EXPECTED IMPLEMENTATION JULY 2022

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MILLING OF EXISTING ASPHALT PAVEMENT
(REV 1-22-21) (FA 1-25-22) (7-22)

SUBARTICLE 327-3.1 is deleted and the following substituted:

327-3 Construction.

327-3.1 General: Remove the existing raised pavement markers (RPMs) before milling. Include the cost of removing existing RPMs in the price for milling.

When milling to improve rideability or cross slope, remove the existing pavement to the average depth specified in the Plans, in a manner that will restore the pavement surface to a uniform cross slope and longitudinal profile. The Engineer may require the use of a stringline to ensure maintaining the proper alignment.

Establish the longitudinal profile of the milled surface in accordance with the milling plans. Ensure the final cross slope of the milled surface parallels the surface cross slope shown in the Plans or as directed by the Engineer. Establish the cross slope of the milled surface by a second sensing device near the outside edge of the cut or by an automatic cross slope control mechanism. The Plans may waive the requirement of automatic grade or cross slope controls where the situation warrants such action.

Operate the milling machine to minimize the amount of dust being emitted. The Engineer may require prewetting of the pavement.

Provide positive drainage of the milled surface and the adjacent pavement. Perform this operation on the same day as milling. Milling operations are restricted to only that area which can be milled and resurfaced with the first lift of asphalt within the same work operation and prior to opening to traffic.

Before opening an area which has been milled to traffic, sweep the pavement and gutters with a power broom or other approved equipment to remove, to the greatest extent practicable, fine material which will create dust under traffic. Sweep in a manner to minimize the potential for creation of a traffic hazard and to minimize air pollution. Do not sweep or allow milled asphalt into inlets.

Sweep the milled surface with a power broom before placing asphalt concrete.

In urban and other sensitive areas, use a street sweeper or other equipment capable of removing excess milled materials and controlling dust. Obtain the Engineer's approval of such equipment, contingent upon its demonstrated ability to do the work.

Perform the sweeping operation immediately after the milling operations or as directed by the Engineer.

STRUCTURES FOUNDATIONS (DESIGN BUILD).
(REV 12-22-21) (FA 1-25-22) (7-22)

SUBARTICLE 455-2.10 is deleted and the following substituted:

455-2.10 Disposition of Tested Piles/Shafts: After completing testing, cut off the tested piles/shafts, which are not to be incorporated into the final structure, and any reaction piles/shafts at an elevation 24 inches below the finished graded surface. Take ownership of the cut-offs and provide areas for their disposal.

SUBARTICLE 455-5.1 is deleted and the following substituted:

455-5 General Construction Requirements.

455-5.1 Predrilling of Pile Holes: Predrilled pile holes are either starter holes to the depth described in this Subarticle or holes drilled through embankment/fill material down to the natural ground at no additional cost to the Department. When using low displacement steel piling such as structural shapes, drive them through the compacted fill without the necessity of drilling holes through the fill except when the requirements for predrilling are shown in the Plans. When using concrete or other high displacement piles, drill pile holes through fill, new or existing, to at least the elevation of the natural ground. Use the range of drill diameters listed below for square concrete piles.

12 inch square piles	15 to 17 inches
14 inch square piles	18 to 20 inches
18 inch square piles	22 to 26 inches
20 inch square piles	24 to 29 inches
24 inch square piles	30 to 34 inches
30 inch square piles	36 to 43 inches

For other pile sizes, use the diameter of the drills shown in the Plans or accepted by the Engineer. Accurately drill the pile holes with the hole centered over the Plan location of the piling. Maintain the location and vertical alignment within the tolerances allowed for the piling.

For predrilled holes required through rock or other hard (i.e. debris, obstructions, etc.) materials that may damage the pile during installation, predrill hole diameters approximately 2 inches larger than the largest dimension across the pile cross-section. Fill the annular space around the piles as described in 455-5.10.1 with clean A-3 sand or sand meeting the requirements of 902-3.3.

In the setting of permanent and test piling, the Contractor may initially predrill holes to a depth up to 20% of the test pile length, unless required otherwise by the Engineer or the plans. Predrill holes for production piles in the same manner as the test piles. When installing piles in compacted fill, predrill the holes to the elevation of the natural ground. With prior written authorization from the Engineer, the Contractor may

predrill holes to greater depths to minimize the effects of vibrations on existing structures adjacent to the work or for other reasons the Contractor proposes.

SUBARTICE 455-5.9 is deleted and the following substituted:

455-5.9 Penetration Requirements: Measure the penetration of piles from the elevation of the natural ground, the existing surface, the deepest scour elevation shown in the Pile Data Table, or the bottom of excavation, whichever is lowest. When the Contract Documents show a minimum pile tip elevation, drive the tip of the pile to this minimum elevation. The Engineer will accept the bearing of a pile only if the Contractor achieves the required bearing when the tip of the pile is at or below the specified minimum tip elevation and below the bottom of the preformed or predrilled pile hole.

When the Plans do not show a minimum tip elevation, ensure that the penetration is at least 10 feet into firm bearing material or at least 20 feet into soft material unless otherwise permitted by the Engineer. The Engineer may accept a penetration between 15 feet and 20 feet when there is an accumulation of five consecutive feet or more of firm bearing material. Firm bearing material is any material offering a driving resistance greater than or equal to 30 tons per square foot of gross pile area as determined by the Dynamic Load Testing (455-5.12.4). Soft material is any material offering less than these resistances. The gross pile area is the actual pile tip cross-sectional area for solid concrete piles, the product of the width and depth for H piles, and the area within the outside perimeter for pipe piles and voided concrete piles.

Do not drive piles beyond practical refusal. To meet the requirements in this Subarticle, provide penetration aids, such as jetting or preformed pile holes, when piles cannot be driven to the required penetration without reaching practical refusal.

ARTICLE 455-18 is deleted and the following substituted:

455-18 Method Shafts.

The Engineer will use the construction of method shafts (test holes) to determine if the methods and equipment used by the Contractor are sufficient to produce a shaft excavation meeting the requirements of the Contract Documents. During method shaft excavations, the Engineer will evaluate the ability to control dimensions and alignment of excavations within tolerances; to seal the casing into impervious materials; to control the size of the excavation under caving conditions by the use of slurry or by other means; to properly clean the completed shaft excavation; to construct excavations in open water areas; to determine the elevation of ground water; to place reinforcing steel and concrete meeting the requirements of these Specifications within the prescribed time frame; and to execute any other necessary construction operation. Revise the methods and equipment as necessary at any time during the construction of the method shaft when unable to satisfactorily carry out any of the necessary operations described above or when unable to control the dimensions and alignment of the shaft excavation within tolerances.

Successfully construct method shafts out of permanent position at the location shown in the Plans. Ensure the diameter and depth of the method shafts are the same diameter and maximum depth as the production drilled shafts. When there are shafts both on land and in water, successfully construct a method shaft for each condition. When there is more than one size of drilled shaft, perform a method shaft for the largest diameter for each condition. Reinforce the method shaft unless otherwise directed in the Contract Documents. Conduct integrity tests on each shaft, using both cross-hole sonic logging and TITDS test methods. Fill the method shaft with concrete in the same manner production drilled shafts will be constructed. Backfill method shafts which are not filled with concrete with suitable soil in a manner satisfactory to the Engineer. Leave concreted method shafts in place, except remove the top of the shaft to a depth of 2 feet below the finished graded surface. Use the same procedure for shafts constructed in water. Restore the disturbed areas at the sites of method shafts drilled out of position as nearly as practical to their original condition. When the Contractor fails to demonstrate to the Engineer the adequacy of his methods or equipment, and alterations are required, make appropriate modifications and provide additional method shafts at no expense to the Department. Make no changes in methods or equipment after initial acceptance without the consent of the Engineer.

A separate method shaft is not required for drilled shafts installed under sign, signal, lighting and ITS structures. The first production shaft will serve as a method shaft for determining acceptability of the installation method.

ARTICLE 455-31 is deleted and the following substituted:

455-31 Compaction and Density Requirements.

Compact the bottom of the excavation with suitable equipment. Compact the soil beneath footing excavation (whether dug to the bottom of footing or over-excavated) to a density not less than 95% of the maximum density as determined by FM 1-T180 for a minimum depth of 2 feet below the bottom of the excavation or to the depth shown in the Plans before backfilling begins. For every 500 feet of excavation or isolated compaction operation, perform two Quality Control (QC) density tests with a 12 inch depth of measurement: one QC density test with the gauge placed at an elevation of 1 foot below the bottom of the excavation and one QC density test with the gauge placed at the bottom of the excavation in accordance with FM 1-T238. Compact the backfill in footing excavations which have been over-excavated to a density not less than 95% of the maximum density as determined by FM 1-T180. Ensure that the maximum lift thickness after compaction does not exceed 6 inches. For every 500 feet of backfill or isolated compaction operation, perform at least one QC density test. The Engineer will conduct one density verification test per every four QC test with a minimum of one density test below the bottom of the excavation and one density test in the backfill. Verification comparison criteria and resolution procedures will be in accordance with 120-10.4 except replace FM 1-T99, with FM 1-T180.

