
IFB NO. Y20-708-RM

ISSUED: August 23, 2019

INVITATION FOR BIDS

FOR

**JOHN YOUNG PARKWAY AND CONROY ROAD/AMERICANA BLVD TEXAS
AVENUE AND RIO GRANDE AVENUE INTERSECTIONS AND SIDEWALK
IMPROVEMENTS**

**PART H
TECHNICAL SPECIFICATIONS**

**PART H
Volume II**

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TP 101 - Mobilization

MOBILIZATION

Mobilization shall include all items detailed in Article 101 of the “Standard Specifications”, the Special Provisions and on the plans, except as directed by the Engineer.

Preservation of Property Corners including all items detailed in Section 7-11 of the Standard Specifications shall be included in the contract price for mobilization.

Basis of Payment

The work and incidental costs covered under Mobilization will be paid for at the contract lump sum price and will be paid in partial payments in accordance with the following:

Percent of Original Contract Amount Lump Sum Earned	Allowable Percent of the Price for the Items*
5	25
10	50
25	75
50	100

*Partial payments as detailed above will be limited to 10% of the original Contract amount for the roadway pay items. Any amount of mobilization in excess of 10% of the roadway pay items will be paid upon completion of all work.

A Lump Sum price will be provided for each of the two project locations: 1. John Young Parkway & Conroy Road/Americana Boulevard and 2. Texas Avenue & Rio Grande Avenue, as identified on the Schedule of Prices in the Bid Form.

Payment shall be made under:

Pay Item:

101-1	Mobilization (John Young Pky & Americana Blvd.)	Lump Sum
101-1	Mobilization (Texas Ave. & Rio Grande Ave.)	Lump Sum

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TP 102 – Maintenance of Traffic

MAINTENANCE OF TRAFFIC

All Maintenance of Traffic work shall conform to the requirements of Section 102 of the Standard Specifications, Index 102 of the FDOT Standard Plans, the plans, and/or as herein modified, except as directed by the Engineer.

The road shall be kept open to two-way traffic on a paved surface during construction except when full closures are allowed by the plans or by the Engineer. The Contractor shall not be permitted to isolate residences or places of business. Access shall be provided to all residences and all places of business whenever construction interferes with the existing means of access.

The Contractor shall furnish, erect and maintain all necessary traffic control devices, including flagmen and pilot cars, in accordance with the *Manual of Uniform Traffic Control Devices for Streets and Highways*, published by the U.S. Department of Transportation, Federal Highway Administration. The Contractor shall provide and maintain in a safe condition the entire project limits included, but not limited to pre-existing conditions, driving lanes, temporary approaches, crossings, and intersections with trails, roads, streets, business parking lots, residences, garages and completed work. The Contractor shall take all necessary precautions for the protection of the work and the safety of the public in accordance with Section 102.

The Contractor shall present his signed and sealed Maintenance of Traffic Plan that is approved by Orange County Traffic Engineering to the Engineer at the preconstruction conference, and shall be fully and solely responsible for the adequacy of the Maintenance of Traffic plan regardless of the source. The plan shall be signed and sealed by the contractor's own professional engineer licensed in the State of Florida. Any proposed revisions to the approved Maintenance of Traffic plan are required to be approved by the Engineer.

The Contractor shall be responsible for installation of signs for all business along the project corridor. Signs should be manufactured and installed in accordance with FDOT Standard Plans. No special compensation will be made to the contractor to defray costs of any of the work or delays for complying with the requirements of installing business signs, but such costs shall be considered as having been included in the price stipulated for the Maintenance of Traffic pay item.

Basis of Payment

All materials, work and incidental costs related to Maintenance of Traffic will be paid for at the contract lump sum price. All material, labor and equipment necessary for the construction and maintenance of the entire project limits included, but not limited to pre-existing conditions, driving lanes, temporary approaches, crossings, intersections with trails, roads, streets, business parking lots, residences, garages, temporary driving lanes, side streets, driveway connections, and completed work, as may be directed by the Engineer shall be included in the contract price.

A Lump Sum price will be provided for each of the two project locations: 1. John Young Parkway

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& Conroy Road/Americana Boulevard and 2. Texas Avenue & Rio Grande Avenue, as identified on the Schedule of Prices in the Bid Form.

Payment shall be made under:

Pay Item:

102-1	Maintenance of Traffic (John Young Pkwy. & Americana Blvd.)	Lump Sum
102-1	Maintenance of Traffic (Texas Ave. & Rio Grande Ave.)	Lump Sum

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TP 104 - Prevention, Control and Abatement of Erosion and Water Pollution

PREVENTION, CONTROL and ABATEMENT of EROSION and WATER POLLUTION

LAND CLEARING

Prevention, control and abatement of erosion and water pollution shall conform to the requirements of Section 104 of the "Standard Specifications", National Pollution Discharge Elimination System (NPDES) requirements, except as modified by these Technical Provisions or as directed by the Engineer.

The Contractor shall present at the Preconstruction Conference its Storm Water Pollution Prevention Plan (SWPPP) and a separate schedule to manage erosion and water pollution. This schedule shall include a complete outline of the proposed construction of all erosion and pollution control and abatement items required.

The Contractor shall be responsible for the preparation and submittal of the Notice of Intent (NOI) and Notice of Termination (NOT) to the Florida Department of Environmental Protection (FDEP) and shall obtain the FDEP Generic Permit for Stormwater Discharge from Large and Small Construction Activities.

DEWATERING

The term treatment as used in this technical provision means the application of all FDEP approved techniques and/or methods available to remove the exceedances out of dewatering effluent except impounding. Impounding is not considered a treatment method for purposes of compensation under this technical provision.

The CONTRACTOR shall include in his/her bid all applicable costs, including monitoring, resulting from treatment and disposal of contaminated groundwater with concentration levels that exceed the allowable limits of the FDEP generic permit, and shall not be entitled to any adjustment in the Contract Price as a result of any change in the permit fees or unanticipated treatment and disposal costs.

Prior to any work commencing, and for the duration of the work, the CONTRACTOR is responsible for meeting all the conditions of the applicable permits and submitting any required reports to the appropriate agencies.

The CONTRACTOR shall dewater only in relation to the location and relocation of facilities owned by the COUNTY. No compensation shall be provided for dewatering performed for facilities that are not owned by the COUNTY.

Permitting

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If exceedances are found in the dewatering effluent, the CONTRACTOR will be required to:

1. Immediately notify the COUNTY and report the exceedances that are encountered.
2. Meet with the FDEP to determine any and all alternatives that are acceptable.
3. Obtain prior COUNTY approval of treatment and disposal alternatives.
4. Obtain prior written COUNTY authorization to use pay item TP 104-14
5. Apply and obtain any and all permits and/or treatment approvals that FDEP requires including, but not limited to:
 - a. Generic Permit for Discharges from Petroleum Contaminated Sites (62- 621.300(1), F.A.C.). Allows discharges from sites with automotive gasoline, aviation gasoline, jet fuel, or diesel fuel contamination.
 - b. Permit for all Other Contaminated Sites (62-04; 62-302; 62-620 & 62-660, F.A.C.). The coverage is available only through the individual NPDES permit issued by FDEP. Allows discharges from sites with general contaminant issues, i.e. ground water and/or soil contamination other than petroleum fuel contamination.
 - c. Generic Permit for the Discharge of Produced Ground Water from Any Non- Contaminated Site Activity (62-621.300(2), F.A.C.).
 - d. Generic Permit for Stormwater Discharge from Large or Small Construction Activities (62-621.300(4) (a), F.A.C.).
6. Apply and obtain any and all permits and/or treatment approvals that the Water Management District requires including, but not limited to:
 - a. No-Notice Short-Term Dewatering Permit (40E-20.302(3), F.A.C.) If the CONTRACTOR'S proposed work is expected to exceed 90 days in duration, or does not meet any of the other requirements listed with the requirements of Rule 40E-20.302(3), the CONTRACTOR must apply for and obtain a Dewatering General Water Use Permit (40E-20.302(2) F.A.C.)

The CONTRACTOR shall not be entitled to file, or recover under, any delay claim based on preparation of permit applications and the time required for obtaining the applicable permits. If, prior to or during the dewatering, it is determined that the disposal or discharge of the dewatering effluent is not authorized by the FDEP's Generic Permit for the Discharge of Produced Ground Water from Any Non-Contaminated Site Activity, the CONTRACTOR shall diligently pursue further required permit(s) from FDEP or other agencies without resort to delay claims or recompense from the COUNTY for either permit application activities or the time required to obtain such permits.

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The CONTRACTOR shall consider and anticipate the potential need to obtain the herein discussed permits in developing his schedule, and shall make every effort to avoid or minimize potential impacts to his critical path that might result from delays in dewatering activities due to the time necessary for the CONTRACTOR to obtain the necessary permits. The CONTRACTOR shall make every effort to schedule activities requiring dewatering as late as possible during his schedule, and shall schedule activities not impacted by dewatering as early as possible. For each day, up to a maximum of one hundred eighty (180) days that the CONTRACTOR diligently pursues such permit(s) and is unable to avoid adversely impacting his critical path, a day will be added to the time allotted to the CONTRACTOR to complete performance of the Project.

Treatment

The CONTRACTOR shall implement the appropriate treatment that is acceptable to FDEP, COUNTY, and, if necessary, the Water Management District to attain compliance for all exceedances encountered during dewatering activities. Treatments may include, but are not limited to: chemical treatment, ion exchange treatment, filtration, and disposal of discharged groundwater in a properly permitted facility.

The CONTRACTOR shall:

1. Make every effort to minimize the spread of contamination into uncontaminated areas;
2. Provide for the health and safety of all workers at the job site and make provisions necessary for the health and safety of the public that may be exposed to any potentially hazardous conditions;
3. Ensure such provisions adhere to all applicable laws, rules or regulations covering hazardous conditions in a manner commensurate with the level of severity of the conditions;
4. If necessary, provide contamination assessment and remediation personnel to handle site assessment, determine the course of action necessary for site security, and perform the necessary steps under applicable laws, rules, and regulations for additional assessment and/or remediation work to resolve the contamination issue;
5. Delineate the contamination area(s), any staging or holding area required, and develop a work plan that will provide the schedule of projected completion dates for the final resolution of the contamination issue;
6. Maintain jurisdiction over activities inside any delineated contamination areas and any associated staging or holding areas;
7. Be responsible for the health and safety of workers within the delineated areas; and
8. Provide continuous access to representatives of regulatory or enforcement agencies having jurisdiction.

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Basis of Payment

All work and incidental costs required to comply with the articles of this specification will be paid at the contract lump sum price for Prevention, Control and Abatement of Erosion and Water Pollution.

A Lump Sum price will be provided for each of the two project locations: 1. John Young Parkway & Conroy Road/Americana Boulevard and 2. Texas Avenue & Rio Grande Avenue, as identified on the Schedule of Prices in the Bid Form.

Payment will be made under:

Pay Item:

104-14	Prevention, Control and Abatement of Erosion and Water Pollution (John Young Pkwy & Americana Blvd.)	Lump Sum
104-14	Prevention, Control and Abatement of Erosion and Water Pollution (Texas Ave. & Rio Grande Ave.)	Lump Sum

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TP 110 – Clearing and Grubbing

CLEARING AND GRUBBING

All clearing and grubbing shall be performed in accordance with the requirements of Section 110 of the “Standard Specifications”, except as directed by the Engineer.

Scope of work to include but not be limited to, the removal of all rigid, asphalt pavement, Portland cement concrete pavement, curb, curb and gutter, ditch pavement, sidewalk, driveway aprons, concrete slabs, concrete structures, brick, fences, gravity walls, retaining walls, pipes, etc. Clearing and Grubbing shall also include the removal of existing pavement and base course and backfilling with suitable material, as shown in the construction plans. Removal of the existing roadway shall also include the proper disposal of the removed materials as specified above.

Basis of Payment

All work and incidental costs required to perform clearing and grubbing as herein specified will be paid for at the contract lump sum price.

A Lump Sum price will be provided for each of the two project locations: 1. John Young Parkway & Conroy Road/Americana Boulevard and 2. Texas Avenue & Rio Grande Avenue, as identified on the Schedule of Prices in the Bid Form.

Payment shall be made under:

Pay Item:

110-1-1	Clearing and Grubbing (John Young Pkwy & Americana Blvd.)	Lump Sum
110-1-1	Clearing and Grubbing (Texas Ave. & Rio Grande Ave.)	Lump Sum

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TP 120 – Excavation, Embankment and Grading

EXCAVATION, EMBANKMENT AND GRADING

All excavation and embankment work shall conform to the requirements of Section 120 of the "Standard Specifications", and the provisions of this section, except as directed by the Engineer.

Basis of Payment

Subsoil Excavation will be paid for at the contract price per cubic yard.

Payment shall constitute full compensation for all work described herein and in the Special Provisions and shall include the excavation and disposal of muck, clay, rock, or any other material that is unsuitable in its original position and that is excavated below the finished grading template. Work under this pay item shall also include the excavation of all suitable material within the specified limits as necessary to excavate the unsuitable material. The bottom of the finished grading template shall be considered to be the top of the finished base, shoulders, and slopes for stabilized bases and the finished shoulder and slope lines and bottom of base or rigid pavement for rigid pavement or all other bases. Payment shall also include the provision, placement, shaping, and compaction of suitable backfill material to replace the removed unsuitable material up to the original grade line or to the bottom of the proposed roadway base material, whichever is lower.

The limits of Subsoil Excavation indicated in the construction plans are considered to be particularly variable, in accordance with field conditions actually encountered.

Excavation, Embankment and Grading will be paid for at the contract lump sum price.

