



Florida Department of Transportation

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SECRETARY

MEMORANDUM

DATE: November 17, 2014
TO: Specification Review Distribution List
FROM: Daniel Scheer, P.E., State Specifications Engineer
SUBJECT: Proposed Specification: **4550101 Structures Foundations.**

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

This change was proposed by Juan Castellanos of the State Construction Office to modify the language for changes resulting from the creation of new Section 108 Protection of Existing Structures. The new section will address protection of existing structures during any construction operation including roadway compaction and other work that is not related to foundation construction. Changes in Section 455 are required to avoid conflicts and redundancy in the specification.

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://www2.dot.state.fl.us/SpecificationsEstimates/Development/IndustryReview.aspx> . Comments received after **December 15, 2014**, may not be considered. Your input is encouraged.

DS/dt
Attachment

STRUCTURES FOUNDATIONS.

(REV 11-67-14)

SUBARTICLE 455-1.1 is deleted and the following substituted:

455-1.1 Protection of Existing Structures: *Protect existing structures in accordance with Section 108.* ~~When the Plans require excavation or foundation construction operations in close proximity to existing structures, take all reasonable precautions to prevent damage to such structures. The requirements described herein apply to all types of structures (on or off the right of way) that may be adversely affected by foundation construction operations (including phase construction) due to vibrations, ground loss, ground heave, or dewatering. Protect utilities as described in the applicable provisions of Section 7.~~

~~Survey and monitor structures for settlement in a manner approved by the Engineer, recording elevations to 0.001 foot. Employ a qualified Specialty Engineer to inspect and document the condition of structures prior to and after construction of excavations and foundation construction. Inspect and monitor the following structures:~~

- ~~_____ (1) as shown in the Plans.~~
- ~~_____ (2) within a distance of ten shaft diameters or the estimated depth of drilled shaft excavation, whichever is greater.~~
- ~~_____ (3) within a distance of three times the depth of other excavations.~~
- ~~_____ (4) within 200 feet of sheet pile installation and extraction operations~~
- ~~_____ (5) for projects with pile driving operations, inspect and document the condition of all structures within a distance, in feet, of pile driving operations equal to 0.25 times the square root of the impact hammer energy, in foot-pounds. Survey and monitor for settlement all structures within a distance, in feet, of pile driving operations equal to 0.5 times the square root of the impact hammer energy, in foot-pounds.~~

~~Obtain the Engineer's approval of the number and location of monitoring points. Record elevations:~~

- ~~_____ (1) before beginning construction;~~
- ~~_____ (2) daily during the driving of any casings, piling, or sheeting;~~
- ~~_____ (3) weekly for two weeks after stopping pile driving;~~
- ~~_____ (4) during excavation;~~
- ~~_____ (5) during blasting;~~
- ~~_____ (6) or as directed by the Engineer.~~

~~Notify the Engineer of any movements detected and immediately take any remedial measures required to prevent damage to the existing structures.~~

~~The Department will make the necessary arrangements to provide right of way entry to the existing structures.~~

~~Adequately document the condition of the structures and all existing cracks with descriptions and pictures. Prepare two reports documenting the condition of the structures: one report before beginning foundation construction operations and a second report after completing foundation construction operations. The Department will take ownership of both reports. Do not perform pre-driving and post-driving surveys of the condition of bridges owned by the Department except when shown in the Contract Documents.~~

~~When shown in the Contract Documents, employ a qualified Specialty Engineer to monitor and record vibration levels during the driving of casings, piling, sheeting, or blasting~~

~~operations. Provide vibration monitoring equipment capable of detecting velocities of 0.1 inches per second or less.~~

~~_____ Upon detecting settlement or heave of 0.005 feet, vibration levels reaching 0.5 inches per second, levels otherwise shown in the Contract Documents, or damage to the structure, immediately stop the source of vibrations, backfill any open excavations, and contact the Engineer for instructions.~~

~~_____ When excavating for construction, the Contractor is responsible for evaluating the need for, design of, and providing any necessary precautionary features to protect adjacent structures from damage, including, but not limited to, selecting construction methods and procedures that will prevent damaging caving of the shaft excavation and monitoring and controlling the vibrations from construction activities, including driving of casings, driving of sheeting, and blasting. When sheeting and shoring are not detailed in the Plans, employ a qualified Specialty Engineer to design the sheeting and shoring, and to sign and seal the plans and specification requirements. Send these designs to the Engineer for his record before beginning construction.~~

~~_____ 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.). In the event the Department authorizes the use of preformed pile holes to meet this requirement, the Department will pay for this work as described in 455-5.9.3.~~

~~_____ When shown in the Plans or directed by the Engineer, install a piezometer near the right of way line and near any structure that may be affected by lowering the ground water when dewatering is required. Monitor the piezometer and record the ground water elevation level daily. Notify the Engineer of any ground water lowering near the structure of 12 inches or more.~~

ARTICLE 455-11 is deleted and the following substituted:

455-11 Method of Measurement (All Piling).