For compaction, use a suitable heavy vibratory roller with a static drum weight of at least 4 tons. Compact each lift to the required density. Also, compact the final lift

below the footing with a suitable sled vibratory compactor to remove any upper disturbance caused by the drum roller. When conditions require use of smaller compaction equipment, obtain the Engineer's acceptance for the equipment, and reduce the lift thickness to achieve the required density.

Perform backfilling to the existing surface or finished graded surface, as required by the Plans in the immediate vicinity by suitable mechanical compactors weighing less than 1,000 pounds. The Contractor may compact backfill located more than 15 feet away from the exterior periphery of the footing with heavier compactors. Do not place backfill on the footing until the Engineer has given permission and until the concrete is at least seven days old.

When the plans indicate spread footing abutments on mechanically stabilized earth (MSE) walls, place and compact the backfill material underneath the footing in accordance with the requirements of 548-8.5. Meet the density requirements of 548-9.4.

SECTION 1
DEFINITIONS AND TERMS
(REV 11-10-21)

ARTICLE 1-3 is deleted and the following substituted:

1-3 Definitions.

The following terms, when used in the Contract Documents, have the meaning described

Advertisement.

The public announcement, as required by law, inviting bids for work to be performed or materials to be furnished, usually issued as “Notice to Contractors,” or “Notice to Bidders.”

Article.

The numbered prime subdivision of a Section of these Specifications.

Bidder.

An individual, firm, or corporation submitting a proposal for the proposed work.

Bridge.

A structure, including supports, erected over a depression or over an obstruction such as water, highway or railway, or for elevated roadway, for carrying traffic or other moving loads, and having a length, measured along the center of the roadway, of more than 20 feet between the inside faces of end supports. A multiple-span box culvert is considered a bridge, where the length between the extreme ends of the openings exceeds 20 feet.

Calendar day.

Every day shown on the calendar, ending and beginning at midnight.

Contract.

The term “Contract” means the entire and integrated agreement between the parties thereunder and supersedes all prior negotiations, representations, or agreements, either written or oral. The Contract Documents form the Contract between the Department and the Contractor setting forth the obligations of the parties thereunder, including, but not limited to, the performance of the Work and the basis of payment.

Contract Bond.

The security furnished by the Contractor and the surety as a guaranty that the Contractor shall fulfill the terms of the Contract and pay all legal debts pertaining to the construction of the project.

Contract Claim (Claim).

A written demand submitted to the Department by the Contractor in compliance with 5-12.3 seeking additional monetary compensation, time, or other adjustments to the Contract, the entitlement or impact of which is disputed by the Department.

Contract Documents.

The term “Contract Documents” includes: Advertisement for Proposal, Proposal, Certification as to Publication and Notice of Advertisement for Proposal, Appointment of Agent by Nonresident Contractors, Noncollusion Affidavit, Warranty Concerning Solicitation of the Contract by Others, Resolution of Award of Contract, Executed Form of Contract, Performance Bond and Payment Bond, Specifications, Plans (including revisions thereto issued during construction), Estimated Quantities Report, Standard Plans, Addenda, or other information mailed or otherwise transmitted to the prospective bidders prior to the receipt of bids, work orders and supplemental agreements, all of which are to be treated as one instrument whether or not set forth at length in the form of contract.

Note: As used in Sections 2 and 3 only, Contract Documents do not include work orders, and supplementary agreements. As used in Section 2 only, Contract Documents also do not include Resolution of Award of Contract, Executed Form of Contract, and Performance and Payment Bond.

Contract Letting.

The date that the Department opened the bid proposals.

Contract Time.

The number of calendar days allowed for completion of the Contract work, including authorized time extensions.

Contractor.

The individual, firm, joint venture, or company contracting with the Department to perform the work.

Contractor’s Engineer of Record.

A Professional Engineer registered in the State of Florida, other than the Engineer of Record or his subcontracted consultant, who undertakes the design and drawing of components of the permanent structure as part of a redesign or Cost Savings Initiative Proposal, or for repair designs and details of the permanent work. The Contractor’s Engineer of Record may also serve as the Specialty Engineer.

The Contractor’s Engineer of Record must be an employee of a pre-qualified firm. The firm shall be pre-qualified in accordance with the Rules of the Department of Transportation, Chapter 14-75. Any Corporation or Partnership offering engineering services must hold a Certificate of Authorization from the Florida Department of Business and Professional Regulation.

As an alternate to being an employee of a pre-qualified firm, the Contractor’s Engineer of Record may be a Department-approved Specialty Engineer. For items of the permanent work declared by the State Construction Office to be ”major” or “structural”,

the work performed by a Department-approved Specialty Engineer must be checked by another Department-approved Specialty Engineer. An individual Engineer may become a Department-approved Specialty Engineer if the individual meets the Professional Engineer experience requirements set forth within the individual work groups in Chapter 14-75, Rules of the Department of Transportation, Florida Administrative Code. Department-approved Specialty Engineers are listed on the State Construction Website. Department-approved Specialty Engineers will not be authorized to perform redesigns or Cost Savings Initiative Proposal designs of items fully detailed in the Plans.

Controlling Work Items.

The activity or work item on the critical path having the least amount of total float. The controlling item of work will also be referred to as a Critical Activity.

Culverts.

Any structure not classified as a bridge that provides an opening under the roadway.

Delay.

Any unanticipated event, action, force or factor which extends the Contractor's time of performance of any controlling work item under the Contract. The term "delay" is intended to cover all such events, actions, forces or factors, whether styled "delay", "disruption", "interference", "impedance", "hindrance", or otherwise, which are beyond the control of and not caused by the Contractor, or the Contractor's subcontractors, materialmen, suppliers or other agents. This term does not include "extra work".

Department.

State of Florida Department of Transportation.

Developmental Specification.

See definition for Specifications.

Engineer.

The Director, Office of Construction, acting directly or through duly authorized representatives; such representatives acting within the scope of the duties and authority assigned to them.

Note: In order to avoid cumbersome and confusing repetition of expressions in these Specifications, it is provided that whenever anything is, or is to be done, if, as, or, when, or where "acceptable, accepted, approval, approved, authorized, condemned, considered necessary, contemplated, deemed necessary, designated, determined, directed, disapproved, established, given, indicated, insufficient, ordered, permitted, rejected, required, reserved, satisfactory, specified, sufficient, suitable, suspended, unacceptable, or unsatisfactory," it shall be understood as if the expression were followed by the words "by the Engineer," "to the Engineer," or "of the Engineer."

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Engineer of Record.

The Professional Engineer or Engineering Firm registered in the State of Florida that develops the criteria and concept for the project, performs the analysis, and is responsible for the preparation of the Plans and Specifications. The Engineer of Record may be Departmental in-house staff or a consultant retained by the Department.

The Contractor shall not employ the Engineer of Record as the Contractor's Engineer of Record or as a Specialty Engineer.

Equipment.

The machinery and equipment, together with the necessary supplies for upkeep and maintenance thereof, and all other tools and apparatus necessary for the construction and acceptable completion of the work.

Estimated Quantities Report.

The Estimated Quantities Report contains pay item and quantity information for the project. When the Plans do not adequately describe quantity related information, refer to the Estimated Quantities Report.

Extra Work.

Any "work" which is required by the Engineer to be performed and which is not otherwise covered or included in the project by the existing Contract Documents, whether it be in the nature of additional work, altered work, deleted work, work due to differing site conditions, or otherwise. This term does not include a "delay".

Federal, State, and Local Rules and Regulations.

The term "Federal, State and Local Rules and Regulations" includes: any and all Federal, State, and Local laws, bylaws, ordinances, rules, regulations, orders, permits, or decrees including environmental laws, rules, regulations, and permits.

Highway, Street, or Road.

A general term denoting a public way for purposes of vehicular travel, including the entire area within the right-of-way.

Holidays.

Days designated by the State Legislature or Cabinet as holidays, which include, but are not limited to, New Year's Day, Martin Luther King's Birthday, Memorial Day, Independence Day, Labor Day, Veterans' Day, Thanksgiving Day and the following Friday, and Christmas Day.

Inspector.

An authorized representative of the Engineer, assigned to make official inspections of the materials furnished and of the work performed by the Contractor.

Laboratory.

The official testing laboratory used by the Department.

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Major Item of Work.
Any item of work having an original Contract value in excess of 5% of the original Contract amount.

Materials.
Any substances to be incorporated in the work under the Contract.

Median.
The portion of a divided highway or street separating the traveled ways for traffic moving in opposite directions.