Payment shall constitute full compensation for all work described herein and in the Special Provisions and shall include grading of shoulders, graded road connections, slopes, compaction, final dressing, subsoil excavation, replacement material and all work required for completing the project that is not paid for under the other pay items. Also included are removals and off-site disposal or on-site utilization of all materials, structures, abandoned utilities and obstructions as directed by the Engineer.

A Lump Sum price will be provided for each of the two project locations: 1. John Young Parkway & Conroy Road/Americana Boulevard and 2. Texas Avenue & Rio Grande Avenue, as identified on the Schedule of Prices in the Bid Form.

Payment shall be made under:

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Pay Item:

120-9	Excavation Embankment and Grading (John Young Pkwy. & Americana Blvd.)	Lump Sum (LS)
120-9	Excavation Embankment and Grading (Texas Ave. & Rio Grande Ave.)	Lump Sum (LS)

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TP 160 – Stabilized Subgrade

STABILIZED SUBGRADE

All work shall be performed in accordance with the requirements of Section 160 of the “Standard Specifications” (Stabilizing) and shall be constructed to the limits, thickness, and specified limerock bearing ratio as shown on the plans, except as directed by the Engineer.

Method of Measurement

Quantities of stabilized subgrade measured for payment under this Section shall be the actual area in square yards of satisfactorily installed stabilized subgrade.

Basis of Payment

Stabilized subgrade will be paid for at the contract unit price per square yard installed and accepted and shall include the cost of furnishing and hauling additional stabilizing materials required, and all mixing, shaping and compacting of the stabilized area. The increased thickness of the Type B stabilization under curb and gutter sections shall be considered incidental and included in the contract unit price.

Payment shall be made

under: Pay Item:

160-4 Type B Stabilization (12”) (Min LBR 40)

Per Square Yard

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TP 285 – Optional Base Course

OPTIONAL BASE COURSE

Work specified in this Section consists of constructing Optional Base Course in Section 285 of the “Standard Specifications”, except as amended herein. The plant, methods of operation and equipment shall conform to Section 320; general construction requirements shall be as specified in Section 320; and materials and compositions shall conform to Section 330 of the “Standard Specifications”, except as directed by the Engineer.

Method of Measurement

Quantities measured for payment under this Section shall be the actual area in square yards of optional base course installed within the limits of the contract.

Basis of Payment

Optional Base Course will be paid for at the contract unit price per square yard, completed and accepted. No additional payment will be made for thickness greater than indicated neither on the plans nor for pavement of unauthorized areas.

Payment shall constitute full compensation including but not limited to all labor, equipment, materials including bituminous material (plant mix), bituminous material (tack coat) and all other incidental costs necessary to complete the work as specified.

Payment shall be made

under: Pay Item:

285-713 Optional Base Group 13 (8” Type B-12.5 only) (Black Base) Per Square Yard (SY)

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TP 327 – Milling of Existing Asphalt Pavement

MILLING OF EXISTING ASPHALT PAVEMENT

Milling of existing asphalt pavement shall be performed in accordance with the requirements of Sections 327 and 300 of the “Standard Specifications”, except as amended herein. The work specified in this Section consists of removing existing asphaltic concrete pavement by milling to lower the finished grade adjacent to existing curb prior to resurfacing, except as directed by the Engineer.

Milled material becomes the property of the Contractor.

Equipment

The milling machine shall be capable of maintaining a depth of cut and cross slope that achieves the results specified in the plans and specifications. The overall length of the machine (out to out measurements excluding the conveyor) shall be a minimum of 18 feet. The minimum cutting width shall be 6 feet.

The milling machine shall be equipped with a built-in automatic grade control system that controls the transverse slope and the longitudinal profile to produce the specified results.

Any commercially manufactured milling machine meeting the above requirements shall be accepted prior to starting the project. If after milling has started the milling machine cannot consistently produce the specified results, the milling machine will be rejected for further use.

Equipment permitted when milling adjacent to existing curbs or other areas. Use of a smaller milling machine will be subject to the Engineer’s acceptance, where it is impractical to use the above-described equipment.

The milling machine shall be equipped with means to effectively limit the amount of dust escaping the removal operation.

Construction

The Contractor shall remove the existing raised reflective pavement markers prior to milling. Include the cost of removing existing pavement markers in the price for milling.

The milling machine shall be operated to minimize the amount of dust being emitted from the machine. Pre-wetting of the pavement may be required.

Where traffic will be maintained on the milled surface prior to placing the new asphaltic concrete, the striation patterns shall produce an acceptable riding surface. The Engineer will accept the traveling speed of the milling machine to produce an acceptable riding surface.

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Before opening a milled area to traffic, the pavement shall be thoroughly swept with power broom or other acceptable equipment to remove, to the greatest extent practicable, fine material, which will dust under traffic. This operation shall be conducted in such a manner that will minimize the potential of creating a traffic hazard and minimize air pollution.

Sweeping the milled surface with a power broom is required before placing asphaltic concrete.

The sweeping operation shall be performed immediately after the milling to prevent milled material infiltrating into the storm sewer system when the milling operation is near a municipal curb and gutter or a closed drainage system.

This operation shall include thoroughly removing all milled material from the gutter to prevent it from being swept into inlet openings or grates. Curbs shall not be damaged during the removal operation. The Engineer may require the equipment and/or methods be changed to achieve satisfactory results.

Milled Surface

Milled surfaces shall have a reasonably uniform texture, shall be within ¼ inch of a true profile grade and shall have no deviation in excess of ¼ inch from a straightedge applied to the pavement perpendicular to the centerline. Variations of the longitudinal joint between multiple cut areas shall not exceed ¼ inch. Areas varying from a true surface in excess of the above stated tolerance may be accepted without correction if the Engineer determines that they were caused by a pre-existing condition, which could not have reasonably been corrected by the milling operations. Any unsuitable texture or profile, as determined by the Engineer, shall be corrected by the Contractor at no additional compensation.

The Engineer may require re-milling of any area where a surface lamination causes a non-uniform texture to occur.

Method of Measurement

Quantities measured for payment under this Section shall be square yards, of milling acceptably completed.

Basis of Payment

Milling Existing Asphalt Pavement will be paid for at the contract unit price per square yard. Payment shall be full compensation for all work specified in this Section, including hauling off or otherwise disposing of the milled material.

Payment shall be made

under: Pay Item:

327-70-6 Milling Existing Asphalt Pavement (1 1/2" Avg. Depth) Per Square Yard (SY)

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TP 334 – Superpave Asphaltic Concrete Pavement

SUPERPAVE ASPHALTIC CONCRETE

PAVING 334-1 GENERAL

Work specified in this Provision consists of the application of Asphaltic Concrete structural courses properly produced and laid upon a prepared and accepted base in accordance with these specifications and in conformity with the lines, grades, thicknesses and cross-sections provided in the plans. Base preparation and Asphaltic Concrete Friction Courses are covered under separate provisions.

This Provision is intended to stand alone for the production and placement of structural course asphalt and replaces Sections 330 and 334 of the FDOT Standard Specifications for Road and Bridge Construction except when specific references are made to these or other Sections. Any references to FDOT Specification Sections shall mean the latest FDOT Standard Specifications for Road and Bridge Construction, including Supplements. Any incorrect references to or conflicts with the FDOT specifications, test methods, or standards shall be brought to the attention of the Engineer for clarification.

The Engineer will have the right to disapprove of any material or process that does not conform to these specifications.

The Contractor shall document all QC procedures, Process Control, inspection, and all test results and make them available for review by the Engineer throughout the Contract duration.

All test methods designated as FM refer to the FDOT Florida Sampling and Testing Methods.

334-2 CONTRACTOR QUALITY CONTROL REQUIREMENTS

334-2.1 GENERAL: The Contractor shall be responsible for the overall quality of the materials and workmanship of the work covered under this Provision.

Ensure that the qualifications and certifications of personnel and laboratories are maintained throughout the Contract duration. Provide proof of qualifications and all applicable certifications to the County prior to construction operations commencing. Notify the County immediately when there is a change in any qualification or certification during the Contract duration.

334-2.2 PERSONNEL: Provide personnel who are both qualified and certified in all activities related to asphalt mix production at the plant and placement on the roadway, especially for the sampling, testing and inspection of materials and construction activities. At a minimum, a certified Paving Level II technician shall be present on site at all times during paving operations. Provide documentation to the Engineer that the personnel responsible for the production and placement of asphalt products under the Contract are qualified and certified.

334-2.3 TESTING LABORATORY: Furnish or have furnished a fully equipped asphalt laboratory (permanent or portable) at the production site. Provide documentation to the Engineer that any

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Laboratory used is FDOT qualified and certified.

334-2.4 EQUIPMENT: Provide equipment and methods conforming to Section 320 of the FDOT Standard Specifications for Road and Bridge Construction. Provide a sufficient number of trucks to transport the asphalt mixture from the plant to the job site such that paving of each lane can proceed in one smooth uninterrupted operation. In determining the number of trucks required the Contractor shall consider the capacity of the trucks, the length of the approved haul route from the plant to the job site, traffic conditions, weather conditions, and any other factors that could impact the round trip travel time. Stopping the paver to wait for trucks bringing the asphalt mixture will not be acceptable. In addition to meeting the requirements in Section 320-5, the paving machine shall be capable of pushing the asphalt truck as it dumps the asphalt mixture into the hopper. Stopping the paving machine to allow the next asphalt truck to back up to it to fill the hopper is not an acceptable procedure, and shall not be allowed.

Unless otherwise approved by the Engineer, the paving machine shall weigh a minimum of 26,000 pounds.

334-2.5 MINIMUM QUALITY CONTROL REQUIREMENTS: Perform the following activities necessary to maintain quality and process control and meet specification requirements:

Stockpiles: Ensure each aggregate component is placed in an individual stockpile, and separated from adjacent stockpiles, either by space or by a system of bulkheads. Prevent the intermingling of different materials in stockpiles. Form and maintain stockpiles in a manner that will prevent separation, contamination, segregation, etc. Identify each individual stockpile, including RAP, as shown on the mix design.

Incoming Aggregate: Obtain gradations and bulk specific gravity (Gsb) values from aggregate supplier for reference; determine the gradation of all component materials; routinely compare gradations and Gsb values to mix design.

Cold Bins: Calibrate the cold gate/feeder belt for each material; determine cold gate/feeder belt settings; observe operation of cold feeder for uniformity.

Dryer: Observe pyrometer for aggregate temperature control; observe efficiency of the burner.

For Batch Plants: Determine percent used and weight to be pulled from each bin to assure compliance with Mix Design, check mixing time, and check operations of weigh bucket and scales.

For Drum Mixer Plants: Determine aggregate moisture content, and calibrate the weigh bridge on the charging conveyor.

Control Charts: Plot and keep charts updated daily for all Quality Control Sampling and Testing and post in the asphalt lab where they can be seen. Maintain the following charts:

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1. Sample test results for the following: No. 8 sieve, No. 200 sieve, asphalt binder content, air voids, and density.
2. Gradation of incoming aggregate.
3. Gradation and asphalt content of RAP.
4. Any other test result or material characteristic (as determined by the Contractor) necessary for process control.

The above listed minimum activities are to be considered normal activities necessary to control the production of hot mix asphalt at an acceptable quality level. It is recognized, however, that depending on the type of process or materials, some of the activities listed may not be necessary and in other cases, additional activities may be required. The frequency of these activities will also vary with the process and the materials. When the process varies from the defined process average and variability targets, the frequency of these activities will be increased until the proper conditions have been restored.

334-2.6 MINIMUM PROCESS CONTROL TESTING REQUIREMENTS:

Asphalt Plant

1. Hot Mix Asphalt: Determine the asphalt binder content; mix gradation and volumetric properties at a minimum frequency of one per day. In the event that the daily production exceeds 1,000 tons, perform these tests a minimum of two times per day.
2. Aggregate (Including RAP): One sample per 1,000 tons of incoming material as it is stockpiled for gradation. The testing of RAP material shall include the determination of asphalt binder content and gradation of extracted aggregate.
3. Monitor the mix temperature for the first five loads and every fifth load thereafter.
4. Monitor the aggregate moisture content from stockpiles or combined cold feed aggregate - one per day.
5. Other tests (as determined necessary by the Contractor) for process control.

Roadway

1. Monitor the mix temperature for the first five loads and every fifth load thereafter.
2. Monitor the prime/tack spread rate as needed to control operations and ensure that it meets or

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exceeds the target spread rate.

3. Monitor the pavement cross slope at a frequency necessary to fulfill the requirements of the plans and section 334-3.10.3 below, and identify a system to control the cross slope of each pavement layer during construction.

4. Monitor the mix spread rate at the beginning of each day's production, and as needed to control the operations, at a minimum of once per 200 tons placed to ensure that the spread rate meets or exceeds the target spread rate. When determining the spread rate, use an average of five truckloads of mix.

5. Monitor mat placement thickness every 25' to ensure the minimum design thickness is met.

6. Monitor the pavement temperature with an infrared temperature device. Monitor the roadway density with either 6 inch diameter roadway cores, a nuclear density gauge, or other density measuring device, at a minimum frequency of once per 1,500 feet of pavement. When the layer thickness is greater than or equal to 1 inch (or the spread rate is greater than or equal to 105 lb/yd²) and an approved rolling pattern may be used in lieu of density testing, monitor the density (for informational purposes only) by cutting and testing a 6 inch diameter core at a minimum frequency of three cores per day. Maintain daily records of the testing results and make them available for review by the Engineer throughout the life of the Contract.

7. Monitor the pavement smoothness with a 15-foot rolling straightedge as required by section 334-3.10.4 below.

334-3 GENERAL CONSTRUCTION REQUIREMENTS

334-3.1 DESCRIPTION

Construct plant-mixed hot bituminous pavements. Establish and maintain a quality control system in accordance with section 334-2 above that provides assurance that all materials, products and completed construction submitted for acceptance meet Contract requirements.