455-11.1 Treated Timber Piling: The quantity to be paid for will be the length, in feet, furnished, placed, and accepted according to the authorized lengths list, including any additions and excluding any deletions thereto, as approved by the Engineer.

455-11.2 Prestressed Concrete Piling:

455-11.2.1 General: The quantity to be paid for will be the length, in feet, of prestressed concrete piling furnished, driven and accepted according to the authorized lengths list, including any additions and excluding any deletions thereto, as approved by the Engineer.

455-11.2.2 Furnished Length: The furnished length of precast concrete piles will be considered as the overall length from head to tip. Final pay length will be based on the casting length as authorized in accordance with 455-5.14.3 subject to provisions of 455-11.2.3 through 455-11.2.8, 455-11.8, 455-11.9 and 455-11.13.

455-11.2.3 Build-ups: The lengths of pile build-ups authorized by the Engineer, measured from the plane of cutback or the joint between the sections, to head of build-up, will be included in the quantities of piling.

455-11.2.4 Piles Requiring Cut-offs: No adjustments in the length, in feet, of piling will be made if cut-offs are required after the pile has been driven to satisfactory bearing.

455-11.2.5 Piles Driven Below Cut-off Elevation: Where a pile is driven below cut-off elevation and satisfactory bearing is obtained so that no further driving is required, the length of pile will be measured from cut-off elevation to tip of the pile.

455-11.2.6 Driving of Splice: If a pile is driven below cut-off and satisfactory bearing is not obtained, and additional driving is required after construction of a satisfactory splice, an additional 10 feet of piling will be paid for the additional driving. This compensation for driving of splice, however, will not be allowed for test piles that are spliced and redriven.

455-11.2.7 Replacing Piles: In the event a pile is broken or otherwise damaged by the Contractor to the extent that the damage is irreparable, in the opinion of the Engineer, the Contractor shall extract and replace the pile at no additional expense to the Department. In the event that a pile is mislocated by the Contractor, the Contractor shall extract and replace the pile at no expense to the Department except when a design change proposed by the Contractor is approved by the Department as provided in 455-5.15.5.

In the event that a pile is driven below cut-off without obtaining the required bearing, and the Engineer elects to have the pile pulled and a longer pile substituted, it will be paid for as Unforeseeable Work. In the event a pile is damaged or mislocated, and the damage or mislocation is determined to be the Department's responsibility, the Engineer may elect to have the pile extracted, and it will be paid for as Unforeseeable Work. If the extracted pile is undamaged and driven elsewhere the pile will be paid for at 30% of the Contract unit price for Piling. When the Department determines that it is responsible for damaged or mislocated pile, and a replacement pile is required, compensation will be made under the item for piling, for both the original pile and replacement pile.

The Contractor may substitute a longer pile in lieu of splicing and building-up a pile. In this event, the Contractor will be paid for the original authorized length of the pile, plus any additional length furnished by the Contractor up to the authorized length of the build-up, as piling. The Contractor will be paid 30 feet of piling as full compensation for extracting the original pile.

455-11.2.8 Underwater Driving: When the Contractor selects one of the optional underwater driving methods, payment will be made by selecting the applicable method from the following:

(a) Using a pile longer than the authorized length: Payment for piling will be made only for the authorized length at that location unless the length of pile from cut-off elevation to the final tip elevation is greater than the authorized length, in which case payment for piling will be made from cut-off elevation to final tip elevation. No payment will be made for pile splice, when this option is selected, unless the pile is physically spliced and the splice is driven below cut-off elevation to achieve bearing. When making and driving a pile splice below cut-off elevation to achieve bearing, the length to be paid for piling will be the length between cut-off elevation and final pile tip elevation.

(b) Using an underwater hammer: Payment for piling and pile splices will be in accordance with 455-11.2.1 through 455-11.2.7 and 455-11.9.2. The Contractor shall furnish additional lengths required to provide the full length confirmation pile at no expense to the Department. Payment for piling for the full length confirmation pile will be the authorized length of the pile, unless the length driven below cut-off elevation is greater than the authorized length, in which case the length to be paid for will be the length between cut-off elevation and the final tip elevation. Splices in confirmation piles will be paid for only when the splice is driven below cut-off elevation.