Plans.
The plans sheets and digital models (2D and 3D) provided as contract documents, including reproductions thereof, showing the location, character, dimensions, and details of the work.
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Proposal (Bid, Bid Proposal).
The offer of a bidder, on the prescribed form, to perform the work and to furnish the labor and materials at the prices quoted.

Proposal Form.
The official form or the electronically generated bid item sheets on which the Department requires formal bids to be prepared and submitted for the work.

Proposal Guaranty.
The security furnished by the bidder as guaranty that the bidder will enter into the Contract for the work if the Department accepts the proposal.

Request for Correction.
A document initiated by the Contractor proposing a method for correction of work that is not in compliance with the Contract Documents. The Request for Correction is submitted to the Engineer for review and disposition.

Request for Information.
A document initiated by the Contractor that is submitted to the Engineer for interpretation of a Contract Document provision, the meaning of which is not clear to the Contractor. The Request for Information is submitted to the Engineer for review and disposition.

Request for Modification.
A document initiated by the Contractor requesting to modify the Contract Documents, that is submitted to the Engineer for review and disposition.

Right-of-Way.
The land that the Department has title to, or right of use, for the road and its structures and appurtenances, and for material pits furnished by the Department.

Roadbed.
The portion of the roadway occupied by the subgrade and shoulders.

Roadway.
The portion of a highway within the limits of construction.

Secretary.
Secretary of Transportation, State of Florida Department of Transportation, acting directly or through an assistant or other representative authorized by him; the chief officer of the Department of Transportation.

Section.
A numbered prime division of these Specifications.

Special Event.
Any event, including but not limited to, a festival, fair, run or race, motorcade, parade, civic activity, cultural activity, charity or fund drive, sporting event, or similar activity designated in the Contract Documents.

Special Provisions.
See definition for Specifications.

Specialty Engineer.
A Professional Engineer registered in the State of Florida, other than the Engineer of Record or his subcontracted consultant, who undertakes the design and drawing preparation of components, systems, or installation methods and equipment for specific temporary portions of the project work or for special items of the permanent works not fully detailed in the Plans and required to be furnished by the Contractor. The Specialty Engineer may also provide designs and details, repair designs and details, or perform Engineering Analyses for items of the permanent work declared by the State Construction Office to be “minor” or “non-structural”.

For items of work not specifically covered by the Rules of the Department of Transportation, a Specialty Engineer is qualified if he has the following qualifications:

1. Registration as a Professional Engineer in the State of Florida.
2. The education and experience necessary to perform the submitted design as required by the Florida Department of Business and Professional Regulation.

Specifications.
The directions, provisions, and requirements contained herein, together with all stipulations contained in the Contract Documents, setting out or relating to the method and manner of performing the work, or to the quantities and qualities of materials and labor to be furnished under the Contract.

Standard Specifications: "Standard Specifications for Road and Bridge Construction" an electronic book, applicable to all Department Contracts containing adopted requirements, setting out or relating to the method or manner of performing work, or to the quantities and qualities of materials and labor.

Supplemental Specifications: Approved additions and revisions to the Standard Specifications, applicable to all Department Contracts.

Special Provisions: Specific clauses adopted by the Department that add to or revise the Standard Specifications or supplemental specifications, setting forth conditions varying from or additional to the Standard Specifications applicable to a specific project.

Technical Special Provisions: Specifications, of a technical nature, prepared, signed, and sealed by an Engineer registered in the State of Florida other than the State Specifications Engineer or his designee, that are made part of the Contract as an attachment to the Contract Documents.

Developmental Specification: A specification developed around a new process, procedure, or material.

Standard Plans.

"Standard Plans for Road and Bridge Construction", an electronic book describing and detailing aspects of the Work. Where the term Design Standards appears in the Contract Documents, it will be synonymous with Standard Plans.

Standard Specifications.

See definition for Specifications.

State.

State of Florida.

Subarticle.

A headed and numbered subdivision of an Article of a Section of these Specifications.

Subgrade.

The portion of the roadbed immediately below the base course or pavement, including below the curb and gutter, valley gutter, shoulder and driveway pavement. The subgrade limits ordinarily include those portions of the roadbed shown in the Plans to be constructed to a design bearing value or to be otherwise specially treated. Where no limits are shown in the Plans, the subgrade section extends to a depth of 12 inches below the bottom of the base or pavement and outward to 6 inches beyond the base, pavement, or curb and gutter.

Substructure.

All of that part of a bridge structure below the bridge seats, including the parapets, backwalls, and wingwalls of abutments.

Superintendent.
The Contractor's authorized representative in responsible charge of the work.

Superstructure.
The entire bridge structure above the substructure, including anchorage and anchor bolts, but excluding the parapets, backwalls, and wingwalls of abutments.

Supplemental Agreement.
A written agreement between the Contractor and the Department, and signed by the surety, modifying the Contract within the limitations set forth in these Specifications.

Supplemental Specifications.
See definition for Specifications.

Surety.
The corporate body that is bound by the Contract Bond with and for the Contractor and responsible for the performance of the Contract and for payment of all legal debts pertaining thereto.

Technical Special Provisions.
See definition for Specifications.

Traveled Way.
The portion of the roadway for the movement of vehicles, exclusive of shoulders and bicycle lanes.

Unilateral Payment.
A payment of money made to the Contractor by the Department pursuant to Section 337.11(12), Florida Statutes (2009), for sums the Department determines to be due to the Contractor for work performed on the project, and whereby the Contractor by acceptance of such payment does not waive any rights the Contractor may otherwise have against the Department for payment of any additional sums the Contractor claims are due for the work.

Work.
All labor, materials and incidentals required to execute and complete the requirements of the Contract including superintendence, use of equipment and tools, and all services and responsibilities prescribed or implied.

Work Order.
A written agreement between the Contractor and the Department modifying the Contract within the limitations set forth in these Specifications. Funds for this agreement are drawn against the Initial Contingency Pay Item or a Contingency Supplemental Agreement.

Working Day.

Any calendar day on which the Contractor works or is expected to work in accordance with the approved work progress schedule.

SECTION 5
CONTROL OF THE WORK
(REV 11-10-21) (FA 1-25-22) (7-22)

SUBARTICLE 5-1.2 is deleted and the following substituted:

5-1.2 Department's Plans: Plans consist of general drawings showing such details as are necessary to give a comprehensive idea of the construction contemplated. In general, roadway plans will show alignment, profile grades, typical sections and general plan view details. Cross sectional views maybe provided or created from provided surface models. In general, structure plans will show in detail all dimensions of the work contemplated. When the structure plans do not show the dimensions in detail, they will show general features and such details as are necessary to give a comprehensive idea of the structure.

Elevations and B.M. Datum shown are North American Vertical Datum 1988 (NAVD-1988), National Geodetic Vertical Datum of 1929 (NGVD-1929), or other datum as noted in the Plans.

The existing surface is a combination of the following:

1. The natural ground or the original ground line,
2. The bottom of the existing pavement,
3. The bottom of existing features removed by clearing and grubbing,
4. The bottom of the existing base, if the base is to be removed,

The finished graded surface includes the completed grades of side slopes, unpaved shoulders, and the bottom of the base for flexible or rigid pavement.

ARTICLE 5-3 is deleted and the following substituted:

5-3 Conformity of Work with Contract Documents.

Perform all work and furnish all materials in reasonably close conformity with the lines, grades, models, dimensions, and material requirements, including tolerances, as specified in the Contract Documents.

In the event that the Engineer finds that the Contractor has used material or produced a finished product that is not in reasonably close conformity with the Contract Documents, but that the Contractor has produced reasonably acceptable work, the Engineer will determine if the Department will accept the work in place. In this event, the Engineer will document the basis of acceptance by Contract modification, which provides

for an appropriate reduction in the Contract price for such work or materials included in the accepted work as deemed necessary to conform to the determination based on engineering judgment.

In the event that the Engineer finds that the Contractor has used material or produced a finished product that is not in reasonably close conformity with the Contract Documents, and that the Contractor has produced an inferior or unsatisfactory product, the Contractor shall remove and replace or otherwise correct the work or materials at no expense to the Department.

For base and surface courses, the Department will allow the finished grade to vary as much as 0.1 foot from the grade shown in the Plans, provided that the Contractor's work meets all templates and straightedge requirements and contains suitable transitions.

SECTION 9
MEASUREMENT AND PAYMENT
(REV 11-10-21) (FA 1-25-22) (7-22)

SUBARTICLE 9-3.2.1 is deleted and the following substituted:

9-3.2.1 Error in Plan Quantity: As used in this Article, the term "substantial error" is defined as the smaller of (1) or (2) below:

1. a difference between the original plan quantity and final quantity of more than 5%,

2. a change in quantity which causes a change in the amount payable of more than $5,000.

On multiple job Contracts, changes made to an individual pay item due to substantial errors will be based on the entire Contract quantity for that pay item.

Where the pay quantity for any item is designated to be the original plan quantity, the Department will revise such quantity only in the event that the Department determines it is in substantial error. In general, the Department will determine such revisions by final measurement, plan calculations, or both, as additions to or deductions from plan quantities.