334-3.2 LIMITATIONS OF OPERATIONS

334-3.2.1 Weather Limitations: Do not transport asphalt mix from the plant to the roadway unless all weather conditions are suitable for the laying operations.

334-3.2.2 Limitations of Laying Operations:

334-3.2.2.1 General: Spread the mixture only when the surface upon which it is to be laid has been previously prepared, is intact, firm, and properly cured, and is substantially dry. Do not place friction course until the adjacent shoulder area has been dressed and grassed.

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334-3.2.2.2 Temperature: Spread the mixture only when the air temperature in the shade and away from artificial heat is at least 40°F and rising for layers greater than 1 inch in thickness and at least 45°F and rising for layers 1 inch or less in thickness (including leveling courses). The minimum temperature requirement for leveling courses with a spread rate of 50 lb/yd² or less is 50°F and rising.

334-3.2.2.3 Wind: Do not spread the mixture when the wind is blowing to such an extent that proper and adequate compaction cannot be maintained or when sand, dust, etc., are being deposited on the surface being paved to the extent that the bond between layers will be diminished.

334-3.2.2.4 Night Paving: Provide sufficient lighting for night operations.

334-3.3 ROADWAY SURFACE PREPARATION

334-3.3.1 Cleaning: Prior to the laying of the mixture, clean the surface of the base or pavement to be covered of all loose and deleterious material by the use of a vacuum truck. Power brooms or blowers may be used when the use of a vacuum truck is impractical, supplemented by hand brooming where necessary.

334-3.3.2 Patching and Leveling Courses: Where an asphalt mix is to be placed on an existing pavement or old base which is irregular, or wherever the plans indicate, bring the

existing surface to proper grade and cross-section by the application of patching or leveling courses. Wherever a patch is required, the width shall be taken out to the full width of each lane affected and the length shall extend far enough longitudinally to fully encompass the affected area. The existing pavement receiving a patch or leveling course shall be milled as shown on the plans or as required by the Engineer.

334-3.3.3 Application Over Surface Treatment: Where an asphalt mix is to be placed over a newly constructed surface treatment, sweep and dispose of all loose material from the paving area.

334-3.3.4 Coating Surfaces of Contacting Structures: Paint all structures which will be in actual contact with the asphalt mixture, with the exception of the vertical faces of existing pavements and curbs or curb and gutter, with a uniform coating of asphalt cement to provide a closely bonded, watertight joint.

334-3.3.5 Tack Coat:

334-3.3.5.1 Tack Coat Required: Apply a tack coat, meeting the requirements of Section 300 in the FDOT Standard Specifications for Road and Bridge Construction, on existing pavement structures that are to be overlaid with an asphalt mix and between successive layers

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of all asphalt mixes. The use of Trackless Polymer Modified Asphalt Emulsion Tack Coat (NTSS-1HM) is not allowed unless approved by the Engineer.

334-3.3.5.2 Tack Coat at Engineer's Option: Apply a tack coat on the following surfaces only when so directed by the Engineer:

1. Freshly primed bases.
2. Surface treatment.

334-3.4 ASPHALT PLANT PREPARATION

Ensure the following requirements are met at the asphalt plant:

Asphalt Cement

- Asphalt cement is delivered to the asphalt plant at a temperature not to exceed 370°F.
- Asphalt cement is maintained in storage within a range of 230 to 370°F in advance of mixing operations.
- Constant heating is maintained within these limits, and that high fluctuations in temperature during a day's production is avoided.

Aggregate Blending:

- All aggregates to be blended or proportioned are placed in separate bins at the cold hopper.
- Proportioning is performed by means of securely positioned calibrated gates or other approved devices.
-

Aggregate Cold Bins:

- Bin compartments are constructed to prevent any spilling or leakage of aggregate from one bin to another.
- Bin compartments have the capacity and design to permit a uniform flow of aggregates.
- Bin compartments are mounted over a feeder of uniform speed, which will deliver the specified proportions of aggregate to the drier.
- Bins are equipped with vibrators to ensure a uniform flow of aggregate at all times.
- Each bin compartment is provided with a gate which is adjustable in the vertical direction.
- Gates can be held securely at any specified vertical opening.
- Gates are equipped with a measuring device for measuring the vertical opening of the gates from a horizontal plane level with the bottom of the feeder.

Mineral Filler:

Mineral filler (if required in the mix design) is fed or weighed in separately from the other aggregates.

Aggregate Heating and Drying:

- Aggregates are heated and dried before screening.

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- The temperature of the aggregates is controlled so that the temperature of the completed mixture at the plant falls within the permissible range allowed by this Section.

Aggregate Screening:

- Oversized pieces of aggregate are removed by the use of a scalping screen.
- Oversized material is not returned to the stockpile for reuse unless it has been crushed

and reprocessed into sizes that will pass the scalping screen.

- The quantity of aggregates being discharged onto the screens does not exceed the capacity of the screens to actually separate the aggregates into the required sizes.
- A maximum of 10% plus-10 material in the minus-10 bin is maintained.

334-3.5 MIXTURE PREPARATION

Ensure the following requirements are met:

334-3.5.1 Batch Mixing: The dried aggregates and mineral filler (if required), prepared as specified and proportioned to meet the verified mix design, shall be conveyed to the empty mixer. The accurately measured hot asphalt binder shall be introduced into the mixer simultaneously with, or after, the hot aggregates. The blended materials shall be continuously mixed until thoroughly uniform with all particles fully coated. The mixing time begins when the measuring devices for both the asphalt and the aggregates indicate that all the material is in the mixer, and continues until the material begins to leave the mixing unit. In no case will the mixing time be less than 35 seconds.

334-3.5.2 Continuous Mixing: The dried aggregates and mineral filler (if required), prepared as specified and proportioned to meet the verified mix design, shall be introduced into the mixer in synchronization with the accurate feeding of the hot asphalt cement. The blended materials shall be sufficiently mixed until thoroughly uniform with all particles fully coated.

334-3.5.3 Mix Temperature: The ingredients of the mix shall be heated and combined in such a manner as to produce a mixture with a temperature, when discharged from the pugmill or surge bin, which is within the master range as defined below.

The temperature of the completed mixture shall be determined using a quick-reading thermometer through a hole in the side of the loaded truck immediately after loading. A 1/4 inch hole on both sides of the truck body within the middle third of the length of the body, and at a distance from 6 to 10 inches above the surface supporting the mixture shall be provided.

The normal frequency for taking asphalt mix temperatures will be for each day, for each design mix on the first five loads and once every five loads thereafter. The temperature of the asphalt mix at the plant and at the roadway shall be taken at the normal frequency before the mix is placed. The temperature shall be recorded on the front of the respective delivery ticket. The Engineer shall review the plant and roadway temperature readings and may take additional temperature measurements at any time.

The master range for all mix designs will be the established temperature from the mix design

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±30°F. Reject for use on the project any load or portion of a load of asphalt mix at the plant or at the roadway with a temperature outside of this master range. The Engineer will be immediately notified of the rejection.

If any single load at the plant or at the roadway is within the master range but differs from the established mix temperature by more than ±25°F or if the average difference of

the temperature measurements from the established mix temperature for five loads exceeds ±15°F, the temperature of every load will be monitored until the temperature falls within the specified tolerance range in Table 334-1; at this time the normal frequency may be resumed.

Table 334-1

Temperature Tolerance From Verified Mix Design

Any Single Measurement

±25°F

Average of Any Five Consecutive Measurements

±15°F

334-3.5.4 Maximum Period of Storage: The maximum time that any mix may be kept in a hot storage or surge bin shall be 72 hours.

334-3.5.5 Contractor's Responsibility for Mixture Requirements: Produce a homogeneous mixture, free from moisture and with no segregated materials, that meets all specification requirements. Also apply these requirements to all mixes produced by the drum mixer process and all mixes processed through a hot storage or surge bin, both before and after storage.

334-3.6 MIXTURE TRANSPORT

Transport the mixture in tight vehicles previously cleaned of all foreign material. After cleaning, thinly coat the inside surface of the truck bodies with soapy water or an asphalt release agent as needed to prevent the mixture from adhering to the beds. Do not allow excess liquid to pond in the truck body. Do not use diesel fuel or any other hazardous or environmentally detrimental material as a coating for the inside surface of the truck body. Cover each load during cool and cloudy weather and at any time there is a probability of rain.

334-3.7 MIXTURE PLACEMENT

334-3.7.1 Requirements Applicable to All Mixture Types:

334-3.7.1.1 Alignment of Edges: Lay all asphalt concrete mixtures, including leveling courses, other than the pavement edge just adjacent to curb and gutter or other true edges, by the stringline method to obtain an accurate, uniform alignment of the pavement edge. Control the unsupported pavement edge to ensure that it will not deviate more than ±1.5 inches from the stringline.

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334-3.7.1.2 Temperature of Spreading: Maintain the temperature of the mix at the time of spreading within the master range as defined in 334-3.5.3.

334-3.7.1.3 Rain and Surface Conditions: Immediately cease transportation of asphalt mixtures from the plant when rain begins at the roadway. Do not place asphalt mixtures while rain is falling, or when there is standing water on the surface to be covered. Once the rain has stopped and water has been removed from the tacked surface to the satisfaction of

the Engineer and the temperature of the mixture caught in transit still meets the requirements as specified in 334-3.7.1.2, the Contractor may then place the mixture caught in transit.

334-3.7.1.4 Speed of Paver: Establish the forward speed of the asphalt paver based on the rate of delivery of the mix to the roadway but not faster than the optimum speed needed to adequately compact the pavement.

334-3.7.1.5 Automatic Screed Control: For all asphalt courses placed with an asphalt paver, equip the paver with automatic longitudinal screed controls of either the skid type, traveling stringline type, or non-contact averaging ski type with a minimum length of 25 feet. On the final layer of asphalt base, overbuild, and structural courses, and for friction courses, use the joint matcher in lieu of the skid, traveling stringline, or non-contact averaging ski on all passes after the initial pass. Equip the asphalt paver with electronic cross slope controls.

334-3.7.1.6 Number of Crews Required: For each paving machine operated, use a separate crew, each crew operating as a full unit. The technician who will be in charge of all paving operations shall be state approved and properly certified as deemed appropriate by the Engineer. The Contractor's technician in charge of the paving operations may be responsible for more than one crew but must be physically accessible to the Engineer at all times when placing mix.

334-3.7.1.7 Checking Depth of Layer: Check the depth of each layer at frequent intervals, and make adjustments when the thickness deviates from the design thickness. When making an adjustment, allow the paving machine to travel a minimum distance of 32 feet to stabilize before the second check is made to determine the effects of the adjustment.

334-3.7.1.8 Hand Spreading: In limited areas where the use of the spreader is impossible or impracticable, the Contractor may spread and finish the mixture by hand.

334-3.7.1.9 Straightedging and Back-patching: Straightedge and backpatch after obtaining initial compaction and while the material is still hot.

334-3.7.2 Requirements Applicable to Courses Other Than Leveling:

334-3.7.2.1 Spreading and Finishing: Upon arrival, dump the mixture in the approved

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mechanical spreader, and immediately spread and strike-off the mixture to the full width required, and to such loose depth for each course that, when the work is completed, the

required specified thickness is placed. Carry a uniform amount of mixture ahead of the screed at all times.

334-3.7.2.2 Thickness of Layers: Construct each course of Type SP mixture in layers of thickness as shown in Section 334-4.1.3.

334-3.7.2.3 Laying Width: For regular roadways, pave to the full lane width, except in areas where physically constrained. For other applications such as sidewalks, provide a spreader capable of placing and screeding to the plan width. If necessary due to the traffic requirements, lay the mixture in strips in such a manner as to provide for the passage of traffic. As an option, where the road is closed to traffic, lay the mixture to the full width with machines traveling in echelon. Plan longitudinal joints such that they are not placed where a permanent wheel path will occur.

334-3.7.2.4 Correcting Defects: Before starting any rolling, check the surface. Correct any irregularities; remove all drippings, fat sandy accumulations from the screed, and fat spots from any source; and replace them with satisfactory material. Do not skin patch. When correcting a depression while the mixture is hot, scarify the surface and add fresh mixture.

334-3.7.3 Requirements Applicable Only to Leveling Courses:

334-3.7.3.1 Patching Depressions: Before spreading any leveling course, fill all depressions in the existing surface more than 1 inch deep by spot patching with leveling course mixture, and then compact them thoroughly.

334-3.7.3.2 Spreading Leveling Courses: Place all courses of leveling by the use of two motor graders, equip one with a spreader box. Other types of leveling devices may be used if approved by the Engineer.

334-3.7.3.3 Rate of Application: When using Type SP-9.5 (fine graded) for leveling, do not allow the average spread of a layer to be less than 50 lb/yd² or more than 75 lb/yd². The quantity of mix for leveling shown in the plans represents the average for the entire project.

334-3.8 MIXTURE COMPACTION

334-3.8.1 Equipment and Sequence: For each paving or leveling train in operation, furnish a separate set of rollers, with their operators.

Select equipment, sequence, and coverage of rolling to meet the specified mix design density. The coverage is the number of times the roller passes over a given area of pavement.

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Regardless of the rolling procedure used, complete the final rolling before the surface temperature of the pavement drops to the extent that effective compaction may not be achieved or the rollers begin to damage the pavement.

334-3.8.2 Standard Rolling Procedure: Meet the following equipment, sequence, and coverage requirements:

1. Seal Rolling: Provide two coverages with a tandem steel-wheeled roller, weighing 5 to 12 tons, following as close behind the spreader as possible without pick-up, undue displacement, or blistering of the material. Use static mode only for all compaction. No vibration will be allowed.
2. Intermediate rolling: Provide five coverages with a self-propelled pneumatic-tired roller, following as close behind the seal rolling operation as the mix will permit.
3. Final rolling: Provide one coverage with a tandem steel-wheeled roller (static mode only), weighing 5 to 12 tons, after completing the seal rolling and intermediate rolling, but before the surface pavement temperature drops to the extent that effective compaction may not be achieved or the rollers begin to damage the pavement.

