Florida Department of Transportation

RICK SCOTT
GOVERNOR

605 Suwannee Street
Tallahassee, FL 32399-0450

ANANTH PRASAD, P.E.
SECRETARY

November 5, 2013

Chad Thompson
Programs Operations Engineer
Federal Highway Administration
545 John Knox Road, Suite 200
Tallahassee, Florida 32303

Re: State Specifications and Estimates Office
Section **455 (for Design Build)**
Proposed Specification: **4550510DB Structures Foundations (Design Build) – Optional Soil Set-Up Approach**

Dear Mr. Thompson:

We are submitting, for your approval, two copies of the above referenced Special Provision for Design Build.

This change is proposed by Larry Jones of the State Structures Design Office to incorporate this alternative technical concept in Design Build projects when requested by the Geotechnical Engineer.

Please review and transmit your comments, if any, within two weeks. Comments should be sent via email to SP965DS or daniel.scheer@dot.state.fl.us.

If you have any questions relating to this specification change, please call me at 414-4130.

Sincerely,

Signature on file

Daniel Scheer, P.E.
State Specifications Engineer

DS/ft
Attachment
cc: Florida Transportation Builders' Assoc.
State Construction Engineer

STRUCTURES FOUNDATIONS (DESIGN BUILD) – OPTIONAL SOIL SET-UP APPROACH.

(REV ~~12-3-12~~*7-30-13*) ~~(FA 1-3-13) (1-13)~~

ARTICLE 455-5.10.7 is deleted and the following substituted:

455-5.10.7 Optional Soil Set-Up Approach: If the Contractor so desires, it may consider soil set-up. Production piles that are driven to less than the Nominal Bearing Resistance (NBR) may be accepted based on the anticipated soil setup without set checks on all piles, only if the following criteria are met:

(a) Pile tip penetration satisfies the minimum penetration requirement following 455-5.8.

(b) End of Initial Drive (EOID) resistance exceeds 1.10 times the Factored Design Load for the pile bent/pier, as determined by the dynamic testing or blow count criteria.

(c) The Resistance Factor for computing NBR is taken from the following table:

Resistance Factors for Pile Installation Using Soil Setup (all structures)				
Loading	*Design Method*	*Construction QC Method*	*Resistance Factor, φ*	
			Blow Count Criteria[3]	*100% Dynamic Testing[4]*
Compression	*Davisson Capacity*	*EDC using UF method, or PDA and CAPWAP[1]*	*0.55*	*0.60*
		Static Load Testing[2]	*0.65*	*0.70*
		Statnamic Load Testing[2]	*0.60*	*0.65*
Uplift	*Skin Friction*	*EDC using UF method, or PDA and CAPWAP[1]*	*0.45*	*0.50*
		Static Load Testing[2]	*0.55*	*0.55*

1 Dynamic Load Testing and Signal Matching Analysis
2 Used to confirm the results of Dynamic Load Testing and Signal Matching Analysis
3 Initial drive of production piles using Blow Count Criteria
4 Initial drive of all piles accepted by results of Dynamic Testing of all blows.

~~Resistance Factors for Pile Installation Using Soil Setup (all structures)~~			
~~Loading~~	~~Design Method~~	~~Construction QC Method~~	~~Resistance Factor, φ~~
~~Compression~~	~~Davisson Capacity~~	~~PDA and CAPWAP1~~	~~0.55~~
		~~Static Load Testing2~~	~~0.65~~
		~~Statnamic Load Testing2~~	~~0.60~~

~~Uplift~~	~~Skin Friction~~	~~PDA and CAPWAP1~~	~~0.45~~
		~~Static Load Testing2~~	~~0.55~~
~~1 Dynamic Load Testing and Signal Matching Analysis~~ ~~2Used to confirm the results of Dynamic Load Testing and Signal Matching Analysis~~			

(d) At least one test pile is driven at each bent/pier *with a successful set check at the anticipated production pile tip elevations* and one of the following sets of dynamic load testing conditions are met at each bent/pier.

1. The bearing of at least 10% of piles in the bent/pier (round up to the next whole number) is confirmed by instrumented set-check, and all test piles and instrumented set-checks demonstrate the pile resistance exceeds the NBR within seven days after EOID

2. The bearing of at least 20% of piles in the bent/pier (round up to the next whole number) is confirmed by instrumented set-check, and all test piles and instrumented set-checks demonstrate the pile resistance exceeds the NBR within 21 days after EOID.

(e) All uninstrumented piles are driven deeper and to a greater EOID resistance than the EOID resistance of all instrumented production piles in the same bent/pier.

STRUCTURES FOUNDATIONS (DESIGN BUILD) – OPTIONAL SOIL SET-UP APPROACH.
(REV 7-30-13)

ARTICLE 455-5.10.7 is deleted and the following substituted:

455-5.10.7 Optional Soil Set-Up Approach: If the Contractor so desires, it may consider soil set-up. Production piles that are driven to less than the Nominal Bearing Resistance (NBR) may be accepted based on the anticipated soil setup without set checks on all piles, only if the following criteria are met:

(a) Pile tip penetration satisfies the minimum penetration requirement following 455-5.8.

(b) End of Initial Drive (EOID) resistance exceeds 1.10 times the Factored Design Load for the pile bent/pier, as determined by the dynamic testing or blow count criteria.

(c) The Resistance Factor for computing NBR is taken from the following table:

Resistance Factors for Pile Installation Using Soil Setup (all structures)				
Loading	Design Method	Construction QC Method	Resistance Factor, φ	
			Blow Count Criteria[3]	100% Dynamic Testing[4]
Compression	Davisson Capacity	EDC using UF method, or PDA and CAPWAP[1]	0.55	0.60
		Static Load Testing[2]	0.65	0.70
		Statnamic Load Testing[2]	0.60	0.65
Uplift	Skin Friction	EDC using UF method, or PDA and CAPWAP[1]	0.45	0.50
		Static Load Testing[2]	0.55	0.55

1 Dynamic Load Testing and Signal Matching Analysis
2 Used to confirm the results of Dynamic Load Testing and Signal Matching Analysis
3 Initial drive of production piles using Blow Count Criteria
4 Initial drive of all piles accepted by results of Dynamic Testing of all blows.

(d) At least one test pile is driven at each bent/pier with a successful set check at the anticipated production pile tip elevations and one of the following sets of dynamic load testing conditions are met at each bent/pier.

1. The bearing of at least 10% of piles in the bent/pier (round up to the next whole number) is confirmed by instrumented set-check, and all test piles and instrumented set-checks demonstrate the pile resistance exceeds the NBR within seven days after EOID

2. The bearing of at least 20% of piles in the bent/pier (round up to the next whole number) is confirmed by instrumented set-check, and all test piles and instrumented set-checks demonstrate the pile resistance exceeds the NBR within 21 days after EOID.

(e) All uninstrumented piles are driven deeper and to a greater EOID resistance than the EOID resistance of all instrumented production piles in the same bent/pier.