In the event that either the Department or the Contractor contends that the plan quantity for any item is in error and additional or less compensation is thereby due, the claimant shall submit, at their own expense, evidence of such in the form of acceptable and verifiable measurements or calculations. The Department will not revise the plan quantity solely on the basis of a particular method of construction that the Contractor selects. For earthwork items, the claimant must note any differences in the existing surfaces from that shown in the Plans that would result in a substantial error to the plan quantity, and must be properly documented by appropriate verifiable level notes, acceptable to both the Contractor and the Department, prior to disturbance of the existing surface by construction operations. The claimant shall support any claim based upon a substantial error for differences in the existing surface by documentation as provided above.

SECTION 125
EXCAVATION FOR STRUCTURES AND PIPE
(REV 11-10-21) (FA 1-25-22) (7-22)

SUBARTICLE 125-4.4 is deleted and the following substituted:

125-4.4 Pipe Trench Excavation: Excavate trenches for pipes to the elevation of the bottom of the pipe and to a width sufficient to provide adequate working room. Remove soil not meeting the classification specified as suitable backfill material in 125-8.3.2.2, to a depth of 4 inches below the bottom of the pipe elevation. Where the soils permit, ensure that the trench sides are vertical up to at least the mid-point of the pipe.

For pipe lines placed above the existing surface, place and compact the embankment, prior to excavation of the trench, to an elevation at least 2 feet above the top of the pipe and to a width equal to four pipe diameters, and then excavate the trench to the required grade.

For pipe trenches utilizing trench boxes, ensure that the trench box used is of sufficient width to permit thorough tamping of bedding material under and around the pipes as specified in 125-8.1.6.

Do not disturb the installed pipe and its embedment when moving trench boxes. Move the trench box carefully to avoid excavated wall displacement or damage. As the trench box is moved, fill any voids left by the trench box and continuously place and compact the backfill material adjacent to and all along the side of the trench box walls to fill any voids created by the trench box.

SUBARTICLE 125-5.1 is deleted and the following substituted:

125-5.1 General: Unless shown in the Plans, do not excavate outside of caissons, cribs, cofferdams, or sheet piling, and do not disturb the natural stream bed adjacent to the structure. If excavating or dredging at the site of the structure before sinking caissons, cribs, or cofferdams, complete the foundation and backfill all such excavations to the existing surface or other required elevation, with material satisfactory to the Engineer.

SUBARTICLE 125-8.1.3 is deleted and the following substituted:

125-8.1.3 Backfill Materials: Backfill to the existing surface or subgrade surface of openings made for structures, with a sufficient allowance for settlement. The Engineer may require that the material used for this backfill be obtained from a source entirely apart from the structure. Use only material accepted by the Engineer. Maintain a clearance of at least 1 foot of clean select soil between recycled concrete aggregate (RCA) and aluminum or metalized drainage pipe.

Do not allow heavy construction equipment to cross over culvert or storm sewer pipes until placing and compacting backfill material to the finished graded surface or to an elevation at least 4 feet above the crown of the pipe.

SECTION 145
GEOSYNTHETIC REINFORCEMENT
(REV 11-10-21) (FA 1-25-22) (7-22)

SUBARTICLE 145-4.3.1 is deleted and the following substituted:

145-4.3 Reinforced Foundations Constructed on Soft In-Situ Soils:

145-4.3.1 Preparation: For some applications involving reinforcement of soft insitu soils, the Engineer may require that some vegetation be left in place. If directed in the Plans or by the Engineer, cut trees to within 6 inches of the existing surface, and leave the stumps in place. Remove fallen trunks, limbs, etc. greater than 3 inches in diameter.

SUBARTICLE 145-8.1 is deleted and the following substituted:

145-8.1 Geosynthetic Reinforced Soil Slopes: The quantity to be paid for will be the plan quantity area, in square feet, of the projected vertical height of the slope face, measured from the top of slope to the finished graded surface at the toe of slope and from the beginning to end limits as shown in the Plans, regardless of the length or number of layers of geosynthetic within the reinforced volume and including any reinforcement required below the toe of slope elevation.

SECTION 160
STABILIZING
(REV 11-10-21) (FA 1-25-22) (7-22)

SUBARTICLE 160-3.1 is deleted and the following substituted:

160-3 Construction Methods.

160-3.1 General: Prior to the beginning of stabilizing operations, construct the area to be stabilized to an elevation such that, upon completion of stabilizing operations, the completed stabilized subgrade will conform to the lines and grades shown in the Plans. Prior to spreading any additive stabilizing material, bring the surface of the roadbed to a plane approximately parallel to the plane of the finished graded surface shown in the Plans.

Construct mainline pavement lanes, turn lanes, ramps, parking lots, concrete box culverts, retaining wall systems, shoulder-only areas, sidewalk, and shared

use path areas meeting the requirements of 120-8.1, except replace “embankment” with “subgrade”.

Isolated mixing operations will be considered as separate LOTs. Curb pads and shoulders compacted separately shall be considered separate LOTs. Isolated compaction operations will be considered as separate LOTs. For multiple phase construction, a LOT shall not extend beyond the limits of the phase.

SUBARTICLE 160-3.4.3 is deleted and the following substituted:

160-3.4.3 Finish Grading: Shape the completed stabilized subgrade to conform with the finished graded surface shown in the Plans. Check the subgrade using elevation stakes or other means approved by the Engineer.

SECTION 200
ROCK BASE (FA 1-25-22) (7-22)
(REV 11-10-21)

SUBARTICLE 200-6.1.1 is deleted and the following substituted:

200-6.1.1 Single Course Base: After spreading, scarify the entire surface, then shape the base to produce the required grade and cross slope, free of scabs and laminations, after compaction.

SUBARTICLE 200-6.1.2 is deleted and the following substituted:

200-6.1.2 Multiple Course Base: Clean the first course of foreign material, then blade and bring it to a surface cross slope approximately parallel to the finished base. Before spreading any material for the upper courses, allow the Engineer to make density tests for the lower courses to determine that the required compaction has been obtained. After spreading the material for the top course, scarify finish and shape its surface to produce the required grade and cross slope, free of scabs and laminations, after compaction.

ARTICLE 200-9 is deleted and the following substituted:

200-9 Calculations for Average Thickness of Base.

For bases that are not mixed in place, the Engineer will determine the average thickness from the measurements specified in 200-10.1, calculated as follows:

1. When the measured thickness is more than 1/2 inch greater than the design thickness shown on the typical section in the Plans, it will be considered as the design thickness plus 1/2 inch.

2. Average thickness will be calculated per typical section for the entire job as a unit.

3. Any areas of base left in place with no payment will not be included in the calculations.

4. Where it is not possible through borings to distinguish the base materials from the underlying materials, the thickness of the base used in the measurement will be the design thickness.

SECTION 230
LIMEROCK STABILIZED BASE
(REV 11-10-21) (FA 1-25-22) (7-22)

ARTICLE 230-4 is deleted and the following substituted:

230-4 Preparation of Roadbed.

Complete the area to be stabilized to the lines shown in the Plans and to a grade parallel to the finished elevation of the stabilized base, before adding the stabilizing material. Ensure that the elevation of the roadbed is such that the base will conform to the typical section upon completing the work. Dispose of any surplus excavated materials resulting from this work, as specified in 120-5.

SUBARTICLE 230-5.4 is deleted and the following substituted:

230-5.4 Shaping Surface: After mixing, shape the surface so it conforms to the grade and typical section shown in the Plans after compacting.

SECTION 285
OPTIONAL BASE COURSE
(REV 11-10-21) (FA 1-25-22) (7-22)

ARTICLE 285-1 is deleted and the following substituted:

285-1 Description.

Construct a base course composed of one of the optional materials shown on the typical sections.

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ARTICLE 285-3 is deleted and the following substituted:

285-3 Selection of Base Option.

The Plans will include typical sections indicating the various types of base construction (material and thickness) allowable.

When base options are specified in the Plans, use only those options. When base options are not specified, select one base option as allowed for each typical section shown in the Plans. Only one base option is permitted for each typical section. See Tables 285-1 and 285-2 for optional base materials, thickness and additional restrictions.

Notify the Engineer in writing of the base option selected for each typical section at least 45 calendar days prior to beginning placement of base material.