For patching and leveling courses, the first structural layer placed on a milled surface, and on the first overbuild course, use only a self-propelled pneumatic-tired roller.

The Contractor may use equipment, sequences, or coverages other than those specified in the standard rolling procedure if so authorized by the Engineer.

334-3.8.3 Compaction at Crossovers, Intersections, etc.: When using a separate paving machine to pave the crossovers, compact the crossovers with one, 8 to 12 ton tandem steel roller (static mode only). If placing crossovers, intersections, and acceleration and deceleration lanes with the main run of paving, also use a traffic roller to compact these areas.

334-3.8.4 Rolling Procedures: Ensure that the initial rolling is longitudinal.

Where the lane being placed is adjacent to a previously placed lane, pinch or roll the center joint prior to the rolling of the rest of the lane.

Roll across the mat, overlapping the adjacent pass by at least 6 inches. Roll slowly enough to avoid displacement of the mixture, and correct any displacement at once by the use of rakes and the addition of fresh mixture if required.

Continue final rolling to eliminate all roller marks.

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334-3.8.5 Number of Pneumatic-tired Rollers Required: Use a sufficient number of self-propelled pneumatic-tired rollers to ensure that the rolling of the surface for the required number of passes does not delay any other phase of the laying operation and does not result in excessive cooling of the mixture before completing the rolling. In the event that the rolling falls behind, discontinue the laying operation until the rolling operations are sufficiently caught up.

334-3.8.6 Compaction of Areas Inaccessible to Rollers: Use hand tamps or other satisfactory means to compact areas which are inaccessible to a roller, such as areas adjacent to curbs, headers, gutters, bridges, manholes, etc.

334-3.8.7 Correcting Defects: Do not allow the rollers to deposit gasoline, oil, or grease onto the pavement. Remove and replace any areas damaged by such deposits as directed by the Engineer. While rolling is in progress, test the surface continuously, and correct all discrepancies to comply with the surface requirements.

Remove and replace all drippings, fat or lean areas, and defective construction of any description. Remedy depressions that develop before completing the rolling by loosening the mixture and adding new mixture to bring the depressions to a true surface. Should any depression remain after obtaining the final compaction, remove the full depth of the mixture, and replace it with sufficient new mixture to form a true and even surface.

Correct all high spots, high joints, and honeycombing as directed by the Engineer.

Remove and replace any mixture remaining unbonded after rolling. Correct all defects prior to laying the subsequent course.

334-3.9 JOINTS

334-3.9.1 General: When laying fresh mixture against the exposed edges of joints (trimmed or formed as provided below), place it in close contact with the exposed edge to produce an even, well-compacted joint after rolling.

334-3.9.2 Transverse Joints: Place the mixture as continuously as possible. Do not pass the roller over the unprotected end of the freshly laid mixture except when discontinuing the laying operation long enough to permit the mixture to become chilled.

When thus interrupting the laying operation, construct a transverse joint by cutting back on the previous run to expose the full depth of the mat.

334-3.9.3 Longitudinal Joints: For all layers of pavement except the leveling course, place each layer so that longitudinal construction joints are offset 6 to 12 inches laterally between successive layers. The Engineer may waive this requirement where offsetting is not feasible due to the sequence of construction.

334-3.10 SURFACE REQUIREMENTS

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334-3.10.1 General: Construct a smooth pavement with good surface texture and the proper cross-slope.

334-3.10.2 Texture of the Finished Surface of Paving Layers: Produce a finished surface of uniform texture and compaction with no pulled, torn, raveled, crushed or loosened portions and free of segregation, bleeding, flushing, sand streaks, sand spots, or ripples. Correct any area of the surface that does not meet the foregoing requirements in accordance with 334-3.10.5.

Do not use asphalt concrete mixtures containing aggregates that cause a different color appearance in the final wearing surface in sections less than 1 mile in length and across the full width of the roadway unless approved by the Engineer.

334-3.10.3 Cross Slope: Construct a pavement surface with cross slopes in compliance with the requirements of the Contract Documents. Furnish a level with a minimum length of 4 feet or a digital measuring device approved by the Engineer for the control of cross slope. Make this level or measuring device available at the jobsite at all times during paving operations. Utilize electronic transverse screed controls on the paving machine (unless directed otherwise by the Engineer) to obtain an accurate transverse slope of the pavement surface.

334-3.10.3.1 Quality Control Checks: Measure the cross slope of the pavement surface by placing the measuring device perpendicular to the roadway centerline. Report the cross slope to the nearest 0.1%. Record all the measurements on an approved form and submit to the Engineer for documentation. The cross slope report shall be submitted to the Engineer prior to the next scheduled paving operation.

Measure the cross slope at a minimum frequency of one measurement every 100 feet during paving operations to ensure that the cross slope is uniform and in compliance with the design cross slope. When the difference between the measured cross slope and the design cross slope exceeds $\pm 0.2\%$ for travel lanes (including turn lanes) or $\pm 0.5\%$ for shoulders, make all corrections immediately to bring the cross slope into the acceptable range.

When the cross slope is consistently within the acceptable range, upon the approval of the Engineer, the frequency of the cross slope measurements can be reduced to one measurement every 250 feet during paving operations.

For intersections, tapers, crossovers, transitions at beginning and end of project and similar areas, adjust the cross slope to match the actual site conditions or as directed by the Engineer.

334-3.10.4 Pavement Smoothness: Construct a smooth pavement meeting the requirements of this Specification. The County will provide a representative to be present when smoothness testing is performed.

334-3.10.4.1 General: Furnish a 15 foot manual and a 15 foot rolling straightedge meeting the requirements of FM 5-509. Make them available at the job site at all times during paving operations. Obtain a smooth surface on all pavement courses placed, and then straightedge

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all final structural and friction course layers in accordance with 334-3.10.4.5.

334-3.10.4.2 Test Method: Perform all straightedge testing in accordance with FM 5-509 with one pass of the rolling straightedge operated along the outside wheel path of each lane being tested. The Engineer may require additional testing at other locations within the lane.

334-3.10.4.3 Traffic Control: Provide traffic control in accordance with 334-3.2 and FDOT Design Standard Plans (102 series as applicable) during all testing. When traffic control cannot be provided in accordance with the applicable indices, submit an alternative Traffic Control Plan. The cost of this traffic control is included in the Contract bid prices for other pay items.

334-3.10.4.5 Quality Control Checks:

334-3.10.4.5.1 General: Straightedge the final Type SP structural layer and friction course layer with a rolling straightedge. Test all pavement lanes and ramps where the width is constant using a rolling straightedge and document all deficiencies on a form approved by the Engineer. Notify the Engineer of the location and time of all straightedge checks a minimum of 48 hours before beginning. Testing shall be conducted by a certified Paving Level I or higher technician. Maintain a field record during testing on a form approved by the Engineer identifying the areas tested and listing the location and degree of all deficiencies found. The field record shall be signed by the technician conducting the test and the Engineer or Engineer's Representative observing the test.

334-3.10.4.5.2 Rolling Straightedge Exceptions: Testing with the rolling straightedge will not be required in the following areas: intersections, tapers, crossovers, parking lots and similar areas. In addition, testing with the rolling straightedge will not be performed on the following areas when they are less than 50 feet in length: turn lanes, acceleration/deceleration lanes and side streets. However, correct any individual surface irregularity in these areas that deviates from the plan grade in excess of 3/8 inch as determined by a 15 foot manual straightedge, and that the Engineer deems to be objectionable, in accordance with 334-3.10.5.

In addition, the Engineer may also waive the straightedging requirements on ramps and superelevated sections where the geometrical orientation of the pavement results in an inaccurate measurement with the rolling straightedge.

334-3.10.4.5.3 Intermediate Layers: Straightedge all intermediate Type SP layers (structural and overbuild) as necessary to construct a smooth pavement.

On roadways with a design speed 50 miles per hour or greater, when an intermediate Type SP layer will be opened to traffic, straightedge the pavement with a rolling straightedge and correct all deficiencies in excess of 3/8 inch within 72 hours of placement, unless directed otherwise by the Engineer. Correct all deficiencies in accordance with 334-3.10.5.

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334-3.10.4.5.4 Final Type SP Structural Layer: Straightedge the final Type SP structural layer with a rolling straightedge, either behind the final roller of the paving train or as a separate operation. The Engineer will verify the straightedge testing by observing the Quality Control straightedging operations. Correct all deficiencies in excess of 3/16 inch in accordance with 334-3.10.5, and retest the corrected areas prior to placing the friction course.

For bicycle paths, straightedge the final structural layer with a rolling straightedge, either behind the final roller of the paving train or as a separate operation. Correct all deficiencies in excess of 5/16 inch in accordance with 334-3.10.5. Retest all corrected areas. If the Engineer determines that the deficiencies on the bicycle path are due to field geometrical conditions, the Engineer will waive corrections.

334-3.10.4.5.5 Friction Course Layer: Acceptance for pavement smoothness will be based on verified Quality Control measurements using the rolling straightedge. The Engineer will verify the straightedge testing by observing the Quality Control straightedging operations.

At the completion of all paving operations, straightedge the friction course as a separate operation. As an exception, if approved by the Engineer, straightedge the friction course behind the final roller of the paving train. Correct all deficiencies in excess of 3/16 inch in accordance with 334-3.10.5. Recheck all corrected areas.

334-3.10.5 Correcting Unacceptable Pavement: Correct all areas of unacceptable pavement at no cost to the County. Correct deficiencies in the Type SP structural layers or in the friction course by removing and replacing the full depth of the layer, extending for a distance on either side of the defective area as determined by the Engineer, but in no case less than 50 feet on

either side of the defective area for the full width of the paving lane. At the discretion of the Engineer, removal and replacement of the entire limits of the new pavement may be required.

334-3.11 FINISHED SURFACE PROTECTION

Keep sections of newly compacted asphalt concrete, which are to be covered by additional courses, clean until the successive course is laid.

Do not dump embankment or base material directly on the pavement. Dress shoulders before placing the friction course on adjacent pavement.

Equip blade graders operating adjacent to the pavement during shoulder construction with a 2 by 8 inch or larger board, or other attachment providing essentially the same results, attached to their blades in such manner that it extends below the blade edge in order to protect the pavement surface from damage by the grader blade.

To prevent rutting or other distortion, protect sections of newly finished dense graded friction course and the last structural layer prior to the friction course from traffic until the surface temperature has cooled below 160°F.

The Contractor may use artificial methods to cool the pavement to expedite paving operations. The County may direct the Contractor to use artificial cooling methods when maintenance of traffic requires opening the pavement to traffic at the earliest possible time.

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334-3.12 STRIPING

Following final cooling and compaction of the mat and prior to opening to traffic, place temporary painted traffic stripes in accordance with TP-710 and Standard Specification 710 on each paved surface that will receive traffic, including intermediate structural courses, final structural courses that will serve as the surface course, and friction courses. Following thirty (30) days after placement of the final surface course, structural or friction, place thermoplastic striping in accordance with TP-711 and Standard Specification 711 and place raised reflective pavement markers. Final pavement markings are subject to a 180 day observation period under normal traffic. The observation period shall begin with the satisfactory completion and acceptance of the work. The pavement markings shall show no signs of failure due to blistering, excessive cracking, chipping, discoloration, poor adhesion to the pavement, loss of reflectivity or vehicular damage. The County reserves the right to check the color and retroreflectivity within 30 days prior to the end of the observation period. Replace, at no additional expense to the County, any pavement markings that do not perform satisfactorily under traffic during the 180 day observation period.

334-4 SUPERPAVE ASPHALTIC CONCRETE

334-4.1 DESCRIPTION

334-4.1.1 General: Construct a Superpave Asphaltic Concrete pavement using the type of mixture specified in the Contract on a properly prepared and accepted base. Superpave mixes are identified as Type SP-9.5, Type SP-12.5 or Type SP-19.0.

Meet the requirements of 334-2 for personnel, plant, methods and equipment. Meet the general construction requirements of 334-3.

334-4.1.2 Traffic Levels: The requirements for Type SP Asphaltic Concrete mixtures are based on the design traffic level of the project, expressed in 18-Kip Equivalent Single Axle Loads (ESAL's). The traffic levels applicable for this specification are as shown in Table 1.

Table 1 Superpave Traffic Levels		
Traffic Level	Million ESAL's	Typical Applications
A	<0.3	Local roads, county roads, and city streets where truck traffic is light or prohibited
B	0.3 to <3	Arterial roads, Collector roads, access streets, medium duty city streets and the majority of county roadways
C	3 to < 10	

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The traffic level(s) for the project are as specified in the Contract. A Type SP mix one traffic level higher than the traffic level specified in the Contract, up to a Traffic Level C mix, may be substituted at no cost to the County. In situations where the design traffic level is not specified in the Contract, a Traffic Level C mix shall be used.

334-4.1.3 Layers: Use only fine graded Superpave mixes.

334-4.1.3.1 Layer Thickness: The allowable structural layer thicknesses for fine Type SP Asphaltic Concrete mixtures are as follows:

Type SP-9.5	1 1/4 – 1 1/2 inches
Type SP-12.5	1 1/2 – 2 1/2 inches
Type SP-19.0.....	2- 3 inches

In addition to the minimum and maximum thickness requirements, the following restrictions are placed on fine mixes when used as a structural course:

- Type SP-9.5 - Limited to the top two structural layers, two layers maximum.
- Type SP-12.5 - May not be used in the first layer of courses over 3 1/2 inches thick, nor in the first layer of courses over 2 3/4 inches thick on limited access facilities.
- Type SP-19.0 - May not be used in the final (top) structural layer.

334-4.1.3.2 Additional Requirements: The following requirements also apply to fine Type SP Asphaltic Concrete mixtures:

334-4.1.3.2.1 When construction includes the paving of adjacent shoulders (≤ 5 feet wide), the layer thickness for the upper pavement layer and shoulder shall be the same and paved in a single pass, unless called for differently in the contract documents.

334-4.1.3.2.2 All overbuild layers shall be Type SP Asphalt Concrete designed at the traffic level as stated in the Contract. Use the minimum and maximum layer thicknesses as specified above unless called for differently in the contract documents. On variable thickness overbuild layers, the minimum allowable thickness may be reduced by 1/4 inch, and the maximum allowable thickness may be increased 1/2 inch, unless called for differently in the contract documents.

334-4.2 MIX COMPOSITION

334-4.2.1 General: Compose the asphalt mixture using a combination of aggregates (coarse, fine or mixtures thereof), mineral filler, if required, and asphalt binder material. Size, grade and combine the aggregate proportions to meet the grading and physical properties of the approved mix design. Aggregates from various sources may be combined.

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334-4.2.2 Mix Design: Submit to the Engineer the proposed mix design and proof that this mix design is on the FDOT District 5 accepted list. The Engineer will verify with the FDOT District 5 Bituminous Engineer that the mix is on the approved list. No mix design revisions will be allowed. A new design mix will be required for any substitution of an aggregate product, binder, or other design component unless approved by the Engineer. The Engineer will consider any marked variations from mix design parameters or any evidence of inadequate field performance of a mix design as sufficient evidence that the properties of the mix design have changed, and the Engineer will no longer allow the use of that mix design. Provide certification from the plant (either in a statement on the delivery ticket or on a separate sheet) that the mix provided is in conformance with the design mix.

334-4.2.3 Additional Information: Provide the following information to the Engineer with each FDOT approved mix design submitted for use:

- The approved FDOT Mix Design Number.
- The design traffic level and the design number of gyrations (N_{design}).
- The source and description of the materials to be used.
- The FDOT source number product code of the aggregate components furnished from an FDOT approved source.
- The gradation and proportions of the raw materials as intended to be combined in the paving mixture. The gradation of the component materials shall be representative of the material at the time of use. Compensate for any change in aggregate gradation in handling and processing as necessary.
- A single percentage of the combined mineral aggregate passing each specified sieve. Degradation of the aggregate due to processing (particularly -No. 200 [-75 μm]) should be accounted for and identified for the applicable sieves.
- The bulk specific gravity value for each individual aggregate (and RAP) component, as identified in the FDOT aggregate control program.
- A single percentage of asphalt binder by weight of total mix intended to be incorporated in the completed mixture, shown to the nearest 0.1%.
- A target temperature at which the mixture is to be discharged from the plant and a target roadway temperature. Do not exceed a target temperature of 340°F for modified asphalts and 315°F for unmodified asphalts.
- The physical properties achieved at four different asphalt binder contents, one of which shall be at the optimum asphalt content, and must conform to all specified physical requirements.
- The ignition oven calibration factor.

334-4.3 MATERIALS

334-4.3.1 General Requirements: Meet the material requirements specified in Division III of the FDOT Standard Specifications for Road and Bridge Construction. Specific references are as

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follows:

Coarse Aggregate: Stone, Slag, Crushed Gravel, Crushed Reclaimed Portland Cement
Concrete Pavement, Crushed Glass..... Section 901
Fine Aggregate Section
902 Superpave PG Asphalt Binder.....Section
916-1

334-4.3.2 Superpave Asphalt Binder: Unless specified otherwise in the Contract, use a PG 58-22 or PG 67-22 asphalt binder unless the use of a different binder or recycling agent has been approved by the Florida Department of Transportation and the Engineer for a particular mix design.

334-4.3.3 Use of Reclaimed Asphalt Pavement (RAP) Material:

334-4.3.3.1 General Requirements: Reclaimed Asphalt Pavement (RAP) may be used as a component material of the asphalt mixture, subject to the following requirements:

- Assume responsibility for the production and placement of asphalt mixes which incorporate RAP as a component material.
- Use only RAP that has been approved by the FDOT. Provide documentation of the FDOT approval.
- Limit the amount of RAP material used in the mix to a maximum of 30% by weight of total aggregate, unless otherwise approved the Engineer.
- Use any suitable means to prevent oversized RAP material from showing up in the completed recycled mixture. Take immediate corrective action if oversized RAP material appears in the completed recycled mix.
- Provide stockpiled RAP material that is reasonably consistent in characteristics and contains no aggregate particles which are soft or conglomerates of fines.
- Provide RAP having a minimum average asphalt content of 4.0% by weight. The Engineer may sample the stockpile to verify that this requirement is met.

334-4.4 ACCEPTANCE

334-4.4.1 General: The asphalt mixture will be accepted based on one of the following methods as determined by the Engineer and/or the Contract Documents:

- 1) Certification, Contractor Process Control Testing, and Acceptance Testing by the Engineer
- 2) Other method(s) as determined by the Contract

334-4.4.2 Certification by the Contractor: Submit a Notarized Certification of Specification Compliance letter by an officer of the company who is in responsible charge of paving

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operations. The letter shall be submitted on company letterhead to the Engineer and shall state that all material produced and placed on the project was in substantial compliance with the Specifications.

334-4.4.3 Contractor Process Control Testing: Provide supporting test data documenting all quality and process control testing as described in 334-2 above. A pre-qualified Independent Laboratory as approved by the Engineer may be utilized for the Process Control testing.

334-4.4.4 Acceptance Testing by the Engineer: The Engineer may employ the use of a pre-qualified Independent Geotechnical Engineering firm and/or Laboratory to perform acceptance testing. For every 500 feet of pavement placed per lane per day, take a set of three (3) randomly placed cores, at least two (6") inches in diameter, for determining density and thickness. A minimum of two sets of three cores will be taken per roadway. Acceptance will be based on the following:

334-4.4.4.1 Density: The minimum acceptable average density for each course of asphaltic concrete placed shall be ninety-two (92%) percent of the design unit weight (G_{mm}) of the job mix, with no test lower than ninety and eight tenths (90.8%) percent or higher than ninety-five (95%) percent.

334-4.4.4.2 Thickness: Meet the minimum design thickness on all cores. When a deficiency in thickness is found, the Engineer may require additional cores to be taken to determine the extent of the thickness deficiency. For any thickness that is less than the design thickness, remove and replace the full depth of the layer, extending for a distance on either side of the defective area as determined by the Engineer, but in no case less than 50 feet on either side of the defective area for the full width of the paving lane. At the discretion of the Engineer, removal and replacement of the entire limits of the new pavement may be required. For any thickness that is greater than the design thickness, the Engineer will make a determination about acceptance.

334-4.4.4.3 Surface Tolerance: The asphalt mixture will be accepted on the roadway with respect to surface tolerance in accordance with the applicable requirements of 334-3.10.

334-4.4.4.4 Additional Tests: The County reserves the right to run any test at any time for informational purposes and for determining the effectiveness of the Contractor's quality control and process control.

334-4.5 METHOD OF MEASUREMENT

For the work specified under this Section the quantity to be paid for shall be the actual area in Square Yards (SY) of asphaltic concrete placed and accepted, with the exception of Overbuild, for which the quantity to be paid for shall be tons of asphaltic concrete, placed and accepted, within the limits of the contract.

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334-4.6 BASIS OF PAYMENT

Type SP Asphaltic Concrete will be paid for at the contract unit price per square yard, completed and accepted, with the exception of Overbuild, which will be paid for at the contract unit price per ton, completed and accepted. No additional payment will be made for thickness of asphalt greater than the design thickness.

The bid price for the asphalt mix will include the cost of the liquid asphalt or the asphalt recycling agent. There will be no separate payment for the asphalt binder material in the asphalt mix.

Payment shall be made under:

- | | |
|-------------------|--|
| Item No. 334-2-15 | Superpave Asphaltic Concrete, (Traffic C) (1-1/2") (SP-12.5) - per square yard (SY) |
| Item No. 334-2-25 | Superpave Asphaltic Concrete, (Traffic C) (2-1/2") (SP-12.5) - per square yard (SY). |

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TP 337 – Superpave Asphaltic Concrete Friction Courses

SUPERPAVE ASPHALTIC CONCRETE FRICTION COURSES

337-1 DESCRIPTION

337-1.1 General: Construct a Superpave Asphaltic Concrete Friction Course pavement using the type of mixture specified in the Contract. Superpave Friction Course mixes are identified as Type FC-5, FC-9.5 and FC-12.5. Meet the requirements of TP 334-2 for personnel, plant, methods and equipment. Meet the general construction requirements of TP 334-3.

337-1.2 Thickness: The thickness of the friction course layer will be the plan thickness as shown in the plans per mix type. FC-9.5 will be 1", FC-12.5 will be 1-1/2", and FC-5 will be 3/4".

337-1.3 Contractor's Process Control: Provide the necessary quality and process control of the friction course mix production and placement in accordance with the applicable provisions of TP 334-2 and TP 334-3. The contractor will monitor the spread rate periodically to ensure uniform thickness. Provide quality control procedures for daily monitoring and control of spread rate. If the spread rate drops below the target value, immediately make all corrections necessary to bring the spread rate into the acceptable range.

337-2 MIX COMPOSITION

337-2.1 General: Compose the asphalt mixture using a combination of aggregates (coarse, fine, or a mixture thereof) and asphalt binder. Some mixtures may require fibers and/or hydrated lime. Size, grade and combine the aggregate proportions to meet the grading and physical properties of the approved mix design and the requirements of this Section.

337-2.2 Mix Design: Any submitted mix design must be pre-approved by the FDOT. Submit to the Engineer the proposed mix design and proof that the mix design is on the FDOT District 5 accepted list. No mix design revisions will be allowed. A new design mix will be required for any substitution of an aggregate product, aggregate gradation, binder, or other design component unless approved by the Engineer. The Engineer will consider any marked variations from mix design parameters or any evidence of inadequate field performance of a mix design as sufficient evidence that the properties of the mix design have changed, and the Engineer will no longer allow the use of that mix design. Provide certification from the plant (either in a statement on the delivery ticket or on a separate sheet) that the mix provided is in conformance with the design mix.

337-2.3 Asphalt Binder: Meet the requirements of Section 916, and any additional requirements or modifications specified herein for the various mixtures. Use PG 76-22 asphalt binder meeting the requirements of Section 916-1 of the FDOT Standard Specifications for Road and Bridge

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Construction. ARB-5 and ARB-12 shall not be used as the asphalt rubber binder unless otherwise approved by the Engineer. Limit the amount of Reclaimed Asphalt Pavement (RAP) material used in the mix design to equal to or less than 20% by weight of the total aggregate, unless otherwise approved by the Engineer.

337-2.4 Additional Information: Provide the following information to the Engineer with each FDOT approved mix design submitted for use:

- The approved FDOT Mix Design Number.
- The design traffic level and the design number of gyrations (N_{design}).
- The source and description of the materials to be used.
- The FDOT source number product code of the aggregate components furnished from an FDOT approved source.
- The gradation and proportions of the raw materials as intended to be combined in the paving mixture. The gradation of the component materials shall be representative of the material at the time of use. Compensate for any change in aggregate gradation in handling and processing as necessary.
- A single percentage of the combined mineral aggregate passing each specified sieve. Degradation of the aggregate due to processing (particularly -No. 200 [-75 μm]) should be accounted for and identified for the applicable sieves.
- The bulk specific gravity value for each individual aggregate (and RAP) component, as identified in the FDOT aggregate control program.
- A single percentage of asphalt binder by weight of total mix intended to be incorporated in the completed mixture, shown to the nearest 0.1%.
- A target temperature at which the mixture is to be discharged from the plant and a target roadway temperature. Do not exceed a target temperature of 340°F for modified asphalts and 315°F for unmodified asphalts.
- The physical properties achieved at four different asphalt binder contents, one of which shall be at the optimum asphalt content, and must conform to all specified physical requirements.
- The ignition oven calibration factor.

337-3 SPECIAL CONSTRUCTION REQUIREMENTS

337-3.1 FC-9.5 and FC-12.5:

337-3.1.1 Temperature:

337-3.1.1.1 Air Temperature at Laydown: Spread the mixture only when the air temperature (the temperature in the shade away from artificial heat) is at 45°F and rising.

337-3.1.1.2 Temperature of the mix: Heat and combine the asphalt binder and aggregate in a

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manner to produce a mix having a temperature, when discharged from the plant and at the time of spreading on the roadway, meeting the requirements of TP 334-3.5.3.

337-3.1.2 Prevention of Adhesion: To minimize adhesion to the drum during the rolling operations, the Contractor may add a small amount of liquid detergent to the water in the roller.

At intersections and in other areas where the pavement may be subjected to cross-traffic before it has cooled, spray the approaches with water to wet the tires of the approaching vehicles before they cross the pavement.

337-3.1.3 Transportation Requirements of Friction Course Mixtures: Cover all loads of friction course mixtures with a tarpaulin.

337-3.2 FC-5:

337-3.2.1 Hot Storage: When using surge or storage bins in the normal production of FC-5, do not leave the mixture in the surge or storage bin for more than one hour.

337-3.2.2 Longitudinal Grade Controls for Open-Graded Friction Courses: Use either longitudinal grade control (skid, ski or traveling stringline) or a joint matcher.

337-3.2.3 Temperature:

337-3.2.3.1 Air Temperature at Laydown: Spread the mixture only when the air temperature (the temperature in the shade away from artificial heat) is at 65°F and rising. As an exception, place the mixture at temperatures lower than 65°F, only when approved by the Engineer based on the Contractor's demonstrated ability to achieve a satisfactory surface texture and appearance of the finished surface. In no case shall the mixture be placed at temperatures lower than 60°F.

337-3.2.3.2 Temperature of the Mix: Heat and combine the asphalt binder and aggregate in a manner to produce a mix having a temperature, when discharged from the plant and at the time of spreading on the roadway, meeting the requirements of TP 334-3.5.3. The target mixing temperature shall be established at 320°F.

337-3.2.4 Compaction: Provide two, static steel-wheeled rollers, with an effective compactive weight in the range of 135 to 200 PLI, determined as follows:

Total Weight of Roller (pounds)
PLI = -----
Total Width of Drums (inches)

(Any variation of this equipment requirement must be approved by the Engineer.) Establish an appropriate rolling pattern for the pavement in order to effectively seat the mixture without crushing the aggregate. In the event that the roller begins to crush the aggregate, reduce the number of coverages or the PLI of the rollers. If the rollers continue to crush the aggregate, use a

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tandem steel-wheel roller weighing not more than 135 lb/in (PLI) of drum width.

337-3.2.5 Special Equipment

337-3.2.5.1 Fiber Supply System: Use a separate feed system to accurately proportion the required quantity of mineral fibers into the mixture in such a manner that uniform distribution is obtained. Interlock the proportioning device with the aggregate feed or weigh system to maintain the correct proportions for all rates of production and batch sizes. Control the proportion of fibers to within plus or minus 10% of the amount of fibers required. Provide flow indicators or sensing devices for the fiber system, interlocked with plant controls so that the mixture production will be interrupted if introduction of the fiber fails.

When a batch plant is used, add the fiber to the aggregate in the weigh hopper or as approved and directed by the Engineer. Increase the batch dry mixing time by 8 to 12 seconds, or as directed by the Engineer, from the time the aggregate is completely emptied into the pugmill. Ensure that the fibers are uniformly distributed prior to the addition of asphalt binder into the pugmill.

When a drum-mix plant is used, add and uniformly disperse the fiber with the aggregate prior to the addition of the asphalt binder. Add the fiber in such a manner that it will not become entrained in the exhaust system of the drier or plant.

337-3.2.5.2 Hydrated Lime Supply System: For FC-5 mixes containing granite, use a separate feed system to accurately proportion the required quantity of hydrated lime into the mixture in such a manner that uniform coating of the aggregate is obtained prior to the addition of the asphalt. Add the hydrated lime in such a manner that it will not become entrained in the exhaust system of the drier or plant. Interlock the proportioning device with the aggregate feed or weigh system to maintain the correct proportions for all rates of production and batch sizes and to ensure that all mixture produced is properly treated with hydrated lime. Control the proportion of hydrated lime to within plus or minus 10% of the amount of hydrated lime required. Provide and interlock flow indicators or sensing devices for the hydrated lime system with plant controls so that the mixture production will be interrupted if introduction of the hydrated lime fails. The addition of the hydrated lime to the aggregate may be accomplished by Method (A) or (B) as follows:

337-3.2.5.2.1 Method (A) - Dry Form: Add hydrated lime in a dry form to the mixture according to the type of asphalt plant being used.

When a batch plant is used, add the hydrated lime to the aggregate in the weigh hopper or as approved and directed by the Engineer. Increase the batch dry mixing time by eight to twelve seconds, or as directed by the Engineer, from the time the aggregate is completely emptied into the pugmill. Uniformly distribute the hydrated lime prior to the addition of asphalt binder into the pugmill.

When a drum-mix plant is used, add and uniformly disperse the hydrated lime to the aggregate prior to the addition of the asphalt. Add the hydrated lime in such a manner that it will not become entrained in the exhaust system of the drier or plant.

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337-3.2.5.2.2 Method (B) - Hydrated Lime/Water Slurry: Add the required quantity of hydrated lime (based on dry weight) in a hydrated lime/water slurry form to the aggregate. Provide a solution consisting of hydrated lime and water in concentrations as directed by the Engineer. Use a plant equipped to blend and maintain the hydrated lime in suspension and to mix it with the aggregates uniformly in the proportions specified.

337-3.2.5.3 Hydrated Lime Pretreatment: For FC-5 mixes containing granite, pretreat the aggregate with hydrated lime prior to incorporating the aggregate into the mixture. Use a feed system to accurately proportion the aggregate and required quantity of hydrated lime, and mix them in such a manner that uniform coating of the aggregate is obtained. Control the proportion of hydrated lime to within $\pm 10\%$ of the amount required. Aggregate pretreated with hydrated lime in this manner shall be incorporated into the asphalt mixture within 45 days of pretreatment.

337-3.2.5.3.1 Hydrated Lime Pretreatment Methods: Pretreat the aggregate using one of the following two methods:

Pretreatment Method A – Dry Form: Add the required quantity of hydrated lime in a dry form to the aggregate. Assure that the aggregate at the time of pretreatment contains a minimum of 3% moisture over saturated surface dry (SSD) conditions. Utilize equipment to accurately proportion the aggregate and hydrated lime and mix them in such a manner as to provide a uniform coating.

Pretreatment Method B – Hydrated Lime/Water Slurry: Add the required quantity of hydrated lime (based on dry weight) in a hydrated lime/water slurry form to the aggregate. Provide a solution consisting of hydrated lime and water in a concentration to provide effective treatment. Use equipment to blend and maintain the hydrated lime in suspension, to accurately proportion the aggregate and hydrated lime/water slurry, and to mix them to provide a uniform coating.

337-3.2.5.3.2 Blending Quality Control Records: Maintain adequate Quality Control records for the Engineer's review for all pretreatment activities. Include as a minimum the following information (for each batch or day's run of pretreatment): pretreatment date, aggregate certification information, certified test results for the hydrated lime, aggregate moisture content prior to blending, as-blended quantities of aggregate and hydrated lime, project number, customer name, and shipping date.

337-3.2.5.3.3 Certification: In addition to the aggregate certification, provide a certification with each load of material delivered to the HMA plant, that the material has been pretreated in conformance with these specifications. Include also the date the material was pretreated.

337-4 ACCEPTANCE

337-4.1 FC-9.5 and FC-12.5: Meet the requirements of TP 334-4.4.

337-4.2 FC-5: Meet the requirements of TP 334-4, excluding TP 334-4.4.4
Prior to the issuance of substantial completion, the contractor shall submit to the Engineer the complete

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ross slope report for the entire friction course placed within the project limits.

337-5 FAILING MATERIAL

Assume responsibility for removing and replacing all defective material placed on the project, at no cost to the County.

337-6 METHOD OF MEASUREMENT

For the work specified under this Section the quantity to be paid for shall be the actual area in Square Yards (SY) of asphaltic concrete friction course placed and accepted within the limits of the contract.

The bid price for the asphalt mix will include the cost of the asphalt binder, asphalt cement, anti-stripping agent, blending and handling and the tack coat application as directed in Article 300-8 of the FDOT Standard Specifications for Road and Bridge Construction, as well as fiber stabilizing additive and hydrated lime (if required). There will be no separate payment or unit price adjustment for the asphalt binder material in the asphalt mix.

337-7 BASIS OF PAYMENT

Price and payment will be full compensation for all the work specified under this Section (including the applicable requirements of Articles 300 and 320 of the FDOT Standard Specifications for Road and Bridge Construction.

Payment shall be made under:

ITEM NO. 337-7-83 Asphaltic Concrete Friction Course (1.5") (FC-12.5), (Traffic Level C)(Incl. Tack Coat)	Square Yard (SY)
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TP 425 – Inlets, Manholes, and Junction

Boxes INLETS, MANHOLES, AND JUNCTION BOXES

Construction of Inlets, Manholes and Junction Boxes shall conform to the requirements of Section 425 of the "Standard Specifications" and applicable FDOT Standard Plans contained in the plans, except as directed by the Engineer.

Precast inlet tops shall not be used for any type of inlet.

Method of Measurement

The quantities measured for payment under this Section shall be the number of inlets, manholes, junction boxes, yard drains, special end walls, and shallow ditch drains satisfactorily completed and accepted, including drainage structure under drains where required.

Basis of Payment

Structures included in this Section will be paid for at the contract unit price each, completed and accepted. Payments shall constitute full compensation for furnishing all materials and completing all work described herein or shown on the plans, including all excavation; dewatering; subsoil excavation and replacement material; backfilling and compacting around structures; disposal of surplus material; and furnishing and placing of all concrete; reinforcing steel; gratings; frames; covers, and any other necessary fittings as shown in the plans, required for acceptable construction, or as directed by the Engineer. Where required, drainage structure underdrains shall be included in the unit price for inlets and manholes. Any alteration of pipe grades up to one (1) foot to clear utilities shall be made and connections to structures made at no additional cost to the County or utility.

Payment shall be made under:

Item No. 425-1-325	Inlets, Curb, Type P-2, Partial	Each
Item No. 425-1-365	Inlets, Curb, Type P-6, Partial	Each

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TP 520 - Concrete Gutter, Curb Elements and Traffic Separator

CONCRETE GUTTER, CURB ELEMENTS, AND TRAFFIC SEPARATOR

Construction of concrete curb and gutter, concrete traffic separator, and concrete valley gutter shall conform to the requirements of Section 520 of the "Standard Specifications", except as directed by the Engineer.

Foundation

Foundation material upon which the concrete is to be placed shall be compacted to meet the specified densities and shall be thoroughly wetted but free of standing water just prior to placing concrete.

Contraction Joints

Contraction joints shall be sawed to a minimum depth of 1 1/2 inches. Sawing shall begin as soon as the concrete has hardened to the degree that excessive raveling will not occur. Sawing shall progress in the same direction and sequence as the concrete placement. Every third joint shall be sawed first, then saw intermediate joints.

For concrete placed before noon, all joints shall be sawed the same day of placement. For concrete placed after noon, all third joints shall be sawed the day of placement; all other joints prior to noon the following day.

Curing

Concrete shall be cured as provided in Section 520-8, except as modified herein or as approved by the Engineer. Curing material shall be applied to the concrete surfaces after finishing as soon as the concrete has hardened sufficiently to prevent marring the surface or within one hour after finishing is completed, whichever occurs first. Applying curing materials shall not be held up due to other activities on the project. Contractor shall schedule and provide manpower necessary to conform to these requirements.

Spraying equipment, including spray tip and nozzle, shall be as recommended by manufacturer's printed literature, or an acceptable equal. Suggested equivalent spraying equipment is:

Pump Sprayer: Model No. 1949, Chapin Mfg., (800) 444-
3140 Drum Pump Sprayer: 12 Volt DC # 6061, Chapin Mfg.

Equipment shall be maintained and nozzles replaced as required to provide consistent uniform spray pattern.

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A uniform coating meeting the manufacturer's recommended minimum application rate shall be applied. Areas appearing to have insufficient curing compound, as determined solely by the Engineer, shall be re-coated immediately to provide required uniform coverage.

Storage containers having greater than a five gallon capacity may be utilized only with prior approval by the Engineer. The contractor shall submit the manufacturer's descriptive literature describing the placement, storage and mixing requirements for storage containers exceeding five gallons. The contractor shall provide and utilize mechanical mixers for all containers larger than five gallons. The mixers shall be equivalent to the manufacture's requirements. The contractor shall conform to all storage, mixing and application requirements.

Repairs

Where replacement is necessary, complete sections between existing contraction joints shall be removed and replaced.

Method of Measurement

For curb or curb and gutter, the quantity to be paid will be plan quantity, in linear feet, measured along the face of the completed and accepted curb or curb and gutter.

For valley gutter or shoulder gutter, the quantity to be paid will be plan quantity, in linear feet, measured along the gutter line of the completed and accepted valley gutter or shoulder gutter.

For concrete traffic separator of constant width, the quantity to be paid will be plan quantity, in linear feet, measured along the center of its width, completed and accepted, including the length of the nose.

For concrete traffic separator of varying width, the quantity to be paid will be plan quantity, in square yards, completed and accepted.

Basis of Payment

Items covered by this Section will be paid for at the contract unit price. Payment shall constitute full compensation for all work described herein, including all labor, equipment, materials and incidentals necessary to complete each item of work.

Payment shall be made under:

Pay Item:

520- 1- 10	Concrete Curb and Gutter, Type F	per linear foot
520- 5- 11	Traffic Separator Concrete, Type I, (4')	per linear foot

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TP 522 – Concrete Sidewalks, 4 inch and 6 inch thickness

CONCRETE SIDEWALKS, 4 INCH AND 6 INCH THICKNESS

Construction of 4-inch and 6-inch thick concrete sidewalk shall conform to the requirements of Section 522 of the “Standard Specifications”, and Index 522 of the FDOT Standard Plans, except as directed by the Engineer.

Foundation

Foundation material shall meet the specified densities and shall be thoroughly wetted but free of standing water just prior to placing concrete.

Contraction Joints

Contraction joints shall be sawed. All joints shall be straight lines oriented at 90 degrees to the edge of sidewalk, radially if in a curve, or as directed otherwise. The minimum depth of joints shall be 1 1/2 inches or 1/4 the nominal thickness of concrete placed, whichever is greater.

Joint installation shall proceed in the same direction and sequence as the concrete placement. Sawing shall begin as soon as the concrete has hardened to the degree that excessive raveling will not occur. Every third transverse joint and all longitudinal joints shall be sawcut within 8 hours after finishing. Remaining transverse joints, shall be sawcut by noon the following day.

Construction Joints

Construction joints shall be constructed at the end of all pours and at other locations where the concrete placement operations are stopped for as long as 30 minutes. They shall be placed at least 10 feet from any other transverse construction joint or end of pavement section.

Metal keyways shall be installed at all construction joints in sidewalks 6-inches and greater in thickness. Concrete thickness shall be increased by 2-inches for a minimum distance of 6-inches either side of construction joints.

Curing

Concrete shall be cured as provided in Section 520-8, except as modified herein. Curing material shall be applied to the concrete surfaces after finishing as soon as the concrete has hardened sufficiently to prevent marring the surface or within one hour after finishing is completed, whichever occurs first. Applying curing materials shall not be held up due to other activities on the project. Contractor shall schedule and provide manpower necessary to conform to these requirements.

Spraying equipment, including spray tip and nozzle, shall be as recommended by the

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manufacturers' printed literature, or an acceptable equal. Suggested equivalent spraying equipment is as follows:

Pump Sprayer:
Model No. 1949, Chapin Mfg., (800) 444-3140 Drum Pump Sprayer:
12 Volt DC # 6061, Chapin Mfg.

Equipment shall be maintained and nozzles replaced as required to provide a consistently uniform spray pattern.

A uniform coating meeting the manufacturer's recommended minimum application rate shall be applied. Areas appearing to have insufficient curing compound, as determined solely by the County, shall be re-coated immediately to provide the required uniform coverage.

Storage containers having greater than a five gallon capacity may be utilized only with prior approval of the Engineer. The Contractor shall submit the manufacturer's descriptive literature describing the placement, storage and mixing requirements for storage exceeding five gallons. The Contractor shall provide and utilize mechanical mixers for all containers larger than five gallons. The mixers shall be equivalent to or exceed the manufacture's requirements.

The Contractor shall conform to all storage, mixing and application requirements.

Replacement

Where 6-inch concrete has to be replaced due to cracks, it shall be replaced with a uniform thickness of 8-inch concrete covering no less than 40 square feet and extending to existing sawed contraction joints. Replacement concrete shall extend at least 3-inches beneath existing concrete at a minimum thickness of 3-inches.

Method of Measurement

Quantities measured for payment under this Section shall be the actual area in square yards of concrete constructed in place.

Basis of Payment

Concrete Sidewalk including ramps and driveways will be paid for at the contract unit prices, completed and accepted. Payment shall constitute full compensation for all work described herein, and shall include all labor, equipment, materials, clearing and grubbing, excavation, grading, compaction, expansion material (asphalt impregnated), and all incidentals necessary to complete the work to the lines, grades, and thickness indicated on the plans.

Subgrade preparation and additional concrete required for thickened slabs as indicated on the plans or as directed by the Engineer shall be included in the contract unit price for 6-inch Concrete Sidewalk.

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Payment shall be made under:

Pay Item:

522-1	Concrete Sidewalk, (4" Thick)(Includes Compaction)	Per Square Yard
522-2	Concrete Sidewalk, (6" Thick)(Includes Compaction)	Per Square Yard

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TP 527 – Detectable Warnings on Walking Surfaces

DETECTABLE WARNINGS on WALKING SUREACES

The work specified in this Section consists of the furnishing and installing of detectable warnings on walking surfaces in accordance with Section 527 of the “Standard Specifications” except as directed by the Engineer.

Detectable surface mats shall be cast-in-place into wet concrete. Glued / bolted mats will not be accepted.

Method of Measurement

Quantities to be paid for under this Section shall be as set forth in Section 527 of the Standard Specifications.

Basis of Payment

The basis of payment shall be as set forth in Section 527 of the Standard Specifications.

Payment shall be made

under: Pay Item:

527-2	Detectable Warnings (on Walking Surfaces)	Square Feet (SF)
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TP 570 – Performance Turf

DESCRIPTION

Establish a growing, healthy turf over all areas designated in the Plans. Use sod in areas designated in the Plans to be sodded. Maintain turf areas until final acceptance of all contract work. Work shall include all mulching, sodding, fertilizing, clipping removal, litter control, edging and watering necessary to provide routine maintenance of the grassed area throughout the establishment period or until the work is accepted by the Engineer.

There must be at least 90% coverage of healthy grass prior to acceptance by the Engineer. The Engineer, at any time, may require replanting of any areas in which the establishment of the grass stand does not appear to be developing satisfactorily.

The CONTRACTOR shall mow grassed areas every 14 days, or as required by the Engineer, until final acceptance of the work.

MATERIALS

General

All sod shall meet the requirements of the Florida Department of Agriculture and Consumer Services and all applicable state laws, and shall be approved by the Engineer before installation.

All sod and mulch shall be free of noxious weeds and exotic pest plants, plant parts or seed listed in the current Category I “List of Invasive Species” from the Florida Exotic Pest Plant Council (FLEPPC, <http://www.fleppc.org>). Any plant officially listed as being noxious or undesirable by any Federal Agency, any agency of the State of Florida or any local jurisdiction in which the project is being constructed shall not be used. Any such noxious or invasive plant or plant part found to be delivered in seed, sod or mulch will be removed by the CONTRACTOR at his expense and in accordance with the law.

All materials shall meet plant quarantine and certification entry requirements of Florida Department of Agriculture & Consumer Services, Division of Plant Industry Rules.

Sod

Types: Unless a particular type of sod is called for in the Contract Documents, sod may be either centipede, bahia, or bermuda at the CONTRACTOR’S option. It shall be well matted with roots.

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Where sodding will adjoin, or be in sufficiently close proximity to, private lawns, other types of sod may be used if desired by the affected property owners and approved by the Engineer.

Dimensions: The sod shall be taken up in commercial-size rectangles, or rolls, preferably 12 inches by 24 inches or larger, except where 6 inch strip sodding is called for, or as rolled sod at least 12 inches in width and length consistent with the equipment and methods used to handle the rolls and place the sod. Sod shall be a minimum of 1-1/4 inches thick including a 3/4 inch thick layer of roots and topsoil. Reducing the width of rolled sod is not permitted after the sod has been taken up from the initial growing location. Any netting contained within the sod shall be certified by the manufacturer to be degradable within three years.

Condition: The sod shall be sufficiently thick to secure a dense stand of live turf. The sod shall be live, fresh and uninjured, at the time of planting. It shall have a soil mat of sufficient thickness adhering firmly to the roots to withstand all necessary handling. It shall be planted within 48 hours after being cut and kept moist from the time it is cut until it is planted. No sod which has been cut for more than 48 hours may be used unless specifically authorized by the Engineer. A letter of certification from the turf Contractor as to when the sod was cut, and what type, shall be provided to the Engineer upon delivery of the sod to the job site.

The source of the sod may be inspected and approved by the Engineer prior to being cut for use in the work.

Mulch

The mulch material shall be compost meeting the requirements below, hardwood barks, shavings or chips; or inorganic mulch materials as approved by the Engineer; or hydraulically applied wood fiber mulch or bonded fiber matrix (BFM) for the establishment of turf material.

Prepared Soil Layer

All material shall be suitable for plant growth. The organic matter content of the prepared soil layer after mixing shall be a minimum of 2.5%, a maximum of 10%, in accordance with FM 1-T-267 and have a pH value of 4.5 or greater and less than or equal to 8.5 as determined in accordance with FM 5-550. The organic matter content shall be created using any of the following materials.

Prepared soil layer materials may be obtained from either, or a combination of, the following sources:

- (1) Excavation within the limits of construction on the project. Such material may be stockpiled or windrowed on the project in areas approved by the Engineer.

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(2) Designated borrow pits for the project.

(3) From other sources of organic soil materials provided by the Contractor.

Organic Soil: This may consist of muck, mucky peat and peat and shall have an organic matter content of 30% or more if the mineral fraction is more than 50% clay, or more than 20% organic matter if the mineral fraction has no clay.

Compost: Meet the requirements of Florida Department of Environmental Protection Rule 62.709.550 Type Y (yard waste), Type YM (yard waste and manure), Type A (municipal solid waste compost) or Rule 62.640.850 Type AA (composted biosolids) and have unrestricted distribution.

Compost for use as a Soil Amendment: If the electrical conductivity (EC) value of the compost exceeds 4.0dS (mmhos/cm) based on the saturated paste extract method, the compost shall be leached with water prior to application.

Compost for use as a Mulch: The compost shall contain no foreign matter, such as glass, plastic or metal shards. The compost shall be slightly coarse to coarse in nature (over half of the solids shall be from particles 1/2 inches in size and no greater than 6 inches. Preference shall be given to compost or mulch made from uncontaminated woody waste materials.

Fertilizer

Ensure that all employees applying fertilizer, possess a current Florida Department of Agriculture and Consumer Services Commercial Applicator license in accordance with Section 482.1562, F.S. provide a copy of current certificates to the Engineer. Fertilizers shall comply with the State and County fertilizer laws.

The numerical designations for fertilizer indicate the minimum percentages (respectively) of (1) total nitrogen, (2) available phosphoric acid, and (3) water-soluble potash, contained in the fertilizer. At least 50% of the nitrogen shall be from a slow-release source.

Certification

The CONTRACTOR shall provide the Engineer a certified test report from the manufacturer of the commercial fertilizer confirming that the requirements of this Section are met. The certified test report shall include test results for total nitrogen, available phosphoric acid, water-soluble potash, and sulfur. Each certification shall cover one batch per type for dry type fertilizer.

Fertilizer Rates

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Soil laboratory fertilization recommendations are based on the amount (lbs) of nutrients (N, P₂O₅, K₂O) to apply per given area (usually 1,000 square feet.). From this recommendation it is necessary to select an appropriate fertilizer grade and then determine how much of this fertilizer to apply to the area.

If a complete fertilizer (containing all three primary nutrients) is not available in the ratio of N-P-K necessary to match the ratio required in the fertilizer recommendation, mixed-grade or single-nutrient fertilizers should be used to satisfy each nutrient requirement.

To calculate fertilizer rates:

- Measure the area to be fertilized in square feet.
- Select fertilizers, to be used based on the soil testing laboratory recommendations by matching the ratio of nutrients recommended to the fertilizer grades available.
- Determine the amount of fertilizer to apply to a given area (1,000 square feet.) by dividing the recommended amount of nutrient by the percentage of the nutrient (on a decimal basis) in the fertilizer. Apply no more than 0.25 lbs P₂O₅/1000 square feet per application prior to planting.
- Adjust the amount of fertilizer to the project area.

Insecticides and Herbicides

Use products found on the following website, <http://state.ceris.purdue.edu/>, approved by the Florida Department of Agriculture for the State of Florida. The use of restricted products is prohibited. Do not use any products in the sulfonylurea family of chemicals. Herbicide application by broadcast spraying is not allowed.

CONTRACTOR shall procure any necessary licenses, pay all charges and fees, and give all notices necessary for lawful performance of the work.

CONTRACTOR shall ensure that all insecticides and herbicides are applied in accordance with Chapter 5E-9, Florida Administrative Code. Provide a copy of current certificates upon request, to the Engineer.

CONTRACTOR shall ensure that employees who work with herbicides comply with all applicable Federal, State, and local regulations.

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CONTRACTOR shall comply with all regulations and permits issued by any regulatory agency within whose jurisdiction work is being performed. Post all permit placards in a protected, conspicuous location at the work site.

CONTRACTOR shall acquire all permits required for aquatic plant control as outlined in Chapter 62C-20, Florida Administrative Code, Rules of the Florida Department of Environmental Protection. Contact the Regional Field Office of Bureau of Invasive Plant Management of the Florida Department of Environmental Protection for proper permits and subsequent approval. If application of synthetic organo-auxin herbicides is necessary, meet the requirements of Chapter 5E-2, Florida Administrative Code.

Water

The water used in the grassing operations may be obtained from any approved source.

The water shall be free of any substance, which might be harmful to plant growth. Effluent water shall meet all Federal, State and local requirements.

Construction Methods

Incorporate turf installation into the project at the earliest practical time.

Use the methods and materials necessary to establish and maintain the initial grassing until final acceptance.

Sod: Place the sod on the prepared surface, with edges in close contact. Do not use sod which has been cut for more than 48 hours.

Place the sod to the edge of all landscape areas as shown in the Plans and as shown in the Design Standards.

Place rolled sod parallel with the roadway and cut any exposed netting even with the sod edge.

Monitor placed sod for growth of pest plants and noxious weeds. If pest plants and/or noxious weeds manifest themselves within 30 days of placement of the sod during the months April through October, within 60 days of placement of the sod during the months of November through March treat affected areas by means acceptable to the COUNTY at no expense to the COUNTY. If pest plants and/or noxious weeds manifest themselves after the timeframes described above from date of placement of sod, the Engineer, at his sole option, will determine if treatment is required and whether or not the CONTRACTOR will be compensated for such treatment.

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Remove and replace any sod as directed by the Engineer.

Turf Establishment

Perform all work necessary, including watering and fertilizing, to sustain an established turf until final acceptance, at no additional expense to the COUNTY. Provide the filling, leveling, and repairing of any washed or eroded areas, as may be necessary.

Established turf is defined as follows:

1. An established root system (leaf blades break before seedlings or sod can be pulled from the soil by hand).
2. No bare spots larger than one square foot.
3. No continuous streaks running perpendicular to the face of the slope.
4. No deformation of the turf areas caused by mowing or other CONTRACTOR equipment.
5. No exposed sod netting.
6. No pests or noxious weeds.

Monitor turf areas and remove all competing vegetation, pest plants, and noxious weeds (as listed by the Florida Exotic Pest Plant Council, Category I “List of Invasive Species”, Current Edition, <http://www.fleppc.org>). Remove such vegetation regularly by manual, mechanical, or chemical control means, as necessary. When selecting herbicides, pay particular attention to ensure use of chemicals that will not harm desired turf. Use herbicides in accordance with provision

During the entire establishment period and until turf is established in accordance with this specification, continue inspection and maintenance of erosion and sedimentation control. Take responsibility for the proper removal and disposal of all erosion and sedimentation control items after turf has been established.

Notify the Engineer, with a minimum of seven calendar days advance notice, to conduct inspections of the turf at approximate 90-day intervals during the establishment period to determine establishment. Results of such inspections will be made available to the CONTRACTOR within seven calendar days of the date of inspection. Determination of an established turf will be based on the entire project and not in sections.

The CONTRACTOR’S establishment obligations of this specification will not apply to deficiencies due to the following factors, if found by the Engineer to be beyond the control of the CONTRACTOR, his subcontractors, vendors or suppliers:

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- Determination that the deficiency was due to the failure of other features of the Contract.
- Determination that the deficiency was the responsibility of a third party performing work not included in the Contract or its actions.

The COUNTY will only pay for replanting as necessary due to factors determined by the COUNTY to be beyond the control of the CONTRACTOR.

Litter Removal

During each cycle all litter and debris are to be removed prior to and upon completion of a mowing cycle. Litter and debris removal includes the pickup removal, and disposal from the right-of-way and COUNTY property of any obstacle such as wood, signs, tires, cans, etc., which cannot be traversed by the mowing equipment. It will also be the CONTRACTOR'S responsibility to remove any item such as bags of trash, newspapers, magazines, food containers, boxes, sheets of paper, etc., which will be torn, ripped, scattered or further subdivided by the mowers, which will result in an objectionable appearance.

Clipping Removal

During each cycle all grass clippings that are not uniformly distributed, and detract from the appearance of the mowing operation will be removed from the site by the CONTRACTOR, upon completion of the mowing operation to allow for a neat and clean appearance after completion. The CONTRACTOR will remove and dispose of all grass clippings from the pavement, curbs and curb inlets located within the limits of the project.

The grass clipping removal will be performed in conjunction with the mowing cycle. It is the responsibility of the CONTRACTOR to maintain the inlet openings free from the debris generated during their right-of-way mowing operation. Grass clippings will not be blown into drains or storm drain inlets. Failure to adhere to this will result in the CONTRACTOR, at his/her own expense within two (2) working days, jetting out these pipes and drains or reimbursing the COUNTY for the clean-up effort carried out by COUNTY personnel.

Edging

Edging is the removal of all weeds, sand, vegetation, debris and plant material by the CONTRACTOR from all edges of curbs, to maintain these areas in an attractive and manicured condition. Edging includes the removal of growth mechanically and manually and shall be performed in conjunction with the mowing cycle. The edging of curbs will create a distinct void; approximately one-half (1/2) inch horizontally between the structure and the turf. String trimmers will not be used in edging. Edging also includes the removal of all sand and debris from the areas

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TP 603 – Signalization

SIGNALIZATION

The signalization shown on the plans shall be constructed in accordance with Sections 603, 632, 634, 641, 646, 650, 653, 660, 663, 665, 670, 671, 682, and 700 of the “Standard Specifications”, except where noted on the plans and indicated by the following Technical Provisions. All traffic signal equipment shall be listed on the Florida Department of Transportation's Approved Products List.

SHOP DRAWINGS

The Contractor shall provide shop drawings for all signalization equipment and installation. These shop drawings will be reviewed and approved by the Engineer prior to the Contractor placing orders for the signalization equipment and beginning construction.

SIGNAL CABLE

Signal Cable shall conform to the requirements of Section 632 of the “Standard Specifications” except payment will be included in the lump sum price for signalization.

SPAN WIRE ASSEMBLIES

Span wire assemblies shall be furnished and installed according to Section 634 of the "Standard Specifications" except payment will be included in the lump sum price for signalization.

PRESTRESSED CONCRETE POLES

Prestressed concrete poles shall be furnished and installed according to Section 641 of the "Standard Specifications" except payment will be included in the lump sum price for signalization.

ALUMINUM POLES, PEDESTALS AND POSTS

Aluminum poles, pedestals and posts shall be furnished and installed according to Section 646 of the "Standard Specifications" except payment will be included in the lump sum price for signalization.

VEHICULAR TRAFFIC SIGNAL ASSEMBLIES

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Vehicular traffic signal assemblies shall conform to Section 650 of the “Standard Specifications” except payment will be included in the lump sum price for signalization.

PEDESTRIAN SIGNAL ASSEMBLIES

Pedestrian signal assemblies shall conform to Section 653 of the “Standard Specifications” except payment will be included in the lump sum price for signalization.

VEHICLE DETECTION SYSTEM

Vehicle detection systems shall be furnished and installed according to Section 660 of the “Standard Specifications” except payment will be included in the lump sum price for signalization.

Each loop assembly shall include loop lead-in cable to connect the loop to the loop detector in the controller cabinet.

SIGNAL PRIORITY AND PRE-EMPTION SYSTEMS

Signal priority and pre-emption systems shall conform to Section 663 of the “Standard Specifications” except payment will be included in the lump sum price for signalization.

PEDESTRIAN DETECTOR ASSEMBLIES

Pedestrian detector assemblies shall be furnished and installed according to Section 665 of the “Standard Specifications” except payment will be included in the lump sum price for signalization.

TRAFFIC CONTROLLERS

Traffic Controllers shall conform to the requirements of Sections 670 and 671 of the “Standard Specifications” except payment will be included in the lump sum price for signalization.

VIDEO EQUIPMENT

Video equipment shall conform to Section 682 of the “Standard Specifications” except payment will be included in the lump sum price for signalization.

HIGHWAY SIGNING

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Highway signing shall conform to Section 700 of the “Standard Specifications” except highway signing shown on the traffic signal plans will be paid as part of the lump sum price for signalization.

METHOD OF MEASUREMENT

Quantities measured for payment under this Section shall be in lump sum for each complete traffic control signal system installed at an intersection.

BASIS OF PAYMENT

Signalization will be paid for at the contract lump sum prices for each traffic control signal system installed at an intersection, completed and accepted. The cost of the signal communication system between signals shall be included in the contract price for each intersection signalization. Payment shall constitute full compensation for all work described herein and shown in the plans.

Payment shall be made under:

Item No. 603-1 Signalization – (John Young Pkwy @ Americana Blvd) (LS)

Item No. 603-1 Signalization – (Texas Ave. @ Rio Grande Ave.) (LS)

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TP 700 - Highway Signing

HIGHWAY SIGNING

The furnishing and installing of all Highway Signing as shown on the plans shall conform to the requirements of Section 700 of the Standard Specifications, except as amended herein or as directed by the Engineer. All highway signs shall be of the type specified and installed at the locations shown on the plans.

The materials and methods shall comply with Sections 700-3 through 700-6 of the Standard Specifications and shall be accepted by the Orange County Traffic Engineering Division prior to installation.

Sign posts for single column signs shall be a minimum of 14 gauge 2"x2" square welded steel with 3/8" knockouts on 1" centers on all four sides. The posts shall be listed on the FDOT's Qualified Products List and shall be galvanized and sealed with a polymer topcoat.

Method of Measurement

The quantities measured for payment under this Section shall be in accordance with Article 700-2.3 of the Standard Specifications.

Basis of Payment

Payment for furnishing and installing highway signs shall be in accordance with Section 700-2.4 of the Standard Specifications.

Payment shall be made

under: Pay Item:

700-1-11	Single Sign Post, F&I Ground Mount, (up to 12 SF)	AS
700-1-50	Single Post Sign, Relocate	AS
700-1-60	Single Post Sign, Remove	AS

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TP 706 - Raised Retro-Reflective Pavement Markers and Bituminous Adhesive

RAISED RETRO-REFLECTIVE PAVEMENT MARKERS and BITUMINOUS ADHESIVE

The furnishing and installing of all retro-reflective pavement markers as shown on the plans shall conform to the requirements of Section 706 of the “Standard Specifications”, except as amended herein or as directed by the Engineer. All retro-reflective pavement markers shall be Class B and the type shall be as shown on the plans.

Method of Measurement

The quantities measured for payment under this Section shall be in accordance with Article 706-6 of the Standard Specifications.

Basis of Payment

Section 706-7 of the Standard Specifications is deleted and the following is substituted:

The quantity for the furnishing and installing of retro-reflective pavement markers shall be paid for at the contract unit price per each.

Payment shall be made under:

Pay Item:

706-3A	Retro-Reflective Pavement Marker (White/Red)	EA
706-3B	Retro-Reflective Pavement Marker (Yellow/Yellow)	EA

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TP 710 - Painted Pavement Markings

PAINTED PAVEMENT MARKINGS

The placing of painted traffic stripes and markings as shown on the plans shall conform to the requirements of Section 710 of the “Standard Specifications”, except as amended herein or as directed by the Engineer.

Method of Measurement

Quantities measured for payment shall be the units for each designated item in the proposal. The quantity to be paid for under this Section shall include all labor and material for the placing of all pavement markings as shown on the plans, including the removal of any existing pavement markings.

Basis of Payment

All materials, work and incidental costs related to Painted Pavement Markings will be paid for at the contract lump sum price for work completed and accepted. Payment shall be full compensation for all the work specified herein and shall include all equipment, labor and materials required for an acceptable installation. Payment for this section shall include one (1) application of painted pavement markings to be applied to the final pavement surface during the 30day cure period.

Payment shall be made under:

Pay Item:

- | | |
|--------|---|
| 710-90 | Painted Pavement Markings, Final Surface (John LS Young Pkwy & Americana Blvd.) |
| 710-90 | Painted Pavement Markings, Final Surface (Texas LS Ave, & Rio Grande Ave.) |

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TP 711 - Thermoplastic Traffic Stripes and Markings

THERMOPLASTIC TRAFFIC STRIPES AND MARKINGS

The placing of thermoplastic traffic stripes and markings as shown on the plans shall conform to the requirements of Section 711 of the “Standard Specifications”, except as amended herein or as directed by the Engineer.

Materials

The materials to be used under this Section shall be in accordance with Article 711-2 of the Standard Specifications.

Method of Measurement

The quantities to be paid for under this Section shall be the length measured in linear feet, net miles of Thermoplastic Solid Traffic Stripe or the per each quantity of messages and directional arrows as measured and accepted by the Engineer. The payment shall include all labor and material for the placing of all pavement markings as shown on the plans, including removal of existing pavement markings.

Basis of Payment

The quantity for the placing of the thermoplastic pavement markings shall be paid for at the contract unit price.

Payment shall be made under:

Pay Item:

711-11-123	Thermoplastic, Standard, White, Solid, 12”	LF
711-11-125	Thermoplastic, Standard, White, Solid, 24”	LF
711-11-141	Thermoplastic, Standard, White, 2-4 Dotted, Guideline 6”	LF
711-11-170	Thermoplastic, Standard, White, Arrows	EA
711-11-224	Thermoplastic, Standard, Yellow, Solid, 18”	LF
711-11-241	Thermoplastic, Standard, Yellow, Skip/Dotted, 6”	LF
711-14-160	Thermoplastic, Preformed, White, Message or Symbol	EA
711-14-170	Thermoplastic, Preformed, White, Arrows	EA
711-16-101	Thermoplastic, Standard-Other Surfaces, White, Solid, 6”	LF
711-16-131	Thermoplastic, Standard-Other Surfaces, White, Skip, 6”	LF
711-16-201	Thermoplastic, Standard-Other Surfaces, Yellow, Solid, 6”	LF

JOHN YOUNG PARKWAY AND CONROY ROAD/AMERICANA BLVD
TEXAS AVENUE AND RIO GRANDE AVENUE
INTERSECTIONS AND SIDEWALK IMPROVEMENTS
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TP 900-1 As Built

AS-BUILT PLANS

The As-Built Plans shall incorporate all the changes made to the red line As-Built plans. They shall show locations and elevations of paving, swales, ditches, pipe inverts and structures constructed and all relocated or reset property corners, section corners and 1/4 section corners.

Upon the completion of the project, the Contractor shall submit to the County one (1) set of 24"x36" paper Full Size Drawings with Statement of Certifications, certifying that the project was constructed according to the Construction Plans and Specifications, and that the AS BUILT PLANS are correct representation of what was constructed. The plans shall delineate all red line information contained on the As-Built Plans.

The Contractor shall include the Statement of Certification on either the cover sheet certifying all of the sheets or certify each individual sheet. The Statement of Certifications shall be signed and sealed by a Professional Engineer and/or a Professional Surveyor and Mapper, both registered in the State of Florida.

Basis of Payment

As-Built Plans will be paid for at the contract lump sum price, completed and accepted.

A Lump Sum price will be provided for each of the two project locations: 1. John Young Parkway & Conroy Road/Americana Boulevard and 2. Texas Avenue & Rio Grande Avenue, as identified on the Schedule of Prices in the Bid Form.

Payment shall be made

under: Pay Item:

900-1	As-Built Plans (John Young Pkwy & Americana Blvd.)	Lump	Sum
900-1	As-Built Plans (Texas Ave. & Rio Grande Ave.)	Lump	Sum

JOHN YOUNG PARKWAY AND CONROY ROAD/AMERICANA BLVD
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TP 900-2 Indemnification

INDEMNIFICATION

The Contractor shall indemnify, defend, and hold harmless the COUNTY and all its officers, agents, and employees, from all claims, losses, damages, costs, charges, or expenses arising out of any acts, action, neglect, or omission by the Contractor during the performance of the Contract, whether direct or indirect, and whether to any person or property to which the COUNTY or said parties may be subject, except that neither the Contractor nor any of its subcontractors are liable under this Section for damages arising out of the injury or damage to persons or property directly caused or resulting from the sole negligence of the COUNTY or any of its officers, agents, or employees.

A Lump Sum price will be provided for each of the two project locations: 1. John Young Parkway & Conroy Road/Americana Boulevard and 2. Texas Avenue & Rio Grande Avenue, as identified on the Schedule of Prices in the Bid Form.

Payment shall be made under:

Pay Item:

900-2	Indemnification (John Young Pkwy & Americana Blvd.)	Lump Sum (\$100.00)
900-2	Indemnification (Texas Ave. & Rio Grande Ave.)	Lump Sum (\$100.00)