Generally make this determination within 2 inches of driving.” Needed? Recommend deleting.

Response:

6. 455-5.10.7 – In 2nd sentence of 1st paragraph: recommend deleting “if and only.”

Response:

7. 455-5.13 – Delete item 10. It is very ambiguous.

Response:

8. 455-5.13, 3rd Paragraph – Comma is needed after “instruments.”

Response:

9. 455-5.18 – Is the signed and sealed “certification of pile foundations” the same or different from the “signed and sealed certification letter”? If the same, delete redundant text. Articles 455-26.1 and 455-51 don’t appear to have this same redundancy.

Response:

10. 455-5-19 – Semicolons would work better in this list than commas.

Response:

11. 455-10, Item 14 – Recommend deleting “foreman” as this is not defined in 105-8.13.

Response:

12. 455-10.2, 2nd Paragraph – I believe this “the” was meant to be in front of GFDEOR instead of in front of acceptance.

Response:

13. 455-10.2, 3rd Paragraph – Change comma to semi-colon.

Response:

14. 455-15.1.2, Item 1 – Recommend deleting “foreman” as this is not defined in 105-8.13.

Response:

15. 455-15.1.2, Item 20 – Number of hours is missing.

Response:

16. 455-15.1.2.1, 2nd Paragraph – Is the first sentence needed? it seems to be redundant with the 1st Paragraph.

Response:

17. 455-17.6.1.5 – I believe “observed” should be “are observed”.

Response:

18. 455-17.6.1.5 – Shouldn’t “Foundation Geotechnical Design Engineer of Record” in these sentences be “Geotechnical Foundation Design Engineer of Record” or better yet “GFDEOR”?

Response:

19. 455-17.6.2 – Inserting “generally” is not necessary because it doesn’t change the requirement to the contractor.

Response:

20. 455-22.2 – Is the signed and sealed “certification of drilled shaft foundations” the same or different from the “letter signed and sealed”? If the same, delete redundant text. Articles 455-26.1 and 455-51 don’t appear to have this same redundancy.

Response:

21. 455-47 – Recommend deleting “foreman” as this is not defined in 105-8.13.

Response:

22. 455-47, Item 9 – Is this needed? The Plans are being developed by the D-B Firm, correct?

Response:

23. 455-51 – Why isn’t this inserted into the General Requirements like 2 of the other Foundation Certification Packages subarticles?

Response:

.....
Mohamad Hussein

Comments (11-18-12)

1. 455-2.8 (10): Add Thermal Integrity Profile (TIP) results to the list, since this test is becoming used more and more frequently.

Response:

2. 455-2.11: Replace “Statnamic” with Rapid Load Testing (RLT), since this is the more general (and generic) name that this type of testing is known by and it is the technical name that ASTM (D7383) uses. There are other locations throughout the document that have Statnamic, or Statnamicly tested piles.

Response:

3. 455-5.2: Rating the hammer energy based on the theoretical energy of the ram at impact

(i.e., kinetic energy) may be technically challenging for diesel hammers without specialized measurements (as is typically done with hydraulic hammers) where preignition and compression of the gases in the chamber, in addition to the mechanical efficiency, and other effects would be difficult to quantify. It might require proximity switches be inserted in the hammer casing, and this is not common practice for diesel hammers; for diesel hammers measuring the stroke (from blows per minute) is general practice. It may be best to leave the hammer rating to the manufacturers, especially for general equipment sizing purposes.

Response:

4. 455-5.10.1: The ¼ inch rebound should be clarified to mean the soil's rebound after consideration of the pile's elastic compression/rebound; otherwise, most piles would not be able to meet this requirement since the pile's elastic rebound alone is close to ¼ inch, or above. Also, it is difficult for the inspector to visually ascertain ¼ inch rebound on the fast moving pile under the hammer impact, and "set-rebound graphs" are a safety hazard. Alternatively, a limit of ½ inch may be more reasonable, technically and practically. Rebound can be calculated from pile top dynamic test data by taking the difference between maximum pile top displacement (DMX) minus pile set per blow (from the observed/recorded blow count).