Table 285-1
Optional Base Groups 1 through 7

Base Materials	Base Group (Base Group Pay Item)						
	1 (701)	2 (702)	3 (703)	4 (704)	5 (705)	6 (706)	7 (707)
Limerock, LBR 100	4”	5”	5-1/2”	6”	7”	8”	8-1/2”
Cemented Coquina, LBR 100	4”	5”	5-1/2”	6”	7”	8”	8-1/2”
Shell Rock, LBR 100	4”	5”	5-1/2”	6”	7”	8”	8-1/2”
Bank Run Shell, LBR 100	4”	5”	5-1/2”	6”	7”	8”	8-1/2”
Recycled Concrete Aggregate, LBR 150(1)	4”	5”	5-1/2”	6”	7”	8”	8-1/2”
Graded Aggregate Base, LBR 100	4-1/2”	5-1/2”	6-1/2”	7-1/2”	8-1/2”	9”	10”
Type B-12.5	4” (3)	4” (3)	4” (3)	4” (3)	4-1/2”	5”	5-1/2”
B-12.5 and 4” Granular Subbase, LBR 100 (2)	-	-	-	-	-	-	-
RAP Base (4)	5” (4)	-	-	-	-	-	-

(1) Do not use on interstate roadways.
(2) The construction of both the subbase and Type B-12.5 will be bid and used as Optional Base. Granular subbases include limerock, cemented coquina, shell rock, bank run shell, recycled concrete aggregate and graded aggregate base. All subbase thicknesses are 4” minimum prior to adding the required prime coat.
(3) Based on minimum practical thickness.
(4) Only for use on non-limited access paved shoulders, shared use paths, or other non-traffic bearing applications.
(5) To be used for widening, three feet or less.

Table 285-1(continued)
Optional Base Groups 8 through 15

Base Materials	Base Group (Base Group Pay Item)							
	8 (708)	9 (709)	10 (710)	11 (711)	12 (712)	13 (713)	14 (714)	15 (715)
Limerock, LBR 100	9-1/2”	10”	11”	12”	12-1/2”	13-1/2” (5)	14” (5)	-

Table 285-1(continued)
Optional Base Groups 8 through 15

Base Materials	Base Group (Base Group Pay Item)							
	8 (708)	9 (709)	10 (710)	11 (711)	12 (712)	13 (713)	14 (714)	15 (715)
Cemented Coquina, LBR 100	9-1/2”	10”	11”	12”	12-1/2”	13-1/2” (5)	14” (5)	-
Shell Rock, LBR 100	9-1/2”	10”	11”	12”	12-1/2”	13-1/2” (5)	14” (5)	-
Bank Run Shell, LBR 100	9-1/2”	10”	11”	12”	12-1/2”	13-1/2” (5)	14 (5)	-
Recycled Concrete Aggregate, LBR 150 (1)	9-1/2”	10”	11”	12”	12-1/2”	13-1/2” (5)	14” (5)	-
Graded Aggregate Base, LBR 100	11”	12”	13”	14”	-	-	-	-
Type B-12.5	5-1/2”	6”	6-1/2”	7”	7-1/2”	8”	8-1/2”	9”
B-12.5 and 4” Granular Subbase, LBR 100 (2)	-	4”	4-1/2”	5”	5-1/2”	6”	6-1/2”	7”
RAP Base (4)	-	-	-	-	-	-	-	-

(1) Do not use on interstate roadways.
(2) The construction of both the subbase and Type B-12.5 will be bid and used as Optional Base. Granular subbases include limerock, cemented coquina, shell rock, bank run shell, recycled concrete aggregate and graded aggregate base. All subbase thicknesses are 4” minimum prior to adding the required prime coat.
(3) Based on minimum practical thickness.
(4) Only for use on non-limited access paved shoulders, shared use paths, or other non-traffic bearing applications.
(5) To be used for widening, three feet or less.

Table 285-2: Limited Use Optional Base Groups(1)

Base Materials	Base Group (Base Group Pay Item)							
	101 (701)	102 (702)	103 (703)	104 (704)	105 (705)	106 (706)	107 (707)	108 (708)
Limerock Stabilized, LBR 70	5”	6-1/2””	8”	9”	10”	11”	12-1/2”	-
Shell, LBR 70	5”	6-1/2”	8”	9”	10”	11”	12-1/2”	-
Shell Stabilized, LBR 70	7”	8-1/2”	9-1/2”	10-1/2”	12”	-	-	-
Sand-Clay, LBR 75	5”	6-1/2”	8”	9”	10”	11”	12-1/2”	-
Soil Cement (300 psi) (Plant Mixed)	5”	5-1/2”	6-1/2”	7-1/2”	8-1/2”	9”	10”	11”
Soil Cement (300 psi) (Road Mixed)	5”	5-1/2”	6-1/2”	7-1/2”	8-1/2”	-	-	-
Soil Cement (500 psi) (Plant Mixed)	4” (2)	4”	5”	5-1/2”	6”	7”	7-1/2”	8-1/2”

(1) Use only when specified in the Plans.

Table 285-2: Limited Use Optional Base Groups[1]								
Base Materials	Base Group (Base Group Pay Item)							
	101 (701)	102 (702)	103 (703)	104 (704)	105 (705)	106 (706)	107 (707)	108 (708)
(2) Based on minimum practical thicknesses.								

ARTICLE 285-7 is deleted and the following substituted:

285-7 Calculation of Average Thickness of Base.

For bases that are not mixed in place, the Engineer will determine the average thickness from the measurements specified in 285-6.1, calculated as follows:

1. When the measured thickness is more than 1/2 inch greater than the design thickness shown on the typical section in the Plans, it will be considered as the design thickness plus 1/2 inch.

2. Average thickness will be calculated per typical section for the entire job as a unit.

3. Any areas of base left in place with no payment will not be included in the calculations.

4. Where it is not possible through borings to distinguish the base materials from the underlying materials, the thickness of the base used in the measurement will be the design thickness.

5. For Superpave asphalt base course, the average spread rate of each course shall be constructed in compliance with 234-8.

ARTICLE 285-9 is deleted and the following substituted:

285-9 Basis of Payment.

Price and payment will be full compensation for all work specified in this Section, including tack coat between base layers, prime coat, cover material for prime coat, bituminous material used in bituminous plant mix, and cement used in soil-cement.

For superpave asphalt base course, a pay adjustment based upon the quality of the material will be applied in accordance with 334-8.

Where the Plans include a typical section which requires the construction of an asphalt base only, price adjustments for bituminous material provided for in 9-2.1.2 will apply to that typical section. For typical sections which permit the use of asphalt or other materials for construction of an optional base, price adjustments for bituminous material provided for in 9-2.1.2 will not apply.

Payment will be made under:

Item No. 285- 7- Optional Base - per square yard.

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SECTION 286
DRIVEWAY BASE
(REV 11-10-21) (FA 1-25-22) (7-22)

ARTICLE 286-4 is deleted and the following substituted:

286-4 Spreading, Compacting, and Finishing Base.

Uniformly spread base material over the prepared area to a depth which will, upon completion of compaction and finishing, result in driveway base conforming with the specified lines and elevations. Then, strike off the base material to a plane paralleling the finished surface, and compact it in a manner similar to that used in the construction of roadway base. The Engineer will not require any specific density.

Finish the surface to the specified grade and cross slope.

SECTION 327
MILLING OF EXISTING ASPHALT PAVEMENT
(REV 11-10-21) (FA 1-25-22) (7-22)

SUBARTICLE 327-3.1 is deleted and the following substituted:

327-3 Construction.

327-3.1 General: Remove the existing raised pavement markers (RPMs) before milling. Include the cost of removing existing RPMs in the price for milling.

When milling to improve rideability or cross slope, remove the existing pavement to the average depth specified in the Plans, in a manner that will restore the pavement surface to a uniform cross slope and longitudinal profile. The Engineer may require the use of a stringline to ensure maintaining the proper alignment.

Establish the longitudinal profile of the milled surface in accordance with the milling plans. Ensure the final cross slope of the milled surface parallels the surface cross slope shown in the Plans or as directed by the Engineer. Establish the cross slope of the milled surface by a second sensing device near the outside edge of the cut or by an automatic cross slope control mechanism. The Plans may waive the requirement of automatic grade or cross slope controls where the situation warrants such action.

Operate the milling machine to minimize the amount of dust being emitted. The Engineer may require prewetting of the pavement.

Provide positive drainage of the milled surface and the adjacent pavement. Perform this operation on the same day as milling. Pave all milled surfaces no later than the day after the surface was milled.

If traffic is to be maintained on the milled surface before the placement of the new asphalt concrete, provide suitable transitions between areas of varying thickness to create a smooth longitudinal riding surface. Control milling operations to produce a pattern of striations and a texture that provide an acceptable riding surface.

Before opening an area which has been milled to traffic, sweep the pavement and gutters with a power broom or other approved equipment to remove, to the greatest extent practicable, fine material which will create dust under traffic. Sweep in a manner to minimize the potential for creation of a traffic hazard and to minimize air pollution. Do not sweep or allow milled asphalt into inlets.

Sweep the milled surface with a power broom before placing asphalt concrete.

In urban and other sensitive areas, use a street sweeper or other equipment capable of removing excess milled materials and controlling dust. Obtain the Engineer's approval of such equipment, contingent upon its demonstrated ability to do the work.

Perform the sweeping operation immediately after the milling operations or as directed by the Engineer.

SECTION 330
HOT MIX ASPHALT -
GENERAL CONSTRUCTION REQUIREMENTS
(REV 11-10-21) (FA 1-25-22) (7-22)

SUBARTICLE 330-5.2.1 is deleted and the following substituted:

330-5.2 Asphalt Paver:

330-5.2.1 General: Provide a self-propelled asphalt paver that can be steered, and is equipped with a receiving and distribution hopper and a mechanical screed. Use a mechanical screed capable of adjustment to regulate the depth of material spread and to produce the desired cross slope.

When asphalt mix is placed in windrows, operate windrow pickup equipment so substantially all of the mixture deposited on the roadbed is picked up and loaded into the paver. Prevent the windrow pickup equipment from contaminating the mixture.

SECTION 339
MISCELLANEOUS ASPHALT PAVEMENT
(REV 11-10-21) (FA 1-25-22) (7-22)

ARTICLE 339-3 is deleted and the following substituted:

339-3 Foundation and Soil Treatment.

Shape the soil in areas where pavement is to be constructed, to a surface true to the lines, grades and typical sections shown in the Plans. Compact the soil to a firm state.

Immediately before placing the pavement, uniformly apply a pre-emergent herbicide in accordance with the requirements of 7-1.7, to the foundation soil. Ensure that

the herbicide carries an approved label for use under paved surfaces, and that herbicide is applied in accordance with directions on the label.

Prevent damage to any adjacent vegetation during herbicide application. Replace, at no expense to the Department, any plants damaged as the result of soil treatment outside designated areas.

SECTION 350
CEMENT CONCRETE PAVEMENT
(REV 11-10-21) (FA1-25-22) (7-22)

SUBARTICLE 350-15.1 is deleted and the following substituted:

350-15 Thickness Determinations.

350-15.1 General: After completing the concrete pavement, including any corrective work to meet ride requirement, determine the thickness by core boring or non-destructive testing. The Engineer will select the locations for testing and make the determination of thickness. Sample locations will be taken at various offsets from the centerline such that each test represents an area not exceeding 2,500 square yards. Provide traffic control, non-destructive equipment, coring equipment, and operator to obtain the samples.

SECTION 353
CONCRETE PAVEMENT SLAB REPLACEMENT
(REV 11-10-21) (FA 1-25-22) (7-22)

ARTICLE 353-7 is deleted and the following substituted:

353-7 Placing, Striking Off, Consolidating and Finishing Concrete.

The requirements of Section 350 are applicable to this Section.

Perform straightedging while the concrete is still in plastic state after floating is completed and the excess water removed. Furnish and operate a 10 foot straightedge meeting the requirements of Section 350. Hold the straightedge in successive positions parallel to the road centerline, in contact with the surface, testing until the replacement slab is straight edged from one side to the other. Advance along the road in successive stages of not more than one-half the length of the straightedge. Fill any depressions immediately with freshly mixed concrete, consolidate, strike-off, and refinish. Cut down and refinish any high areas. Continue straightedge testing and surface correction until the entire surface conforms to the required grade and cross slope. Ensure that transverse slope deviations of the finished pavement do not exceed 1/8 inch with the straightedge laid in a direction perpendicular to the centerline. When 25ortland cement concrete pavement abuts bridge approaches or pavement not under this Contract, ensure that the

longitudinal slope deviations of the finished pavement do not exceed 1/8 inch in 10 foot length. Produce a uniform, gritty textured final finish longitudinally along the pavement by dragging a broom or seamless strip of damp burlap, having at least 3 feet in contact with the pavement.

If the Engineer identifies a surface irregularity determined to be objectionable, straightedge with a 10 foot long straightedge and address all deficiencies in excess of 1/8 inch by grinding in accordance Section 352.

When required in the Contract Documents, produce a pavement surface that is true to grade and uniform in appearance with a longitudinal line type texture by grinding in accordance with Section 352.

SECTION 400
CONCRETE STRUCTURES
(REV 11-10-21) (FA 1-25-22) (7-22)

ARTICLE 400-6 is deleted and the following substituted:

400-6 Underdrain and Weep Holes.

Provide weep holes in all abutments and retaining walls.

Provide a continuous underdrain for box culverts in accordance with Standard Plans, Index 400-289. Provide weep holes that are at least 3 inches in diameter and not more than 10 feet apart. Place the outlet ends of the weep holes just above the finish graded surface in front of abutments and retaining walls. Cover the inlet ends of all weep holes with galvanized wire mesh and a minimum of 2 cubic feet of clean, broken stone or gravel wrapped in Type D 3 filter fabric, to allow free drainage but prevent the fill from washing through.

SUBARTICLE 400-7.14 is deleted and the following substituted:

400-7.14 Concrete Box Culverts: In general, place the base slab or footing of concrete box culverts, and allow them to set before constructing the remainder of the culvert. In this case, make suitable provision for longitudinal keys. Construct bottom slabs, footings, and apron walls as a monolith if practicable. Where transverse construction joints are necessary, place them at right angles to the culvert barrel, and make suitable provision for keys.

In the construction of box culverts having walls 6 feet or less in height, the sidewalls and top slab may be constructed as a monolith or may place the concrete in the walls and allow it to set before placing the top slab concrete.

Where the height of the box culvert walls exceed 6 feet, place the walls, and allow the concrete to set at least 12 hours before placing the top slab concrete. In such cases, form keys in the sidewalls.

When casting the walls and top slabs of box culverts as a monolith, ensure that any necessary construction joints are vertical. Design all construction joints with formed keys. Provide keys that are beveled as shown in the Plans or as directed, but do not allow the edge of the beveled material forming the key to be less than 1 1/2 inches from the edge of the concrete.

Construct each wingwall, if possible, as a monolith. Ensure that construction joints, where unavoidable, are horizontal and so located that no joints will be visible in the exposed face of the wing above the finished graded surface.

Precast box culvert sections may be used in lieu of cast-in-place box culvert construction provided the provisions in Section 410 are satisfied.

SECTION 407
THREE-SIDED PRECAST CONCRETE CULVERT
(REV 11-10-21) (FA 1-25-22) (7-22)

ARTICLE 407-12 is deleted and the following substituted:

407-12 Construction Requirements.

Prior to constructing the footing, prepare the bearing soil in accordance with Section 455 for spread footings. If a precast concrete footing is used, prepare a 4-inch-thick layer of compacted granular bedding material to a minimum width of 12 inches outside the footing width and meet the density requirements of 125-9.2. Provide bedding material in accordance with Standard Plans, Index 120-001 select material, with not more than 15% fines passing the No. 200 U.S. Standard sieve, or other granular material approved by the Engineer.

Accomplish all footing construction in dry or dewatered excavations, as defined in 455-29. When coarse aggregate is approved for use as an alternate bedding or foundation backfill material, fully wrap the coarse aggregate with a layer of Type D-4 geotextile filter fabric, as specified in Section 985. At each end of any concrete slab channel lining, substitute the coarse aggregate with select material within four feet of toe walls.

Form a 3 inches deep key in the top surface of the footing 4 inches wider than the wall thickness. Ensure that footings reach a compressive strength of 3,000 psi before placing precast units.

Place the units as shown in the shop drawings. Carefully set the structure to the true line and grade. Set the units in a bed of mortar placed in the keyway in the top of the footing. Fill the keyway with mortar, and float the mortar flush with the top of the footing or use shims between the footer and culvert during setting, then inject non-shrink grout under the culvert walls. Seal blockouts and holes provided for lifting or joint restraint by using an epoxy mortar or non-shrink grout in accordance with Sections 926 or 934.

Carefully place backfill against the filter fabric and joint seal to avoid damage to the material. Use mechanical tampers or approved compacting equipment to compact all backfill and embankment immediately adjacent to each side of the structure. Place the

backfill within 4 feet of each side of the structure in lifts of 8 inches or less (loose depth). Do not operate heavy compaction equipment within 4 feet of the structure. Ensure that the backfill elevation differential between both sides of the structure does not exceed 24 inches. Backfill behind wingwalls in accordance with Section 125. Carry backfill in front of wingwalls to thefinished grade surface shown in the Plans.

SECTION 455
STRUCTURES FOUNDATIONS
(REV 11-10-21) (FA 1-25-22) (7-22)

SUBARTICLE 455-2.10 is deleted and the following substituted:

455-2.10 Disposition of Tested Piles/Shafts: After completing testing, cut off the tested piles/shafts, which are not to be incorporated into the final structure, and any reaction piles/shafts at an elevation 24 inches below the finished graded surface or as shown in the Plans. Take ownership of the cut-offs and provide areas for their disposal.

SUBARTICLE 455-5.9 is deleted and the following substituted:

455-5.9 Penetration Requirements: Measure the penetration of piles from the elevation of the natural ground, the existing surface, the deepest scour elevation shown in the Pile Data Table, or the bottom of excavation, whichever is lowest. When the Contract Documents show a minimum pile tip elevation, drive the tip of the pile to this minimum elevation. The Engineer will accept the bearing of a pile only if the Contractor achieves the required bearing when the tip of the pile is at or below the specified minimum tip elevation and below the bottom of the preformed or predrilled pile hole.

When the Plans do not show a minimum tip elevation, ensure that the penetration is at least 10 feet into firm bearing material or at least 20 feet into soft material unless otherwise permitted by the Engineer. The Engineer may accept a penetration between 15 feet and 20 feet when there is an accumulation of five consecutive feet or more of firm bearing material. Firm bearing material is any material offering a driving resistance greater than or equal to 30 tons per square foot of gross pile area as determined by the Dynamic Load Testing (455-5.12.4). Soft material is any material offering less than these resistances. The gross pile area is the actual pile tip cross-sectional area for solid concrete piles, the product of the width and depth for H piles, and the area within the outside perimeter for pipe piles and voided concrete piles.

Do not drive piles beyond practical refusal. To meet the requirements in this Subarticle, provide penetration aids, such as jetting or preformed pile holes, when piles cannot be driven to the required penetration without reaching practical refusal.

If the Contractor encounters unforeseeable, isolated obstructions that the Contractor cannot practically penetrate by driving, jetting, or preformed pile holes, and the Contractor must remove the pile to obtain the required pile penetration, the Department will pay the costs for such removal as Unforeseeable Work.

SUBARTICLE 455-11.12 is deleted and the following substituted:

455-11.12 Preformed Pile Holes: The quantity added to the payment for piling will be 30% of the length of completed preformed pile holes from existing surface 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 455-5.10.3, 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 455-18 is deleted and the following substituted:

455-18 Method Shafts.

The Engineer will use the construction of method shafts (test holes) to determine if the methods and equipment used by the Contractor are sufficient to produce a shaft excavation meeting the requirements of the Contract Documents. During method shaft excavations, the Engineer will evaluate the ability to control dimensions and alignment of excavations within tolerances; to seal the casing into impervious materials; to control the size of the excavation under caving conditions by the use of slurry or by other means; to properly clean the completed shaft excavation; to construct excavations in open water areas; to determine the elevation of ground water; to place reinforcing steel and concrete meeting the requirements of these Specifications within the prescribed time frame; and to execute any other necessary construction operation. Revise the methods and equipment as necessary at any time during the construction of the method shaft when unable to satisfactorily carry out any of the necessary operations described above or when unable to control the dimensions and alignment of the shaft excavation within tolerances.

Construct method shafts out of permanent position at the location shown in the Plans or as directed by the Engineer. Ensure the diameter and depth of the method shaft or holes are the same diameter and maximum depth as the production drilled shafts. Reinforce the method shaft unless otherwise directed in the Contract Documents. Fill the method shaft with concrete in the same manner production drilled shafts will be constructed. Backfill method shaft which are not filled with concrete with suitable soil in a manner satisfactory to the Engineer. Leave concreted method shaft in place, except remove the top of the shaft to a depth of 2 feet below the finished graded surface. Use the same procedure for shafts constructed in water. Restore the disturbed areas at the sites of method shaft drilled out of position as nearly as practical to their original condition. When the Contractor fails to demonstrate to the Engineer the adequacy of his methods or

equipment, and alterations are required, make appropriate modifications and provide additional test holes at no expense to the Department. Include the cost of all method shaft in the cost of the drilled shafts. Make no changes in methods or equipment after initial approval without the consent of the Engineer.

A separate method shaft is not required for drilled shafts installed under sign, signal, lighting and ITS structures. The first production shaft will serve as a method shaft for determining acceptability of the installation method.

SUBARTICLE 455-23.3 is deleted and the following substituted:

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 existing surface 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.

ARTICLE 455-31 is deleted and the following substituted:

455-31 Compaction and Density Requirements.

Compact the bottom of the excavation with suitable equipment. Compact the soil beneath footing excavation (whether dug to the bottom of footing or over-excavated) to a density not less than 95% of the maximum density as determined by FM 1-T180, for a minimum depth of 2 feet below the bottom of the excavation or to the depth shown in the Plans before backfilling begins. For every 500 feet of excavation or isolated compaction operation, perform two Quality Control (QC) density tests with a 12 inch depth of measurement: one QC density test with the gauge placed at an elevation of 1 foot below the bottom of the excavation and one QC density test with the gauge placed at the bottom of the excavation in accordance with FM 1-T238. Compact the backfill in footing excavations which have been over-excavated to a density not less than 95% of the maximum density as determined by FM 1-T180. Ensure that the maximum lift thickness after compaction does not exceed 6 inches. For every 500 feet of backfill or isolated compaction operation, perform at least one QC density test. The Engineer will conduct one density verification test per every 4 QC test, with a minimum of one density test below the bottom of the excavation and one density test in the backfill. Verification comparison criteria and resolution procedures will be in accordance with 120-10.4 except replace FM 1-T99 with FM 1-T180.

For compaction, use an approved heavy vibratory roller with a static drum weight of at least 4 tons. Compact each lift to the required density. Also, compact the final lift

below the footing with a suitable sled vibratory compactor to remove any upper disturbance caused by the drum roller. When conditions require use of smaller compaction equipment, obtain the Engineer's approval for the equipment, and reduce the lift thickness to achieve the required density.

Perform backfilling to the existing surface or finished graded surface as required by the Plans in the immediate vicinity by approved mechanical compactors weighing less than 1,000 pounds. The Contractor may compact backfill located more than 15 feet away from the exterior periphery of the footing with heavier compactors. Do not place backfill on the footing until the Engineer has given permission and until the concrete is at least seven days old.

When the plans indicate spread footing abutments on mechanically stabilized earth (MSE) walls, place and compact the backfill material underneath the footing in accordance with the requirements of 548-8.5. Meet the density requirements of 548-9.4.

SECTION 524
CONCRETE DITCH AND SLOPE PAVEMENT
(REV 11-10-21) (FA 1-25-22) (7-22)

ARTICLE 524-4 is deleted and the following substituted:

524-4 Foundation.

Shape and compact the foundation materials, upon which the pavement is to be constructed, to a firm, even surface, true to grade and cross slope.

Dispose of surplus material.

ARTICLE 524-7 is deleted and the following substituted:

524-7 Finishing.

Roughen the surface of ditch pavement after screeding concrete, unless otherwise specified, to the approximate shape and grade by a rake or other suitable tool drawn perpendicular to the direction of flow. Ensure that the furrows are at least 1/4 inch deep.

Strike off slope pavement or smooth surfaced ditch pavement, when specified, true to line and cross slope and remove all surplus water and laitance from the surface. Lightly broom the finish.

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SECTION 530
REVETMENT SYSTEMS
(REV 11-10-21) (FA 1-25-22) (7-22)

SUBARTICLE 530-3.5 is deleted and the following substituted:

530-3.5 Articulating Concrete Block (ACB) Revetment System: Install the ACB revetment system in accordance with ASTM D6884 and the manufacturer's recommendations, unless directed otherwise by the Engineer.

Prior to installation, construct the area to be stabilized to an elevation such that, upon completion of stabilizing operations, the completed stabilized subgrade will conform to the lines, grades and cross slope shown in the Plans. Bring the subgrade surface to a plane approximately parallel to the plane of the proposed finished surface, such that, upon placement of the mat, no individual block within the ACB mat will protrude more than one-half inch from any adjacent block. Uniformly compact each subgrade layer to achieve the density required in the Plans. If the Plans do not provide for stabilizing, compact the subgrade in both cuts and fills, to the density specified in ASTM D6884.

Embed anchors at least six feet into the subgrade at a 45 degree angle into the bank with a minimum pullout resistance of 875 pounds. In the presence of the Engineer, perform on-site anchor strength testing to verify the required pull out resistance is achieved. Anchor strength testing must be performed on the first two and final two installed anchors, and randomly throughout the installation operation such that 5% of all installed anchors are tested for pullout resistance. If any anchor fails to meet the pullout resistance requirement, test every subsequent installed anchor until a revised installation plan is proposed and approved by the Engineer. Anchor spacing cannot exceed four feet.

Immediately prior to placing the geotextile fabric and ACB system, inspect the prepared subgrade to ensure it is free of loose material and the surface is smoothly compacted. Place the geotextile fabric directly on the prepared area, in intimate contact with the subgrade and free of folds or wrinkles. Do not glue or physically bond the geotextile fabric to the ACB mat. Install a six inch thick layer of bedding stone under the geotextile fabric, when called for in the Plans.

When installing ACB systems around curves, the mats shall be matched up to the greatest extent possible. Gaps greater than one block size shall be filled with a block and grouted the depth of the block with non-structural grout.

Do not install blocks with chips that result in any block weighing less than 95% of the manufacture specified weight.

EXPECTED IMPLEMENTATION JULY 2022

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SECTION 534
NOISE AND PERIMETER WALLS
(REV 11-10-21) (FA 1-25-22) (7-22)

ARTICLE 534-4 is deleted and the following substituted:

534-4 Shop Drawing Submittal.

Submit shop drawings for precast elements, when required, in accordance with Section 5, showing a plan and elevation with the following project specific information:

1. Begin and end wall stations with offsets
2. Horizontal and vertical alignments of the wall
3. Panel locations
    a. Graphic details and graphic panel locations (noise walls only)
    b. Drainage panel locations and Type
    c. Location and length of side installed panels (when required)
4. Post locations and lengths
5. Elevations of top of panel, bottom of panel, and panel joints
6. Existing ground and finished grade elevations
7. Non-standard precast component details
8. Non-standard post and pile connection details
9. Lifting devices

ARTICLE 534-5 is deleted and the following substituted:

534-5 Construction.

Keep to minimum the clearing and grubbing; trim trees and shrubs only to the extent necessary to construct the walls, unless otherwise shown in the Plans. Keep right-of-way fence that is scheduled to be salvaged in place until completing the wall or as otherwise directed by the Engineer.

Prior to beginning earthwork on the project, stake the wall location in the field and establish the finished graded surface elevations at the base of the walls. Use these elevations to develop the shop drawings. Protect the finish graded surface elevations established in the field for the duration of the project, and do not adjust without prior approval of the Engineer. When constructing earthen berms to raise the base elevation of walls, construct the berms of fill material compacted to 95% of the maximum density as determined by AASHTO T99. After erecting the wall, return the disturbed area to preconstruction condition unless otherwise indicated in the Plans.

SECTION 548
RETAINING WALL SYSTEMS
(REV 11-10-21) (FA 1-25-22) (7-22)

ARTICLE 548-4 is deleted and the following substituted:

548-4 Shop Drawings.

Submit shop drawings and calculations in accordance with Section 5. Provide calculations and drawings showing details, notes, materials, dimensions, sizes and other information necessary for the complete fabrication and erection of the retaining wall system. As a minimum, provide the following:

1. Elevation view showing the finished graded surface and elevations of the top and bottom of wall at the begin and end of wall, all breaks in vertical alignment and all whole stations and 25 foot station increments.

2. Sections showing the length, size and designation of soil reinforcement.

3. Plan view showing the horizontal alignment and offsets from the horizontal control line to the exterior face of the wall; the location of utilities, drainage structures and other items that impact the wall; the limits of the reinforced soil volume; and, the location of piles within the reinforced earth volume.

4. Details for construction around utilities, drainage structures and other items that impact the wall; for placement of soil reinforcement at acute corners; for addressing conflicts between soil reinforcement and obstructions in the reinforced soil volume; for addressing different wall types intersecting and impacting each other.

5. General notes and design parameters including design soil characteristics; factored bearing resistance and factored bearing pressure for each wall height increment and other notes required for construction of the walls.

6. Design calculations for each wall height increment detailed in the shop drawings.

7. When the friction angle depicted in the shop drawings exceeds 30 degrees for sand backfill or 34 degrees for limerock backfill, provide laboratory test results in accordance with 548-9.5 verifying the backfill to be used for the wall meets the design soil characteristics for the shop drawings.

8. For SBW systems, include details for the placement of drainage aggregate, drainage pipes and separation geotextile. Drawings should be similar to details for Type II or Type III underdrains in Standard Plans, Index 440-001. Do not directly cover perforated drainage pipes with a geotextile filter fabric (such as a filter sock).

9. When SBW systems use friction or semi-friction connections between geosynthetic reinforcement and the facing blocks, include the results of connection capacity testing. Tests must be performed using the materials to be used on the project and tested in accordance with ASTM D6638 to justify the short-term ultimate connection strength reduction factor (CR_u) used to determine the long-term connection strength reduction factor (CR_{cr}) value in the design calculations for each wall height increment detailed in the shop drawings.

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SECTION 550
FENCING
(REV 11-10-21) (FA 1-25-22) (7-22)

SUBARTICLE 550-4.4.1 is deleted and the following substituted:

550-4.4 Construction Over Irregular Terrain and Other Obstructions:

550-4.4.1 Clearance of Bottom of Fence: Install the fence such that the bottom of the fence, in general, follows the contour of the ground. The fence is detailed in the Plans at approximately 3 inches above finished graded surface. Over irregular ground, however, the Engineer will permit a minimum clearance of 1 inch and a maximum of 6 inches for a length not to exceed 8 feet, and, for Type A fence, with the barbed wire spaced midway between ground and bottom of fabric.

SECTION 555
DIRECTIONAL BORE
(REV 11-10-21) (FA 1-25-22) (7-22)

SUBARTICLE 555-5.2 is deleted and the following substituted:

555-5.2 As-Built Plans: Provide the Engineer a complete set of as-built plans showing all bores (successful and failed) within 30 calendar days of completing the work. As-built plans must be PDF files, in the same scale as the Plans. Ensure that the plans are dimensionally correct copies of the Plans and include roadway plan and profile, cross-section views, boring location and subsurface conditions as directed by the Engineer. The plans must show appropriate elevations referenced to a permanent FDOT feature (mast arm foundation, manhole inlet cover, head wall, etc). Specific plans content requirements include but may not be limited to the following:

1. The Contract plan view shows the center line location of each facility installed, or installed and placed out of service, to an accuracy of 1 inch at the ends and other points physically observed in accordance with the bore path report.

2. As directed by the Engineer, provide either a profile plan for each bore path, or a cross-section of the roadway at a station specified by the Engineer, or a roadway centerline profile. Show the ground or pavement surface and crown elevation of each facility installed, or installed and placed out of service, to an accuracy of within 1 inch at the ends and other exposed locations. On profile plans for bore paths crossing the roadway, show stationing of the crossing on the Plans. On the profile plans for the bore paths paralleling the roadway, show the Plans stationing. If the profile plan for the bore path is not made on one of the Plans, use a 10 to 1 vertical exaggeration.

3. If, during boring, an obstruction is encountered which prevents completion of the installation in accordance with the design location and specification, and the product is left in place and taken out of service, show the failed bore path along with the final bore path on the plans. Note the failed bore path as “Failed Bore Path - Taken Out of Service”. Also show the name of the utility owner, location and length of the drill head and any drill stems not removed from the bore path.

4. Show the top elevation, diameter and material type of all utilities encountered and physically observed during the subsoil investigation. For all other obstructions encountered during a subsoil investigation or the installation, show the type of material, horizontal and vertical location, top and lowest elevation observed, and note if the obstruction continues below the lowest point observed.

5. Include bore notes on each plan stating the final bore path diameter, product diameter, drilling fluid composition, composition of any other materials used to fill the annular void between the bore path and the product, or facility placed out of service. Note if the product is a casing as well as the size and type of carrier pipes placed within the casing as part of the Contract work.

SECTION 556
JACK AND BORE
(REV 11-10-21) (FA 1-25-22) (7-22)

SUBARTICLE 556-6.2 is deleted and the following substituted:

556-6.2 As-Built Plans: Submit to the Engineer a complete set of as-built plans showing all bores (successful and failed) within 30 calendar days of completion of the work. As-built plans must be PDF files, in the same scale as the Plans. Include notes on the plans stating the final bore path diameter, facility diameter, drilling fluid composition, composition of any other materials used to fill the annular void between the bore path and the facility or facility placed out of service. If the facility is a casing, note this, as well as the size and type of carrier pipes to be placed within the casing as part of the Contract work. Produce the plans as follows:

1. On the Contract plan view, show the centerline location of each facility, installed or installed and placed out of service to an accuracy within 1 inch at the ends and other points physically observed. They show the remainder of the horizontal alignment of the centerline of each facility installed or installed and placed out of service and note the accuracy with which the installation was monitored.

2. As directed by the Engineer, submit either a profile plan for each bore path, or a cross-section of the roadway at a station specified by the Engineer, or a roadway centerline profile. Also show the ground or pavement surface and the crown elevation of each facility installed, or installed and placed out of service, accurately to within 1 inch at the ends and other points physically observed. Show the remainder of the vertical alignment of the crown of each facility installed, or installed and placed out of service and note the accuracy with which the installation was monitored. On profile plans

for bore paths crossing the roadway, show the Plans stationing. On the profile plans for bore paths paralleling the roadway show the Plans stationing. If the profile plan for the bore path is not made on one of the Plans, use a 10 to 1 vertical exaggeration.

3. If a bore path is not completed, show on the Plans the failed bore path along with the name of the utility owner and the final bore path. Note the failed bore path as failed bore path. Also show the location and length of the cutting head and any product not removed from the bore path.

4. Show the crown elevation, diameter and material type of all utilities encountered and physically observed during the subsoil investigation. For all other obstructions encountered during subsoil investigation or the installation, show the type of material, horizontal and vertical location, top elevation and lowest elevation observed, and note if the obstruction continues below the lowest point observed.