(c) Using a pile follower: When a pile follower is used with a conventional pile driving system, the method of payment will be the same as shown above in 455-11.9.2.

455-11.3 Steel Piling:

455-11.3.1 General: The quantity to be paid for will be the length, in feet, of steel piling furnished, spliced, driven and accepted, up to the authorized length, including any additions and excluding any deletions thereto as approved by the Engineer.

455-11.3.2 Point Protectors: The quantity to be paid for will be each for the total of point protectors authorized, furnished, and properly installed.

455-11.4 Test Piles: The quantity to be paid for of test piles of various types, will be the length, in feet, of test piling furnished, driven and accepted, according to the authorized length list, and any extensions thereof as approved by the Engineer.

Where a test pile is left in place as a permanent pile, it will be paid for only as test piles. Any extensions necessary to continue driving the pile for test purposes, as authorized by the Engineer, will be paid for as test piles. Other extensions of piles, additional length paid for splicing and build-ups will be included in the quantities of regular piling and will not be paid for as test piling.

455-11.5 Dynamic Load Tests: Payment will be based on the number of dynamic load tests as shown in the Plans or authorized by the Engineer, completed and accepted in accordance with the Contract Documents. No separate payment will be made for dynamic load tests used to evaluate the Contractor's driving equipment. This will generally be done on the first test pile or production pile driven on a project with each combination of proposed hammer and pile size and/or a separate pile to evaluate any proposed followers, or piles driven to evaluate proposed changes in the driving system. No payment will be made for dynamic load tests used to evaluate the integrity of a pre-planned epoxy-bonded dowel splice. Include all costs associated with dynamically testing production piles with epoxy-bonded dowel splices under Pay Item No. 455-34. No payment will be made for dynamic load tests on test piles.

Payment for attaching equipment to each production pile for dynamic load testing prior to initial driving and as authorized by the Engineer will be 20 feet of additional pile. No payment will be made for attaching dynamic testing equipment for set-checks or redrives.

455-11.6 Steel Sheet Piling: The quantity to be paid for will be the plan quantity area, in square feet, measured from top of pile elevation to the bottom of pile elevation and beginning and end wall limits as shown in the Plans with no allowance for variable depth surface profiles. Approved alternate support structures would be paid for as plan quantity computed for sheet pile. Sheet piling used in cofferdams and to incorporate the Contractor's specific means and methods, and not ordered by the Engineer, will be paid for as required in Section 125.

455-11.7 Concrete Sheet Piling: The quantity to be paid for will be the product of the number of such piles satisfactorily completed, in place, times their lengths in feet as shown in the Plans or authorized by the Engineer. This quantity will be based upon piles 2-1/2 feet wide.

When the Engineer approves, the Contractor may furnish the concrete sheet piling in widths wider than shown in the Plans; then the number of piles shall be the actual number of units completed times the width used divided by the width in the Plans.

455-11.8 Pile Splices: The quantity to be paid for authorized drivable splices and build-ups greater than 5 feet in length in concrete piling, and test piling, which are made for the purpose of obtaining authorized pile lengths longer than shown as the maximum length in the Standard Indexes, for obtaining greater lengths than originally authorized by the Engineer, to incorporate test piling in the finished structure, for further driving of test piling, or for splices

shown in the Plans, will be 30 feet of additional prestressed concrete piling under Pay Item No. 455-34.

For concrete piles and test piles, where the build-up is 5 feet or less in length, the quantity to be paid for will be 9 feet of prestressed concrete piling under Pay Item No. 455-34 as compensation for drilling and grouting the dowels and all other costs for which provision has not otherwise been made.

The quantity to be paid for authorized splices in steel piling and test piling for the purpose of obtaining lengths longer than the lengths originally authorized by the Engineer will be 20 feet of additional steel piling under Pay Item No. 455-35.

455-11.9 Set-Checks and Redrives:

455-11.9.1 Set Checks/Test Piles: There will be no separate payment for the initial four set-checks performed the day of and the working day following initial driving. For each additional set-check ordered by the Engineer and performed within the following working day of initial driving, an additional quantity of 10 feet of piling will be paid.

455-11.9.2 Set Checks/Production Piles: There will be no separate payment for the initial two set-checks performed the day of and the working day following initial driving. For each additional set-check ordered by the Engineer and performed within the following working day of initial driving, an additional quantity of 10 feet of piling will be paid.

455-11.9.3 Redrives: The quantity to be paid for will be the number of redrives, each, authorized by the Engineer. Payment for any pile redrive (test pile or production pile) ordered by the Engineer will consist of 20 feet of additional piling.

455-11.10 Pile Extraction: Piles authorized to be extracted by the Engineer and successfully extracted as provided in 455-11.2.7 will be paid for as described in 455-11.2.7. No payment for extraction will be made for piles shown in the Plans to be extracted or piling damaged or mislocated by the Contractor that are ordered to be extracted by the Engineer.

~~**455-11.11 Protection of Existing Structures:** The quantity to be paid for will be at the Contract lump sum price. When the Contract Documents do not include an item for protection of existing structures, the cost of settlement monitoring as required by these Specifications will be included in the cost of the structure; however, work in addition to settlement monitoring will be paid for as Unforeseeable Work when such additional work is ordered by the Engineer.~~

455-11.121 Static Load Tests: The quantity to be paid for will be the number of static load tests of the designated tonnages, each, as shown in the Plans or authorized by the Engineer, actually applied to piles, completed and accepted in accordance with the Plans and these Specifications.

455-11.132 Preformed Pile Holes: The quantity added to the payment for piling will be 30% of the length of completed preformed pile holes from existing ground or the bottom of any required excavation, whichever is lower, to the bottom of preformed hole acceptably provided, complete for the installation of the bearing piles, regardless of the type of pile (test pile or production pile) installed therein. Only those holes authorized to be paid for, as provided in 455-5.9.3, will be included in the measurement for payment. The Engineer will authorize payment for preformed pile holes only when the pile has been placed in proper position and has achieved the required penetration.

ARTICLE 455-12 is deleted and the following substituted:

455-12 Basis of Payment (All Piling).

455-12.1 Treated Timber Piling: Price and payment will be full compensation for furnishing all materials, including collars, metal shoes, copper cover sheets, preservatives and tar, and for wrapping pile clusters with wire cable, where so shown in the Plans.

455-12.2 Prestressed Concrete Piling: Price and payment will be full compensation for the cost of furnishing and placing all reinforcing steel, predrilled holes, furnishing the material for and wrapping pile clusters with wire cable where so shown in the Plans and grouting of preformed pile holes when shown in the Plans.

455-12.3 Steel Piling: Price and payment will be full compensation for all labor, equipment, and materials required for furnishing and installing steel piling, including welding and painting as specified and the cost of predrilling pile holes described in 455-5.1.1. The cost of any sand or concrete fill and reinforcing steel in pipe piles will be included in the price for steel piling.

Bracing and other metal parts attached to or forming a part of piling or bracing and not otherwise classified, will be measured and paid for as provided in Section 460.

455-12.4 Test Piles: Price and payment will be full compensation for all incidentals necessary to complete all the work of this item except splices, build-ups, pile extractions and preformed pile holes authorized by the Engineer and paid for under other pay items or payment methods. The cost of all additional work not listed above necessary to ensure required penetration and attain required bearing of the test piles will be included in the price bid per foot of test pile, including driving and all other related costs.

455-12.5 Dynamic Load Tests:

455-12.5.1 Dynamic Load Tests/ Test Piles: All test piles will require dynamic load tests, and include all costs associated with dynamic load tests in the pay items for test piles.

455-12.5.2 Dynamic Load Tests/ Production Piles: Payment will be full compensation for all labor, equipment, materials, instrumentation and installation required to assist the Engineer in performing this work.

455-12.6 Steel Sheet Piling:

455-12.6.1 Permanent Sheet Piling: Price and payment will be full compensation for all labor, equipment, and materials required for furnishing and installing steel sheet piling including preformed holes and coating, but will not include furnishing and placing anchors when an anchored wall system is designed and detailed in the Plans. In such cases, furnishing and installing anchors will be paid for separately.

455-12.6.2 Temporary Sheet Piling: For critical temporary steel sheet pile walls, walls which are necessary to maintain the safety of the traveling public or structural integrity of nearby structures, roadways and utilities during construction, that are detailed in the Plans, price and payment will be full compensation for all labor, equipment, and materials required for furnishing and installing steel sheet piling including preformed holes when shown in the Plans, and including wales, anchor bars, dead men, soil anchors, proof tests, creep tests, and other incidental items when an anchored wall system is required. Removal of the sheet piling, anchors, and incidentals will be included in the cost per square foot for steel sheet piling (critical temporary). When the temporary steel sheet pile walls are not detailed in the Plans, the cost of furnishing and installation shall be incidental to cost of other related items and no separate payment shall be made. If the wall is not shown in the Plans, but deemed to be critical as

determined by the Engineer, then a design shall be furnished by the Department and paid for separately under steel sheet piling (critical temporary).

455-12.7 Concrete Sheet Piling: Price and payment will be full compensation for furnishing all materials, including reinforcing steel, grouting, plastic filter fabric, preformed holes and installation.

455-12.8 Preformed Pile Holes: There is no separate pay item for preformed pile holes. Payment will be made as the unit price for piling of the applicable pile type. Payment will be full compensation for all labor, equipment, casings and materials required to perform this work.

~~**455-12.9 Protection of Existing Structures:** Price and payment will be full compensation for all labor, equipment, and materials required to perform this work.~~

~~**455-12.109 Point Protectors:** Price and payment will be full compensation for all labor, equipment, and materials required to perform this work.~~

~~**455-12.110 Static Load Tests:** Price and payment will be full compensation for all labor, equipment, and materials required to perform this work.~~

~~**455-12.121 Pile Cut-Off:** Anticipate all piles will require cutting-off, and include all costs associated with pile cut-off in the pay items for piling.~~

~~**455-12.132 Payment Items:** Payment will be made under:~~

- ~~Item No. 455- 2- Treated Timber Piling - per foot.~~
- ~~Item No. 455- 14- Concrete Sheet Piling - per foot.~~
- ~~Item No. 455- 18- Protection of Existing Structures - lump sum.~~
- ~~Item No. 455- 34- Prestressed Concrete Piling - per foot.~~
- ~~Item No. 455- 35- Steel Piling - per foot.~~
- ~~Item No. 455- 36- Concrete Cylinder Piling - per foot.~~
- ~~Item No. 455-119- Test Loads - each.~~
- ~~Item No. 455-120- Point Protection - each.~~
- ~~Item No. 455-133- Sheet Piling - per square foot.~~
- ~~Item No. 455-143- Test Piles (Prestressed Concrete) - per foot.~~
- ~~Item No. 455-144- Test Piles (Steel) - per foot.~~
- ~~Item No. 455-145- Test Piles (Concrete Cylinder) - per foot.~~

ARTICLE 455-23 is deleted and the following substituted:

455-23 Method of Measurement.

455-23.1 Drilled Shafts: The quantity to be paid for will be the length, in feet, of the reinforced concrete drilled shaft of the diameter shown in the Plans, completed and accepted. The length will be determined as the difference between the top of shaft elevation as shown in the Plans and the final bottom of shaft elevation as authorized and accepted. When the Contractor elects to provide outside diameter (O.D.) sized casing rather than inside diameter (I.D.) sized casing as allowed in 455-15.7, the pay quantity measured as described above will be multiplied by a factor (F) determined as follows:

$$F = \frac{2D_2 - D_1}{D_2}$$

where:

F= factor to adjust pay quantities to compensate for smaller shafts.

D₁= casing inside diameter specified = shaft diameter specified.

D₂= casing inside diameter provided (D₂ = D₁ minus twice the wall thickness).

455-23.2 Drilled Shafts (Unreinforced): The quantity to be paid for will be the length, in feet, of unreinforced concrete drilled shaft of the diameters shown in the Plans, completed and accepted. The length will be determined as the difference between the top of shaft elevation as shown in the Plans and the final bottom of shaft elevation as authorized and accepted. When the Contractor elects to use O.D. casing, the quantity as determined above will be multiplied by the factor “F” determined as described in 455-23.1.

455-23.3 Unclassified Shaft Excavation: The quantity to be paid for will be the length, in feet, of unclassified shaft excavation of the diameter shown in the Plans, completed and accepted, measured along the centerline of the shaft from the ground surface elevation after any required excavation per 455-1.2 to the plan bottom of shaft elevation authorized and accepted plus up to 15 feet or 3 shaft diameters, whichever is deeper, of additional excavation as authorized by the Engineer. When drilled shafts are constructed through fills placed by the Contractor, the original ground surface before the fill was placed will be used to determine the quantity of unclassified shaft excavation. When the Contractor elects to use O.D. casing, the quantity as determined above will be multiplied by the factor “F” determined as described in 455-23.1.

455-23.4 Unclassified Extra Depth Excavation: When excavation is required by the Engineer to extend more than 15 feet or 3 shaft diameters, whichever is deeper, below the bottom of the shaft elevation shown in the Plans, the work will be considered as Unforeseeable Work.

455-23.5 Test Holes: The cost of all test holes will be included in the cost of drilled shafts.

455-23.6 Core (Shaft Excavation): The quantity to be paid for will be the length, in feet, measured from the bottom of shaft elevation to the bottom of the core-hole, for each authorized core drilled below the shaft excavation, completed and accepted. When the Engineer authorizes pilot holes extending through part or all of the shaft, prior to excavation, to some depth below the shaft bottom, the quantity paid as core (shaft excavation) will be the length in feet, measured from the top elevation to the bottom elevation authorized by the Engineer, completed and accepted. When SPT tests are substituted for coring or pilot holes as provided in 455-15.6, the quantity will be determined as described above in this Section.

455-23.7 Casings: The quantity to be paid for will be the length, in feet, of each size casing as directed and authorized to be used. The length will be measured along the casing from the top of the shaft elevation or the top of casing whichever is lower to the bottom of the casing at each shaft location where casing is authorized and used, except as described below when the top of casing elevation is shown in the Plans. Casing will be paid for only when the Permanent Casing Method is specified, when the Plans show a casing that becomes a permanent part of the shaft, or when the Engineer directs the Contractor to leave a casing in place which then becomes

a permanent part of the shaft. No payment will be made for casings which become bound or fouled during shaft construction and cannot be practically removed. The Contractor shall include the cost of all temporary removable casings for methods of construction other than that of the Permanent Casing Method in the bid price for unclassified shaft excavation item.

When the Permanent Casing Method and the top of casing elevation are specified, the casing will be continuous from top to bottom. Authorization for temporary casing will not be given unless the Contractor demonstrates that he can maintain alignment of the temporary upper casing with the lower casing to be left in place during excavation and concreting operations. When artesian conditions are or may be encountered, the Contractor shall also demonstrate that he can maintain a positive water-tight seal between the two casings during excavation and concreting operations.

When the top of casing elevation is shown in the Contract Documents, payment will be from the elevation shown in the Plans or from the actual top of casing elevation, whichever is lower, to the bottom of the casing. When the Contractor elects to use an approved special temporary casing system in open water locations, the length to be paid for will be measured as a single casing as provided above.

~~455-23.8 Protection of Existing Structures: The quantity to be paid for will be at the lump sum price.~~

~~455-23.9-8 Load Tests:~~ The quantity to be paid for will be the number and type of load tests conducted.

~~455-23.109 Instrumentation and Data Collection:~~ The quantity to be paid for will be at the lump sum price.

~~455-23.110 Cross-Hole Sonic Logging:~~ The quantity of the cross-hole sonic logging test set-ups to be paid for will be the number of drilled shafts accepted based on cross-hole sonic logging tests.

ARTICLE 455-24 is deleted and the following substituted:

455-24 Basis of Payment.

455-24.1 Drilled Shafts: Price and payment will be full compensation for all drilled shafts, including the cost of concrete, reinforcing steel and cross-hole sonic logging tubes, including all labor, materials, equipment, and incidentals necessary to complete the drilled shaft. The cost of the reinforcing steel, including lap lengths, to accommodate shaft lengths longer than shown in the Plans is included in the cost of drilled shafts. Costs associated with repairing defects found in the drilled shaft shall be included in the cost of the drilled shaft.

455-24.2 Drilled Shafts (Unreinforced): Price and payment will be full compensation for all drilled shafts (unreinforced), including the cost of concrete and all labor, equipment, materials, and incidentals necessary to complete the drilled shaft.

455-24.3 Unclassified Shaft Excavation: Price and payment will be full compensation for the shaft excavation (except for the additional costs included under the associated pay items for casing); removal from the site and disposal of excavated materials; restoring the site as required; cleaning and inspecting shaft excavations; using slurry as necessary; using drilling equipment; blasting procedures, special tools and special drilling equipment to excavate the shaft to the depth indicated in the Plans; and furnishing all other labor, materials, and equipment necessary to complete the work in an acceptable manner.

455-24.4 Test Holes: No separate payment will be made for test hole (method shaft). All cost of test holes will be included in the cost of drilled shafts.

455-24.5 Core (Shaft Excavation): Price and payment will be full compensation for drilling and classifying the cores/pilot hole, delivering them to the Department, furnishing drilled shaft concrete to fill the core/pilot hole, and all other expenses necessary to complete the work. When SPT tests are substituted for cores/pilot holes as provided in 455-15.6, they will be paid for at the price per foot for coring.

455-24.6 Casings: Price and payment will be full compensation for additional costs necessary for furnishing and placing the permanent casing in the shaft excavation above the costs attributable to the work paid for under associated pay items for unclassified shaft excavation.

~~455-24.7 Protection of Existing Structures: Price and payment will include all cost of work shown in the Plans or described herein for protection of existing structures. When the Contract Documents do not include an item for protection of existing structures, the cost of settlement monitoring as required by these Specifications will be included in the cost of the structure; however, work in addition to settlement monitoring will be paid for as Unforeseeable Work when such additional work is ordered by the Engineer.~~

455-24.87 Load Tests: Price and payment will include all costs related to the performance of the load test.

455-24.98 Instrumentation and Data Collection: Price and payment will include all labor, equipment, and materials incidental to the instrumentation and data collection, and, when required, the load test report.

455-24.109 Cross-Hole Sonic Logging: Price and payment will include all costs related to the performance of the CSL testing and incidentals to the cross-hole sonic test set-up.

455-24.110 Payment Items: Payment will be made under:

Item No. 455-18	Protection of Existing Structures - lump sum.
Item No. 455-88-	Drilled Shaft - per foot.
Item No. 455-107-	Casing - per foot.
Item No. 455-111-	Core (Shaft Excavation) - per foot.
Item No. 455-119-	Test Loads - each.
Item No. 455-122-	Unclassified Shaft Excavation - per foot.
Item No. 455-129-	Instrumentation and Data Collection - lump sum.
Item No. 455-142-	Cross-Hole Sonic Logging - each.

ARTICLE 455-27 is deleted and the following substituted:

455-27 Protection of Existing Structures.

~~Protect existing structures in accordance with 455-1.1. Also, if not otherwise provided in the Plans, evaluate the need for, design, and provide all reasonable precautionary features to prevent damage, including, but not limited to, the installation of sheet piling, shoring as necessary, maintenance of the water table beneath such structures as nearly as practical to existing conditions, and monitoring and controlling vibrations from construction activities including driving of sheeting or from blasting.~~ *Protect existing structures in accordance with Section 108.*

[dt1]

ARTICLE 455-36 is deleted and the following substituted:

455-36 Method of Measurement.

~~455-36.1 Protection of Existing Structures: The quantity to be paid for, when included in the Contract Documents, will be at the Contract lump sum price.~~

455-36.21 Dewatering: The quantity to be paid for will be at the Contract unit price for each footing excavation, only at locations authorized by the Engineer and acceptably dewatered.

455-36.32 Excavation: No separate payment will be made for backfill or will separate payment be made for excavation above bottom of footing elevation. The cost of this work will be included in the Contract unit price for concrete (substructure). For footings with excavation (over-excavation) below the bottom of the footing elevation shown in the Plans, the cost of this excavation, backfilling, and compaction will be included in the Contract unit price for excavation for structures. The pay quantity will be the volume in cubic yards bounded by vertical planes 12 inches outside of the limits of the footing and parallel thereto and extending from the bottom of the footing elevation to the authorized bottom of over-excavation or within the pay limits shown in the Plans. If the elevation of a footing as shown in the Plans is changed to a higher or lower elevation, the Engineer will not consider such change as a material change to the original Contract Documents, a waiver of any condition of the Contract, or an invalidation of any of the provisions of the Contract.

455-36.43 Reinforcing Steel: The quantity to be paid for will be the total weight, in pounds, determined as described in Section 415.

455-36.54 Concrete: The quantity to be paid for will be the volume of the classes shown in the Plans, in cubic yards, determined as described in Section 400.

ARTICLE 455-37 is deleted and the following substituted:

455-37 Basis of Payment.

~~455-37.1 Protection of Existing Structures: When separate payment for protection of existing structures is provided, price and payment will be full compensation for all work necessary to evaluate the need for, design of, and to provide the necessary features to protect existing structures, including all cost of work shown in the Plans or described herein for protection of existing structures.~~

~~When a separate payment for protection of existing structures is not provided, the cost of this work will be included in the cost of the structure.~~

455-37.21 Dewatering: Price and payment will be full compensation for all work related to the successful dewatering of footings, including installing, maintaining, and monitoring piezometer wells. Dewatering will be considered Unforeseeable Work when the Engineer determines that dewatering is required and the Plans do not include a dewatering item.

455-37.32 Excavation: Price and payment will be full compensation for all work related to over-excavating below the bottom of footing elevation, backfill, and compaction as specified.

455-37.43 Reinforcing Steel: Price and payment will be full compensation for all work required to furnish and place the steel as shown in the Plans and as specified herein.

455-37.54 Concrete: Price and payment will be full compensation for all work required to construct footings and seals as shown in the Plans and described herein.

No separate payment will be made for sheeting and shoring required for excavation and footing construction except when a separate pay item for sheeting and shoring is

included in the Plans. The cost of all work not specifically mentioned in the other footing items will be included in the price per cubic yard for substructure concrete.

455-37.65 Payment Items: Payment will be made under:

- Item No. 125- 1- Excavation For Structures - per cubic yard.
- Item No. 400- 2- Class II Concrete - per cubic yard.
- Item No. 400- 3- Class III Concrete - per cubic yard.
- Item No. 400- 4- Class IV Concrete - per cubic yard.
- Item No. 400- 91- Dewatering For Spread Footings - each.
- Item No. 415- 1- Reinforcing Steel - per pound.
- ~~Item No. 455- 18- Protection of Existing Structures - lump sum.~~

SUBARTICLE 455-39.2 is deleted and the following substituted:

455-39.2 Protection of Existing Structures: ~~Protect existing structures in accordance with 455-1.1.~~ *Protect existing structures in accordance with Section 108.*

ARTICLE 455-47 is deleted and the following substituted:

455-47 Auger Cast Pile Installation Plan.

At the preconstruction conference, but no later than 30 days before auger cast pile construction begins, submit an auger cast pile installation plan for approval by the Engineer. Provide the following detailed information on the plan:

1. Name and experience record of auger cast pile superintendent or foreman in responsible charge of auger cast pile operations. Place a person in responsible charge of day to day auger cast pile operations who possesses satisfactory prior experience constructing -auger cast piles similar to those described in the Contract ~~documents~~*Documents*. The Engineer will give final approval subject to satisfactory performance in the field.
2. List and size of the proposed equipment, including cranes, augers, concrete pumps, mixing equipment etc., including details of proposed pump calibration procedures.
3. Details of pile installation methods.
4. Details of reinforcement placement and method of centering in pile, including details of all temporary supports for reinforcement, anchor bolts, precast columns, etc.
5. Details of how and by whom the grout volumes will be determined, monitored and documented.
6. Required submittals, including shop drawings and concrete grout design mixes.
7. Other information shown in the Plans or requested by the Engineer.

ARTICLE 455-49 is deleted and the following substituted:

455-49 Method of Measurement.

~~**455-49.1 Protection of Existing Structures:** The quantity to be paid for, when included in the Contract Documents, will be at the Contract lump sum price.~~

~~455-49.2 Auger Cast Pile:~~ The quantity to be paid for *auger cast pile* will be at the Contract unit price per foot between tip and required pile top elevations for all piles completed and accepted.

ARTICLE 455-50 is deleted and the following substituted:

455-50 Basis of Payment.

~~455-50.1 Protection of Existing Structures: When separate payment for protection of existing structures is provided, price and payment will be full compensation for all work necessary to evaluate the need for, design of, and to provide the necessary features to protect the existing structures, including all cost of work shown in the Plans or described herein for protection of existing structures.~~

~~When a separate payment for protection of existing structures is not provided, the cost of settlement monitoring will be included in the cost of the structure. Work ordered by the Engineer for protection of existing structures, other than settlement monitoring, will be paid for as Unforeseeable Work.~~

455-50.21 Auger Cast Piles: Price and payment will be full compensation for all labor, materials, and incidentals for construction of auger cast piles of the sizes and depths indicated on the Contract drawings or otherwise required under this Contract. Price and payment will also include the removal and proper disposal off site of all spoil from the auger operation and all excess grout displaced from the auger hole, unless otherwise approved by the Engineer. Work to remove and replace unsuitable material when necessary as specified in 455-44 will be considered Unforeseeable Work.

455-50.32 Payment Items: Payment will be made under:

~~Item No. 455-18 Protection of Existing Structures - lump sum.~~

Item No. 455-112- Auger Grouted Piles - per foot.

ORIGINATION FORM

Date: **8/26/2014**

Originator: **Juan Castellanos**

Contact Information: **Juan Castellanos 850-414-4276**

Specification Title: **Structures Foundations**

Specification Section, Article, or Subarticle Number: **455**

Why does the existing language need to be changed? **A new section 108 is being created simultaneously with these 455 changes to address Protection of Existing Structures for any type of work in FDOT. This new section will address protection of existing structures during any construction operation including roadway compaction and other work that is not related to foundation construction. Changes in 455 are required to avoid conflicts and redundancy in the specification.**

Summary of the changes: **Delete language that is addressed now in new section 108.**

Are these changes applicable to all Department jobs? **Yes**

If not, what are the restrictions?

Will these changes result in an increase or decrease in project costs? **No**

If yes, what is the estimated change in costs?

With who have you discussed these changes? **Construction, Design and Specifications offices**

What other offices will be impacted by these changes? **None**

Are changes needed to the PPM, Design Standards, SDG, CPAM or other manual? **Yes; PPM changes are being performed to address protection of existing structures.**

Is a Design Bulletin, Construction Memo, or Estimates Bulletin needed? **No**

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

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