Response:

5. 455-5.10.4 (c): The period of waiting after initial driving to perform a setcheck or restrike should not be dictated in a design/build project environment, and it would not be known ahead of time to be a part of the project contract documents. The GFDEOR should be left the liberty to determine the time of setcheck/restrike that suits the needs for foundation certification based on site specific conditions and project requirements.

Response:

6. 455-5.10.7 (c): The relevant phi-factors in the table for dynamic load testing with signal matching can reasonably be increased by 0.1 if all piles in a given bent/pier are tested. 100% setcheck testing in such cases provides considerable amount of information regarding the individual pile's structural and geotechnical in-place conditions that significantly increase confidence, and markedly reduce the uncertainty usually associated with the phi-factors levels currently listed.

Response:

7. 455-5.11.1: "Embedded Data Collector (EDC)" should be replaced with a more generic term (such as embedded gages).

Response:

8. 455-5.11.3: Uses Allowable Stress Design (ASD) procedures, which may be inconsistent with contemporary practice, but OK for temporary piles. In ASD, AASHTO allows the use of a factor of safety of 2.25 for dynamic testing on permanent piles, and that should be OK for temporary piles' use.

Response:

9. 455-5.13: Replace EDC with "internal gages", consistent with the PDA not specifically named and its system being called external gages with bolts in the same section.

Response:

10. Can cast indentation be mentioned for concrete piles here?

Response:

11. 455-7.2: Replace EDC with embedded gages, and check entire document – replace with generic term.

Response:

Pam Moore
Comments (11-02-12)

- 1) 455-2.8 – Since this requirement is for load tests on both piles and shafts, driving records and dynamic testing results should be listed among the items to be included.

Response:

- 2) 455-2.9 – The verbiage in the standard spec regarding use of the Department’s load test equipment was deleted. Should the verbiage about returning the Department’s equipment be deleted from this section?

Response:

- 3) 455-5.10.2 – Section 455-5.14.2 is referenced for blow count criteria. The majority of 455-5.14.2 is about production lengths; driving criteria is only mentioned as something which is included in the length letter. Suggest changing 455-5.10.2 to “Drive piles to the blow count criteria established by the GFDEOR and the Dynamic Testing Engineer using the methods described herein, as presented in the Production Pile Length Letter (see 455-5.14.2).”

Response:

- 4) 455 -5.10.4 – Since this is design-build, is it necessary to distinguish between set-checks & redrives? Can they both just be referred to as restrikes?

Response:

- 5) 455-5.10.4(c) – Uninstrumented restrikes – Should a minimum number of blows be required, say 15, so that the first low energy blows are not counted as contributing to capacity? If 15 blows minimum, then use last 10 to determine bearing resistance.

Response:

- 6) 455-5.10.7:

- a) How is the requirement of resistance at $EOID \geq 1.1$ Factored Design Load to be interpreted for non-instrumented piles? Does the driving criteria have to include a blow count for this requirement?

Response:

- b) Since the instrumented piles would most likely be the test piles which are usually driven deeper than production piles, it may be unreasonable to require non-set-checked production piles to be driven deeper. Should this requirement be changed to indicate the piles must be driven the full production pile length with EOID resistance \geq instrumented pile EOID resistance?

Response:

c) The note stipulating that the time is from the previous restrike is an added clarification.

Response:

7) 455-10.1 - #17 says that a representative shall be available for resolution of issues “within hours notice”. How many hours?

Note: This same comment is applicable to 455-15.1.2 #20.

Response:

8) 455-22.1 – Why is the Department picking shafts for CSL before receiving the certification packages? Shouldn’t this be up to the GFDEOR at this point, with the Department only looking at the certification and choosing shafts to be verified?

Response: