Financial Management Department
Purchasing Division
1112 Manatee Avenue West, Ste 803
Bradenton, FL 34205
Phone: (941) 749-3014
www.mymanatee.org

December 16, 2015

TO: All Interested Bidders

SUBJECT: **Invitation for Bid# 16-0212-DS**
Road Building Materials and Services

ADDENDUM #3

Bidders are hereby notified that this Addendum shall be acknowledged on page Bid Form-1 of the Bid Form and made a part of the above named bidding and contract documents. Bids submitted without acknowledgement of the Addendum will be considered incomplete.

The following items are issued to add to, modify, and clarify the bid and contract documents. These items shall have the same force and effect as the original bidding and contract documents, and cost involved shall be included in the bid prices. Bids to be submitted on the specific bid date, shall conform to the additions and revisions listed herein.

The deadline for clarification of questions is **December 16, 2015 at 3:00 pm**. This deadline has been established to maintain fair treatment of all potential bidders. Questions received after this date and time shall not be considered.

Q1: SMR Aggregates will be out of reserves within the next 1 to 2 years. Should we bid any of the Washed Shell or Bank Run Shell if we will be out of business before the end of the 3 year term? This will affect the following:

Items: Section I
1. Stone #4
2. Stone #57
3. Course Aggregate 3/8
4. Course Sand
4a.Tack Sand
5. Concrete Sand
9. Bank Run Shell <16%
11. Washed Shell ½"
12. Washed Shell 1"
13. Washed Shell 3"
14. Shell Screenings ½"
18. Course Aggregate ½

R1: Submit a bid, there is no penalty if reserves are not available for the complete three year term.

Q2: Can an asphalt patching item for variable depth patching from 2 to 4 inches, not including material, be added to the bid schedule? Often times there is a need for some minor patching prior to hot in-place recycling in order to improve the pavement condition of the pavement to be recycled.

R2: Patching is addressed in IV. 17 and material in IV.8. Bidders are to bid as noted on the bid form. No additional changes will be made.

Q3. There is a typo in the bid schedule for Section IV, Hot in Place Asphalt RECYCLING ITEM IV.48 that needs to be corrected. It currently reads, ASPHALT STABLIZED BASE COVER, 30,000 SY. It should be changed to read: ASPHALT RECYCLING 30,000 SY. The second line currently reads ASPHALT REJUVENATION AGENT. This should be changed to read: RECYCLING AGENT.

R3: IV.48 has been amended under the respective section. Please see revised bid form.

Q4: The specification for hot in-place recycling currently in the proposal is not current and needs to be replaced with the attached specification that was addressed in Addendum # 2 of the Bid # 12-1479-DS used three years ago.

R4: Bidders are to discard the originally supplied specifications replacing with the Addendum # 3 Technical Specifications. All other specifications remain unchanged.

Q5. Would it be possible to remove the hot mix asphalt concrete item from the hot in-place recycling portion of the contract and allow the hot mix to be provided by a Manatee County supplier for the same purpose?

R5: No.

Q6: Requesting to add additional FDOT quality control and testing Micro-Surfacing language effecting (IV.20, IV.20a, IV.21 and IV.21a) to specifications.

R6: On page 58 under Micro-Surfacing Materials Emulsion Asphalt additional language has been added. Bidders are to bid the respective items with the amended specifications.

Q7: Requesting to add additional FDOT qualify control and testing Bituminous Double Surface Treatment language effecting (IV.18) to specifications.

R7: Under (IV.18) Bituminous Double Surface Treatment additional language has been added. Bidders are to bid the respective items with the amended specifications.

Q8: Requesting an additional bid item for Bituminous Single Surface Treatment? This would fall under IV.18 specification.

R8: Section IV Base and Surface bid form has been amended with the addition of (IV.18a) Bituminous Single Surface Treatment. Bidders are to bid the respective items with the amended specifications.

Q9: Requesting an additional bid item under IV.20 and IV.21 for Tack Coat per the specification for Micro-surfacing?

R9: Section IV Base and Surface bid form has been amended with the additional line under IV.20a and IV.21a for clean and tack as required. Bidders are to bid the respective items with the amended specifications.

Q10: Under IV.47 Full Depth Reclamation can you add a bid item to Furnish and Place S-III and S-I Asphalt per ton as was done for the IV.48 HIP?

R10: No changes are to be made to the bid item. The Hot in Place process is a continuous train that the asphalt is added during the reworking of the asphalt in a signal pass process. The Full Depth process is different it is a rebase and then a resurface after a curing time. Manatee County currently has a method for the Full Depth contractors can bid on Furnish and Place S-I and S-III. See S-I and S-III and Sweep Tack and Spread. Under IV.48; the only material that would be needed is S-III. S-I is a structural mix and would not be required.

Q11: Requesting the Polymer Modified Slurry Seal specification be added for a Single Coat Type II Polymer Modified Slurry Seal at a rate of 22 to 26 pounds per SY?

R11: No, Manatee County will not be including the Polymer Modified Slurry Seal to the current annual bid. If the process should become necessary for a roadway the specific project will be bid individually.

Q12: If a Bond is required (PG C-5) How will we get paid for it?

R12: Manatee County will reimburse the complete cost of the bond. Contractors shall put on the respective release order a separate line for the bond with the amount of the bond and attach the support documentation.

Q13: (PG D-3) Lay-out of work. Will we be paid under survey for this Item per hr? If not how should we add this to our bid?

R13: The layout of the work is paid for under survey per hour per technical spec III.30.

Q14: Sec. E PG 27 Type S-3 states 1 ¼" Max, should it not be at least 1 ½" to 2"?

R14: The current specs are accurate to the Type S-3 specifications and shall stay as is.

Q15: PG 28 Friction Courses No Rap in Friction Courses FDOT is allowing Rap in Friction Now (Not as high as the surface courses)

R15: Items IV.4 Friction Course 12.5, item IV.5 Friction Course 9.5, and item IV.6 Friction Course Type FC-5 refer to the current FDOT specifications which allow Rap. Page 24 starts the specification for Type S mixes.

Q16: Permits, is there a charge for them, if so, how do we determine what we need or add an Item for permits.

Q16: Permits, is there a charge for them, if so, how do we determine what we need or add an Item for permits.

R16: If a permit is required, it will be paid for initially by the Contractor and then added to the release order as separate line item. Contractor shall attach supporting documentation to be reimbursed.

Q17: In Section I, request to make all the items 20-500tn (The min for a trucker is 20tn)?

R17: Section I will remain as they currently are and will not specify quantity ranges.

Q18: Section III Pavement Base Construction, III.1 III.2, request to eliminate over 10000SY and add 0-999 sy 1000—2500 sy and 2501 and above?

R18: Section III Pavement Base Construction III.1 and III.2 have been amended to reflect a more accurate range for the use of this contract.

Q19: Can we eliminate over 2000 CY and add 0-50 CY---51-150 CY and 151 and above for III.4 and III.4A?

R19: Section III Pavement Base Construction III.4 and III.4a have been amended to reflect a more accurate range for the use of this contract.

Q20: III.5 Grade and shape slopes can we do the same as III.1 and III.2?

Q20: Grade and shape (III.5) is to remain as listed. The ranges are accurate to the usages.

Q21: III.7 Fill Dirt Placing (Place, Shape, and Compact Fill) can we eliminate over 2000 CY and add 0-50 CY---51-150 CY and 151 and above as III.4?

R21: Section III Pavement Base Construction III.7 have been amended to reflect a more accurate range for the use of this contract.

Q22: III.8 Hydro Seeding and Hydro Mulching can we eliminate 1200-22000 and over 22000sy and make 5001 SY and above?

R22: The item will stay as is, its range is accurate for use of this contract.

Q23: III.27 Clipping Shoulder and & Removal of Material to Establish Drainage Finished Surface to Be Sodded or Hydro, can you modify to 0-1000lf 1001 lf to 2000 and 2001 and above?

R23: Section III Pavement Base Construction III.27 have been amended to reflect a more accurate range for the use of this contract.

Q24: IV.27 Pavement Milling, can the following be added, 0 to 1000 SY and 1001 to 2000 SY **for 1" and 2" Milling?**

R24: Section IV Base and Surface Construction/Material IV.27 have been amended to reflect a more accurate range for the use of this contract.

Q25: VII Traffic Control, requesting a guardrail removal Item and a bumper block remove and re install item be added.

R25: Curb Stop Removal and Reinstall has been added to Section III. New bid item is III.33

Q26: Can an item for paint be added when it is less than $500.00

R26: The bid form for paint items will remain as originally presented.

BIDDERS NOTE:
Bidders are to discard the previously submitted bid forms replacing with the Addendum # 3 bid forms attached. Bid Forms are also interactive. Please utilize these bid forms when submitting your completed bid offering.

Bidders are to discard page B-4 from the original broadcast solicitation located under section terms and conditions and replace with Addendum #3 page B-4. The maximum threshold for release orders has increased.

Bonding when required by the Project Manager, shall be for the duration of the project.

Bidders are to provide the bidder's **company name** and full authorized signature on each of the first section pages of the bid forms. By signing the first page of each section, bidders are attesting that each page of each section of the bid form have been signed by the authorizing agent for the firm.

The deadline for submitting sealed Bids at the Manatee County Purchasing Division, 1112 Manatee Avenue West, Suite 803, Bradenton, FL 34205 is **January 7, 2016 at 3:00 PM.**

END OF ADDENDUM #3

Sincerely,

Melissa M. Wendel, CPPO
Purchasing Official
/ds
(Attachments)
(Revised Bid Forms……_____total pages)
(Page B-4 revised)
(IV.48 Hot in Place specifications)
(Revised Technical Specifications)

SECTION E – TECHNICAL SPECIFICATIONS
ADDENDUM # 3

The technical specifications provide for the clarification of what standards and specifications are to be utilized in submittal of your bid.

Where referenced the governing standards and specifications are:

FDOT specifications can be found at: http://www.dot.state.fl.us/specificationsoffice/

Manatee County Specifications (Utility Design Standards, Transportation Design Standards and Storm Water Design Standards) can be found at: http://www.mymanatee.org/home/government/departments/public-works/engineering-services/engineering-standards.html

ASTM, AASHTO, AMRL and CMEC specifications can be found at: http://www.astm.org/

Florida Building Code can be found at: http://www.floridabuilding.org/

Florida Department of Environmental Regulation can be found: http://www.dep.state.fl.us/

Florida Department of Natural Resources can be found at: http://myfwc.com/

U.S. Environmental Protection Agency can be found at: http://www.epa.gov/

DESCRIPTION OF WORK IN SUPPORT OF REFERENCED FDOT BID ITEMS
All FDOT referenced sections and/or bid items shall follow the specified scope in the current edition unless otherwise specified.

DESCRIPTION OF WORK IN SUPPORT OF NON – REFERENCED FDOT BID ITEMS
All non-referenced FDOT sections and/or bid items shall follow the noted specification designator.

BASIS OF PAYMENT IN SUPPORT OF REFERENCED FDOT BID ITEMS
All FDOT referenced sections and/or bid items will be paid per the appropriate unit of measure noted in the current specifications and on corresponding bid form.

BASIS OF PAYMENT IN SUPPORT OF NON - REFERENCED FDOT BID ITEMS
All bid items silent in the specifications will be paid per the item description and unit of measure noted on the corresponding bid form.

Note: Distance from Successful Bidders Plant to Manatee County Yard shall be based on Manatee County Yard located at 4680 66th ST W @ Cortez Road, Bradenton, Florida. Manatee County Yards are operational from 7:00 AM to 3:00 PM Monday through Friday, except for County holidays.

SECTION E – TECHNICAL SPECIFICATIONS
ADDENDUM # 3

ZONES
Zones as designated as areas of the County to allow for prices various of the delivery of goods or the provision of services at different locations in a 750 + square mile county. When the bid form has a line item that mentions zones, it allows the bidder to use different pricing depending on where the work site is located to account for their costs.

SECTION I -- AGGREGATE

DESCRIPTION OF WORK
The work specified in this section shall reference FDOT specifications and American Society for Testing and Materials (ASTM) requirements as listed on Bid Form with the exception of I.16.

(I.16) CRUSHED CONCRETE BASE
The work specified in the bid item includes Crushed Concrete Base to follow FDOT Standard Specifications 2007 (rev 8-07) except that the Limerock Bearing Ratio (LBR) shall be minimum 150. The layer coefficient of 0.18 with LBR minimum150 is allowed to calculate the base thickness.

Only FDOT certified piles are acceptable to this solicitation. The producing process certified by FDOT without the actual pile certified is not considered solid enough for the acceptance of the material. The Successful Bidder shall provide the County deliver tickets with FDOT certified pile number, pile location, project name and manufactory contact information shown.

Additional tests and pile inspections will be required for the quality control and the Successful Bidder will be responsible for the cost of the initial ten tests and any re-tests when needed. The material will be rejected by the County if the initial test fails. The rejected material shall be completely removed from the project site.

1) Regarding structural number on Crushed Concrete Base, Manatee County to approve SN 0.18 if following criteria is met and maintained:

   A) Limerock Bearing Ratio value of 150 or greater.
   B) Gradation conforms to FDOT Specifications 2007 (rev 8-07).
   C) Deleterious materials conform to FDOT Specifications2007 (rev 8-07)
   D) Delivery ticket indicates FDOT approved source, actual lot allocated to a particular project.
   E) Piles or lots to be inspected by Manatee County representative prior to acceptance.

2) Regarding Limerock Bearing Ratio value:

   A) No Limerock Bearing Ratio value less than 150, with no under tolerance.

3) Regarding source approval:

   A) FDOT approved source, allocated lot sufficient to serve County needs, delivery tickets stating FDOT approved source, project name, and FDOT preapproved lot

or pile number.

4) Regarding deleterious materials:

A) Deleterious material content in addition to the FDOT Specifications2007 (rev 8-07) should state that no construction debris such as Styrofoam insulation, telephone wire, lumber, shingles, aluminum window or door frames etc., or household trash, i.e.: bottles, cans, paper goods etc. is acceptable.

5) Material source inspection:

A) Prior to acceptance of base product, a representative of Manatee County will **visit the Producer's location and obtain a sample of the proposed base for the** specified project. In addition to sampling, the pile will be visually inspected for deleterious materials, substantial segregation, or any other undesirable characteristics. The pile shall have a traceable identification by pile number or lot number and an accurate quality assessment.

6) Import and placement of base product:

A) During import of base product, a county inspector or duly designated representative of the county will be onsite monitoring incoming loads, making visual assessments of the product and checking load tickets for verification of materials.

B) After spreading out, prior to compacting, samples of the base product will be obtained by Manatee County approved testing lab, every 500 LF staggering right, left, center of the roadway for Limerock Bearing Ratio, gradation and deleterious material testing.

7) Rejection of materials:

A) Material not meeting above requirements **will** be subject to rejection and be removed from the project site. Any three (3) concurrent rejections will require immediate shut down of imported material and require review and remedies prior to restart.

8) Compaction of material:

A) In place material shall achieve 98% of AASHTO T-180 compaction.

(I.16) BASIS OF PAYMENT

All bid items specified shall be paid under the ton pay item for Crushed Concrete Base on the Bid Form.

SECTION E – TECHNICAL SPECIFICATIONS
ADDENDUM # 3

SECTION II - LIQUID ASPHALT

DESCRIPTION OF WORK
The work specified in this section shall reference FDOT Section 300 Prime and Tack Coats.

BASIS OF PAYMENT
All bid items specified shall be paid under the gallon pay item for Liquid Asphalt on the Bid Form.

SECTION III – PAVEMENT BASE CONSTRUCTION

DESCRIPTION OF WORK
The work specified in this section shall reference FDOT specifications, Manatee County Specifications (Utility Design Standards, Transportation Design Standards and Storm Water Design Standards) and specified heavy equipment models as listed on the Bid Form. The following bid items III.4, III.4a, III.5, III.7, III.8, III.9, III.10, III.11, III.12 reference see specification.

(III.4) EXCAVATION (DIRT REMOVAL)
The work specified in this section includes excavation involving the excavation and utilization or disposal of all materials necessary for the construction of the project.

This includes both roadway and subsoil excavation.

(III.4a) SPECIAL EXCAVATION REMOVAL OF DELETERIOUS MATERIAL LOADING AND HAULING
The work specified as special removal is to include loading and hauling material from a stock pile to the Lena Road Landfill located at 3333 Lena Road, Bradenton Florida. The County is responsible for tipping fees, this item will be paid for in Cubic Yards (CY) based on collective examination from the Successful Bidder and County of each truck leaving the site.

(III.4 and III.4a) BASIS OF PAYMENT
All bid items specified shall be paid under the cubic yard pay items for Excavation (Dirt Removal) and Special Excavation Removal of Deleterious Materials Loading and Hauling on the Bid Form.

(III.5) GRADE AND SHAPE FORESLOPE, BACKSLOPE, & PULLING OF DITCHES
The work specified in this section includes all equipment and labor required to establish new ditches to grade, place, shape, compact both foreslope and backslope as required to insure proper drainage. This item does not include fill material or sod.

(III.5) BASIS OF PAYMENT
The bid item specified shall be paid under the square yard pay item for Grade and Shape Foreslope, Backslope, & Pulling of Ditches on the Bid Form.

SECTION E – TECHNICAL SPECIFICATIONS
ADDENDUM # 3

(III.7) FILL DIRT PLACING (PLACE, SHAPE AND COMPACT FILL)
The work specified in this section consists of the placing of fill dirt to address transitions in elevations to natural ground.

(III.7) BASIS OF PAYMENT
All bid items specified shall be paid under the cubic yard pay item for Fill Dirt Placing on the Bid Form.

(III.8) DESCRIPTION OF WORK for HYDRO-SEEDING and HYDRO-MULCHING
The work specified in this section includes the furnishing of all labor, equipment and material required to grass by either regular or Hydro-Seeding and Hydro-Mulching shoulders, slopes and other designated areas. This includes all seed, fertilizer, mulch and water required for the slurry mix. Work shall include final preparation of the ground for seeding. Hydro Seeding for grassing on the right-of-way of Manatee County highways. Basic specification for this work is Florida Department of Transportation's Standard Specifications for Road and Bridge Construction - 2007.

WATER (Reference III.12)
The quantity of water ordered at the specific time of its being applied will be paid for separately per thousand gallons actually applied. This in accordance with Paragraph 570-6.6 of the FDOT specifications.

The following water schedule should be planned in case rain does not provide the necessary moisture. One and one-half to two gallons per square yard shall be applied twice weekly for three weeks or until such time as the roots are well established. An example of a wetting agent such as "Aquagro" shall be added. (http://tirmsdev.com/Aquatrols-Corporation-of-America-Inc-AquaGro-2000G-p12080)

FERTILIZER
Must adhere to Manatee County Fertilizer Ordinance 11-21. (**Attachment "F"**- end of document).

MULCH (part of III.8)
Cellulose fiber - 1000/1300 pounds per acre; soil binder 5 to 40 pounds acre may be added on steep slopes. Soil binder will be paid separately.

GRASS SEED (part of III.8)
Permanent Grass Seed:
1. 40/100 pounds per acre - Pensacola Bahia
2. 10/20 pounds per acre - Bermuda

Starter Grass Seed:
1. May 1 through October 15 - Millet 40 pounds per acre
2. April, October 15 to November - Millet 20 pounds
   - Rye 20 pounds

3. November 15 through March 31 - Rye 40 pounds per acre

(III.8) BASIS OF PAYMENT
All bid items specified shall be paid under the square yards pay item for hydro-seeding and hydro-mulching on the Bid Form.

(III.9) (BAHIA), (III.10) (ST. AUGUSTINE), (III.11) (BERMUDA) REFERENCE SODDING (FDOT 2007 edition) AND (III.12) WATER FOR SEEDING, SODDING & TREES

DESCRIPTION OF WORK.
The work specified in this section includes establishing a stand of grass within the specified areas, by furnishing and placing sod, and rolling, fertilizing, watering, and maintaining the sodded areas to ensure a healthy stand of grass.

Materials
Meet the following requirements:
Sod.....981-2 (FDOT 2007)

Construction Methods for (III.9, III.10, III.11 and III.12)

Preparation of Ground: Scarify or loosen the areas requiring sod to a depth of 6 inches. On areas where the soil is sufficiently loose, particularly on shoulders and fill slopes, the Engineer may authorize the elimination of the ground preparation. Limit preparation to those areas that can be sodded within 72 hours after preparation. Prior to sodding, thoroughly water areas and allow water to percolate into the soil. Allow surface moisture to dry before sodding to prevent a muddy soil condition.

Placing Sod: Place sod immediately after ground preparation. Do not use sod which has been cut for more than 72 hours. Stack all sod that is not planted within 24 hours after cutting and maintain proper moist condition. Do not sod when weather and soil conditions are unsuitable for proper results. Pre-wet the area prior to placing sod. Do not place sod on eroded or washed out sites. Place the sod on the prepared surface, with edges in close contact, and embed it firmly and smoothly by light tamping with appropriate tools.
Place the sod to the edge of all the paving and shrub areas and 1 inch below adjoining pavement with an even surface and edge. Place rolled sod parallel with the roadway and cut any exposed netting even with the sod edge. Roll using a lightweight turf roller. Provide a true and even surface without any displacement of the sod or deformation. Where sodding in drainage ditches, stagger the setting of the sod pieces to avoid a continuous seam along the line of flow. Ensure that the offsets of individual strips do not exceed 6 inches. Tamp the outer pieces of sod to produce a featheredge effect. Peg sod at locations where the sod may slide. Drive pegs through sod blocks into firm earth, at intervals approved by the Engineer. Remove any sod as directed by the County.

(III.12) Watering: Thoroughly water the sod immediately after placing. Do not water in excess of 1 inch per week for establishment.

Maintenance: Maintain the sodded areas in a satisfactory condition until final acceptance of the project. Include in such maintenance the filling, leveling, and repairing of any washed or eroded areas, as may be necessary. The County will pay for resodding necessary due to factors determined **collectively** to be beyond the control of the Successful Bidder. Mow the sodded areas to a height of 6 inches when competing vegetation height exceeds 20 inches in height. 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, treat affected areas by means acceptable to the County at no expense to the County.

Method of Measurement (III.9, III.10 and III.11)
The quantities for the referenced items, completed and accepted are:

(1) The area, in square yards, of sodding.

(III.9, III.10, III.11 and III.12) BASIS OF PAYMENT
All bid items specified shall be paid under the square yard pay item except for (III.12) which will be paid under the gallon pay item on the Bid Form.

(III.13) PAVEMENT REMOVAL
The work specified in this section includes all equipment and labor required to excavate, remove and dispose of asphalt surface or base and sub-base.

(III.13) BASIS OF PAYMENT
All bid items specified under (Pavement Removal) shall be paid under square yards pay item noted on the Bid Form.

(III.25) REWORKING AND SHOULDER SODDING ON EXISTING FACILITIES
The work specified in this section includes all equipment, labor and material to repair re-establish or to insure proper drainage along existing shoulders, county rights of way or facilities and establish a strand of grass. Price is to include sod.

(III.25) BASIS OF PAYMENT
All bid items specified under (Removal and Shouldering Sodding on Existing Facilities) shall be paid under the square yard pay item noted on the Bid Form.

(III.26) CLIPPING OF SHOULDER AND CLEANUP FOR RESURFACING
The work specified in this section includes all equipment and labor required to address shoulder directly parallel to paving projects and establish edge of pavement, removal of excess material and the pull back and cleanup of the clipped shoulder.

(III.26) BASIS OF PAYMENT
All bid items specified under (Clipping of Shoulder and Cleanup for Resurfacing) shall be paid under lineal foot for each shoulder clipped.

(III.27) CLIPPING SHOULDER AND REMOVAL OF MATERIAL TO ESTABLISH DRAINAGE FINISHED SURFACE TO BE SODDED OR HYDRO

The work specified in this section includes all equipment and labor required to remove and re-establish proper drainage along county roads. This includes the loading, hauling and disposal of material paid at truck measure per CY removal and per LF for each shoulder clipped. The finished grading will be uniform and ready for sodding or Hydro seeding. Price does not include sodding or Hydro seeding.

(III.27) BASIS OF PAYMENT

All bid items specified under (Clipping Shoulder and Removal of Material to Establish Drainage Finished Surface to be sodded or Hydro) shall be paid under lineal foot/cubic yard for pay item noted on the Bid Form.

(III.28) COLD MIX IN PLACE INJECTION OF EXISTING UNPAVED ROADS BASE STABILIZATION

The work specified in this section includes all equipment, labor and material required to **stabilize an unpaved road base to a depth of 8". The testing of existing material, the** design mix may require additional materials as part of the process under this task. These items are:

Additional aggregate materials paid for in Tons,

Emulsified Asphalt, paid for in Gallons,

Additives such as Portland cement or liquid asphalt, paid for in Tons.

and design mix for base stabilization will be included in the SY cost and finished base stabilization will meet FDOT Section 285 Optional Base Group standards.

(III.28) BASIS OF PAYMENT

All bid items specified under (Cold Mix in Place Injection of Existing Unpaved Roads Base Stabilization) shall be paid under respective pay item noted on the Bid Form.

(III.29) COLD RECYCLED BITUMINOUS BASE COURSE

The work specified in this section includes the in-place construction of a Cold In-Place Recycled (CIR) Bituminous Pavement Layer and shall consist of pulverizing, crushing, and screening of the in- situ bituminous materials to the depth and width shown on the plans. An emulsified asphalt binder agent, water, and other additives, if required, will then be incorporated into the pulverized material and thoroughly mixed. This material will then be spread and compacted in accordance with the plans and specifications and as directed by the County. It is the intent of this Blanket Purchase Order to recycle 100% of the existing asphalt pavement. This will include, but is not limited to, all existing asphalt pavement adjacent to all concrete curbing, storm sewer inlets, manholes,
sanitary sewer manholes, and all utility valve boxes. The existing asphalt pavement in the above-described locations must be included in the recycling process in order to construct a bituminous pavement layer uniform in thickness throughout 100% of the proposed area.

SECTION E – TECHNICAL SPECIFICATIONS
ADDENDUM # 3

Materials

Asphalt Emulsion: The type of asphalt emulsion to be used shall be determined by the mixture design. Bituminous material shall conform to the applicable requirements of the 2010 *FDOT Standard Specifications for Road and Bridge Construction, Section 916.* A representative from the asphalt emulsion supplier will be at the job site at the beginning of the project to monitor the characteristics and performance of the asphalt emulsion. Throughout the job, the representative will be available to monitor the project and make adjustments to the asphalt emulsion formulation as required.

Cold Pulverized Material: The cold pulverized recycled asphalt pavement (hereinafter referred to as RAP) material shall meet the following gradation requirement prior to the addition of the asphalt emulsion.

1) STANDARD		***2) METRIC***	
Sieve Size	%Passing	Sieve Size	%Passing
1.25"	100	31.5 mm	100

Note: The compacted pavement layer shall be placed at a thickness of a minimum of two (2) times the nominal size of the crushed RAP or 2.5 inches, whichever is greater, and to a maximum of 5 inches.

Mixture Design

A preconstruction mix design(s) shall be submitted to the County by the CIR Successful Bidder using materials obtained directly from the project site prior to construction. Mix design formulations shall be conducted in accordance with the guidelines located in *Appendix 1- Mix Design Procedures for CIR*. Permission to obtain materials from roadway must first be obtained from the County. All core holes must be immediately patched with cold patch. The mix design testing shall be conducted by an AASHTO Materials Reference Laboratory (AMRL) accredited laboratory. Based on RAP consistency throughout project limits, more than one mix design may be required.

The mix design(s) shall be signed and sealed by a registered professional engineer and meet the Mix Design Performance Criteria of *Table 1* and be approved by the County prior to construction.

Table 1 – Mix Design Performance Criteria		
100 mm specimens shall be prepared in a Superpave Gyratory compactor. The mixture should meet the following criteria at the selected design asphalt emulsion content:		
Property	***Criteria***	***Purpose***
Compaction effort, Superpave Gyratory Compactor AASHTO T312	1.25° angle, 600 kPa stress, 30 gyrations	Density Indicator
Density, ASTM D2726 or equivalent	Report	Compaction Indicator

Gradation for Design Millings, ASTM C117	Report	
*Marshall stability, ASTM D6926, D6927, 40°C	1,250 lb min.	Stability Indicator
**Resistance of Compacted Bituminous Mixture to Moisture Induced Damage AASHTO T283 - Retained stability based on cured stability	70 % min.	Ability to withstand moisture damage
Indirect Tensile Test, AASHTO T322, Modified in *Appendix 2*	See Note in *Appendix 2*	Cracking (Thermal)
Raveling Test of Cold-Mixed Bituminous Emulsion Samples ASTM D7196, Modified in Appendix 3, 10°C and 50% humidity	2% max.	Raveling Resistance
** Cured stability tested on compacted specimens after 60°C (140°F) curing to constant weight.*		
***Vacuum saturation of 55 to 75 percent, water bath 25°C 23 hours, last hour at 40°C water bath*		

Other Additives: If necessary, additives may be used to meet the requirements in Table 1. In the case that an additive is used, the type and allowable usage percentage must be described in the submitted design recommendation.

Addition of Imported Crushed Reclaimed Asphalt Pavement (RAP) Material: If available, imported RAP material may be added at the discretion of the County if the RAP material meets the requirements in *Table 2*. The crushed RAP shall be free from vegetation and all other deleterious materials, including silt and clay balls.
It shall meet the requirements for Deleterious Materials given in *Table 2*. The crushed RAP shall not exceed the maximum size requirement in Section 334-2.3 and when blended with the design millings, shall produce a product which meets the specifications given in *Table 1*.

Table 2 - Imported Crushed RAP Criteria		
Property	***Method***	***Limit***
Deleterious Materials: Clay Lumps and Friable Particles in Aggregate, %	ASTM C 142 or AASHTO T112	0.2% maximum
Maximum size and Distribution	ASTM C 136 or AASHTO T 27	Section 334-2.3

Additional Aggregate: Based on the results of mix design testing or other requirements, **the CIR Successful Bidder shall determine if additional aggregate ("add-rock") is required** to comply with mix design performance criteria specified in *Table 1*. Any additional aggregate shall meet the criteria specified in *Table 3*, and it shall be graded to produce a pavement layer which meets the mix design performance criteria specified in *Table 1*.

Table 3 - Additional Aggregate Criteria		
Property	***Method***	***Limit***
Los Angeles abrasion value, % loss	AASHTO T96	40% maximum
Sand Equivalent,%	ASTM D2419	60% minimum
Maximum size and Distribution	ASTM C 136 or AASHTO T 27	Section 334-2.2
Water absorption %	AASHTO T 85	5%_ maximum

Equipment: Maintain all equipment in a satisfactory operating condition and in accordance with the 2010 FDOT Standard Specifications for Road and Bridge Construction, Section 100. The Cold In-Place Recycling shall be conducted with the equipment specified herein.

Milling Machine: A self-propelled cold milling machine that is capable of pulverizing the existing bituminous material in a single pass to the depth shown on the plans and to a minimum width of not less than 10 feet (3.05 m). The machine shall have automatic depth controls to maintain the cutting depth to within ± ¼ in (6 mm) of that shown on the plans, and shall have a positive means for controlling cross slope elevations. The use of a heating device to soften the pavement will not be permitted.

Material Sizing Unit: A material sizing unit having screening and crushing capabilities to reduce the pulverized bituminous material to the size required by Section 334-2.3 prior to mixing with asphalt emulsion. The screening and crushing unit shall have a closed circuit system capable of continuously returning oversized material to the crusher. All of the RAP (100%) shall be processed to the maximum size requirements as specified.

Mixing Unit: A mixing unit equipped with a belt scale for the continuous weighing of the pulverized and sized bituminous material and a coupled/interlocked computer controlled liquid metering device.

The mixing unit shall be an on-board completely self-contained pugmill. The liquid metering device shall be capable of automatically adjusting the flow of asphalt emulsion to compensate for any variation in the weight of pulverized material coming into the mixer. The metering device shall deliver the amount of asphalt emulsion to within ± 0.2 percent of the required design amount by weight of pulverized bituminous material (for example, if the design requires 3.0 percent, the metering device shall maintain the emulsion amount between 2.8 percent and 3.2 percent). The asphalt emulsion pump should be of sufficient capacity to allow emulsion contents up to 3.5% by weight of pulverized bituminous material. Also, automatic digital readings will be displayed for both the flow rate and total amount of pulverized bituminous material and asphalt emulsion in appropriate units of weight and time.

Pick-Up Machine: A pick-up machine may be used for transferring the recycled material from the windrow to the receiving hopper of the bituminous paver. The pick-up machine

shall be capable of removing the entire windrow down to the remaining underlying material.

Bituminous Paver: A self-propelled conventional bituminous paver having electronic grade and cross slope control for the screed shall be utilized. The equipment shall be of sufficient size and power to spread and lay the mixture in one smooth continuous pass to the specified section and according to the plans.

Additive Metering Devices: Any additives such as water, lime slurry, etc. added by the equipment in FDOT sections 3.1-3.6 at the mill head or mixing unit shall be controlled through liquid metering devices capable of automatically adjusting for the variation in the weight of the pulverized material going into the mixing unit.

The metering devices shall be capable of delivering the amount of additive to within +/- 0.2 percent of the required design amount by weight of the pulverized bituminous material. A capability of adding up to 5% water by weight of the pulverized bituminous material, if necessary based on environmental and material requirements, is required. It will not be required to meter the water added at the milling machine to control dust in the screens, belts, or crusher/material sizing unit.

Rollers: All rollers shall be self-propelled. The number, weight and types of rollers shall be as necessary to obtain the required compaction. Employing at least one pneumatic-tired roller shall have a minimum gross operating weight of not less than 50,000 lbs. (22,600 kg) is recommended. Pneumatic rollers must have properly working scrapers and water spraying systems. In addition, employing at least one double drum vibratory steel-wheeled roller shall have a gross operating weight of not less than 20,000 lbs. (9,000 kg) and a width of 78 inches (1980 mm) is recommended. Double drum vibratory rollers must have properly working scrapers and water spraying systems.

Power Broom - A self-propelled power broom for removal of loose particles and other materials from the Recycled Pavement Layer surface shall be utilized. The broom shall have positive control on the downward pressure applied to the surface.

Construction Methods

Removal of Vegetation: Grass and other vegetation shall be removed from the edge of the existing pavement to prevent contamination of the pulverized bituminous material during the milling operation.

Milling: The existing pavement shall be milled to the required depth and width as indicated on the plans. Recycling shall be in a manner that does not disturb the underlying material in the existing roadway. The milling operation shall be conducted so that the amount of fines occurring along the vertical faces of the cut will not prevent bonding of the cold recycled materials. Use a small milling machine, if necessary, to mill longitudinally to the required depth as indicated on the plans along all curbs and gutters, utilities, inlets, around all manholes and any other structures not accessible or practical to be milled by the milling/mixing machine utilities.

The millings produced by the small mill will be the same as the large mill and of equal gradation to produce a uniform recycled pavement layer. Inlets/Catch Basins must be covered during the milling and recycling operation to prevent milled material from entering the catch basin area where it could contaminate and/or block the storm water system.

Processing: The pulverized bituminous material shall be processed by screening and crushing to the required gradation specified in FDOT Section 334-2.2. When a paving fabric is encountered during the CIR operation, the Successful Bidder shall make the necessary adjustments in equipment or operations so that at least ninety percent (90%) of the shredded fabric in the recycled material is no more than 5 in^2 (3200 mm^2). Additionally, no fabric piece shall have any dimension exceeding a length of 4 inches (100 mm). These changes may include, but not be limited to, adjusting the milling rate and adding or removing screens in order to obtain a specification recycled material.

The Successful Bidder shall be required to waste material containing over-sized pieces of paving fabric as directed by the County When the Successful Bidder is aware that paving fabric exists, such as indicated on the plans, the Successful Bidder will not receive additional payment. However, if the Successful Bidder is not made aware of the paving fabric, than the Successful Bidder shall receive additional payment for any necessary adjustments in equipment and operations.

Mixing: The recycled material shall be produced through a mixing unit capable of processing the pulverized material, asphalt emulsion and any additives to a homogeneous mixture. The asphalt emulsion shall be incorporated into the pulverized bituminous material at the initial rate determined by the mix design(s) and approved by the County.

Spreading: The material shall be spread using a self-propelled paver meeting the requirements of either paver in FDOT Sections 334-3.5 or 334-3.6. Heating of the paver screed will not be permitted. A pick-up machine may be used to transfer the windrowed material into the paver hopper if using a conventional paver as listed in FDOT Section 3.5. The pickup machine must be within 150 feet (45 m) of the mixing unit described in FDOT Section 334-4.4. The recycled material shall be spread in one continuous pass, without segregation and to the lines and grades established by the County.

Compaction: Compaction of the recycled mix shall be completed to thickness requirements of FDOT Section 334-2.2. During initial construction, rolling patterns and sequences shall be established through the construction of a control strip, approximately 400 feet in length and produced with the CIR equipment within the pavement section, to determine procedures that result in optimum compaction. Passes with various combinations of rollers and relative increases in density with roller passes shall be evaluated. The number of passes that results in no further increase in wet density and achieves the degree of compaction specified in FDOT *Section 334-5.8* shall be selected as the rolling pattern and will establish a target wet density. Degree of compaction and wet density shall be measured using a nuclear moisture-density gauge in accordance with ASTM D2950, backscatter measurement mode.

Commence rolling once the emulsion has started to break. In all cases, the longitudinal joint must first be rolled followed by the rolling pattern established by the test strip. The selected rolling pattern shall be followed unless changes in the recycled mix or placement conditions occur and the established rolling pattern is causing damage to the mat or the required degree of compaction in unachievable.

These circumstances require the establishment of new rolling patterns and sequences through the construction of a new control strip. Rolling should start no more than 30 minutes behind the paver. Finish rolling should be completed no more than one hour after milling is completed. The following is the recommended rolling procedure:

Employ rollers meeting the requirements of FDOT Section 334-3.7. The longitudinal joint shall first be rolled followed by the rolling pattern established by the test strip. The initial pass for the rolling pattern established by the test strip should begin on the low side and progress to the high side by overlapping of longitudinal passes parallel to the pavement centerline. Rollers shall be operated at speeds appropriate for the type of roller and necessary to obtain the required degree of compaction and prevent defects in the mat. Rolling shall be continued until no displacement is occurring or until the pneumatic roller(s) is (are) walking out of the mixture. Final rolling to eliminate pneumatic tire marks and to achieve density shall be done by double drum steel roller(s), either operating in a static or vibratory mode. Vibratory mode should only be operated at a speed, frequency and amplitude shown not to damage the pavement.
When possible, rolling shall not be started or stopped on uncompacted material but with rolling patterns established so that they begin or end on previously compacted material or the existing pavement.

Return of Traffic: After the completion of compaction of the recycled pavement layer, no traffic, including that of the Successful Bidder, shall be permitted on the completed recycled material for at least two (2) hours. After two hours rolling traffic may be permitted on the recycled material. This time may be adjusted by the County to allow establishment of sufficient cure so traffic will not initiate raveling. After opening to traffic, the surface of the recycled pavement layer shall be maintained in a condition suitable for the safe movement of traffic. All loose particles that may develop on the pavement surface shall be removed by the CIR Successful Bidder by power brooming.

Protection and Damage: Protect the recycled pavement layer in accordance with the *2007 FDOT Standard Specifications for Road and Bridge Construction, Section 330-13.* Any damage to the completed Cold in Place Recycled bituminous material shall be repaired by the Successful Bidder prior to the placement of the hot mix asphalt concrete surface course, or other applicable surface treatment, and as directed by the County. Damage unrelated to Successful Bidder construction procedures or quality of work, such as due to poor base conditions, **shall be paid for under the pay item, "Recycled Material Patching."**

Finished Recycled Pavement Layer Smoothness: The completed cold recycled pavement layer surface shall not vary more than ¼ in (6 mm) from the lower edge of a 10-foot (3-meter) straight edge placed on the surface parallel and transversely to the centerline at locations selected by the County Irregularities exceeding the specified limit

Bidder's storage units for quality control testing if desired. The testing shall meet the following requirements:

Table 4 – Emulsion Criteria		
Property	***Method***	***Limit***
*Residue from distillation, %	ASTM D244	64.0 to 66.0 %
*Oil distillate by distillation, %	ASTM D244	0.5% maximum
Sieve Test, %	ASTM D244	0.1% maximum
**Residue Penetration, 25°C, dmm	ASTM D5	-25 to +25%
**Modified ASTM D244 procedure – distillation temperature of 177°C with 20 minute hold.*		
**To be determined during CIR design phase prior to emulsion formulation and manufacture for project. Penetration value range will be determined and submitted to the County for approval prior to project start*		

Asphalt Emulsion Content and Yield: Total emulsion quantity and yield shall be monitored and recorded daily and for each segment in which the target emulsion percentage is adjusted. This information shall be gathered from the calibrated emulsion metering device. Emulsion content adjustments shall be made appropriately when multiple and specific mix designs for different road segments of varying composition exist.

Water Content and Yield: Total water quantity and yield shall be monitored and recorded daily and for each segment in which the target water percentage is adjusted. This information shall be gathered from the water metering device. Water content adjustments shall be made appropriately when multiple and specific mix designs for different road segments of varying composition exist. Water content adjustments shall also be made based on mixture consistency, coating, and dispersion of the recycled materials.

Mixture Testing: At the discretion of the County and if the recycled pavement layer quality and workmanship seem suspect, the Successful Bidder may be required to sample, in accordance with ASTM D3665 and D979, the recycled mixture for determining compliance with design criteria specified in *Table 1*. If samples of the recycled asphalt pavement mixture are taken after the addition of additives and e emulsion, the specimens must be compacted within 15 minutes of sampling and tested as required in *Table 1*. If the recycled mixture is sampled prior to the addition of additives and emulsion, the sample must immediately be transferred to air-tight plastic container to prohibit loss of moisture. Samples must be mixed in the laboratory with the field additives and emulsion within 24 hours and tested as required in *Table 1*.

Depth of Pulverization (Milling): The depth shall be checked and recorded daily and every 1/8 mile (0.2 km).on both outside vertical faces of the cut. Measure depth by placing a rigid measuring device perpendicular to the bottom of the milled surface and near the vertical faces of the cut.

Compacted Density: Degree of compaction of the recycled pavement layer shall be monitored for compliance with target wet density established during the initial control strip

construction. Wet density shall be determined every 1/4 mile (0.4 km) using a nuclear moisture-density gauge in accordance with ASTM D2950, backscatter measurement mode. Ensure that all nuclear gauges are operated by licensed individuals and have been calibrated within the last 12 months. The acceptable degree of compaction shall be 96 to 98 percent of target wet density. Care shall be taken not to over-roll the mat based on visual observations of check cracking or shoving. A new control strip and target density shall be established if the consistency of the material being recycled changes. The County shall be notified prior to the construction of a new control strip.

Cross-Slope and Smoothness: The recycled pavement layer cross slope shall be checked regularly during spreading. A cross-slope of 2 %, unless otherwise specified in the construction plans, shall be maintained through the length of the project. When the difference between the measured cross slope and designed cross slope exceeds +/- 0.2% for travel lanes and +/ 0.5% for shoulders, operations shall be stopped until corrective actions are taken to bring the cross slope into an acceptable range. The recycled pavement layer shall be checked for smoothness regularly behind the paver and after rolling. The smoothness shall not vary more than ¼ in (6 mm) from the lower edge of a 10-foot (3-meter) straight edge placed on the surface parallel and transversely to the centerline after rolling is completed.
Correct all deficiencies in excess of ¼ in (6 mm) and retest to verify smoothness adequacy. It is recommended that the edge of the mat be rolled first and progress to the center or high side to prevent excessive edge sloughing.

Table 5 – Quality Control Testing and Inspection Criteria		
Property	***Method***	***Limit***
RAP Maximum Particle Size	ASTM C 136 or AASHTO T27	Section 334-2.2
RAP Particle Size Distribution	ASTM C 136 or AASHTO T27	Determined by Mix Design(s)
Emulsion and Water Yield	Calibrated Metering Device	Determined by Mix Design(s)
*Mixture Testing	Table 1	Table 1
**Depth of Milling	Section 334-5.7	Determined by Mix Design(s)
Compacted Density	ASTM D2950	96 to 98% of target density
Cross-Slope	FM 5-509	2% unless otherwise indicated
Smoothness	FM 5-509	Maximum 0.25 in (6 mm) deviation from planeness
Mixture Testing frequency shall be at the County's discretion		
Depth of Milling may need to be adjusted for localized unexpected pavement conditions		

Weather Limitations: Cold In-Place recycling operations shall be completed when the atmospheric temperature measured in the shade and away from artificial heat is at least 50^0 F (10°C). Also, the weather shall not be foggy or rainy. The weather forecast shall

not call for freezing temperature within 48 hours after placement of any portion of the project.

Measurement

(III.29) COLD RECYCLED BITUMINOUS BASE COURSE
The Cold In-Place Recycling (CIR) work will be measured by the square yard of the completed sections for the depth specified. The asphalt emulsion will be measured by the ton or gallon. Additional aggregate, additional reclaimed asphalt pavement (RAP) materials and other additives will be measured by the ton (or metric ton). Water used in this operation will not be paid for directly but shall be considered incidental to this bid item.

(III.30) SURVEYING
The work specified in this section includes all equipment, labor and material required for a Florida Licensed Surveyor to establish grade lines, boundaries, rights of way, geometric layout, plan, and profile drawings, staking, etc. on construction projects. This cost does not include record drawings. No research or office work will be paid unless approved in writing prior by the project manager. It is the intent of this item to be used for field work.

(III.31) TREE REMOVAL & DISPOSAL
The work specified in this section includes all equipment and labor required to remove, load and dispose of the entire tree from the ground up based on the width of the tree at a **height of 6' off the ground. Stump grinding is not included in this price.**

(III.32) 6' CONCRETE CURB STOPS
The work specified in this section includes furnishing and installation of concrete curb stops. Curb stop must meet the most current Florida Building codes.

(III.29, III.30, III.31, III.32 AND III.33) BASIS OF PAYMENT (ADDENDUM # 3)
All bid items specified shall be paid under the respective pay item noted on the Bid Form.

(III.33) CURB STOP REMOVAL AND REINSTALL (ADDENDUM # 3)
The work specified in this section includes all the equipment, labor and material required to remove and replace concrete curb stops. This price will be also include replacing any anchoring for curb stops.

SECTION IV - BASE & SURFACE CONSTRUCTION

(IV.1) SAND-ASPHALT HOT MIX – 800# STABILITY AND (IV.2) SAND-ASPHALT HOT MIX – 1200# STABILITY
The work specified in this section includes constructing a sand-asphalt hot mix base course, leveling course, or surface course.

Meet the requirements for plant and equipment as specified in FDOT Section 320. Meet the general construction requirements for all asphalt concrete pavements and bases as

The Successful Bidder may use RAP meeting the requirements of FDOT 331-2.2.4 as a substitution for a portion of the combination of aggregates. If using RAP, the Successful Bidder may use a recycling agent in accordance with the requirements of FDOT 331-2.2.5. The Successful Bidder may use recycled crushed glass meeting the requirements of 331-2.2.6 as a substitution for a portion of the combination of aggregates.

Mix Design

General: Meet the mix design requirements of FDOT 331-4.3. In addition to these requirements, include, in the mix design, test data showing that the material as produced will meet the requirements of Table 331-2.

Grading Requirements: Meet the requirements of FDOT 332-2.2 for aggregate combination including mineral filler.

Stability: Combine the constituents of the mixture in such proportions as to produce a mixture having Marshall Properties within the limits shown in Table 331-2.

Successful Bidder's Quality Control: Provide the necessary quality control of the bituminous mixture and construction in accordance with the applicable provisions of FDOT 331-4.4 and 331-5.2.
Furnish materials that meet the verified mix design. For extraction gradation analysis, meet the provisions of FDOT 331-4.4.2 and Table 331-3. For plant calibration, meet the provisions of FDOT 331-4.4.3 and Table 331-3.

Acceptance of Mixture

Acceptance at the Plant: The County will accept the bituminous mixture at the plant with respect to gradation and asphalt content in accordance with the applicable requirements of FDOT 331-6.

Acceptance on the Roadway: The County will accept the bituminous mixture on the roadway with respect to compacted density and surface tolerance in accordance with the provisions of FDOT 331-7.

Additional Tests: The County will apply the provisions of FDOT 331-6.4 to Sand-Asphalt Hot Mix.

Method of Measurement

The quantity to be paid for will be the weight of the mixture, in tons, completed and accepted. The weight will be determined as provided in FDOT 320-2 (including the provisions for the automatic recordation system).

The bid price for the asphalt mix will include the cost of the liquid asphalt or the asphalt recycling agent.

(IV.1 AND IV.2) BASIS OF PAYMENT

All bid items specified shall be paid under the ton pay item noted on the Bid Form.

specified in FDOT Section 330. Meet the sand-asphalt base course construction requirements as specified in FDOT Section 280.

The County will accept work on a LOT by LOT basis in accordance with the applicable requirements of FDOT Section 331. The County will determine the size of the LOT as specified in 331-6 for the bituminous mixture accepted at the plant and as specified in 331-7 for material accepted on the roadway.

Materials

Bituminous Material: Use Superpave PG Asphalt Binder or Recycling Agent meeting the requirements of 916-1 or 916-2.

Aggregate

General: Use aggregate material composed of one or more of the following:

a. Local sand.

b. A blend of local sands.

c. A local sand with some additive, such as mineral filler, commercial sand, crushed shell, rock screenings, or other approved material. Meet the commercial material requirements specified in Division III.

d. Manufactured aggregate.

Restrict the maximum size of the aggregate material using scalping screens having an opening of 5/8 inch [16.0 mm] square. Ensure that the material is graded from course to fine, and that it all passes a 1/2 inch [12.5 mm] sieve. Do not use aggregate or mineral filler containing more than 1% of phosphate.

Sand: Use sharp and nonplastic local sand, containing not more than 7% by weight of clay, composed of hard, durable grains free of loam, roots, and other deleterious substances, and suitable for use in a bituminous mix, as determined by laboratory tests. If the local sand deposit consists of stratified layers of varying characteristics and gradation, employ such means as necessary to secure a uniform material. Should the loss of fines during drying operations be such that the stability of the mixture is reduced below the minimum specified, add mineral filler or other approved material in such quantities as necessary to compensate for the loss in stability. Ensure that any clay present is the type which will not produce clay balls in the mixture.

Mineral Filler: If needed, meet the requirements of FDOT Section 917.

Testing: The County will sample all materials shipped to the asphalt plant at their destination.

Composition of Mixture

General: Use a bituminous mixture composed of a combination of fine aggregate, mineral filler if required, and bituminous material. Size, uniformly grade, and combine the aggregate fractions in the proportions specified in Table 331-1 so that the resulting mixture meets the physical properties and the requirements of the verified mix design.

SECTION E – TECHNICAL SPECIFICATIONS
ADDENDUM # 3

SECTION IV ASPHALT BASE COURSES

(IV.3) ASPHALTIC BASE COURSE

The work specified in this section includes the construction of asphalt base courses, and to meet the specific requirements for base widening construction.

The County will accept work on a LOT to LOT basis in accordance with the applicable requirements of FDOT Section 331. The County will determine the size of the LOT as specified in FDOT 331-6 for the bituminous mixture accepted at the plant and as specified in FDOT 331-7 for the material accepted on the roadway.

Use mixes designated as Asphalt Base Course Type 1 (ABC-1), Asphalt Base Course Type 2 (ABC-2) and Asphalt Base Course Type 3 (ABC-3).

Materials

Bituminous Material: Use Superpave PG Asphalt Binder or Recycling Agent meeting the requirements of 916-1.

Course Aggregates: Meet the requirements of FDOT Section 901.

Fine Aggregates: Meet the requirements of FDOT 335-2.2.

General Composition of the Mixes

General: Meet the requirements of FDOT 332-3.1.

Grading Requirements: The mix design, as established by the Successful Bidder and approved by the County, shall be within the design ranges as specified in FDOT Table 331-1, for ABC-1, ABC-2, and ABC-3.

Stability: Meet the requirements of FDOT 332-3.3.2.

Job Mix Formula

Meet the requirements of FDOT 332-3.3.1.

Successful Bidder's Quality Control

Meet the requirements of FDOT 332-3.4.

Acceptance of Mixture

Acceptance at the Plant: The County will accept the bituminous mixture at the plant with respect to gradation and asphalt content in accordance with the requirements of 331-6.

Acceptance on the Roadway: The County will accept the bituminous mixture on the roadway with respect to compacted density in accordance with the applicable provisions of 331-7. Use the permissible variations from longitudinal and transverse grades as specified in 200-7.

Additional Tests: Meet the requirements of FDOT 331-6.4 for ABC-1, ABC-2, and ABC-3.

Plant, Methods, and Equipment

Meet the plant, methods, and equipment requirements for asphalt base course construction as specified in FDOT Section 320, with the following modifications:

(a) Paving Equipment: The County will not require mechanical spreading and finishing equipment for the construction of base widening strips less than 6 feet [1.8 m] in width.

(b) Compacting Equipment: For compaction in areas too restricted to accommodate the standard rollers, the Successful Bidder may use vibratory rollers supplemented with trucks, motor graders, or other compaction equipment approved by the County.

Construction Requirements

General: Meet the construction requirements for asphalt base course construction as specified in FDOT Section 330, with the following modifications and specific requirements.

Limitations for Spreading: The Successful Bidder may place the base mix on the subgrade when the air temperature is at least 40°F [4°C] and rising, provided the subgrade upon which the base mix is to be placed is not frozen or noticeably affected by frost. The Successful Bidder may place the base mix where he removed all such frozen or frost-affected material during excavation for the subgrade.

Preparation of Subgrade: Before placing the initial layer of base material, prepare and compact the subgrade as specified in 160-8. Do not apply this requirement to base widening strips that are not to be stabilized and where the underlying native material has not been disturbed.

Tacking Between Layers: Place a tack coat between each successive layer of base material. As an exception, the County may authorize the elimination of the tack coat between successive layers when the Successful Bidder has laid them on the same day and the initial layer has not become contaminated by sand, dust, etc. Place a tack coat on all asphalt base courses before placing the structural course.

Placing the Mixture

Spreading and Finishing: Place the base course material with a mechanical spreading and finishing machine meeting the requirements as specified in 320-5. Prior to the placing of the surface course, the County may require motor grader leveling to bring the base into conformance with the plan grades and cross-section. The Successful Bidder may spread the first course of multiple course bases with a motor grader where the subgrade will not support the use of a mechanical spreader.

shall be corrected at the expense of the Successful Bidder by grinding/cold milling or leveling with cold or hot mix asphalt. The corrected areas shall be retested to determine compliance with smoothness.

Curing: Prior to placing the hot mix asphalt concrete surface course, or other applicable surface treatment, the recycled pavement layer shall be allowed to cure until the moisture of the material is reduced to 2.0 percent or less, or until approval of the

County. Under dry conditions, the Cold In-Place Recycled pavement layer should meet the moisture requirements within 48 hours.

Quality Control

Successful Bidder Responsibility: The Successful Bidder shall be responsible for providing field and laboratory quality control testing of materials during construction. The County may conduct sampling and testing whenever or as often as desired for verification purposes. The Successful Bidder shall acquire an adequate amount of material for each sample to be tested in the laboratory so that an ample amount of material is left over in case of the need for resolution testing. Resolution testing will be required and provided at the expense of the Successful Bidder if similar laboratory samples tested by the Successful Bidder and the County do not coincide within reasonable values as determined by the County. The resolution laboratory will be selected by the County and the testing results provided by this lab will be used for materials acceptance purposes.

All materials testing laboratories shall be accredited by the AASHTO Materials Reference Laboratory (AMRL) or Construction Materials Engineering Council (CMEC). The Successful Bidder shall submit all documentation of field inspection and laboratory testing results required herein to the County prior to payment and upon request. Copies of all delivery tickets and notes regarding any materials brought to the project site shall be given to the County upon delivery to the project site. These tickets shall be signed by an approved representative of the Successful Bidder at the time of delivery.

Crushed RAP Material Sizing: A sample shall be obtained from the receiving hopper of the paver each ½ mile (0.8 km) before the addition of emulsion and screened using a 1.25 in. (31.5mm) sieve (or smaller sieve if required) to determine maximum particle size requirement compliance. Additionally, two gradations shall be performed at approximately **the middle and end of each day's production and in accordance with AASHTO T27 or** ASTM C136 on the moist millings using the following sieves: 1.25 inch, 1.0 inch, ¾ inch, ½ inch, 3/8 inch, No.4, No.8, No.16, and No.30. The resulting gradations shall be compared to the mix design gradations to determine any necessary changes to emulsion content. Gradation results shall be shared with the County by the end of the following day. Sampling procedures shall be in accordance with ASTM D979 or AASHTO T168.

Asphalt Emulsion: The asphalt emulsion shall be received on the job site within the temperature ranges specified by the emulsion supplier. The emulsion supplier shall provide testing results for each shipment indicating the emulsion is in compliance with the criteria specified in *Table 4*. The County may require the Successful Bidder to obtain emulsion samples from each shipping trailer prior to unloading into the Successful

SECTION E – TECHNICAL SPECIFICATIONS
ADDENDUM # 3

Automatic Screed Control: For all machine-laid courses, use a paver that is equipped with automatic screed control of the ski or traveling string line type. Use the automatic joint matcher on the top course of the base after the first pass with the paving machine.

Thickness of Layers: Ensure that the maximum compacted thickness of any layer of asphalt base course is 3 inches [75 mm].

Compacting the Mixture: Apply the requirements for compaction as specified in 330-10 to the compaction of asphalt base courses with these two exceptions:

1. For widening strips 3 feet [1 m] or less in width, the County will not perform density testing for acceptance. The Successful Bidder may apply the compactive efforts using a trench roller, motor grader tires, or any other heavy equipment that will effectively exert a compactive effort. Specify what equipment will be used and what compactive effort (coverage) **will be furnished. Obtain the County's approval before** starting the operation.

2. For the initial layer of an asphalt base course placed on a soil subgrade, the County will not perform any density determinations. Propose a rolling train and pattern for the approval of the County. The County will perform density determinations on all subsequent layers, and apply the provisions of FDOT 331-7.

Thickness Requirements
Meet the requirements of FDOT 285-6.

Calculations for Average Thickness of Base
Meet the requirements of FDOT 285-7.

Method of Measurement
The quantity to be paid for will be the weight of the mixture, in tons, completed and accepted. The weight will be determined as provided in FDOT 320-2 (including the provisions for the automatic recordation system). The bid price for the asphalt mix **will** include the cost of the liquid asphalt or the asphalt recycling agent.

(IV.3) BASIS OF PAYMENT
All bid items shall be paid under the ton pay item noted on the Bid Form.

(IV.7) EAM COLD MIX
The work specified in this section consists of bituminous patching mixes that are designed in various seasonal grades to be used when the ambient outside temperature reaches a specified range.

A few examples of the bituminous cold patch material are Unique Paving Materials (www.uniquepavingmaterials.com) and EZ Street (www.ezstreetasphalt.com).

(IV. 7) BASIS OF PAYMENT
All bid items specified shall be paid under the ton pay item noted on the Bid Form.

SECTION IV
TYPE S ASPHALT CONCRETE, QUALITY ASSURANCE AND ACCEPTANCE PROCEDURES

(IV.8) ASPHALTIC CONCRETE TYPE S-I AND (IV.9) ASPHALTIC CONCRETE

The work specified in this section includes the construction of a Type S Asphalt Concrete course (using the Quality Assurance acceptance system) using the type of mixture specified in the specification, or when offered as alternates, as selected. If offered as alternates, meet the layer thickness criteria specified in 331-1.2. Type S mixes are identified as Type S-I, Type S-II, or Type S-III. The composition and physical test properties for all mixes including Type S Asphalt Concrete are shown in Tables 331-1 and 331-2. This Section establishes Acceptance Procedures for materials and work performed under FDOT Sections 280, 290, 331, 332, 333, 335, and 337.

Where Type S Asphalt Concrete is specified in the specification, if approved by the County, the equivalent fine Type SP Asphalt Concrete mixture (Traffic Level C) meeting the requirements of FDOT Section 334 may be selected as an alternate at no additional cost to the County. The equivalent mixes are as follows:

Type S-I ..... Type SP-12.5
Type S-II ..... Type SP-19.0
Type S-III ..... Type SP-9.5

Meet the requirements for plant and equipment specified in FDOT Section 320. Meet the general construction requirements specified in FDOT Section 330.

Table 331-1
Bituminous Concrete Mixtures
(Gradation Design Range)

Type	Total Aggregate Passing Sieves[1]							
	3/4 inch [19.0 mm]	1/2 inch [12.5 mm]	3/8 inch [9.5 mm]	No. 4 [4.75 mm]	No. 10 [2.0 mm]	No. 40 [425 µm]	No. 80 [180 µm]	No. 200 [75 µm]
S-I[5]	100	88-98	75-93	47-75	31-53	19-35	7-21	2-6
S-II[2]	83-98	71-87	62-78	47-63	33-49	19-35	9-18	2-6
S-III[5]		100	88-98	60-90	40-70	20-45	10-30	2-6
Type II		100	90-100	80-100	55-90			2-12
Type III		100	80-100	65-100	40-75	20-45	10-30	2-10
SAHM		100						0-12
ABC-1		100						0-12
ABC-2		100			55-90			0-12
ABC-3[3]	70-100			30-70	20-60	10-40		2-10
FC-2[4]		100	85-100	10-40	4-12			2-5
FC-3[5]		100	88-98	60-90	40-70	20-45	10-30	2-6

[1] **In inches [mm] or sieves [µm].**
[2] 100% passing 1 1/4 inch [31.5 mm] sieve and 94 to 100% passing 1 inch [25.0 mm] sieve.

SECTION E – TECHNICAL SPECIFICATIONS
ADDENDUM # 3

Table 331-1
Bituminous Concrete Mixtures
(Gradation Design Range)

Type	Total Aggregate Passing Sieves[1]							
	3/4 inch [19.0 mm]	1/2 inch [12.5 mm]	3/8 inch [9.5 mm]	No. 4 [4.75 mm]	No. 10 [2.0 mm]	No. 40 [425 µm]	No. 80 [180 µm]	No. 200 [75 µm]

[3] 100% passing 1 1/2 inch [37.5 mm] sieve.
[4] The County may increase the design range for the No. 10 [2.00 mm] sieve for lightweight aggregates.
[5] The County may retain up to 1% on the maximum sieve size.

Table 331-2 Non SI Units
Marshall Design Properties For Bituminous Concrete Mixes

Mix Type	Minimum Marshall Stability (lbs.)	Flow** (0.01 in.)	Minimum VMA (%)	Air Voids (%)	Minimum Effective Asphalt Content (%)	VFA Voids Filled with Asphalt (%)
S-I	1,500*	8-13	14.5	4-5	***	65-75
S-II	1,500*	8-13	13.5	4-5	***	65-75
S-III	1,500*	8-13	15.5	4-6	***	65-75
Type II	500-750	7-15	18	5-16	6.0	-
Type III	750-1,000	7-15	15	5-12	5.5	-
SAHM	300-500	7-15	15	5-16	6.0	-
ABC-1	500	7-15	15	5-16	6.0	-
ABC-2	750	7-15	15	5-14	5.5	-
ABC-3	1,000	8-13	14	4-7	***	65-78
FC-2	-	-	-	-	-	-
FC-3	1,500	8-13	15.5	4-6	***	65-75

*The minimum Marshall Stability for Type S mixes used on limited access facilities (Interstate, Turnpike, and Expressways) shall be 1,800 lbs.
**The maximum Flow value during production shall not exceed one point more than shown in the Table.
***The ratio of the percentage by weight of total aggregate passing the No. 200 sieve to the effective asphalt content expressed as a percentage by weight of total mix shall be in the range of 0.6 to 1.2.

Table 331-2 SI Units
Marshall Design Properties For Bituminous Concrete Mixes

Mix Type	Minimum Marshall Stability (kN)	Flow** (mm)	Minimum VMA (%)	Air Voids (%)	Minimum Effective Asphalt Content (%)	VFA Voids Filled with Asphalt (%)
S-I	6.7*	2.0-3.3	14.5	4-5	***	65-75
S-II	6.7*	2.0-3.3	13.5	4-5	***	65-75

S-III	6.7*	2.0-3.3	15.5	4-6	***	65-75
Type II	2.2-3.3	1.8-3.8	18	5-16	6.0	-
Type III	3.3-4.4	1.8-3.8	15	5-12	5.5	-
SAHM	1.3-2.2	1.8-3.8	15	5-16	6.0	-
ABC-1	2.2	1.8-3.8	15	5-16	6.0	-
ABC-2	3.3	1.8-3.8	15	5-14	5.5	-
ABC-3	4.4	2.0-3.3	14	4-7	***	65-78
FC-2	-	-	-	-	-	-
FC-3	6.7	2.0-3.3	15.5	4-6	***	65-75

*The minimum Marshall Stability for Type S mixes used on limited access facilities (Interstate, Turnpike, and Expressways) shall be 8.0 kN.
**The maximum Flow value during production shall not exceed 0.25 mm more than shown in the Table.
***The ratio of the percentage by weight of total aggregate passing the 75µm sieve to the effective asphalt content expressed as a percentage by weight of total mix shall be in the range of 0.6 to 1.2.

The County will accept the work on a LOT to LOT basis in accordance with the applicable requirements of FDOT Sections 5, 6, and 9. The size of the LOT will be as specified in 331-6 for the bituminous mixture produced at the plant and as stipulated in 331-7 for the material placed on the roadway.

Layer Thicknesses:

Structural Layers: The allowable layer thicknesses for Type S Asphalt Concrete mixtures used in structural and overbuild applications is as follows:

Type S-III	3/4 – 1 ¼ inches [20 – 30 mm]
Type S-I	1 ¼ – 2 1/2 inches [30 – 60 mm]
Type S-II	2 – 2 3/4 inches [50 – 70 mm]

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

Type S-III – Limited to the final (top) structural layer, one layer only.

Type S-I – May not be used in the first layer of courses over 3 1/2 inches [90 mm] thick, nor in the first layer of courses over 2 3/4 inches [70 mm] thick on limited access facilities.

Type S-II – May not be used in the final (top) structural layer.

Additional Requirements: The following requirements also apply to Type S Asphalt Concrete mixtures:

1. A minimum 1 1/2 inch [40 mm] initial lift is required over an Asphalt Rubber Membrane Interlayer (ARMI).

2. When construction includes the paving of adjacent shoulders (#5 feet [#1.5 m] wide), the layer thickness for the upper pavement layer and shoulder shall be the same and paved in a single pass, unless shown differently in the plans.

3. All overbuild layers shall be Type S asphalt concrete. Use the minimum and maximum layer thicknesses as specified in 331-1.2.1 unless shown differently in the plans. On variable thickness overbuild layers, the minimum allowable thickness may be reduced by 1/2 inch [13 mm], and the maximum allowable thickness may be increased 1/2 inch [13 mm], unless shown differently in the plans. Other variations from these thicknesses must be approved by the County.

Materials

General Requirements: Meet the material requirements specified in Division III. Specific references are as follows:

Superpave PG Asphalt Binder or Recycling Agent916-1, 916-2
Mineral Filler 917-1, 917-2
Coarse Aggregate, Stone, Slag or Crushed GravelSection 901
Fine Aggregate .....Section 902

Asphalt concrete mixes containing crushed gravel as coarse aggregate component must show no potential for stripping during laboratory testing for mix design verification.
Crushed Reclaimed Portland Cement Concrete Pavement may be used as a coarse aggregate or screenings component subject to meeting all applicable specifications.

Specific Requirements

Condition of Aggregate: Use clean aggregate containing no deleterious substances. Do not use coarse or fine aggregate which contains more than 0.5% of phosphate.
Fine Aggregate and Mineral Filler: In laboratory tests, and for the purpose of proportioning the paving mixture, consider all material passing the No. 10 [2.00 mm] sieve **and retained on the No. 200 [75 µm] sieve as fine aggregate, and the material passing the No. 200 [75 µm] sieve as mineral filler.**

Screenings: Do not use any screenings in the combination of aggregates containing **more than 15% of material passing the No. 200 [75 µm] sieve. When two screenings are** blended to produce the screening component of the aggregate, one of such screenings may contain up to 18% **of material passing the No. 200 [75 µm] sieve, as long as the combination of the two does not contain over 15% material passing the No. 200 [75 µm]** sieve. Screenings may be washed to meet these requirements.

Use of Reclaimed Asphalt Pavement (RAP): Subject to certain requirements, Reclaimed Asphalt Pavement (RAP) may be used as a component material of the asphalt mixture. Where the material is recovered from a FDOT project, the Composition of **Existing pavement may be available on the County's website**. The URL for obtaining this information, if available, is:
http://www11.myflorida.com/statematerialsoffice/Bituminous/CentralBitLab/AsphaltCompositions/Compositions.htm/

RAP may be used as a component material of the bituminous mixture subject to the following:

1. Assume responsibility for the design of asphalt mixes which incorporate RAP as a component part.

2. Do not allow RAP to exceed 60% by weight of total aggregates for Asphalt Base Courses nor more than 50% by weight of total aggregates for Structural and Leveling Courses. Do not use RAP in Friction Courses.

3. Mount a grizzly or grid with openings of a sufficient size to prevent clogging of the cold feed over the RAP cold bin.

4. Use a grizzly or grid over the RAP cold bin, in-line roller crusher, screen, or other suitable means to prevent oversized RAP material from showing up in the completed recycled mixture.

5. If oversized RAP material appears in the completed recycled mix, cease plant operations and take appropriate corrective action.

6. Ensure that the RAP material as stockpiled is reasonably uniform in characteristics and contains no aggregate particles which are soft or conglomerates of fines.

7. Ensure that the RAP has a minimum average asphalt content of 4% by weight of total mix. The County reserves the right to sample the stockpile in order that this requirement is met.

8. When material milled from the project is used as a component of the asphalt mixture and a Composition of Existing Pavement is known, use the following procedures for obtaining representative samples for the mix design:

9. Cut ten 6-inch [150 mm] cores in area(s) approved by the County. Fill the core holes immediately prior to opening to traffic.

10. Representative samples may also be obtained by milling the existing pavement to the full depth shown on the plans for pavement removal for a length of approximately 200 feet [60 m]. Immediately replace the pavement removed with the specified mix in the Specification.

11. Submit a request in writing to the County for any variance from the above outlined methods of obtaining samples for mix designs.

12. When the RAP to be used as a component in a mix design is stockpiled from a previous DOT project and the Composition of Existing Pavement is known, design the mix and submit to the County for verification.

13. When the composition of stockpiled RAP to be used as a component in a mix design is not known, design the mix as follows:

14. Submit a bag of RAP, composed of samples from several locations in the stockpile(s), to the County at least four weeks prior to the planned start of mix design. The County will run viscosities on the reclaimed asphalt pavement and furnish the information to the Successful Bidder.

15. Run a minimum of six extraction gradation analyses of the RAP. Take the samples at random locations around the stockpile(s).

16. Request the County to make a visual inspection of the stockpile(s) of RAP. Based on visual inspection, the County will determine the suitability of the stockpiled materials.

17. When the proposed mix design is submitted to the County for verification, submit the data from the extraction gradation analyses required above.

Binder for Mixes with RAP: Use a PG 67-22 where RAP is less than 20% by weight of total aggregate; use a PG 64-22 where RAP is 20% or greater but less than 30% by weight of total aggregate; use appropriate recycle agent where RAP is 30% or greater. The County reserves the right to change binder type and grade at design based on the characteristics of the RAP binder, and reserves the right to request reasonable changes during the production based on the requirements of 331-4.4.4.

Use of Recycled Crushed Glass: Recycled crushed glass may be used as a component of the bituminous mixture subject to the following:

1. Consider the recycled crushed glass a local material and meet all requirements specified in 902-6.

2. The percentage of recycled crushed glass in any bituminous mixture does not exceed 15% of the total aggregate weight.

3. The asphalt binder used with mixtures containing recycled crushed glass contains 0.5% anti-stripping agent from an approved source. The addition of the specified amount of anti-stripping agent must be certified by the supplier.

4. Test bituminous mixtures containing recycled crushed glass in accordance with AASHTO T 283 as part of the mix design approval. The minimum tensile strength ratio must not be less than 80%. An increase in the amount of anti-stripping agent may be necessary in order to meet this requirement.

5. Recycled crushed glass must not be used in friction course mixtures nor in structural course mixtures which are to be used as the final wearing course.

Permissible Variation for the Coarse Aggregate
Size and uniformly grade or combine the aggregate or aggregates shipped to the job in such proportions that the resulting mixture meets the grading requirements of the mix design.

General Composition of Mixture
General: Use a bituminous mixture composed of a combination of aggregate (coarse, fine or mixtures thereof), mineral filler, if required, and bituminous material. Ensure that not more than 20% by weight of the total aggregate used is silica sand or local materials

as defined in FDOT Section 902. Consider the silica sand and local materials contained in any RAP material, if used in the mix, in this limitation. Size, grade and combine the several aggregate fractions in such proportions that the resulting mixture meets the grading and physical properties of the verified mix design.

RAP meeting the requirements of FDOT 331-2.2.4 may be approved as a substitution for a portion of the combination of aggregates, subject to all applicable specification requirements being met.

Grading Requirements: In all cases, use a mix design within the design ranges specified in Table 331-1.

Mix Design

General: Prior to the production of any asphalt paving mixture, submit a mix design and representative samples of all component materials to the County at least two weeks before the scheduled start of production. The County will verify the mix design before use. Send a copy of the proposed mix design to the County at the same time. (Open-graded mixes will be designed by the County.) Furnish the following information:

1. The specific project on which the mixture will be used.

2. The source and description of the materials to be used.

3. The gradation and approximate 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.

4. 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.

5. A single percentage of asphalt by weight of total mix intended to be incorporated in the completed mixture, shown to the nearest 0.1%. For structural mixes (S-I, S-II and S-III) establish the optimum asphalt content at a level corresponding to a minimum of 4.5% air voids. For FC-3 mixes, establish optimum asphalt content at a level corresponding to a minimum of 5.0% air voids.

6. A single temperature at which the mixture is intended to be discharged from the plant.

7. The laboratory density of the asphalt mixture for all mixes except Open-Graded Friction Courses.

8. Evidence that the completed mixture will meet all specified physical requirements.

9. The name of the individual responsible for the Quality Control of the mixture during production.

Revision of Mix Design: Submit all requests for revisions to approved mix designs, along with supporting documentation, in writing to the County. In order to expedite the revision process, a verbal revision request or discussion of the possibility of a revision request may be made, but must be followed up with a written request. The verified mix design will remain in effect until a change is authorized by the County. In no case will the effective date of the revision be established earlier than the date of the first communication with the County regarding the revision.

Provide a new mix design for any change in source of aggregate.

Resistance to Plastic Flow: Include with the submitted mix design test data showing that the material as produced will meet the requirements specified in Table 331-2 when tested in accordance with FM 1-T 245. Further, determine the bulk specific gravity of the laboratory compacted bituminous mixture in accordance with FM 1-T 166.

Determine the percent of unfilled voids and the percent of aggregate voids filled with asphalt using the maximum specific gravity of the bituminous mixture and on the asphalt content of each group of specimens prepared from the same sample. Determine maximum specific gravity of the bituminous mixture by FM 1-T 209.

Revocation of Mix Design: The County will consider any marked variations from original test data for a mix design 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 County will no longer allow the use of the mix design.

Successful Bidder's Quality Control

Personnel: In accordance with the requirements of 331-5.2 provide the necessary quality control personnel. Ensure that the Quality Control Technician is certified by the County and possesses a valid certificate of qualification. When it becomes evident to the County that the Quality Control Technician cannot perform as required by the position, the County will revoke the certification and require replacement with a certified technician.

Extraction Gradation Analysis: Sample the bituminous mixture at the plant in accordance with FM 1-T 168. Determine the percent bitumen content of the mixture in accordance with FM 5-563, and determine the percent passing the standard sieves in accordance with FM 1-T 030. In the event the calibration factor for the mix exceeds 0.50%, conduct the extraction and gradation analysis in accordance with FM 5-544 and FM 5-545, respectively. Show all test results to the nearest 0.01. Carry all calculations to **the nearest 0.001 and rounded to the nearest 0.01, in accordance with the County's rules** of rounding.

Run a minimum of one extraction gradation analysis of the mixture for each day's or part of a day's production and immediately following any change in the production process. Take the quality control sample of mixture for the extraction gradation analysis each day as soon as the plant operations have stabilized. Obtain the results in a timely manner (no later than the end of the day) so that adjustments can be made if necessary.

On initial use of a Type S or FC-3 mix design at a particular plant, as a minimum, run an additional extraction gradation analysis if more than 500 tons [450 metric tons] of mixture are produced on the first day of production.

Extraction gradation analysis will not be required on the days when mix production is less than 100 tons [90 metric tons]. However, when mix production is less than 100 tons [90 metric tons] per day on successive days, run the test when the accumulative tonnage on such days exceeds 100 tons [90 metric tons].

Use the target gradation and asphalt content as shown on the mix design. Any changes in target will require a change in the mix design in accordance with 331-4.3.2.

If the percentage of bitumen deviates from the optimum asphalt content by more than 0.55% or the percentage passing any sieve falls outside the limits shown in Table 331-3, make the necessary correction. If the results for two consecutive tests deviate from the optimum asphalt content by more than 0.55% or exceeds the limits as shown in Table 331-3 for any sieve, stop the plant operations until the problem has been corrected. In addition, if the results of two consecutive tests show an amount greater than 99.0% passing the 1/2 inch [12.5 mm] sieve for Type S-I, an amount greater than 99.0% passing the 3/4 inch [19.0 mm] sieve for Type S-II, or an amount greater than 99.0% passing the 3/8 inch [9.5 mm] sieve for Types S-III or FC-3, stop the plant operation until the problem has been corrected.

Maintain control charts showing the results of the extraction gradation analysis (bitumen content and sieve analysis).

Table 331-3
Tolerances for Quality Control Tests (Extraction Gradation Analysis)

Sieve Size	Percent Passing
1 inch [25.0 mm]	7
3/4 inch [19.0 mm]	7
1/2 inch [12.5 mm]	7
3/8 inch [9.5 mm]	7
No. 4 [4.75 mm]	7
No. 10 [2.00 mm]	5.5
No. 40* [*425 µm]	4.5
No. 80* [*180 µm]	3
No. 200 [75 µm]	2
*Does not apply to SAHM, ABC-1 or Type II.	

Plant Calibration: At or before the start of mix production, perform a wash gradation on a set of hot bin samples for batch or continuous mix plants or belt cut for drum mix plants to verify calibration of the plant. When approved by the County, extraction gradation analysis of the mix may be used to verify calibration of the plant. This extraction gradation **analysis may also be used to fulfill the quality control requirements for the first day's** production.

Viscosity of Asphalt in Mixes Containing RAP: When RAP is a component material, the viscosity of the asphalt material in the bituminous mixture, determined by the County in accordance with ASTM D 2171, shall be 6,000 ± 2,000 poises [600 ± 200 Pa·s]. This determination will be made on samples obtained by the County on a random basis at a frequency of approximately one per 2,000 tons [1,800 metric tons] of mix.

If the viscosity determined by the County is out of the specified range, adjust the binder formulation or blend of RAP in the mix to bring the viscosity within tolerance.

Acceptance Procedures

The County will approve all materials for acceptance through the County's Acceptance Procedures specified herein. The County is responsible for determining the acceptability of the construction and materials incorporated therein. The Successful Bidder is responsible for the quality of construction and materials incorporated therein. Accomplish all quality control sampling and testing on a random basis in accordance with the approved Quality Control Plan. The County will perform all necessary sampling and testing for acceptance purposes on a random basis as specified herein, in addition to **monitoring and observing the Successful Bidder's quality control test procedures and** results. Maintain effective quality control until final project acceptance.

A LOT is defined as an isolated quantity of a specified material produced from a single source or operation, or it is a measured amount of specified construction produced by the same process. In order to change the process, thereby necessitating the termination of the current LOT and starting a new LOT, submit a written request, with justification, to the **County for approval. Obtain the County's approval prior to making the process change.**

Perform all quality control sampling and testing of materials in strict conformance with the Florida Method of Sampling and Testing as found in the Field Sampling and Testing Manual. The County will perform all acceptance sampling and testing of materials in strict conformance with the Florida Method of Sampling and Testing as found in the Field Sampling and Testing Manual. This manual, developed and distributed by the FDOT Materials Office, contains the detailed sampling and testing procedures from AASHTO and ASTM as modified by the County.

Acceptance Plans

Payment Based on Acceptance Results: The County will adjust the payment for each LOT of material, product, item of construction or completed construction on the basis of acceptance test results in accordance with the requirements specified hereinafter in the applicable Sections.

Resampling of LOTs: The County requires that LOTs of materials, products, items of construction or completed construction meet the requirements of these Specifications at the time of submission. The County will not take check samples for acceptance purposes.

Referee System: The County has established a referee system to verify the validity of the acceptance test results on LOTs at the asphalt plant. The County will evaluate the acceptance test results with data from split samples run by the District and Central Labs.

The County will make a final determination and disposition of the acceptance test results. Acceptance results will be considered non-representative if the test results from the Field and Referee samples differ by more than 0.44% for asphalt content when obtained by the use of FM 5-563 or 0.56% for FM 5-544. Acceptance results for gradation will be considered non-representative if the test results from the Field and Referee samples differ by more than the precision values given in Figure 2 of FM 1-T 030 when using FM 5-563 or Figure 2 of FM 5-545 when using FM 5-544. When the referee analysis indicates that one or more test results are not representative, the County will discard the non-representative test value(s) and base payment calculations
for the LOT (including the sublot with the non-representative test values) on the remaining sublot(s) test data as defined in 331-6.

Quality Control by the Successful Bidder: Provide and maintain a quality control system that provides reasonable assurance that all materials, products and completed construction submitted for acceptance meet County requirements. Develop and maintain a quality control system in conformance with the following requirements:

SUCCESSFUL BIDDER QUALITY CONTROL SYSTEM

I. SCOPE:

These Specifications establish minimum requirements and activities for a Successful Bidder quality control system. These requirements pertain to the inspections and tests necessary to substantiate material and product conformance to specification requirements and to all inspections and tests required by the County.

II. FUNCTIONS AND RESPONSIBILITIES:

1. **The County will verify the Successful Bidder's design mixes, inspect plants and monitor** control of the operations to ensure conformance with these Specifications. The County will design all open-graded friction mixes (FC-2 and FC-5).

At no time will the County issue instructions to the Successful Bidder as to the setting of dials, gauges, scales and meters. However, the County may question and warn the Successful Bidder against the continuance of any operations or sequence of operations that obviously do not result in satisfactory compliance with the requirements of these Specifications.

2. The Successful Bidder. Submit in writing the proposed Quality Control Plan for each **asphalt plant for the County's approval. Maintain the approved Quality Control Plan in** effect for the plant to which it is assigned until the County rejects it in writing. Include in the plan the sampling, testing, inspection and the anticipated frequencies of each to maintain process control. A recommended series of sampling, testing and inspecting activities are shown in Table 331-4.

Table 331-4
RECOMMENDATIONS FOR A SUCCESSFUL BIDDER QUALITY CONTROL PLAN

A. All Types of Plants
1. Stockpiles
    a. Place materials in the correct stockpile.
    b. Use good stockpiling techniques.
    c. Inspect stockpiles for separation, contamination, segregation, etc.
2. Incoming Aggregate
    a. Obtain gradations and bulk specific gravity (BSG) values from the aggregate supplier.
    b. Determine gradation of all component materials.
    c. Compare gradations and BSG to mix design.
3. Cold Bins
    a. Calibrate the cold gate/feeder belt settings.
    b. Observe operation of cold feed for uniformity.
4. Dryer
    a. Observe pyrometer for aggregate temperature control.
    b. Observe efficiency of the burner.
5. Hot Bins
    a. Determine gradation of aggregates in each bin.
    b. Determine theoretical combined grading.
6. Bituminous Mixture
    a. Determine asphalt content.
    b. Determine mix gradation.
    c. Check mix temperature.
    d. Verify modifier addition.

B. Batch Plants
1. For batch weights, determine percent used and weight to be pulled from each bin to ensure compliance with the mix design.
2. Check mixing time.
3. Check operations of weigh bucket and scales.

C. Continuous Mix Plant
1. Determine gate calibration chart for each bin.
2. Determine gate settings for each bin to ensure compliance with the mix design.
3. Determine gallons [cubic meters] per revolution or gallons [cubic meters] per minute to ensure compliance with the mix design.

D. Drum Mixer Plant
1. Calibrate the cold feed and prepare a calibration chart for each cold gate.
2. Develop information for the synchronization of the aggregate feed, reclaimed asphalt pavement (RAP) feed and the bituminous material feed.
3. Calibrate the weigh bridge on the changing conveyor.

The activities shown in Table 331-4 are the normal activities necessary to control the production of bituminous concrete at an acceptable quality level. The County recognizes, 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, increase the frequency of these activities until the proper conditions are restored. Take one sample and test for every 1,000 tons [900 metric tons] of incoming aggregate (including RAP) as it is stockpiled. Test RAP material for extracted gradation and asphalt content.

Plot and keep up-to-date control charts for all quality control sampling and testing. Provide control charts for the following:

a. gradation of incoming aggregates
b. gradation and asphalt content of RAP
c. combined gradations of hot bins
d. extracted asphalt content
e. mix gradation
f. gradation of cold feed (drum mixers)

Post all current control charts in the asphalt lab where they can be seen.

Formulate all design mixes with the exception of open-graded friction mixes (FC-2 and FC-5). Submit design mixes to the County for verification prior to their use. Provide process control of all materials during handling, blending, mixing and placing operations.

III. QUALITY CONTROL SYSTEM:

1. General Requirements. Furnish and maintain a quality control system that provides reasonable assurance that all materials and products submitted to the County for acceptance meet the specification requirements. Perform, or have performed, the inspection and tests required to substantiate product conformance to specification requirements, and also perform, or have performed, all inspections and tests otherwise required by the County. Keep a quality control technician, who has been certified by the County as a Qualified Asphalt Plant Technician (Plant Level II), available at the asphalt plant at all times when producing asphalt mix for the County. Place a person in responsible charge of the paving operations who is qualified by the County as a Qualified Asphalt Paving Technician (Paving Level II). Document the quality control procedures, inspection and tests, and make that information available for review by the County throughout the life of the Blanket Purchase Order.

2. Documentation. Maintain adequate records of all inspections and tests. Record the nature and number of tests made, the number and type of deficiencies found, the quantities approved and rejected, and the nature of corrective action taken, as appropriate. The County may review and approve all documentation procedures prior to the start of the work. The County will take ownership of all charts and records **documenting the Successful Bidder's quality control tests and inspections upon** completion of the work.

3. Charts and Forms. Record all conforming and nonconforming inspections and test results on approved forms and charts, and keep them up to date and complete and

make them available at all times to the County during the performance of the work. Prepare charts of test properties for the various materials and mixtures on forms that are in accordance with the applicable requirements of the County.

The County will furnish a copy of each applicable chart and form. Provide a supply of the **charts and forms from the copy furnished. Obtain the County's approval of non-**standard forms and charts prior to using them.

4. Corrective Actions. Take prompt action to correct any errors, equipment malfunctions, process changes or other problems that result or could result in the submission of materials, products or completed construction that do not meet the requirements of these Specifications. When it becomes evident to the County that the Successful Bidder is not controlling his process and is making no effort to take corrective actions, the County will require the Successful Bidder to cease plant operations until such time as the Successful Bidder can demonstrate that he can and is willing to control the process.

5. Laboratories with Measuring and Testing Equipment. Furnish a fully equipped asphalt laboratory (permanent or portable) at the production site, and meeting the following requirements:

a. Area - Provide an effective working area for the laboratory that is a minimum of 180 ft^2 [17 m^2]. This area does not include the space for desks, chairs and file cabinets.

b. Lighting - Provide lighting in the lab adequate to illuminate all areas of work.

c. Temperature Control - Equip the lab with heating and air conditioning units that provide a satisfactory working environment.

d. Ventilation - Equip the lab with fume hoods and exhaust fans that will remove all hazardous fumes from within the laboratory in accordance with OSHA requirements.

e. Equipment and Supplies - Furnish the lab with the necessary sampling and testing equipment, and supplies, for performing Successful Bidder quality control and County acceptance sampling and testing. A detailed list of equipment and supplies required for each test is included in the Field Sampling and Testing Manual.

f. When running plants at a high production rate, furnish additional testing equipment as necessary to allow the completion of the Successful Bidder's quality control tests and the County's Acceptance tests within the specified time frame.

6. Sampling and Testing. Use the sampling and testing methods and procedures that the County provides to determine quality conformance of the materials and products. The County will use these same methods and procedures for its acceptance tests. Include the sampling for other material characteristics on a random basis and the plotting of the test results on control charts in the Quality Control Plan.

7. Alternative Procedures. The Successful Bidder may use alternative sampling methods, procedures and inspection equipment when such procedures and equipment provide, as a minimum, the quality assurance required by the Specification Documents. Prior to applying such alternative procedures, describe them in a written proposal and **demonstrate for the County's approval that their effectiveness is equal to or better than** the Specification requirements. In case of dispute as to whether certain proposed procedures provide equal assurance, use the procedures stipulated by the Specification Documents.

8. Nonconforming Materials. Establish and maintain an effective and positive system for controlling nonconforming materials, including procedures for identification, isolation and disposition.

Reclaim or rework nonconforming materials in accordance with procedures acceptable to the County. Discuss the details of this system at the preconstruction conference, and make these details a part of the record of the conference.

9. County Inspection at Subcontractor or Supplier Facilities. The County reserves **the right to inspect materials not manufactured within the Successful Bidder's facility. The County's inspection does not constitute acceptance and does not, in any way,** replace the **Successful Bidder's inspection or otherwise relieve the Successful Bidder of his** responsibility to furnish an acceptable material or product. When the County inspects the **subcontractor's or supplier's product, such inspection does not replace** the Successful **Bidder's responsibility to inspect such subcontractor's or supplier's product.**

10. Inspect subcontracted or purchased materials when received, as necessary, to ensure conformance to Specification requirements. Report to the County any nonconformance found on County source-inspected material, and require the supplier to take necessary corrective action.

Defective Materials

Acceptance or Rejection: Following the application of the appropriate acceptance plan, the County will make the final decision as to the acceptance, rejection or acceptance at an adjusted payment of the LOTs.

Disposition of LOTs: For nonconforming LOTs of materials, products, items of construction or complete construction that are not adaptable to correction by reworking, either remove and replace the nonconforming work, or accept no payment or an adjusted payment as stated in these Specifications, or, if not stated, as directed by the County.

General Basis of Adjusted Payment for Deficiencies: When the County determines that a deficiency exists, the County will apply the applicable payment factor as shown in these Specifications to the entire LOT. When the County determines that multiple deficiencies exist, the County will apply an adjustment to the LOT of material that is identified by each deficiency. The County will apply the adjustment for each deficiency separately as it occurs. The County will not allow an adjustment to be affected by any other adjustment occurring for the same LOT. As an exception to the foregoing requirements, when there are two or more deficiencies in the gradation acceptance tests

(% pass No. 4 [4.75 mm] sieve, % pass No. 10 [2.0 mm] sieve, % pass No. 40 [425 µm sieve], % pass No. 200 [75 µm] sieve) the County will only apply the greater adjustment. The County will express all reductions in payment in terms of equivalent pay items at no pay. When the item is measured by the ton [metric ton], the County will convert the LOT in the field, which is measured in feet [meters], to equivalent tons [metric tons] and by using the average calculated spread for that LOT. When the pay item is measured by the square yard [square meter], the County will convert the LOT at the production point, which is measured in tons [metric tons], to equivalent square yards [square meters] at the design thickness and by using the laboratory density as a conversion factor.

Acceptance of the Mixture at the Plant

General: The County will accept the bituminous mixture at the plant, with respect to gradation and asphalt content, on a LOT to LOT basis. The material will be tested for acceptance in accordance with the provisions of 331-5 and the following requirements. However, the County will reject any load or loads of mixture which are unacceptable for reason of being excessively segregated, aggregates improperly coated, or of excessively high or low temperature for use in the work.

For initial use of a Type S or FC-3 mix design with a Florida limestone source north of the **28th parallel at a particular plant, limit the first day's production to a maximum of 300 tons** [275 metric tons]. Resume production upon notification of acceptable Marshall Properties as determined in accordance with 331-6.4.

A standard size LOT at the asphalt plant will consist of 4,000 tons [3,600 metric tons] with four equal sublots of 1,000 tons [900 metric tons] each. As an exception, the first LOT for the initial use of a Type S or FC-3 mix design with a particular plant will consist of four sublots, the first sublot of 500 tons [450 metric tons] or the first day's production (300 tons [275 metric tons] maximum for mix design with a Florida limestone source north of the 28th parallel), the second sublot of 500 tons [450 metric tons], and the remaining two sublots of 1,000 tons [900 metric tons] each.

A partial LOT may occur due to the following:

(1) the completion of a given mix type on a project.

(2) An approved LOT termination by the County due to a change in process, extended delay in production, or change in mix design.

If the partial LOT contains one or two sublots with their appropriate test results, then the previous full-size LOT will be redefined to include this partial LOT and the evaluation of the LOT will be based on either five or six sublot determinations. If the partial LOT contains three sublots with their appropriate test results, this partial LOT will be redefined to be a whole LOT and the evaluation of it will be based on three sublot determinations.

When the total quantity of any mix is less than 3,000 tons [2,700 metric tons], the partial LOT will be evaluated for the appropriate number of sublots from n=1 to n=3. When the total quantity of any mix type is less than 500 tons [450 metric tons], the Department will accept the mix on the basis of visual inspection. The Department may run extraction and gradation analysis for information purposes; however, the provisions for partial payment will not apply.

On multiple blanket purchase orders (projects), the LOT(s) at the asphalt plant will carry over from project to project.

Acceptance Procedures: Control all operations in the handling, preparation, and mixing of the asphalt mix so that the percent bitumen and the percents passing the No. 4, No. 10, No. 40 and No. 200 [4.75 mm, 2.00 mm, 425 µm and 75 µm] sieves will meet the approved job mix formula within the tolerance shown in Table 331-6.

Table 331-6
Tolerances for Acceptance Tests

Characteristic	Tolerance*
Asphalt Content (Extraction)	±0.55%
Asphalt Content (Printout)	±0.15%
Passing No. 4 [4.75 mm] sieve	±7.00%
Passing No. 10 [2.00 mm] sieve	±5.50%
Passing No. 40 [425 µm] sieve**	±4.50%
Passing No. 200 [75 µm] sieve	±2.00%

*Tolerances for sample size of n=1. See Table 331-7 for other sample sizes n=2 through n=6.
**Applies only to Types S-I, S-II, S-III, and FC-3.

Acceptance of the mixture will be on the basis of test results on consecutive random samples from each LOT. One random sample will be taken from each sublot. The bituminous mixture will be sampled and tested at the plant as specified in 331-4.4.2.

Calculations for the acceptance test results for bitumen content and gradation **(percentages passing No. 4, No. 10, No. 40 and No. 200 [4.75 mm, 2.00 mm, 425 µm and 75 µm] sieves) will be shown to the nearest 0.01. Calculations for arithmetic averages** will be carried to the nearest 0.001 and rounded to the nearest 0.01 in accordance with **the County's rules of rounding.**

Payment will be made on the basis of Table 331-7, **"Acceptance Schedule of Payment".** The process will be considered out of control when the deviation of any individual test **result from the mix design falls in the 80% pay factor for the "one test" column of Table** 331-7. When this happens, the LOT will be automatically terminated and production stopped. The approval of the County will be required prior to resuming production of the mix. Acceptance of the LOT will then be determined in accordance with Table 331-7.

All acceptance tests will be completed on the same day the sample was taken, when possible, and on no occasion will they be completed later than the following work day.

Table 331-7
Acceptance Schedule of Payment (Asphalt Plant Mix Characteristics)

Average of Accumulated Deviations of the Acceptance Tests from the Mix Design.						
Pay Factor	1-Test	2-Tests	3-Tests	4-Tests	5-Tests	6-Tests
Asphalt Cement Content (Extraction - FM 5-544 or 5-563)						

Table 331-7 Acceptance Schedule of Payment (Asphalt Plant Mix Characteristics)						
Average of Accumulated Deviations of the Acceptance Tests from the Mix Design.						
Pay Factor	1-Test	2-Tests	3-Tests	4-Tests	5-Tests	6-Tests
1.00	0.00-0.55	0.00-0.43	0.00-0.38	0.00-0.35	0.00-0.33	0.00-0.31
0.95	0.56-0.65	0.44-0.50	0.39-0.44	0.36-0.40	0.34-0.37	0.32-0.36
0.90	0.66-0.75	0.51-0.57	0.45-0.50	0.41-0.45	0.38-0.42	0.36-0.39
0.80*	over 0.75	over 0.57	over 0.50	over 0.45	over 0.42	over 0.39
Asphalt Cement Content (Printout)						
1.00	0.00-0.15	0.00-0.15	0.00-0.15	0.00-0.15	0.00-0.15	0.00-0.15
0.95	0.16-0.25	0.16-0.25	0.16-0.25	0.16-0.25	0.16-0.25	0.16-0.25
0.90	0.26-0.35	0.26-0.35	0.26-0.35	0.26-0.35	0.26-0.35	0.26-0.35
0.80*	over 0.35	over 0.35	over 0.35	over 0.35	over 0.35	over 0.35
No. 4 [4.75 mm] sieve**						
1.00	0.00-7.00	0.00-5.24	0.00-4.46	0.00-4.00	0.00-3.68	0.00-3.45
0.98	7.01-8.00	5.25-5.95	4.47-5.04	4.01-4.50	3.69-4.13	3.46-3.86
0.95	8.01-9.00	5.96-6.66	5.05-5.62	4.51-5.00	4.14-4.58	3.87-4.27
0.90	9.01-10.00	6.67-7.36	5.63-6.20	5.01-5.50	4.59-5.02	4.28-4.67
0.80*	over 10.00	over 7.36	over 6.20	over 5.50	over 5.02	over 4.67
No. 10 [2.00 mm] sieve**						
1.00	0.00-5.50	0.00-4.33	0.00-3.81	0.00-3.50	0.00-3.29	0.00-3.13
0.98	5.51-6.50	4.34-5.04	3.82-4.39	3.51-4.00	3.30-3.74	3.14-3.54
0.95	6.51-7.50	5.05-5.74	4.40-4.96	4.01-4.50	3.75-4.18	3.55-3.95
0.90	7.51-8.50	5.75-6.45	4.97-5.54	4.51-5.00	4.19-4.63	3.96-4.36
0.80*	over 8.50	over 6.45	over 5.54	over 5.00	over 4.63	over 4.36
No. 40 [425 µm] sieve**						
1.00	0.00-4.50	0.00-3.91	0.00-3.65	0.00-3.50	0.00-3.39	0.00-3.32
0.98	4.51-5.50	3.92-4.62	3.66-4.23	3.51-4.00	3.40-3.84	3.33-3.72
0.95	5.51-6.50	4.63-5.33	4.24-4.81	4.01-4.50	3.85-4.29	3.73-4.13
0.90	6.51-7.50	5.34-6.04	4.82-5.39	4.51-5.00	4.30-4.74	4.14-4.54
0.80*	over 7.50	over 6.04	over 5.39	over 5.00	over 4.74	over 4.54
No. 200 [75µm] sieve**						
1.00	0.00-2.00	0.00-1.71	0.00-1.58	0.00-1.50	0.00-1.45	0.00-1.41
0.95	2.01-2.40	1.72-1.99	1.59-1.81	1.51-1.70	1.46-1.63	1.42-1.57
0.90	2.41-2.80	2.00-2.27	1.82-2.04	1.71-1.90	1.64-1.80	1.58-1.73
0.80*	over 2.80	over 2.27	over 2.04	over 1.90	over 1.80	over 1.73
*If approved by the County based determination that the material is acceptable to remain in place, the Successful Bidder may accept the indicated partial pay. Otherwise, remove and replace the material at no cost to the County at any item. **When there are two or more reduced payments for these items in one LOT of material, only the greatest reduction in payment will be applied. CAUTION: This rule applies only to these four gradation test results. NOTES:						

(1) The **No. 40 [425 µm] sieve applies to Type S**-I, S-II, S-III and FC-3.
(2) Deviations are absolute values with no plus or minus signs.

Automatic Batch Plant with Printout: Acceptance determinations for asphalt content for mixtures produced by automatic batch plants with printout will be based on the calculated bitumen content using the printout of the weights of asphalt actually used. Acceptance determinations for gradations (No. 4, No. 10, No. 40 and No. 200 [4.75 mm, **2.00 mm, 425 µm and 75 µm] sieves) will be based on the actual test results from** extraction gradation analyses. Payment will be made based on the provisions of Table 331-7.

Additional Tests: The County reserves the right to run any test at any time for **informational purposes and for determining the effectiveness of the Successful Bidder's** quality control.

Determination of Marshall and Volumetric Properties: The County will determine the Marshall and Volumetric Properties of the mix at a minimum frequency of one set per LOT, to determine whether or not the produced mix is meeting the specification requirements. The County will sample and prepare test specimens and test them in accordance with FM 5-511 for Marshall Stability and flow, FM 1-T 209 for maximum specific gravity, and FM 1-T 166 for density. Volumetric properties will be determined for Type S and FC-3 mixes only.

Failing Marshall Properties: When the average value of the specimens fails to meet specification requirements for stability or flow, the County may stop the plant operations until all specification requirements can be met or until another verified mix design has been approved. Make revisions to a mix design in accordance with 331-4.3.2. If the Lab Density of the mix during production differs from the value shown on the verified mix design by more than 2 lbs/ft^3 [32 kg/m^3] for two consecutive tests, the County will revise the target value.

Failing Volumetric Properties (Type S and FC-3 mixes only): When the County determines the air void content to be less than 3.0%, or greater than 6.5%, make appropriate adjustments to the mix. When the air void content is determined to be less than 2.5% or greater than 7.0% on any one test, or less than 3.0% on two consecutive tests, cease operations until the problem has been resolved.

Resuming Production: In the event that plant operations are stopped due to a failure to **meet specification requirements, obtain the County's approval before resuming** production of the mix. Limit production to a maximum of 300 tons [270 metric tons]. At this time, the Marshall and volumetric properties of the mix will be verified. After the Marshall and volumetric properties are verified, full scale production of the mix may be resumed.

Disposition of In-Place Material: Any material in-place that is represented by the failing test results (low stability, high flow, or less than 2.5% air voids) will be evaluated by the County to determine if removal and replacement is necessary. Remove and replace any in-place material, if required, at no cost to the County.

Acceptance of the Mixture at the Roadway:
Density Control Nuclear Method: Determine the in-place density of each course of asphalt mix construction using the Nuclear Density Backscatter Method as specified by FM 1-T 238 (Method B). For a completed course, obtain an average in-place LOT density of at least 98% of the valid control strip density.

Do not perform density testing on patching courses, leveling and intermediate courses less than 1 inch [25 mm] thick (or a specified spread rate less than 100 lb/yd^2

[55kg/m^2]), overbuild courses where the minimum thickness is less than 1 inch [25 mm], projects less than 1,000 feet [300 m], sections with variable width, or open-graded friction courses. Compact these courses, with the exception of open-graded friction courses in accordance with 330-10.1.2.

Control Strips: In order to determine the density of compacted asphalt mixtures for the purpose of acceptance, first establish a control strip. Construct one or more control strips for the purpose of determining the control strip density. Construct a control strip at the beginning of asphalt construction and one thereafter for each successive course. Construct a new control strip for any change in the composition of the mix design, underlying pavement structure, compaction equipment, or procedures. The County may require an additional control strip when the County deems it necessary to establish a new control strip density or confirm the validity of the control strip density being used at that time. The Successful Bidder may also request a confirmation of the control strip density. **Construct the control strip as a part of a normal day's run.**

Construct a control strip 300 feet [100 m] in length and of an adequately uniform width to maintain a consistent compactive effort throughout the section. When constructing the control strip, start it between 300 and 1,000 feet [100 and 300 m] from the beginning of the paving operation. Construct a control strip of a thickness that is the same as that specified for the course of which it is a part. Construct the control strip using the same mix, the same paving and rolling equipment, and the same procedures as those used in laying the asphalt course of which the control strip is to become a part. Leave every control strip in place to become a portion of the completed roadway.

In order to determine the acceptability of the control strip, make ten nuclear density determinations at random locations within the control strip after completing the compaction of the control strip. Do not make any determinations within 12 inches [300 mm] of any unsupported edge. Use the average of these ten determinations for the Control Strip Density. For purposes of determining the percent of laboratory density, as required in Table 331-8, the County will develop a correction factor at four nuclear density locations from 6 inch [150 mm] diameter cores or by direct transmission nuclear determination where applicable. Cut the cores prior to opening the roadway to traffic. The County will calculate the percent of lab density to the nearest 0.01% and round it to the nearest 0.1%. Should the percent of lab density in a control strip exceed 99.0%, notify the County immediately.

In the event that a control strip does not meet the minimum density requirements specified in Table 331-8, take appropriate corrective actions and construct a new control strip. If three consecutive control strips fail to meet specification requirements, the County will limit production and placement of the mix to 800 to 1,000 feet [250 to 300 m], regardless of the thickness and width the Successful Bidder is placing, until the Successful Bidder obtains a passing control strip.

Once the Successful Bidder has obtained a passing control strip after a failing control strip (for the same mix, layer, and project), the County will use the passing control strip to accept all previously laid mix. In the event the Successful Bidder does not obtain a passing control strip, and this particular mix, layer, etc., is completed on the project, the County will evaluate density in accordance with FM 5-543.

Table 331-8
Roadway Requirements for Bituminous Concrete Mixes

Mix Type	Density	Minimum Control Strip Density* (% of Lab Density)	Surface Tolerance
S-I, S-II, S-III, Type II, Type III, SAHM	per 331-7	96	per 330-12
ABC-1, ABC-2, ABC-3	per 280-8.6	96	per 200-7
FC-2	No density required	N/A	per 330-12
FC-3	per 331-7	96	per 330-12

* The minimum control strip density requirement for shoulders is 95% of lab density.

LOTs: For the purpose of acceptance and partial payment, the County will divide each **day's production into LOTs. The County will close out all LOTs at the end of the day. The** standard size of a LOT is 5,000 feet [1,500 m] of any pass made by the paving train regardless of the width of the pass or the thickness of the course. A sublot will be 1,000 feet [300 m] or less. The County will consider pavers traveling in echelon as two separate passes. When at the end of a production day, the completion of a given course, layer, or mix, or at the completion of the project, and a LOT size is determined to be less than 5,000 feet [1,500 m], it will be considered a partial LOT. Handle partial LOTs as follows:

If the length of the partial LOT is 2,000 feet [600 m] or less, and a previous full-size LOT from the same day, mix, layer, and project is available, then the previous full-size LOT will be redefined to include this partial LOT and the number of tests required for the combined LOT will be as shown in Table 331-9.

If the partial LOT is 2,000 feet [600 m] or less, and a previous full-size LOT from the same day, mix, layer, and project is not available, the County will evaluate the partial LOT separately and perform the number of tests required for the partial LOT as shown in Table 331-9.

If the partial LOT is greater than 2,000 feet [600 m] long, the County will evaluate the partial LOT separately and perform the number of tests required for the partial LOT as shown in Table 331-9.

Table 331-9	
Testing Requirements for Partial LOTs	
LOT Size	Number of Tests
Less than 3,000 feet [900 m]	3
3,001 to 4,000 feet [901 to 1,200 m]	4
4,001 to 5,000 feet [1,201 to 1,500 m]	5
5,001 to 6,000 feet [1,501 to 1,800 m]	6
6,001 to 7,000 feet [1,801 to 2,100 m]	7
Greater than 7,000 feet [2,100 m]	2 LOTs

For each LOT and partial LOT, the County will make density determinations at a frequency shown in Table 331-9 at random locations within the LOT, but will not take them within 12 inches [300 mm] of any unsupported edge. The County will determine the random locations by the use of statistically derived stratified random number tables. For the Successful Bidder to receive full payment for density, the average density of a LOT shall be a minimum of 98.0% of the control strip density. Once the County determines the average density of a LOT, do not provide additional compaction to raise the average. Notify the County should the average density for two consecutive LOTs be greater than 102% of control strip density.

Acceptance: The County will accept the completed pavement with respect to density on a LOT basis. The County will make partial payment for those LOTs that have an average density less than 98.0% of the Control Strip Density based on Table 331-10:

Table 331-10	
Payment Schedule For Density	
Percent of Control Strip Density*	Percent of Payment
98.0 and above	100
97.0 to less than 98.0	95
96.0 to less than 97.0	90
Less than 96.0**	75
* In calculating the percent of control strip density, do not round off the final percentage. ** If approved by the County, based on a determination that the material is acceptable to remain in place, the Successful Bidder may accept the indicated partial pay; otherwise, remove and replace the material at no expense to the County. The Successful Bidder may remove and replace the material at no expense to the County at any time.	

Density Requirements for Small Projects and Other Non-mainline Roadway Areas: For projects less than 1,000 feet [300 m] in length and bridge projects with approaches less than 1,000 feet [300 m] each side, do not apply the requirements for control strips and nuclear density determination. Use the standard rolling procedures as specified in 330-10.1.2. Do not apply the provisions for partial payment to these small projects.

In other non-mainline roadway areas where it is not practical to establish a control strip, such as parking areas, toll plazas, turn lanes, and acceleration/deceleration lanes, the Successful Bidder may use the standard rolling procedure to determine density requirements if so authorized in writing by the County

Surface Tolerance: The bituminous mixture will be accepted on the roadway with respect to surface tolerance in accordance with FDOT 330-12.

Method of Measurement
The quantity to be paid for will be the weight of the mixture, in tons, completed and accepted.

The weight will be determined as provided in 320-2 (including the provisions for the automatic recordation system).

The bid price for the asphalt mix will include the cost of the liquid asphalt or the asphalt recycling agent.

(IV.8 and IV.9) BASIS OF PAYMENT
All bid items specified shall be paid under the respective pay item noted on the Bid Form.

(IV.10) ASPHALT CONCRETE TYPE II
The work specified in this section will consist of constructing a Type II Asphalt Concrete pavement. Meet the plant and equipment requirements as specified in FDOT Section 320. Meet the general construction requirements, as specified in FDOT Section 330.

The County will accept work on a LOT to LOT basis in accordance with the applicable requirements of Section 331. The County will determine the size of the LOT as specified in FDOT 331-6 for the bituminous mixture accepted at the plant and as specified in FDOT 331-7 for the material accepted on the roadway.

Materials
Bituminous Material: Use Superpave PG Asphalt Binder or Recycling Agent meeting the requirements of FDOT 916-1 or 916-2.

Aggregate
General: Use aggregate containing no appreciable amount of phosphate and consisting of either crushed slag, crushed stone, crushed gravel, coquina shell, oyster shell, or other crushed aggregate screenings from a County approved source. The Successful Bidder may use any combination of these aggregates with sand that meets the gradation and Marshall properties requirements specified, except shell in the surface course.

Special Requirements for Gravel: Use crushed gravel containing no less than 85% particles which possess a minimum of three crushed faces, produced from gravel that is free of clay balls and excessive quantities of loam, roots, or other deleterious materials.

Sand: Use sand composed of hard, durable grains, containing no excessive quantities of loam or other deleterious substances. If clay is present, ensure that the quantity does not exceed 7%. Ensure that any clay present is the type which will not produce clay balls in the mixture. Use nonplastic sand suitable for use in bituminous mixtures as determined by laboratory tests. If the sand deposit consists of stratified layers of varying characteristics and gradation, employ such means as necessary to secure a uniform material.

Mineral Filler: If needed, meet the requirements of FDOT Section 917.

Testing: The County **will** sample all materials shipped to the asphalt plant at their destination.

Composition of Mixture

General: Use a bituminous mixture composed of a combination of aggregate (coarse, fine, or mixtures thereof), mineral filler if required, and bituminous material. Size, uniformly grade, and combine the several aggregate fractions in such proportions that the resulting mixture meets the grading and physical properties of the verified mix design.

The Successful Bidder may use RAP meeting the requirements of FDOT 331-2.2.4 as a substitution for a portion of the combination of aggregates. If using RAP, the Successful Bidder may use a recycling agent in accordance with the requirements of FDOT 331-2.2.5.

The Successful Bidder may use recycled crushed glass meeting the requirements of FDOT 331-2.2.6 as a substitution for a portion of the combination of aggregates.

Grading Requirements:

General: Use a mix design that has been verified by the County and meets the design range specified in Table 331-1.

Gradation: When tested before entering the asphalt plant in the combination to be used, ensure that the aggregate, including any mineral filler, does not contain more than 12% by weight of material passing **the No. 200 [75 µm] sieve. Do not use any screenings in** the combination of aggregate that contain more than 15% of material passing the No. 200 **[75 µm] sieve. When blending two screenings to produce the screenings component of** the aggregate, the Successful Bidder may allow any component of such screenings to **contain up to 18% of material passing the No. 200 [75 µm] sieve. The Successful Bidder** may wash screenings to meet these requirements. Use screenings that are free from lumps and foreign matter.

Percentage of Sand: Allow no more than 40% by weight of the total aggregate used to be sand.

When using RAP as an aggregate, do not allow the sand size portion of the RAP material plus the sand introduced as a separate component to exceed 40% by weight of the total aggregate.

Mix Design:
General: Meet the mix design requirements of FDOT 331-4.3. In addition to these requirements, include, in the mix design, test data showing that the material as produced will meet the requirements of Table 331-2.

Stability: Combine the constituents of the mixture in such proportions as to produce a mix having Marshall Properties within the limits shown in Table 331-2.

Successful Bidder's Quality Control: Provide the necessary quality control of the bituminous mixture and construction in accordance with the provisions of FDOT 331-4.4 and FDOT 331-5.2. Furnish materials that meet the verified mix design. For the extraction gradation analysis, meet the provisions of FDOT 331-4.4.2 and Table 331-3. For plant calibration, meet the provisions of FDOT 331-4.4.3 and Table 331-3.

Acceptance of Mixture
Acceptance at the Plant: The County will accept the bituminous mixture at the plant with respect to gradation and asphalt content in accordance with the requirements of FDOT 331-6.

Acceptance on the Roadway: The County will accept the bituminous mixture on the roadway with respect to compacted density and surface tolerance in accordance with the applicable provisions of FDOT 331-7.

Additional Tests: The County will apply the provisions of 331-6.4 to Type II Asphalt Concrete.

Method of Measurement
The quantities to be paid for will be measured as specified for Type S Asphalt Concrete under the applicable provisions of FDOT 331-7.

(IV.10) BASIS OF PAYMENT
All bid items specified paid under the pay Item noted on the Bid Form.

(IV.11) ASPHALT CONCRETE TYPE III
The work specified in this section will cover the construction of an asphalt concrete pavement course composed of a mixture of stone or slag screenings with silica sand and asphalt cement, and mineral filler if needed.

Meet the plant and equipment requirements as specified in FDOT Section 320. Meet the general construction requirements as specified in FDOT Section 330.

The County will accept work on a LOT to LOT basis in accordance with the applicable requirements of FDOT Section 331. The County will determine the size of the LOT as specified in FDOT 331-6 for the bituminous mixture accepted at the plant and as specified in FDOT 331-7 for the material accepted on the roadway.

SECTION E – TECHNICAL SPECIFICATIONS
ADDENDUM # 3

Materials

Bituminous Material: Use Superpave PG Asphalt Binder or Recycling Agent meeting the requirements of FDOT 916-1 or FDOT 916-2.

Aggregate: Use aggregate consisting of crushed stone or crushed slag screenings, or a combination of these screenings with silica sand, that meets the gradation requirements and that provides the required stability of the mix, as specified below. Use crushed stone or crushed slag screenings that meet the requirements of Section 901. Use sand that meets the requirements of 332-2.2.3. Do not use aggregate containing any appreciable amount of phosphate.

Mineral Filler: If needed, meet the requirements of FDOT Section 917.

Composition of Mixture

General: Use a bituminous mixture composed of a combination of aggregate (coarse, fine, or mixtures thereof), mineral filler if required, and bituminous material. Size, uniformly grade, and combine the several aggregate fractions in the proportions that the resulting mixture meets the grading and physical properties of the verified mix design.

The Successful Bidder may use RAP meeting the requirements of 331-2.2.4 as a substitution for a portion of the combination of aggregates. If using RAP, the Successful Bidder may use a recycling agent in accordance with the requirements of 331-2.2.5.

The Successful Bidder may use recycled crushed glass meeting the requirements of 331-2.2.6 as a substitution for a portion of the combination of aggregates.

Grading Requirements

General: Use a mix design that has been verified by the County and meets the design range specified in Table 331-1.

Gradation: When tested before entering the asphalt plant in the combination to be used, ensure that the aggregate, including any mineral filler, does not contain more than 10% **by weight of material passing the No. 200 [75 µm sieve]. Do not use any screenings in** the combination of aggregate that contain more than 15% of material passing the No. 200 **[75 µm] sieve. When blending two screenings to produce** the screenings component of the aggregate, the Successful Bidder may allow any component of such screenings to **contain up to 18% of material passing the No. 200 [75 µm] sieve. The Successful Bidder** may wash screenings to meet these requirements. Use screenings that are free from lumps and foreign matter.

Proportions of Sand and Screenings: Allow no more than 25% by weight of the total aggregate used to be local sand. In addition to the local sand, the Successful Bidder may use commercial washed sand in a quantity not to exceed 15% by weight of the total aggregate. Obtain the commercial washed sand from an approved source having a

County sand mine number and meeting the requirements of FDOT Section 902 except those in FDOT 902-2.2.

If used in the mixture, consider the sand portion of RAP material to be local sand.

Mix Design
General: Meet the mix design requirements of FDOT 331-4.3. In addition to these requirements, include, in the mix design, test data showing that the material as produced will meet the requirements of Table 331-2.

Stability: Combine the constituents of the mixture in such proportions as to produce a mixture having Marshall Properties within the limits shown in Table 331-2.

Successful Bidder's Quality Control: Provide the necessary control of the bituminous mixture and construction in accordance with the applicable provisions of FDOT 331-4.4 and 331-5.2. Furnish materials that meet the verified mix design.

For the extraction gradation analysis, meet the provisions of FDOT 331-4.4.2 and Table 331-3. For plant calibration, meet the provisions of FDOT 331-4.4.3 and Table 331-3.

Acceptance of Mixture
Acceptance at the Plant: The County will accept the bituminous mixture at the plant with respect to gradation and asphalt content in accordance with the requirements of 331-6.

Acceptance on the Roadway: The County will accept the bituminous mixture on the roadway with respect to compacted density and surface tolerance in accordance with the applicable provisions of FDOT 331-7.

Additional Tests: The County will apply the provisions of FDOT 331-6.4 to Type III Asphalt Concrete.

Method of Measurement
The quantities to be paid for will be measured as specified for Type S Asphalt Concrete under the applicable provisions of FDOT 331-7.

(IV.11) BASIS OF PAYMENT
All bid items specified shall be paid under the pay item noted on the Bid Form.

A. **(IV.13) SWEEP, TACK, SPREAD AND COMPACT 100# / SY OR MORE**
(IV.14) SWEEP, TACK, SPREAD AND COMPACT 50# / SY TO 99# /SY
(IV.15) SWEEP, TACK, SPREAD AND COMPACT ROAD WIDENING
(IV.16) SWEEP, TACK, SPREAD AND COMPACT PARKING LOTS
(IV.51) SWEEP, TACK, SPREAD AND COMPACT SUPER PAVE MIXES <#100
(IV.52) SWEEP, TACK, SPREAD AND COMPACT SUPER PAVE MIXES >#100
The work specified in these sections include all equipment, labor and materials necessary to sweep, tack, spread, and compact for asphaltic-concrete are established for leveling courses, thin overlays, road widening and parking lots. Straight line paving will be paid 50#/sy to 99#/sy per course and for 100#/sy per course and greater. (See general notes)

B. **(IV.17) SWEEP, TACK SPREAD AND COMPACT PATCHING**

The work specified in this section includes all equipment, labor and materials necessary to cut, square, sweep, tack, spread and compact for asphalt concrete per ton. Separated pay items for patching will be for cut, square, sweep, tack, spread and compact for asphalt-concrete per ton. (See general notes)

General Notes for A & B

Unit price determination will be based upon total quantities per each Blanket Release Order.

Example: Two 50#/sy leveling courses, each course 300 tons
2 x 300 tons = 600 tons; pay at over 500 tons unit price.

Successive leveling or surface courses comprised of or to be placed on top of SAHM, Type II, or Type III mixes shall not be placed until the previous mat has cooled sufficiently to eliminate distortion and/or displacement of that mat.

Quantities for multiple courses will be combined for unit price determination for material, labor, and equipment.

Intersecting streets shall be pulled to the radius points at a minimum, unless specified by the Pavement Manager or his representative.

Herbicide to be applied to vegetation growing within the asphalt pavement areas a minimum of 24 hours prior to resurfacing at no cost to the County.

Driveways along streets to be resurfaced shall be done on an as-required basis to provide a smooth transition to the travel surface.

Asphaltic-concrete material delivered to job site and sweep, tack, spread, and compact bid items will be combined to determine low aggregate job total for award on a Release Order basis. Where appropriate and where necessary, manhole and water valve adjustment bid items will be combined with the above items to determine low aggregate job total.
All home owners and businesses affected by the project shall be notified a minimum of two days in advance of the beginning of the project. The notification shall be a door hanger with the Successful Bidders name and contact information including phone numbers.

(IV.13, IV.14, IV.15 IV.16, IV17, IV51 AND IV.52) BASIS OF PAYMENT

All bid items specified shall be paid under the respective pay items noted on the Bid Form.

(IV.18) BITUMINOUS DOUBLE SURFACE TREATMENT and (IV.18a) BITUMINOUS SINGLE SURFACE TREATMENT (ADDENDUM # 3)

The work specified in this section consists of furnishing and applying a single or double application of bituminous surface treatment on a paved roadway or on a prepared road base, compacted to the lines, grades, and thickness established by the County and in substantial conformance with the limits established by the County.

SECTION E – TECHNICAL SPECIFICATIONS
ADDENDUM # 3

Description: Chip Seal is a pavement surface treatment option that combines a layer of polymer modified liquid asphalt emulsion placed on a prepared base with a layer of aggregate spread and compacted while the asphalt is still liquid.

Materials

Aggregates: Crushed granite conforming to FDOT section 901, table 1 for #89, #78 or #67 gradation for coarse aggregates except as modified herein. The aggregate shall be washed granite obtained from a source approved by the county. Sampling and testing of aggregate shall be the responsibility of the Successful Bidder.

Copies of test results from the aggregate supplier shall be furnished to the county prior to the start of the surface treatment.

Liquid bituminous material for surface treatment (ADDENDUM # 3): CRS-2h liquid bituminous material conforming to FDOT specification section 916-4.1 except as modified herein. The bituminous material shall be polymer modified. The Successful Bidder shall certify the liquid bituminous material meets the aforementioned FDOT and use a supplier on the FDOT Approved Products List 916 Bituminous Materials for the CRS-2h.

The Cationic mixing grade shall be homogenous and of high quality. The material shall be prepared from straight-run Venezuelan Asphalt of high ductility and shall contain a rubber hydrocarbon additive derived from latex in addition to carefully controlled amounts of selected diluents to promote work ability and minimize stripping. Additives that enhance pavement performance are subject to approval by Manatee County.

Cationic Asphalt Emulsion

Material Designation		
Test on Emulsion:	Minimum	Maximum
Viscosity, Saybolt Furol, 77 degrees F (25 C), s	---	---
Viscosity, Saybolt, 122 degrees F (50 C), s	150	400
Storage Stability Test, 24-h, %*		1
Distillation (prior to addition of dilutent)		
% residue by volume of emulsion	65	---
% oil distillate by volume of emulsion	---	0.5
Tests on Residue from Distillation:	---	---
Penetration, 77 °F, 100 g., 5 sec.	70	110
Solubility in Trichloroethylene, %	97.5	---
Ductility, 77 °F, 5 cm./min., cm.	100	---

Material Samples

The County will require the Successful Bidder to sample and test each load of emulsion prior to delivery. The Successful Bidder will also provide a sample of the emulsion, on site, prior to commencing work. The County will require the Successful Bidder to provide sample containers and a local Independent testing laboratory for the analyzing of

emulsion. The Successful Bidder will be responsible for the cost of the testing. The County reserves the right to test any shipment of emulsion that is believed to be of substandard. All samples shall be shipped and stored in clean air tight sealed wide mouth jars or bottles made of plastic.

Equipment

Distributor: The liquid bituminous material shall be applied with a truck mounted, pressure distributor that has been calibrated within the previous twelve (12) months, for transverse and longitudinal application rate. The distributor shall be equipped, maintained and operated so that the bituminous material can be applied at controlled temperatures and rates from .035 to 1.5 gallons per square yard.

The distributor shall be capable of applying bituminous material of variable widths up to sixteen (16) feet. The distributor shall uniformly apply the bituminous material to the specified rate with a maximum allowed variation of 0.015 gallons per square yard. Distributor equipment shall include tachometer, accurate volume measuring device, a **calibrated tank and a thermometer for measuring the temperature of the tank's contents.** Distributors shall be equipped with a heating device, asphalt pump and full circulating spray bars adjustable laterally and vertically. Distributors and transport trailers shall be equipped with a sampling valve. Distributor trucks shall be of the pressure type with insulated tanks. The use of gravity distributors will not be permitted. The valves shall be operated by levers so that one or all valves may be quickly opened or closed in one operation. The valves which control the flow from nozzles shall act positively so as to provide a uniform unbroken spread of bituminous material on the surface. The distributor shall be equipped with devices and charts to provide for accurate and rapid determination and control of the amount of bituminous material being applied and with a bitumeter of the auxiliary wheel type registering speed in feet per minute, and trip and total distance in feet.

Aggregate Spreader: The aggregate spreader shall be a self-propelled unit capable of **uniformly spreading the aggregate at the required rate on a minimum width of six (6")** inches wider than the width of the lane to be treated. The spreader shall be calibrated within the previous twelve (12) months for transverse and longitudinal application. The spreader shall be equipped with a computer-controlled aggregate/chip spreader in order to ensure the appropriate aggregate coverage at varying speeds, unless approved otherwise by County.

Pneumatic Tire Rollers: The Successful Bidder shall use eight (8) to twelve (12) ton self-propelled pneumatic tire rollers with oscillating wheels and low pressure, smooth tires. Maintain the inflation of the tires such that in no two tires the air pressure varies more than 5 psi. The rollers will be equipped with an operating water system and coco pads. A sufficient number of rollers and a sufficient number of passes shall be used to ensure cover aggregate is properly rolled.

Self-Propelled Rotary Power Broom: The self-propelled rotary broom shall be designed, equipped, maintained and operated so the pavement surface can be swept clean. The broom shall have an adjustment to control the downward pressure.

SECTION E – TECHNICAL SPECIFICATIONS
ADDENDUM # 3

Additional Equipment: Additional equipment will be needed to complete the operations required by this technical provision. All equipment necessary for the successful completion of projects governed by this technical provision shall be included in the unit costs associated herein. Availability of quality assurance devices (such as a 15' straight edge) shall be the responsibility of the Successful Bidder.

Experience

Bidders must submit a minimum of five Chip Seal project references on the Attachment **"A" Contractor's Questionnaire** that have been completed within the past three years. Successful Bidders may be required to submit detailed information regarding the staff that they propose for this project. Successful Bidder shall be capable of meeting all the requirements of this specification at the time of the bid.

Construction:

Layout: The Successful Bidder will be responsible for the string lining and lay out of the roadway prior to paving.

Weather and Seasonal limitations: The surface treatment shall not be applied to a wet surface or when rain is occurring or the threat of rain is present immediately before placement. The surface treatment shall not be applied when the temperature is less than 50 degrees Fahrenheit in the shade. When applying emulsions, the temperature of the surface shall be a minimum of 55°F, and no more than 140°F.

Preparation of Surface: The chip seal material shall be placed on a firm unyielding prepared roadway. The Successful Bidder shall be responsible for clipping back shoulders and removing overburden or any other vegetation or debris to ensure that the road is free of organic and deleterious material. The Successful Bidder will be responsible for blowing or sweeping the road immediately ahead of the chip seal operation to make sure the road is free of loose aggregate and other debris.

Application of Bituminous Material: Liquid bituminous material shall be applied by means of a pressure type distributor in a uniform, continuous spread over the section to be treated. The distributor shall be moving forward at the proper speed when the liquid is discharged onto the pavement to provide an even and consistent application at the rate prescribed. If any areas are deficient the operation shall be stopped and corrected **immediately. The liquid shall not be applied more than two hundred (200') feet in advance** of the aggregate spreader when the ambient air temperature is above 75 degrees or one **hundred (100') feet if the air temperature is below 75 degrees**.

- **Single Chip Seal:** Application of the liquid bituminous material shall be applied at a rate of .38 -.45 gallons per square yard depending on the composition of the existing road bed, surface texture and the size of the aggregate in use.

- **Double Chip Seal:** The second application of liquid bituminous material shall be applied at a rate of .38 - .42 gallons per square yard depending upon the size of the first layer of aggregate that the liquid is sprayed upon and the size of the aggregate being placed over the first application of surface treatment.

Application of Cover Aggregate
Immediately following the spray application of the liquid bituminous material, cover aggregate shall be spread over the liquid material at a rate of 18 – 30 lbs square yard depending upon the type of road base and/or the size of the existing aggregate that is being resurfaced.

Rolling: Immediately following the first application of the cover material, roll the entire surface with a pneumatic roller, followed immediately with the steel drum roller. Cover the entire surface one time with the steel drum roller. Then, roll the cover material again with the pneumatic roller. Continue rolling as long as necessary to ensure thorough keying of the cover aggregate into the liquid bituminous material. Eliminate the steel drum when rolling the second application of cover aggregate.

Apply the second application of liquid and cover material the same day as the first application, as far as it is practicable and consistent with the setting of the liquid bituminous material.

Sweeping: After rolling of the first application of cover aggregate, lightly broom the loose aggregate in a manner not to dislodge the aggregate embedded in the liquid. Sweep loose material from road bed. Following second application again broom loose aggregate from the road bed prior to the application of the fog seal. If temperatures exceed 85 degrees, it may be necessary to wait 24 hours before sweeping the first application of chip seal.

Fog Seal: Upon direction from the County, fog seal is to be applied as a separate pay item. When surface treatment has set, a fog seal is to be applied at a rate of .1 to .15 gallons per square yard to the entire surface treatment. The liquid for fog seal shall be a cationic mixing type emulsion diluted forty (40%) percent with water. Fog seal shall then be lightly sanded at a rate of plus or minus two (2) pounds per square yard by means of a mechanical spreader. (See Specs)

General Performance
Provide completed pavement which performs to the satisfaction of the County without bleeding, rutting, shoving, raveling, stripping, or showing other types of pavement distress or unsatisfactory performance.

Traffic Control
The Successful Bidder shall furnish all necessary traffic control, barricades, signs and flagmen, to ensure the safety of the traveling public and to all working personnel. Traffic shall not travel on fresh mix until rolling and blotting has been completed. The Successful Bidder shall submit an M.O.T plan indication all facets of traffic control for the project area. The MOT plan must be approved in writing by the County prior to commencing any work. All traffic control shall be in accordance with the FDOT Roadway Design Standards, most current edition and TP-102. M.O.T. and associated devices shall be checked daily and periodically throughout the project for compliance; and where adjustments or corrections are needed, prompt revisions shall be made.

(IV.18) BASIS OF PAYMENT
All bid items specified shall be paid under the square yard pay item noted on the Bid Form.

(IV.19) THIN LIFT ASPHALT MIX
The work specified in this section consists of the application procedures for rut filling and or overlaying of existing surfaces for the full pavement width with a hot mix plant product of granite screenings and PG 76-22.

Mix Design: The Successful Bidder shall provide the County with a design mix for approval prior to beginning production. Use Table 1.1 for Gradation Design Range.

Table 1.1

Sieve Size	Gradation Design Range
3/8"	100
No. 4	85-100
No. 8	60-80
No. 16	35-55
No. 30	22-38
No. 50	10-25
No. 100	5-15
No. 200	4-10

Design Requirements	
Asphalt Binder Content %	6.0-8.0
Air Voids %	4.0-8.0

Materials
Asphalt Binder Material: The bituminous material shall be PG 76-22.

Aggregate Material: The aggregate used shall be granite screenings from an approved source, obtained from the crushing of material meeting the requirements of FDOT Section 902.

Tack Coat: A tack coat, as specified in Section 300 of the FDOT Standard Specifications for Road and Bridge Construction, latest version, **will** be required on existing pavements that are to be overlaid with an asphalt mix.

Construction Methods
Application of SP 4.75: The SP 4.75 mix shall be placed with a conventional paver and

compacted with a steel wheel roller in accordance with Section 330 of the FDOT Standard Specifications for Road and Bridge Construction, latest version, and as directed by the County. Should there be a need for herbicide application prior to placement of asphalt; the Successful Bidder **shall apply the herbicide following manufacturer's** recommendations.

Layer Thickness
The allowable layer thickness for SP 4.75 shall be ½" – ¾" as specified by the County.

Weather Limitations: Application must be made when the ambient temperatures are above 65 degrees F, only when other weather conditions are determined favorable by the County. Night application will not be allowed.

Acceptance at the Plant
The asphalt mixture will be accepted at the plant, with respect to gradation, air voids and asphalt binder content, on a Lot to Lot basis. However, any load or loads of mixture which, in the opinion of the County, are unacceptable for reasons of excessive segregation, aggregates improperly coated, or of excessively high or low temperature will be rejected for use in the work.

Gradation, air voids and asphalt content of the mix will be determined by the County during production at the minimum frequency of once per 1,000 ton LOT produced. The producer shall also verify the gradation, air voids and asphalt content at a frequency of once per 200 ton Sublot or a minimum of once per day.

The Successful Bidder shall maintain split samples of each day's production for verification testing by the County. Each split sample shall be properly boxed and labeled with the Lot#, Sublot#, date and mix design number. These split samples shall be stored for a period of 30 days, and shall be provided to the County upon request in order to determine the disposition of a whole or partial lot. Should any verification test result fall outside of the tolerance listed in Table 1.1, the County will determine the removal and replacement of failing material at no cost to the County. Production shall be suspended until the County is satisfied that proper corrective action has been taken.

(IV.19) BASIS OF PAYMENT
All bid items specified shall be paid under the respective pay item noted on the Bid Form.

(IV.20, IV.20a, IV.21 AND IV.21a) MICRO SURFACING (ADDENDUM # 3)
The work specified in this section includes construct a micro surfacing pavement with the type of mixture specified in the release order. Micro surfacing is a mixture of polymer-modified emulsified asphalt, mineral aggregate, mineral filler, water, and other additives, properly proportioned, mixed and spread on a paved surface.

The mix shall be capable of being spread in variable thickness cross-sections (wedges, ruts, scratch courses and surfaces) which, after curing and initial traffic consolidation, resists compaction throughout the entire design tolerance range of asphalt binder content and variable thickness to be encountered. The end product shall maintain a skid-resistant surface in variable thick sections throughout the service life of the micro surfacing.

The mix shall be a quick-traffic system that will be able to accept straight rolling traffic one hour after application.

Materials

Emulsified Asphalt (ADDENDUM # 3)

General Requirements: Provide a quick-traffic, polymer-modified emulsified asphalt conforming to the requirements specified in AASHTO M 208 for CSS-1h as listed in Table 335-1. The CSS-1h supplied under this Specification shall be from a supplier on the FDOT approved Products List 916 Bituminous Materials The cement mixing test shall be waived for this product.

The polymer material shall be co-milled into the asphalt or added to the emulsifier solution prior to the emulsification process. The amount of polymer modifier shall not be less than 3.0% polymer solids based on the asphalt content (by weight) and will be certified by the emulsified asphalt supplier.

The County may waive the five-day settlement test, provided job-stored emulsified asphalt is used within 36 hours from the time of the shipment or the stored material has had additional emulsified asphalt blended into it prior to use.

Quality Tests: The emulsified asphalt, and emulsified asphalt residue, shall meet the requirements of AASHTO M 208 for CSS-1h, with the additions noted in Table 335-1.

Table 335-1
Quality Tests for Emulsified Asphalt

AASHTO Test No.	Emulsified Asphalt Property	Specification Requirements
AASHTO T 59	Residue after Distillation (1)	62% Minimum
AASHTO T 59	Cement Mixing	NONE
Quality Tests for Emulsified Asphalt Residue		
AASHTO T 53	Softening Point	135°F (57°C) Minimum
(1) Maintain the test temperature at 350°F (177°C) for 20 minutes.		

Sampling, Certification, and Verification: For the first load of emulsified asphalt produced for the **project, the supplier shall submit a sample to the owning agency's** designated laboratory for testing before use. When applicable, a pretest number will then be assigned by the designated laboratory, which shall be furnished with all emulsified asphalt delivered to the project.

At any time during application, the County may sample and test all subsequent loads of emulsified asphalt delivered to the project to verify and determine compliance with specification requirements. Where these tests identify material outside specification requirements, the County may require the supplier to cease shipment of that pre-tested product. Further shipment of that pre-**tested product to the owning agency's projects will** remain suspended until the cause of the problem is evaluated and corrected by the

supplier to the satisfaction of the County. Proper sampling and handling techniques are required, and the testing shall be completed within seven days of the sample being taken. Refer to AASHTO T 40 for emulsified asphalt sampling procedures.

Aggregate

General: Use an aggregate consisting of 100% crushed stone. The aggregate shall be a crushed stone such as granite, slag, limestone, chat, or other high-quality aggregate, or a combination thereof. To assure the material is 100% crushed, the parent aggregate will be larger than the largest stone in the gradation used. Use aggregate source(s) from the **list of aggregates available on the Florida Department of Transportation's website and** also meeting the requirements of this specification. The URL for obtaining the list of aggregates is:
http://ftp.dot.state.fl.us/fdot/smo/website/sources/frictioncourse.pdf.

Aggregate Quality Tests: In addition to the requirements of FDOT Standard Specification Sections 901 and 902, meet the minimum aggregate requirements of Table 335-2.

Table 335-2
Quality Tests for Aggregate

AASHTO Test No.	Aggregate Property	Specification Requirements
AASHTO T 176	Sand Equivalent	65 Minimum
AASHTO T 104	Soundness	15% Maximum using Na_2SO_4 or 25% Maximum using $MgSO_4$
AASHTO T 96	Abrasion Resistance (1)	30% Maximum
(1) The abrasion test will be performed on the parent aggregate.		

Gradation Requirements: When tested in accordance with AASHTO T 27 and AASHTO T 11, the target (mix design) aggregate gradation, including the mineral filler, shall be within the gradation range for a Type II or Type III mixture shown in Table 335-3.

Table 335-3
Aggregate Gradation Requirements

Sieve Size	Type II Mix Design Range Percent Passing	Type III Mix Design Range Percent Passing	Stockpile Tolerance from Mix Design Percent Passing
3/8 inch	100	100	N/A
No. 4	90 – 100	70 – 90	± 5%
No. 8	65 – 90	45 – 70	± 5%
No. 16	45 – 70	28 – 50	± 5%
No. 30	30 – 50	19 – 34	± 5%
No. 50	18 – 30	12 – 25	± 4%
No. 100	10 – 21	7 – 18	± 3%
No. 200	5 – 15	5 – 15	± 2%

The aggregate will be accepted from the stockpile located at the project. The stockpile will be accepted based on five quality control gradation tests conducted in accordance with AASHTO T 2 and one sand equivalency test conducted in accordance with AASHTO T 176. If the average of the five gradation tests is within the stockpile tolerances shown in Table 335-3 for all of the sieve sizes, and the one sand equivalent test meets the requirement shown in Table 335-2, then the stockpile is accepted. If the average of the five gradation tests is not within the stockpile tolerances shown in Table 335-3 for any sieve size, remove the stockpiled material and replace it with new aggregate or blend other aggregate sources with the stockpiled material. Aggregates used in blending must meet the quality tests shown in Table 335-2 before blending and must be blended in a manner to produce a consistent gradation and sand equivalent value. If the sand equivalent quality control test does not meet the criteria shown in Table 335-2, remove the stockpiled material and replace it with new aggregate.

If new aggregate is obtained or blending of aggregates is performed resulting in an aggregate that is not represented by the mix design, submit a new mix design to the County for approval prior to production of the mix.

The County may obtain stockpile samples at any time. If the average of five gradation tests conducted in accordance with AASHTO T 2 is not within the gradation tolerances shown in Table 335-3 for any sieve size, or if the sand equivalent value does not meet the requirements of Table 335-2, cease production until the problem is corrected to the satisfaction of the County.

All stockpiled aggregates shall be screened at the stockpile area prior to delivery to the paving machine to remove oversize material and non-desirable particles. The screened aggregate will be placed directly into the nurse truck or into the micro surfacing mixing machine, depending on whether continuous or truck mounted machines are used. Screened aggregate may not be placed on the ground prior to mixture laydown.

Mineral Filler: Utilize non air-entrained Portland cement or hydrated lime that is free from lumps. The county will accept the mineral filler by visual inspection. The type and amount of mineral filler shall be determined by a laboratory mix design and will be considered as part of the aggregate gradation. An increase or decrease of less than one percent mineral filler may be permitted during production if it is found to result in better consistency or set times. Any changes to the percentage of mineral filler must meet the requirements of Table335-5.

Water: Utilize water that is potable and free of harmful soluble salts, reactive chemicals, or any other contaminants.

Additives: Additives may be added to the mixture or any of the component materials to provide control of quick-trafficking properties. The additives to be used should be indicated on the mix design and be compatible with the other components of the mix.

Mix Design

Before work begins, the Successful Bidder shall submit a mix design to the County. The mix design must have been developed within the last year using the specific materials to

be used on the project. Mix designs shall be developed by laboratories with experience in designing micro surfacing mixtures. When requested by the County, the mix design shall be verified by an independent laboratory not affiliated with the emulsion supplier or the Successful Bidder. Verification shall include confirmation of the mix design results for wet cohesion and 1hour wet track abrasion loss. Projects requiring rut filling, or multilayer application, shall also require lateral displacement confirmation.

Submit the proposed mix design with supporting test data indicating compliance with all mix design criteria. Allow the County a maximum of one week to either conditionally verify or reject the mix design.

Meet the requirements provided in Table 335-4. After the mix design has been approved, no substitutions to the mix design will be permitted, unless approved by the County. The County will consider inadequate field performance of a mix as sufficient evidence that the properties of the mix related to the mix design have changed.

The release order project will be stopped until it is demonstrated that those properties, or issues, have been sufficiently addressed.

Table 335-4
Mix Design Testing Requirements

ISSA Test No.	Property	Specification Requirements
ISSA TB-139(1)	Wet Cohesion: @ 30 Minutes Minimum (Set) @ 60 Minutes Minimum (Traffic)	12 kg-cm Minimum 20 kg-cm or Near Spin Minimum
ISSA TB-109	Excess Asphalt by Loaded Wheel Tester (LWT) Sand Adhesion	50 g/ft^2 Maximum
ISSA TB-114	Wet Stripping	90% Minimum
ISSA TB-100	Wet-track Abrasion Loss: One-hour Soak Six-day Soak	50 g/ft^2 Maximum 75 g/ft^2 Maximum
ISSA TB-147	Lateral Displacement Specific Gravity after 1,000 Cycles of 125 lb.	5% Maximum 2.10 Maximum
ISSA TB-113(1)	Mix Time @ 77°F (25°C)	Controllable to 120 Seconds Minimum

(1) The Cohesion test and Mixing Time test should be checked and reported for the highest temperatures expected during construction.

The mix design must clearly show the proportions of aggregate, emulsified asphalt, mineral filler, water, and additive usage based on the dry weight of the aggregate. Meet the mix design component material requirements provided in Table 335-5.

Table 335-5
Mix Design Component Material Requirements

Component Materials	Specification Requirements

Residual Asphalt	5.5 to 10.5% (by dry weight of aggregate)
Mineral Filler	0.5 to 3.0% (by dry weight of aggregate)
Polymer-based Modifier	Minimum of 3.0% (solids based on asphalt weight content)
Additives	As needed
Water	As required to produce proper mix consistency

The materials (aggregates, emulsion, mineral filler, and additives) must be from the same source, grade and type used to develop the approved mix design. Any substitutions or alternate supplies must be preapproved by the County.

Changes in the aggregate source or emulsion source requires re-validating the mix design and the performance properties. Blending, co-mingling and otherwise combining materials from two or more sources, grades or types not noted in the approved Mix Design

is strictly prohibited. Aggregate stockpiles and emulsion material should be located at or near the job site in sufficient quantity for the job or designated parts of the job.

Equipment

General: Maintain all equipment, tools, and machines used in the performance of this work in satisfactory working condition at all times to ensure a high-quality product.

Mixing Equipment: Use a machine specifically designed and manufactured to place micro surfacing. Truck mounted and self-loading continuous machines are acceptable. Mix the material with an automatic-sequenced, self-propelled micro surfacing mixing machine. It shall be a continuous-flow mixing unit able to accurately deliver and proportion the mix components through a revolving multi-blade, double-shafted mixer and to discharge the mixed product on a continuous-flow basis. The machine shall have sufficient storage capacity for all mix components to maintain an adequate supply to the proportioning controls.

Self-loading continuous machines shall be capable of loading materials while continuing to lay micro surfacing, thereby minimizing construction joints. Self-loading continuous machines shall be equipped to allow the operator to have full control of the forward and reverse speeds during applications of the micro surfacing material and shall be equipped with opposite-side driver stations to assist in alignment. The self-loading device, opposite-side driver stations, and forward and reverse speed controls shall be original equipment-manufacturer design.

Proportioning Device: Provide and properly mark individual volume or weight controls for proportioning each material to be added to the mix (i.e., aggregate, mineral filler, emulsified asphalt, additives, and water).

Spreading Equipment: Agitate and spread the mixture uniformly in the spreader box by means of twin-shafted paddles or spiral augers fixed in the spreader box. Provide a front seal to ensure no loss of the mixture at the road contact point. The rear seal shall act as a final strike-off and shall be adjustable. The spreader box and rear strike-off shall be so

designed and operated that a uniform consistency is achieved and a free flow of material is provided to the rear strike-off. The spreader box shall have suitable means to hydraulically adjust the box width automatically while traveling behind the mixing unit, and be able to side shift the box to compensate for variations in the pavement geometry.

Secondary Strike-off: Provide a secondary strike-off to improve surface texture. The secondary strike-off shall have the same adjustments as the spreader box.

Rut-filling Equipment: When required by the plans, micro surfacing material may be used to fill ruts, utility cuts, depressions in the existing surface, etc.

When rutting or deformation is less than 1/2 inch, a full width scratch course may be applied with the spreader box using a metal or stiff rubber strike-off. Ruts of 1/2 inch or greater in depth shall be filled independently with a rut-filling box, either five or six feet in width. Ruts that are in excess of 1-1/2 inch in depth may require multiple applications with the rut-filling box to restore the cross-section.

When a rut box is used, emulsified asphalt content may be reduced by 0.5% of the mix design target. Any reduction of emulsified asphalt content must be within the tolerance of the job mix formulation listed in the mix design. Material placed with the rut-filling box shall have a 1/4 inch crown to allow for traffic consolidation. Before placing subsequent lifts, allow all rut-filling material to cure under traffic for at least 24 hours.

Auxiliary Equipment: Provide suitable surface preparation equipment, traffic control equipment, hand tools, and any other support and safety equipment necessary to perform the work.

Calibration

Calibrate each mixing unit to be used in the performance of the work in the presence of the County prior to the start of construction. Previous calibration documentation covering the exact materials to be used may be acceptable, provided that no more than 60 days have lapsed. Document the individual calibration of each material at various settings, which can be related to the machine metering devices. Do not utilize any mixing unit on the project until the calibration has been completed and approved by the County. Any component replacement affecting material proportioning requires that the machine be recalibrated. No machine will be allowed to work on the project until the calibration has been completed and accepted.

Weather Limitations

Do not apply micro surfacing if either the pavement or air temperature is below 50°F and falling. Micro surfacing may be applied when both pavement and air temperatures are 45°F and rising. Do not apply micro surfacing when there is the possibility that the finished product will freeze within 24 hours. Do not apply micro surfacing in the rain or when there is standing water on the pavement. The mixture shall not be applied when weather conditions prevent opening to traffic within a reasonable amount of time, as determined by the County.

Surface Preparation

General: Remove any thermoplastic striping materials and retro-reflective pavement markers in the areas to be micro surfaced. Provide temporary striping as necessary to comply with task requirements. Immediately prior to applying the micro surfacing, clear the surface of all loose material, silt spots, vegetation, and other material that will negatively affect the quality of the micro surfacing, utilizing any standard cleaning method. If water is used for cleaning, allow any unsealed cracks to dry thoroughly before applying micro surfacing. Protect manholes, valve boxes, drop inlets and other service entrances from the micro surfacing mixture by a suitable method. The County will approve the surface preparation prior to micro surfacing. No loose aggregate, either spilled from the lay-down machine or existing on the road, will be permitted.

Cracks: If the plans call for crack filling prior to construction of the micro surfacing treatment, pre-treat any cracks in the surface of the pavement with a crack filler meeting the material requirements of FDOT Developmental Specification Section 305 prior to the application of the micro surfacing. Fill any cracks with a width greater than 1/4 inch. Do not overfill the cracks. Crack filling material must cure for a minimum of 30 days prior to application of the micro surfacing.

Rumble Strips: Where shoulders are not to be micro surfaced, prevent material from being applied to or entering any rumble strip depressions. If necessary, remove any material that enters the depressions. When rumble strips are to be micro surfaced, place a scratch course to fill the depressions prior to placing the final surface course.

Tack Coat: Place a tack coat on all concrete or brick pavement prior to constructing a micro surfacing course. In general, the County will not require a tack coat on asphalt pavements except in areas that are extremely dry or raveled, as determined by the County. If required, the tack coat should be type SS, type CSS, or the micro surfacing emulsified asphalt. It may consist of one part emulsified asphalt to three parts water and should be applied with a standard distributor. The distributor shall be capable of applying the dilution evenly at a rate of 0.05-0.15 gallons per square yard.

Test Strip

Construct a test strip for the County to evaluate. The test strip should be performed in similar conditions as those expected during actual application. The test strip shall be 1,000 feet in length at a location not associated with the project within reasonable proximity to the project staging area. The intention of the test strip is to assure adequate workmanship, aesthetics and that the cure time of the mixture is achievable when applied with the personnel, equipment and materials intended for use during execution of the project. Acceptable cure time is defined by the ability of the test strip to accept rolling traffic within one hour after placement. Full production may begin once the test strip has been accepted by the County.

If the County deems the test strip to be unacceptable, the Successful Bidder shall make any necessary changes. Once the County is satisfied that the cause of the problem has been remedied, the Successful Bidder may resubmit a new test strip for evaluation.

Application

General: Pre-wet the surface by fogging ahead of the spreader box with water. Adjust the rate of application of the fog spray to suit temperatures, surface texture, humidity, and dryness of the pavement.

The micro surfacing shall be of the desired consistency upon leaving the mixer. Carry a sufficient amount of material in all parts of the spreader box at all times so that complete coverage is obtained. Avoid overloading of the spreader box. Do not allow lumping, balling, or unmixed aggregate in the micro surfacing mixture.

Do not leave streaks, such as those caused by oversized aggregate, in the finished surface. If excess streaking develops, stop production until the situation has been corrected. Excessive streaking is defined as more than four drag marks greater than 1/2 inch wide and 4 inches long, or 1 inch wide and 3 inches long, in any 30 square yard area. Do not permit transverse ripples or longitudinal streaks of 1/4 inch in depth or greater, when measured by placing a 10 foot straight edge over the surface.

Rate of Application: The average single application rate, as measured by the Successful Bidder, shall be in accordance with Table 335-6, unless otherwise specified

in the plans. Full width application rates must be maintained within plus or minus 2 pounds per square yard of the specified rate. Application rates are based upon the weight of dry aggregate in the mixture. The maximum thickness of any single layer of micro surfacing at the edge of the pavement shall be 1/4 inch.

Table 335-6
Rate of Application

AGGREGATE TYPE	LOCATION	SUGGESTED APPLICATION RATE(1)	
Type II	Collectors, Local Roads, and Airport Runways	Single Application: 15-21 lbs./yd^2	Double Application (two lifts): Bottom: 14-18 lbs./yd^2 Top: 16-20 lbs./yd^2 Total: 30-34 lbs./yd^2
	Scratch or Leveling Course	As Required --- 14 lb./yd^2 (minimum)	
Type III	Interstate, Arterial Routes, and Wheel Ruts	Single Application: 18-26 lbs./yd^2	Double Application (two lifts): Bottom: 16-22 lbs./yd^2 Top: 18-22 lbs./yd^2 Total: 34-44 lbs./yd^2
	Scratch or Leveling Course	As Required --- 16 lb./yd^2 (minimum)	

(1) Suggested application rates are based upon the weight of dry aggregate in the mixture.

Joints: Prevent excessive buildup, uncovered areas, or unsightly appearance on longitudinal and transverse joints. Provide suitable-width spreading equipment to produce a minimum number of longitudinal joints throughout the project. Place longitudinal joints on lane lines, where possible. Use half passes and odd-width passes only when absolutely necessary. Do not apply a half pass as the last pass of any area. Do not overlap longitudinal lane line joints by more than three inches. Do not construct joints having more than a 1/4 inch difference in elevation when measured by placing a 10 foot straight edge over the joint and measuring the elevation drop-off. Construct longitudinal joints so that water is not held at the joint. Construct transverse joints at the beginning and end project limits so that the elevation difference between the micro surfacing and the adjacent pavement does not exceed 1/4 inch.

Mix Stability: Produce a micro surfacing mixture that possesses sufficient stability so that premature breaking of the material in the spreader box does not occur. The mixture shall be homogeneous during and following mixing and spreading. The mixture shall be free of excess water or emulsified asphalt and free of segregation of the emulsified asphalt and aggregate fines from the coarser aggregate. Do not spray water directly into the spreader box while applying micro surfacing material under any circumstances.

Handwork: Utilize hand squeegees to provide complete and uniform coverage of micro surfaced areas that cannot be reached with the mixing machine. Lightly dampen the area to be hand worked prior to mix placement, if necessary.

Care shall be exercised to leave no unsightly appearance from handwork. When performing handwork, provide the same type of finish as that applied by the spreader box.

Lines: Construct straight lines along curbs and shoulders. Do not permit runoff on these areas. Keep lines at intersections straight to provide a good appearance. If necessary, utilize a suitable material to mask off the end of streets to provide straight lines. Edge lines shall not vary by more than 2 inches horizontally.

Cleanup: Remove micro surfacing mixture from all areas such as manholes, gutters, drainage structures, rumble strips, and as otherwise specified by the County. On a daily basis, remove any debris resulting from the performance of the work.

Post Sweeping: If required by the County, broom the surface of any loose material within 48 hours after the completion of the micro surfacing. If directed by the County, perform this operation again approximately seven to ten days after completion of the micro surfacing as needed. Additionally, clean the surface, as necessary, prior to application of the final pavement markings.

Quality Control and Assurance.
General: Produce a mixture that will meet the mix design and the quality control (QC) tolerances specified in Table 335-7. Notify the County immediately if QC test results exceed the tolerances specified in Table 335-7, and stop mix production. Identify the cause of the deviation, and determine the corrective action necessary to bring the mixture into compliance. **Obtain the County's approval before resuming work.**

The County reserves the right to verify, at agency cost, QC test accuracy by an independent laboratory not heretofore associated with the project. If the County identifies a condition that causes an unsatisfactory micro surfacing treatment, immediately stop production work and correct the defect at no additional cost.

Table 335-7
Micro Surfacing Quality Control Tolerances

Aggregate Gradation Tolerances (±)							
Sieve Size	No. 4	No. 8	No. 16	No. 30	No. 50	No. 100	No. 200
Tolerance	5.0%	5.0%	5.0%	5.0%	4.0%	3.0%	2.0%

General Quality Control Tolerances (±)	
Parameter	Tolerance
Asphalt Cement Content Single Test	0.5% from mix design
Asphalt Cement Content Daily Average	0.2% from mix design
Application Rate (as determined by 1,000 ft yield checks)	2 lb./yd^2
Sand Equivalent Test (ASTM D2419)	7% from mix design

Successful Bidder's Quality Control Plan: Provide and follow a QC plan that will maintain QC for production and construction processes. Provide the County with a copy of the QC plan for review and approval before the pre-construction meeting. Include, at a minimum, the following items:

The source materials used on the project.
Sampling and testing methods used to determine compliance with material specifications.
The equipment to be used on the project.
Calibration method used to determine compliance with the mix design.
Pavement cleaning and preparation procedure.
Plan for protecting micro surfacing mixture from damage by traffic.
Procedure for monitoring initial acceptance requirements.
An action plan demonstrating adjustments of the micro surfacing operation for adverse environmental conditions.

Minimum Sampling and Testing Frequency

Fine Aggregate Gradation: Sample fine aggregate from the project stockpile and test for gradation and sand equivalency. Perform one test per 500 tons of fine aggregate.

At the discretion of the County an alternative would allow certification of an entire stockpile. The stockpile will be accepted based on five quality control gradation tests conducted in accordance with AASHTO T 2 and five sand equivalency tests conducted in accordance with AASHTO T 176. If the average of the five gradation tests is within the stockpile tolerances shown in Table 335-3 for all of the sieve sizes and the five sand equivalent tests meets the requirement shown in Table 335-2, then the stockpile is accepted.

Asphalt Content: Calculate the percent asphalt content of the mixture at least three times per day. The County on-site representative shall randomly determine the timing for the readings used to calculate asphalt content.

Application Rate: Calculate the yield of the course placed at least three times per day. The County on-site representative shall randomly determine the timing for the readings used to calculate application rate.

Documentation: Complete a daily report that includes the following information:

Job number
Route/Street Name(s)
County's On-Site Representative
Date
Air temperature – Min/Max (during application)
Unit weight of emulsion (pounds per gallon)
Beginning and ending application locations
Counter readings (beginning, ending, and total difference)
Total area (square yards)
Aggregate weight
Gallons of emulsion
Application rate (pounds per square yard)
Successful **Bidder's authorized signature**
QC aggregate properties (if required)
Asphalt emulsion bill of lading(s)

Acceptance

Allow the County access to in-progress work for quality assurance review and testing. Upon completion of work, schedule an inspection with the County. The County will note deficiencies. Any deficiencies identified during this process will be addressed by the Successful Bidder at no additional cost.

(IV.20, IV.20a, IV.21 AND IV.21a) BASIS OF PAYMENT

The micro surfacing (referencing FDOT No. 335-1) shall be paid for at the unit price per square yard, completed and accepted. Such price and payment shall be full compensation for performing all work included in this section, and shall include the cost of all materials, including the cost of the emulsified asphalt and aggregate. Crack sealing, if required, shall be paid for under the appropriate pay item.

(IV.22) CONSTRUCTION SEALING OF ASPHALTIC CONCRETE SURFACES COURSES WITH AN ASPHALT REJUVENATING AGENT
(IV.23) RESTORATIVE SEALING OF ASPHALT PAVEMENT WITH ASPHALT REJUVENATIVE AGENT RESTRICTIVE SEAL
(IV.24) ASPHALT REJUVENATING AGENT
(IV.25) ASPHALT REJUVENATING EMULSION

The work specified in the section shall consist of furnishing all labor, equipment, and material, in performing all operations necessary for the rejuvenation and in-depth sealing of asphaltic-concrete surface course by spray application of a cationic rejuvenating agent

composed of petroleum oils and resins emulsified with water, complete, in accordance with the specifications, the applicable drawings and subject to the terms and conditions of the blanket purchase order.

MATERIAL

The asphalt rejuvenating agent shall be composed of a petroleum resin oil base uniformly emulsified with water. Each bidder must submit with his bid a certified statement from asphalt rejuvenator manufacturer showing that the asphalt rejuvenating emulsion conforms to the following physical and chemical requirements.

SPECIFICATIONS
Test Method Requirements

Tests	ASTM	AASHTO	Min.	Max.
Test on Emulsion:				
Viscosity @ 25°C, SFS	D244	T-59	15	40
Residue, % W (1)	D244 (Mod.)	T-59(Mod.)	60	65
Miscibility Test (2)	D244 (Mod.)	T-59(Mod.)	No	
Coagulation				
Sieve Test, % W (3)	D244 (Mod.)	T-59(Mod.)		0.1
Particle Charge Test	D244	T-59		
Positive				
Percent Light Transmittance (4)	GB	GB	30	

Test on Residue from Distillation:

	ASTM	AASHTO	Min.	Max.
Flash Point, COC, °C	D-92	T-48	196	-
Viscosity @ 60°C, cSt	D-445	-	100	200
Asphaltenes, %w	D-2006-70	-	-	1.00
Maltene Dist. Ratio	D-2006-70	-	0.3	0.6
$PC + A_1$ (5)				
$S + A_2$ (5)				
PC/S Ratio	D-2006-70	-	0.5	-
Saturated Hydrocarbons, S (5)	D-2006-70		21	28

A. ASTM D-244 Modified Evaporation Test for percent of residue is made by heating 50 gram sample to 149°C (300°F) until foaming ceases, then cool immediately and calculate results.

B. Test procedure identical with ASTM D-244 except that 0.2 Normal Calcium Chloride solution shall be used in place of distilled water.

C. Test procedure identical with ASTM D-244 except that distilled water shall be used in place of two percent sodium oleate solution.

D. Test procedure is attached.

E. Chemical composition by ASTM Method D-592006-70:

PC = Polar Compounds	A_1 = First Acidaffins
A_2 = Second Acidiaffins	S = Saturated Hydrocarbons

The rejuvenating agent shall have a record of at least five years of satisfactory service as an asphalt rejuvenating agent and in-depth sealer; such satisfactory service being based on the capability of the material to significantly decrease the viscosity and increase penetration value of the asphalt binder in the pavement surface to depth of at least three eighths inch (3/8") and to seal the pavement in-depth to the intrusion of air and water.

The bidder should submit with his bid the manufacturer's certification that the material proposed for use is in compliance with the specification requirements; and previous use documentation and test data conclusively demonstrating that the rejuvenating agent has been used successfully for a period of five years by government agencies as to the required change in asphalt binder viscosity and penetration number. Testing data shall be submitted indicating such product performance. The product RECLAMITE, or approved equal, is acceptable for these requirements.

PRODUCT STANDARDS AND ALTERNATES

The name or (brand) named in this specification, whether or not the words **"or approved equal"** are used, shall be known as standard. The price bid shall be based on the standard specified herein. Should a bidder wish to submit a bid for an Equivalent to the standard specified; bidder shall indicate "Equivalent Bid" on the Bid Form and submit the following:

1. List the proposed Equivalent on the Bid Form with the product name and price.

2. Furnish complete specifications and descriptive literature for the Alternate as well as a one-gallon sample of the material proposed for use. Such descriptive detailed information shall be complete and at least equal in detail to the specification requirements for the standard item for which the alternate is offered.

The Alternate will be given consideration by the County. The Successful Bidder may furnish only those Alternate items included in his bid and approved by the County prior to award of blanket purchase order.

PROCEDURE FOR DETERMINING PERCENT LIGHT TRANSMITTANCE OF EMULSIONS

A. **APPARATUS**

1. Container may be glass, plastic or metal having a capacity of 6,000 ml.

2. Graduated cylinder, 1,000 ml, or greater.

3 Light transmittance measuring apparatus, such as Bausch and Lomb or Lumitron spectrophotometer.

4. Graduated pipette having 1 ml capacity to 0.01 ml accuracy.

5. Suction bulb for use with pipette.

6. Test tubes compatible with spectrophotometer, ¾ " x 6", Bausch and Lomb, Catalog #33-17-81, (B&L).

B. **CALIBRATION OF SPECTROPHOTOMETER**

1. Calibrate spectrophotometer as follows:
(a) Set wavelength at 580 mu,
(b) Allow spectrophotometer to warm-up thirty minutes,
(c) Zero percent light transmittance (%LT) scale,
(d) Rinse test tube three times with tap water and fill to top of circle marking on B&L test tube or approximately 2/3 full,
(e) Place tube in spectrophotometer and set %LT scale at 100, and (f) Repeat steps (c) and (e) two times or until no further adjustments are necessary.

2. Calibrate the emulsion samples test tube as follows:
(a) Rinse out test tube with tap water three times and fill to top of circle mark,
(b) Calibrate spectrophotometer,
(c) Test tube may be used for the emulsion samples. If the %LT is not 100, repeat steps (a) through (c) with other test tubes until one is found with a reading of 100% LT.

C. **PROCEDURE**

1. Shake, stir or otherwise thoroughly mix emulsion to be tested. Place sample of emulsion in beaker and allow to stand one minute.

2. Place 2,000 ml tap water in container.

3. Suck 1.00 ml emulsion into pipette using suction bulb. Wipe off outside pipette.

4. Using suction bulb, blow emulsion into container.

5. Rinse pipette by sucking in diluted emulsion solution and blowing out. Continue until pipette is clean.

6. Clean pipette with soap or solvent and water. Rinse with acetone.

7. Stir diluted emulsion thoroughly.

8. Rinse out tube to be used with the diluted emulsion three times and fill to top of circle.

9. Calibrate spectrophotometer.

10. Place diluted emulsion sample tube in spectrophotometer, cover and read %LT to nearest integer.

11. Repeat steps 9 and 10 until three identical consecutive readings are achieved.

12. The elapsed time between addition of emulsion to dilution of water and final %LT reading should not exceed 5 minutes.

If no Alternate is indicated on the Bid Form, the Successful Bidder shall furnish the standard (brand) specified. Should the Alternate offered be found unacceptable by the County based on the data submitted with the bid and/or no bid is entered on the Bid Form for the standard, then said bid will be considered non-responsive.

APPLICATION TEMPERATURE

The temperature of the emulsion at the time of application shall be as recommended by the manufacturer.

HANDLING OF ASPHALT REJUVENATING AGENT

Contents in tank cars or storage tanks shall be circulated at least ten minutes before withdrawing any material for application. When loading the distributor, the asphalt rejuvenating agent concentrate shall be loaded first and then the required amount of water shall be added. The water shall be introduced into the distributor with enough force to cause agitation and thorough mixing of the two materials.

To prevent foaming, the discharge end of the water hose or pipe which shall be used as a spreader shall be kept below the surface of the material in the distributor. It will be cleaned of all of its asphalt materials and washed out to the extent that no discoloration of the emulsion may be perceptible. Cleanliness of the spreading equipment shall be subject to the approval and satisfaction of the County.

The distributor for spreading the emulsion shall be self-propelled, and shall have pneumatic tires. The distributor shall be designed and equipped to distribute the emulsion uniformly on variable widths of surface at readily determined and controlled rates from 0.05 to 0.5 gallons per square yard of surface, and with an allowable variation from any specified rate not to exceed 5 percent.

Distributor equipment shall include full circulation spray bars, pump, tachometer, volume measuring device and a hand hose attachment suitable for application of the emulsion manually to cover areas or patches inaccessible to the distributor. The distributor shall be equipped to circulate and agitate the emulsion within the tank.

A check of distributor rate and uniformity of distribution shall be made when directed by the County.

WEATHER LIMITATIONS

The emulsion shall be applied only when the existing surface to be treated is thoroughly dry and when the weather is clear and is not threatening to rain. The emulsion shall not be applied when the atmospheric temperature is below 40 degrees F.

APPLICATING EQUIPMENT:

The distributor for spreading the emulsion shall be self-propelled, and shall have pneumatic tires.

The distributor shall be designed and equipped to distribute the asphalt rejuvenating agent uniformly on variable widths of surface at readily determined and controlled rates from 0.05 to 0.5 gallons per square yard of surface, and with an allowable variation from any specified rate not to exceed 5 percent of the specified rate. The rate of application shall be computer controlled such that the selected rate of application remains constant at any variation in speed of the vehicle.

Distributor equipment shall include full circulation spray bars, volume measuring device and a hand hose attachment suitable for application of the emulsion manually to cover areas inaccessible to the distributor. The distributor shall be equipped to circulate and agitate the emulsion within the tank.

A check of distributor equipment as well as application rate accuracy and uniformity of distribution shall be made when directed by the County.

The truck used for applying sand shall be equipped with a spreader that allows the sand to be uniformly distributed onto the pavement. The spreader shall be able to apply 1/2 pound to 3 pounds of sand per square yard in a single pass. The spreader shall be adjustable so as not to broadcast the sand onto driveways or tree lawns.

The sand to be used shall be free flowing, without any leaves, dirt, stones, etc. Any wet sand shall be rejected from the job site.

Any equipment that is not maintained in full working order, or is proven inadequate to obtain the results prescribed, shall be repaired or replaced at the direction of the County.

APPLICATION

The asphalt-rejuvenating agent shall be applied by a distributor truck at the temperature recommended by the manufacturer and at the pressure required for the proper distribution. The emulsion shall be so applied that uniform distribution is obtained at all points of the areas to be treated. Areas inadvertently missed shall receive additional treatment as may be required by hand sprayer application.

Application of asphalt rejuvenating agent shall be on one-half width of the pavement at a time. When the second half of the surface is treated, the distributor nozzle nearest the center of the road shall overlap the previous application by at least one-half the width of the nozzle spray. In any event the centerline construction joint of the pavement shall be treated in both application passes of the distributor truck.

Before spreading, the asphalt rejuvenating agent shall be blended with water at the rate of two (2) parts rejuvenating agent to one (1) part water, by volume or as specified by the manufacturer for conditions. The combined mixture of asphalt rejuvenating agent and water shall be spread at the rate of 0.05 to 0.10 gallons per square yard, or as approved by the County following field testing.

Where more than one application is to be made, succeeding applications shall be made as soon as penetration of the preceding application has been completed and the County grants approval for additional applications.

Grades or super elevations of surfaces that may cause excessive runoff, in the opinion of the County, shall have the required amounts applied in two or more applications as directed.

After the rejuvenating emulsion has penetrated, a light coating of sand shall be applied to the surface in sufficient amount to protect the traveling public as required by the County. The sand shall be swept and removed from the streets and properly disposed of at the **Successful Bidder's expense within 24 hours of application.**

The Successful Bidder shall furnish a quality inspection report showing the source, manufacturer, and the date shipped, for each load of asphalt rejuvenating agent. When directed by the County, the Successful Bidder shall take representative samples of material for testing.

The rejuvenating agent shall be applied by an experienced applicator of such material. **The applicator shall have a minimum of three years' experience** in applying the product proposed for use. He should submit with his bid a list of the last five projects on which he applied said rejuvenator. He is to indicate the project date, number of square yards treated in each and the name and telephone number of the contact for each project.

STREET SWEEPING

The Successful Bidder shall be responsible for sweeping and cleaning of the streets prior to, and after treatment.

Prior to treatment, the street will be cleaned of all standing water, dirt, leaves, foreign materials, etc. This work shall be accomplished by hand-brooming, power blowing or other approved methods. If, in the opinion of the County, the hand cleaning of the pavement surface is not sufficient than a self-propelled street sweeper shall be used to insure complete surface cleaning.

All sand used during the treatment must be removed no later than 24 hours after treatment of the street. This shall be accomplished by a combination of hand and mechanical sweeping. All turnouts, cul-de-sacs, etc. must be cleaned of any material to the satisfaction of the County. Street sweeping will be included in the price bid per square yard for asphalt rejuvenating agent.

If, after sand is swept and in the opinion of the County a condition exists on the roadway, the Successful Bidder must apply additional sand and sweep same no later than 24 hours following reapplication. No additional compensation will be allowed for reapplication and removal of sand.

TRAFFIC

The Successful Bidder shall schedule his operations and carry out the work in a manner

to cause the least disturbance and/or interference with the normal flow of traffic over the areas to be treated.

Treated portions of the pavement surfaces shall be kept closed and free from traffic until penetration, in the opinion of the County, has become complete and the area is suitable for traffic.

When, in the opinion of the County, traffic must be maintained at all times on a particular street, then the Successful Bidder shall apply asphalt rejuvenating agent to one lane at a time. Traffic shall be maintained in the untreated lane until the traffic may be switched to the completed lane.

The Successful Bidder shall be responsible for all traffic control and signing required to permit safe travel. The Successful Bidder shall notify the police and fire departments as to the streets that are to be treated each day.

If, in the opinion of the County, proper signing is not being used, the Successful Bidder shall stop all operations until safe signing and barricading is achieved.

METHOD OF MEASUREMENT
Construction sealing with rejuvenating agent will be measured by the square yard.

(IV22, IV.23, IV.24 and IV.25) BASIS OF PAYMENT
The accepted quantities for construction sealing with asphalt rejuvenating agent, measured as provided for above, shall be paid for under the respective pay item noted on the Bid Form which shall be full compensation for furnishing all materials, equipment, labor, and incidentals to complete the work as specified.

REGULATORY COMPLIANCE
The County shall furnish applicable compliance with Florida Department of Environmental Regulation, Florida Department of Natural Resources, and U.S. Environmental Protection Agency rules and regulations. Links provided at front of technical specifications.

(IV.26) BITUMINOUS CRACK RELIEF LAYER
The work specified in this section consists of constructing a crack relief layer composed of a separate application of bituminous material covered with a single application of aggregate.

Composition and Proportioning
Use the composition and proportioning for the crack relief layer as shown in the table below. The range of bituminous material and cover material are approximate. The County may increase or decrease the range.

NON SI UNITS			
Proportions For Crack Relief Layer			
		Bituminous Material gal/yd^2	
Aggregate Grade	Cover Material ft^3/yd^2	Asphalt Cement	Emulsified Asphalt

NON SI UNITS			
Proportions For Crack Relief Layer			
67	0.32 - 0.38	0.20 - 0.30	0.29 - 0.43

SI UNITS			
Proportions For Crack Relief Layer			
Aggregate Grade	Cover Material m^3/m^2	Bituminous Material L/m^2	
		Asphalt Cement	Emulsified Asphalt
67	0.011 - 0.013	0.9 - 1.4	1.3 - 1.9

Materials
Meet the following requirements:

(1) Bituminous Material:
Asphalt Cement, Viscosity Grade AC-5 916-1
Asphalt Cement, Viscosity Grade AC-10 916-1
Emulsified Asphalt, Grade RS-2.....916-4

(2) Cover Material:
Stone, Slag, or Crushed Gravel .....Section 901

Equipment
Pressure Distributor: Provide a pressure distributor that meets the requirements of FDOT 300-3.1.

Spreading Equipment: Provide spreading equipment that meets the requirements of FDOT 310-4.2.

Rollers: Provide pneumatic-tired traffic type rollers equipped with at least seven smooth-tread, low-pressure tires and capable of carrying a gross load of at least 8 tons [7 metric tons]. Maintain the inflation of the tires such that in no two tires the air pressure varies more than 5 psi [35 kPa]. Load the traffic roller as directed by the County.

Limitations to Width of Application
Confine the application of bituminous and cover material to one lane at a time, leaving all additional lanes open to traffic.

Preparation of Road Surface
Cleaning: Sweep the surface to be covered clean and free of sand, dirt, dust, and other deleterious material by means of mechanical rotary sweepers or other approved methods, and keep the surface free from moisture.

Condition of Underlying Surface: Do not construct the crack relief layer over any loose or unstable pavement that results in excessive penetration of the cover material during the rolling operations.

Protection of Adjacent Surface
Where constructing a crack relief layer adjacent to curb and gutter, valley gutter, or any other concrete surface, cover the concrete surfaces with heavy paper or other protection

approved by the County during application of bituminous material. Immediately remove any bituminous material deposited on such concrete surfaces.

Weather Limitations
Do not apply bituminous material when the air temperature in the shade and away from artificial heat is less than 45°F [4°C] or when weather conditions or the surface conditions are otherwise unfavorable.

Application of Bituminous Material
Distributor Pressure: After cleaning the surface to be treated to the satisfaction of the County, uniformly spray the bituminous material over the surface by means of a pressure distributor. Use a distributor that maintains a consistent pressure of at least 20 psi [135 kPa], but not more than 75 psi [520 kPa].

Application Temperatures: For asphalt cement, maintain an application temperature between 300 and 325°F [149 and 163°C]. For emulsified asphalt, maintain an application temperature between 140 and 180°F [60 and 82°C].

Uniformity of Distribution: Adjust and operate the distributor to maintain an even and uniform distribution of the bituminous material. Immediately remove excessive deposits of bituminous material upon the road surface caused by stopping or starting the distributor, by leakage, or otherwise.

Limitations to Application: Ensure that the area to be covered by any one application of bituminous material is no greater than the aggregate can cover without interruption due to limitations of hauling and spreading equipment or to any other cause.

Spreading Cover Material
Spreading: Spread the cover material immediately following the application of bituminous material. Uniformly distribute the cover material over the bituminous surface in one course. Do not drive trucks, spreaders, or other vehicles on the uncovered bituminous material.

Brooming and Dressing: Immediately after applying the cover material, broom the surface in order to secure a uniform distribution of cover material and a smooth surface. Place additional aggregate by hand on any areas not properly covered. If deemed necessary by the County, drag the surface with a light drag broom or other dragging equipment approved by the County, of a type that will not disturb the embedded aggregate. Supplement this operation by additional hand brooming until obtaining a smooth and even surface. Repeat the dragging and brooming, in conjunction with the rolling, for as long as required to ensure a uniform surface.

Rolling
Immediately after the spreading and dragging of cover material, roll the entire surface. Begin rolling at the edge of pavement, and progress toward the centerline, uniformly lapping each preceding pass and thoroughly covering the entire surface. During rolling, perform additional dragging and hand brooming as specified in FDOT 312-10.2.

SECTION E – TECHNICAL SPECIFICATIONS
ADDENDUM # 3

Surface Requirements
Remove all joints or portions of the completed surface that are defective, not properly finished, or not in conformance with these Specifications, and replace them with a satisfactory surface. The County will not pay for the defective work and its removal.

Covering Crack Relief Layer
Cover the crack relief layer with an asphalt concrete layer prior to opening it to traffic.

Method of Measurement
Bituminous Material: The quantity to be paid for will be the volume, in gallons, applied on the road and accepted, determined as provided in 300-8.

Cover Material: The quantity to be paid for will be the area, in square yards [square meters, if applicable], applied on the road and accepted, determined by surface area.

(IV.26) Basis of Payment
Bituminous Material: Price and payment will be full compensation for furnishing all the materials and for heating, hauling, and applying.

Cover Material: Price and payment will be full compensation for all the work described in this Section, except for the work paid for under the item of Bituminous Material.

(IV.27) PAVEMENT MILLING
Furnish all necessary labor, equipment, and materials to cold-mill existing asphaltic-concrete surfaces to depths specified.

This item may be used to remove underlying base material after asphaltic-concrete is removed.

If two or more passes are required to remove the designated material, the unit price based on total area (number of passes times surface area) will be applied to each pass.

Example / 3,000 sy surface area: First Pass - Remove 1 ¼" asphaltic-concrete; second pass- Remove 3" shell base. 2 passes times 3,000 sy = 6,000 sy. Pay Items: First Pass- 3,000 sy x unit price 1" - 2" average cut (5,001 - 10,000 sy); Second Pass - 3,000 sy x unit price over 2" average cut (5,001 - 10,000 sy)

The County at its option can retain all materials produced from the milling process. Successful Bidder shall haul such materials to County property per cost for equipment rental (Bid Form Section III) the Successful Bidder will be responsible for the removal/disposal of all unwanted materials and shall keep all drainage structures free of debris from the milling process. Desired finish crown to be 5/16".

The Successful Bidder shall furnish all necessary signs, flag persons, etc. that are in keeping with good practice and/or as required by the County for traffic control.

The Successful Bidder shall be responsible to surface any milled surface within 48 hours of the milling process. The Successful Bidder is responsible for any exposed base once the road is milled.

A. Asphalt millings and or clean concrete debris from county projects. **Calculated by weight per volume. 1" per/sy milling = 80# and 1 CY** of concrete = 1800#.

(IV.28) RECLAIMED ASPHALT – CREDIT
(IV.29) RECLAIMED NON-ASPHALTIC BASE MATERIAL
When removed materials are of value and the Successful Bidder takes possession of them, the Successful Bidder will credit back to the County this amount per ton of materials according to the following conversion.

(IV.30) SCREEN AND CRUSH ASPHALT MILLINGS AT COUNTY YARD

General Specifications and Requirements

Asphalt Concrete Crushing

a) Material consists of asphalt recovered milling

b) **Finished crushing will be minus 1 1/2"**

The work will be completed by accepted and approved equipment, typically a Hammermill.

This equipment must be equipped with belt scales and or loader bucket scales.

Copies of tonnage reports will be provided to the county with the request for payment and as requested during crushing operations.

Break large slabs of concrete and remove rebar, wire mesh, and metal.

Magnet assembly to remove metal during crushing and sifting.

Equipment to move raw material and finished product up to 300' from screening to crushing area.

When screening, the material will be separated into 2 categories, 4 minus and oversized debris.

The county will not be responsible for the provision of any equipment or assisting with the movement of any equipment.

All finished material, including debris and metal, will be stockpiled for disposal by the county. The County will provide receptacles for metal material.

The equipment must be mobile, as the service may be completed at any of the locations listed on bid for.

(IV.30) BASIS OF PAYMENT

At the option of Manatee County, if the blanket purchase order requests asphalt concrete millings created from the release order the contractor will pay per ton.
All bid items specified shall be credited back under the ton pay item noted on the Bid Form.

(IV.37) UTILITY/INTERSECTION REPAIR

The work specified in this section covers the repair of intersections or utility cuts from the edge of pavement to edge of pavement. This will be accomplished by milling and resurfacing with S-III asphalt at 1-2 inches at the direction of the County. This includes all equipment, labor and materials necessary to complete the above.

(IV.37) BASIS OF PAYMENT

At the option of Manatee County, if the blanket purchase order requests asphalt concrete millings created from the release order the contractor will pay per ton.
All bid items specified shall be credited back under the ton pay item noted on the Bid Form.

(IV.38) REWORKED ASPHALT CONCRETE PAVEMENT

The work specified in this section consists of constructing a binder course asphalt pavement layer using milling and plant-produced hot-mix asphalt or the hot-in-place recycling process, as specified in this Section. Mill or scarify the existing pavement layer as part of the work described in the plans. If required by the Specification Documents, following the completion of the binder course asphalt pavement layer, construct a hot-mix asphalt layer, as specified in FDOT Section 334 or 337 or Type S-III.

Provide a three year Warranty covering the binder course layer and the hot-mix asphalt layer for a period of three years after final acceptance of the blanket purchase order in accordance with 5-11, and as defined in 324-7.

The applicable requirements of FDOT Sections 300, 320, 327, 330, 334 and 337 do apply to the hot-mix asphalt layer placed on the project and to the binder course layer, as noted herein. Requirements of FDOT Section 338 do not apply to work of this specification.

Price adjustments for rejuvenating agents will be handled in accordance with the Fuel **and Bituminous Price Index for the "AC20/30" category.**

The URL for obtaining this information is:
http://www.dot.state.fl.us/Construction/fuel&bit/fuel&bit.shtm

SECTION E – TECHNICAL SPECIFICATIONS
ADDENDUM # 3

Materials

General Requirements: The following materials requirements apply only to the binder course layer when constructed using plant-produced hot-mix asphalt. The requirements for the hot-mix asphalt layer constructed on top of the binder course layer are specified in Section 334 or 337.

Asphalt Binder or Recycling Agents: Meet the requirements of FDOT 916-1 and 916-2.

Aggregate: Meet the requirements of FDOT Section 901 for coarse aggregate and FDOT Section 902 for fine aggregate.

Reclaimed Asphalt Pavement (RAP) Material: RAP may be used as a component of the asphalt mixture subject to the following requirements:

1. Assume full responsibility for the design, production and construction of asphalt mixes which incorporate RAP as a component material.

2. Provide stockpiled RAP material that is reasonably consistent in characteristics and contains no aggregate particles which are soft or conglomerates of fines.

General Composition of Mixture

Mix Design: Compact the mixture in the laboratory using a Superpave gyratory compactor in accordance with AASHTO T 312-08. Utilize a design number of gyrations of either 50 or 75. The design air void content shall be within the range of 3.5 to 4.5%. The minimum voids in the mineral aggregate (VMA) shall be 12.0%. The minimum effective binder content shall be 4.5%. Utilize FM 1-T 209 for determination of the **mixture's maximum specific gravity for air void determination. Assure that the recovered** binder from the compacted mix will have a penetration value within the range of 40 - 80 dmm when tested in accordance with AASHTO T 49 or have a recovered viscosity within the range of 5,000 – 15,000 Poises when tested in accordance with AASHTO T 202. Furnish a copy of the mix design(s) to the County prior to any paving work.
During production, the Successful Bidder may revise the mix design provided the previous design requirements are met. Submit mix design changes to the County for informational purposes only.

Construction

General Requirements: Prior to commencing construction operations, repair all defective portions of the existing pavement as indicated in the plans. The minimum ambient temperature required to begin operations is 40°F. Clean the pavement such that it is reasonably free from loose materials, sand, dirt, caked clay and other deleterious substances. Remove and dispose of all reflective pavement markers (RPMs).

Milling: Use the cold milling process per FDOT Section 327 to remove the upper layer(s) of asphalt above the binder course layer, if shown in the plans. Use cold milling, hot milling or hot scarifying to remove the existing binder course layer for recycling.

Bonding of Pavement Layers: Construct a pavement in such a manner to assure that the layers are adequately bonded throughout the pavement design service period.

Compaction: Select the compaction equipment and rolling sequences necessary to meet the density specifications as set forth below. Complete all compaction operations before the pavement surface temperature drops to 150°F.

Additional Requirements: When construction includes the paving of adjacent shoulders (equal to or less than 5 feet wide), the layer thickness for the top pavement layer and shoulder must be the same and paved in a single pass, unless called for differently in the Blanket Purchase Order documents.

Successful Bidder's Process Control

General: Utilize a Process Control System that will provide assurance that all materials and products furnished to the County conform to the Specification requirements, and will meet the performance requirements, as outlined below. Document all Process Control procedures, inspections, and tests and make that information available for review by the County throughout the life of the Blanket Purchase Order. Transfer ownership of these documents to the County at the end of the release order (project).

Utilize a process control plan that contains the following as a minimum:

a. Determination of asphalt binder content, maximum specific gravity, air void content, gradation, and asphalt binder viscosity or penetration – minimum frequency of once per day.

b. Depth determination (uncompacted mix) - once per 100 feet.

c. Determination of pavement thickness (roadway cores) - per 324-5.7.

d. Density determination (roadway cores) - one core per 1,000 feet.

e. Determination of cross-slope - per 324-5.8.

f. Determination of pavement smoothness - per 324.5.9.

Corrective Actions: Take prompt action to correct any errors, equipment malfunctions, process changes, or other assignable causes which have resulted or could result in the submission of materials, products, and completed construction which do not conform to the requirements of the specifications.

Recovered Binder: Monitor the penetration or viscosity of the recovered asphalt binder during production. Obtain samples on a random basis at a minimum frequency of once per day. Recover the binder from the asphalt mixture in accordance with FM 5-524 and FM 3-D 5404. Maintain the penetration of the recovered asphalt material in the asphalt mixture (determined in accordance with AASHTO T 49), within plus or minus 10 dmm of the target penetration value as indicated on the mix design and within the range of 40 – 80 dmm or maintain the viscosity of the recovered asphalt material in the asphalt mixture (determined in accordance with AASHTO T 202), within the range of 5,000 to 15,000 poises. If two or more consecutive tests exceed this tolerance, stop all recycling operations until the problem is adequately corrected.

Air Voids: Maintain an air void content of the asphalt mixture within the range of 2.0 to 6.0%. Air voids shall be based on specimens compacted in accordance with AASHTO T 312-08 and a maximum specific gravity as determined in accordance with FM 1-T 209. When the air void content of the asphalt mixture falls outside of this range, remove and replace or rework these areas and make all necessary adjustments to the blend of materials to modify the air void content to an acceptable level.

Asphalt Binder Content and Mix Gradation: Obtain samples randomly and test the samples in accordance with FM 5-563 and FM 1-T 030. Maintain an asphalt content within plus or minus 0.55% of the target asphalt content as indicated on the mix design. In the event the asphalt content deviates by more than 0.55% from the target, make all necessary corrections. If the test results for two consecutive samples both deviate by more than 0.55% from the target, stop all operations and make adjustments to assure that the asphalt content is within 0.55% of the mix design target. Maintain the percent passing the #200 sieve within plus or minus 2.5% of the target gradation as indicated on the mix design. In the event the percent passing the #200 sieve deviates by more than 2.5% from the target, make all necessary corrections. If the test results for two consecutive samples both deviate by more than 2.5% from the target, stop all operations and make adjustments to assure that the percent passing the #200 sieve is within 2.5% of the mix design target.

Density: The in-place density of the binder course will be evaluated by the use of 6-inch diameter roadway cores. The in-place density will be based on the daily maximum specific gravity (G_{mm}) of the as-produced mix. Obtain the roadway cores at random locations **identified by the County at the end of each day's production prior to opening the roadway** to traffic, at a minimum frequency of one core per 1,000 feet or portion thereof for distances less than 1,000 feet. Assume responsibility for maintenance of traffic, coring, patching the core holes, and trimming the cores to the proper thickness prior to density testing.

Determine the density of the cores in accordance with FM 1-T 166, and calculate an average for each Lot, which for purposes of mixture process control, is defined as 5,000 feet. The average density of a Lot shall be a minimum of 92.0% of G_{mm}.

Take corrective actions for those Lots that have an average density less than 92.0% of G_{mm}. If two consecutive Lots are less than 92.0% of G_{mm}, stop construction until appropriate adjustments are made to assure the minimum density requirement is met. Remove and replace or rework areas with an average density less than 90.0% of Gmm.

Once the average density of a Lot has been determined, do not provide additional compaction to raise the average.

Pavement Thickness: The thickness specified in the Plans shall be the compacted in-place thickness. The thickness shall be determined by the average measurement of roadway cores.

Obtain cores at locations determined by the County at a frequency of either one core per 1,000 feet or five cores per day, whichever is less. Thickness can also be determined based on cores cut for the evaluation of density as specified in 324-5.6. Maintain the average thickness of the binder course layer (based on roadway cores) within 1/4 inch of that specified in the Plans. If the average thickness is deficient by more than 1/4 inch but no more than 1/2 inch, take appropriate corrective actions. If the average thickness is deficient by more than 1/2 inch, take additional cores to determine the area of deficient thickness. Correct any area deficient in thickness by more than 1/2 inch at no cost to the County. If the average thickness is deficient for two consecutive days by more than 1/4 inch of that specified in the Plans, stop construction activities until adjustments are made to the operation that will allow placement at the specified depth. Continued operations when the thickness is deficient by more than 1/4 inch of the thickness specified in the Plans will not be allowed.

Cross Slope: Construct a pavement surface with cross slope in compliance with the requirements of FDOT 330-12.3.

Pavement Smoothness: Construct a smooth pavement meeting the requirements of FDOT 330-12.4.

Sampling and Testing by the County

The County reserves the right to run any test at any time for informational purposes. Make all Process Control sampling and testing data accessible for review by the County. Obtain additional roadway cores as directed by the County.

Based on the County's review of the processes or results of County independent testing, take prompt action to correct any errors, equipment malfunctions, process changes, or other assignable causes which have resulted or could result in the submission of materials, products, and completed construction which do not conform to the requirements of the specifications.

Statewide Disputes Review Board

The Statewide Disputes Review Board for this blanket purchase order will resolve any and all disputes that may arise involving administration and enforcement of this Specification. The Successful Bidder and the County acknowledge that use of the Statewide Disputes Review Board is required, and the determinations of the Statewide Disputes Review Board for disputes arising out of this specification will be binding on both the Successful Bidder and the County, with no right of appeal by either party.

Meet the requirements of 8-3.8 from the Statewide Disputes Review Board.

Pavement Evaluation and Remedial Work

General: The FDOT Flexible Pavement Condition Survey Program, along with observations by the County, will be used as a basis for determining the extent and the magnitude of the pavement distresses occurring on the project. In the event that level of distress exceeds any of the threshold values defined below, remedial action by the Successful Bidder will be required.

The County will continuously monitor the pavement for distresses and may require remedial action at any time. For evaluation purposes, the project will be subdivided into LOTs of 0.1 mile per lane. When the segment is less than 0.1 mile, the segment will be called a partial LOT. The County may conduct a Pavement Condition Survey of the Reworked Asphalt Concrete Pavement following the final acceptance of the project, and at intermediate times throughout the warranty period. The final survey, if determined by the County to be necessary, will be conducted no later than 45 calendar days before the end of the warranty period. The County will be responsible for all costs associated with the surveys.

The Successful Bidder will be notified if the County believes remedial action is required. If the survey findings, intermediate or final, are to be disputed by the Successful Bidder, written notification must be provided to the County within 10 calendar days of the date of receipt of the information from the County.

During the warranty period, the Successful Bidder may monitor the pavement using nondestructive methods. Do not conduct any coring, milling or other destructive methods without prior approval by the County.

Threshold Values and Remedial Actions: Threshold values and associated remedial work for the binder course and hot-mix asphalt layers are specified in Table 324-1.

TABLE 324-1
Threshold Values and Associated Remedial Work

Type of Distress	Threshold Values	Remedial Work
Rutting (1)	Depth > 0.25 inch	Remove and replace the distressed LOT(s) to the full depth of all layers and to the full lane width (2)
Ride (3)	RN < 3.5	Remove and replace the top layer for the full length and the full lane width of the distressed LOT(s)(4)
Settlement/Depression(5)	**Depth ≥ 1/2 inch**	Propose the method of correction to the County for approval prior to beginning remedial work
Cracking (6)	Cumulative length of cracking > 30 feet for cracks > 1/8 inch	Remove and replace the distressed LOT(s) to the full depth of all layers and to the full lane width (7)
Raveling and/or Delamination (8)	Any length	Remove and replace the distressed area(s) to the full distressed depth and the full lane width for the full distressed length **plus 50' on each end**

Pot holes and Slippage Area(s) [8]	Observation by County	Remove and replace the distressed area(s) to the full distressed depth and the full lane width for the full distressed length **plus 50' on each end**
Bleeding [9]	Loss of surface texture due to excess asphalt, individual length **≥10 feet and ≥1** foot. In width.	Remove and replace the distressed area(s) to the full distressed depth and the full lane width for the full distressed length **plus 50' on each end**

[1] Rutting: Rut depth to be determined by Laser Profiler in accordance with the Flexible Pavement Condition Survey Handbook. For any LOT that cannot be surveyed by Laser Profiler, the rut depth will be determined manually in accordance with the Flexible Pavement Condition Survey Handbook, with the exception that the number of readings per LOT will be one every 20 feet. For a partial LOT, a minimum of three measurements not exceeding 20 feet apart will be made. When the average of the measurements obtained manually exceeds 0.30 inches, or if any individual measurement exceeds 0.6 inches, remedial work will be required.

[2] Remedial Work for Rutting: The Successful Bidder may propose removal and replacement of less than the full depth of all layers by preparation and submittal of a signed and sealed engineering analysis report, demonstrating the actual extent of the distressed area(s). Remedial work must be performed in accordance with Table 324-1 unless approved otherwise by the County.

[3] Ride: Ride Number (RN) to be established by Laser Profiler in accordance with FM 5-549.

[4] If the deficient ride is due to underlying asphalt layers, base, subgrade, or embankment, which was constructed by the Successful Bidder, propose the method of correction to County for approval prior to beginning the remedial work.

[5]Settlement/Depression: Depth of the settlement/depression to be determined by a 6 foot manual straightedge.

[6] Cracking: Beginning and ending of 1/8 inch cracking will be determined as the average of three measurements taken at one foot intervals. The longitudinal construction joint at the lane line will not be considered as a crack.

[7] Remedial Work for Cracking: The Successful Bidder may propose removal and replacement of less than the full depth of all layers by preparation and submittal of a signed and sealed engineering analysis report, demonstrating the actual extent of the distressed area(s). Remedial work must be performed in accordance with Table 324-1, unless approved otherwise by the County.

[8] Raveling, Delamination, Pot holes, Slippage: As defined and determined by the County in accordance with the examples displayed at the following URL: www.dot.state.fl.us/SpecificationsOffice/Implemented/URLinSpecs/Pavement.shtm

[9] Bleeding: Bleeding to be defined and determined by the County in accordance with the examples displayed at the following URL: www.dot.state.fl.us/SpecificationsOffice/Implemented/URLinSpecs/Pavement.shtm

Remedial Work: The Successful Bidder will perform all necessary remedial work described within this Section at no cost to the County. If the pavement distresses exceed threshold values and it is determined that the cause of the distress is due to the embankment, subgrade, base or other activities performed by the Successful Bidder, the Successful Bidder will be responsible for performing all remedial work associated with the pavement distress. Should an impasse develop in any regard as to the need for remedial work or the extent required, the Statewide Disputes Review Board will render a final decision by majority vote.

Remedial work will not be required if any one of the following conditions is found to apply:

a. Determination that the pavement thickness design, as provided by the County, is deficient. The County will make available a copy of the original pavement thickness design package and design traffic report to the Successful Bidder upon request. The Successful Bidder is responsible for performing all remedial work associated with the pavement distress if the pavement design is provided to the Successful Bidder.

b. Determination that the Accumulated ESALs (Number of 18 Kip Equivalent Single Axle Loads in the design lane) has increased by 25% or more than the Accumulated ESALs used by the Department for design purposes for the warranty period for the pavement design life. In calculating ESALs, the Average Annual Daily Traffic **(AADT) will be obtained from the Department's traffic count data and the T24 (Percent** Heavy Trucks during a 24 **hour period) will be obtained from the Department's traffic** classification survey data.

c. Determination that the deficiency was due to the failure of the existing underlying layers that were not the Blanket Purchase Order work.

d. Determination that the deficiency was the responsibility of a third party or its actions, unless the third party was performing work included in the Blanket Purchase Order.

If a measured distress value indicates remedial action is required per Table 324-1, the Successful Bidder must begin remedial work within 45 calendar days of notification by the County or a ruling of the Statewide Disputes Review Board. The Disputes Review Board will determine the allowable duration for the completion of the remedial work, but not to exceed 6 months.

In the event remedial action is necessary and forensic information is required to determine the source of the distress, the Department may core and/or trench the pavement. The Successful Bidder will not be responsible for damages to the pavement as a result of any forensic activities conducted by the County.

As applicable to distress criteria for rutting, ride and cracking, when two LOTs requiring remedial action are not separated by three or more LOTs not requiring_remedial action, the remedial work shall be required for the total length of all such contiguous LOTs, including the intermediate Lots not requiring_remedial action.

Additionally, where such areas of remedial action are required due to raveling, slippage or bleeding are separated by less than 1,000 feet, the remedial work will be required for the entire area contiguous to the distressed areas, including intermediate areas otherwise requiring no remedial action.

The Successful Bidder has the first option to perform all remedial work that is determined by the County to be their responsibility. If, in the opinion of the County, the problem poses an immediate danger to the traveling public and the Successful Bidder cannot provide temporary mitigation for the defect within 4 hours of written notification and restore the pavement to its original design condition within 72 hours of written notification, the County has the authority to have the remedial work performed by other forces. Temporary mitigation includes the use of traffic control systems such as barricades, drums, or other approved devices to secure the area including lane closures, if necessary, and constructing temporary repairs making it safe for the roadway user until the defect can be restored to its original design condition. The Successful Bidder is responsible for all incurred costs of the work performed by other forces should the problem (remedial work) be determined to be the responsibility of the Successful Bidder. Remedial work performed by other forces does not alter any of the requirements, responsibilities or obligations of the Successful Bidder.

The Successful Bidder must complete all remedial work to the satisfaction of the County. Any disputes regarding the adequacy of the remedial work will be resolved by the Statewide Disputes Review Board. Approval of remedial work does not relieve the Responsible Party from continuing responsibility under the provisions of this Specification.

Notify the County in writing prior to beginning any remedial work. Utilize hot-mix asphalt **meeting the requirements of the County's Standard Specifications for Road and Bridge** Construction and implemented modifications thereto when performing any remedial work. Perform all signing and traffic control in accordance with the current edition of the **County's Design Standards for Design, Construction, Maintenance and Utility Operations** on the State Highway System.

Provide Maintenance of Traffic during remedial work at no additional cost to the County's. Lane closure restrictions listed in the original Blanket Purchase Order will apply to remedial work. Written request(s) to obtain permission for lane closure(s) for either forensic investigation or remedial work must be made to the County 48 hours in advance of any lane closures. Do not perform any lane closures until written permission is given by the County.

If remedial work necessitates a corrective action to overlying asphalt layers, pavement markings, signal loops, adjacent lane(s), roadway shoulders, or other affected Blanket Purchase Order work, perform these corrective actions using similar products at no additional cost to the County.

(IV.38) BASIS OF PAYMENT
All bid items specified shall be paid under the respective pay items noted on the Bid Form.

(IV.39) MANHOLE ADJUSTMENT (ADJUSTMENT RINGS)
(IV.43) WATER VALVE ADJUSTMENT
(V.53) INSTALL CONCRETE COLLAR
The work specified in the section shall consist of the adjustment to manholes (MH) and water valves (WV) to be done after resurfacing has been completed. All such utility boxes to be located by Successful Bidder prior to paving. The asphalt crew shall remove all asphalt/concrete material to expose the lids per adjustment. After paving, the boxes are to be raised to meet the proper finished grade of the road. Metal rings or concrete collar will be acceptable at the discretion of Manatee County. The traffic control is related to where the manhole actually is in the roadway and not the size of the roadway. Some structures that are right on the land lines or centerline will affect 2 lanes of traffic directly and appropriate traffic control method must be chosen but is clearly more effort than for an item affecting just one lane.

A concrete collar of 12" minimum width and 12" minimum thick Portland cement will be poured around water valves to the finished surface grades. Manholes:

1. **Use 3/8" rock in concrete collars**
2. Concrete collars should be 30" x 30" minimum overall
3. Use brick, concrete or iron rings to raise to grade
4. Grout inside of manhole and/or chimneys
5. Remove concrete, brick, grout or any other debris that has fallen into manhole during adjustment.

A combination of quantities (manholes and water valves) can be used to determine unit price for the total number of units. Example: 3 manholes + 4 water valves = 7 units to be paid under 6 - 10 units.
Where appropriate and when necessary, manhole and water valve adjustments will be combined with asphaltic-concrete and sweep, tack, spread, and compact bid items to determine low aggregate job total.

(IV.40) MANHOLE and WATER VALVE ADJUSTMENT as a PART of BASE RECONSTRUCTION
The work specified in this section shall consist of the adjustment of each manhole frame, including ring & cover adjusted to proposed finished grade, precast concrete riser rings as required, all protective coatings, sealing of lift holes, rainwater protector, all materials and surface restoration, and all protective coatings and seals as applicable.

Measurement shall be for each manhole frame & cover adjusted, complete, watertight, and accepted. All components shown or called for by the Manatee County Utility Standard Detail US-2 shall be included in the unit price bid for Manhole, Adjust, and Utilities. Saw cutting, excavation, backfill, surface restoration except asphalt milling & overlay, including up to 12 inches thickness of SP12.5 asphalt, preparation of subgrade to

LBR 40 and compaction to 98% maximum density, all concrete, and any and all other items necessary for a completed assembly in accordance with the Blanket Purchase Order shall be included. Payment shall represent full compensation for all labor, materials, equipment and incidental items necessary to complete each manhole frame & cover adjustment, ready for approval and acceptance by the County.

(IV.40) BASIS OF PAYMENT
All bid items specified shall be paid under per each and per day and pay item noted on the Bid Form.

(IV.41) MANHOLE FRAME AND COVER, FURNISH AND INSTALL
The work specified in this section shall be made for each manhole frame & cover removed and replaced with new manhole frame and cover, adjusted to proposed finished grade, including new frame and cover, precast concrete adjustment rings, mortar, all materials and surface restoration except asphalt mill & overlay, all protective coatings and seals as applicable, sealing of lift holes, and rainwater protector. Successful Bidder shall include road restoration cost to F&I up to 12 inches thickness of SP 12.5 asphalt in 2 inch lifts around each manhole and preparation of subgrade as required by FDOT, minimum LBR 40, compacted to 98% maximum density.

Measurement and Payment shall be for each manhole frame & cover installed complete and accepted. The unit price shall be full payment for all saw cutting, excavation, bedding, backfill, dewatering, compaction, concrete, subgrade preparation, road base, asphalt pavement repair and replacement, disposal of all waste, and any and all other items necessary for a completed system in accordance with the Blanket Purchase Order Documents. All components shown or called for by the Manatee County Utility Standard Detail US-2 shall be included in the unit price bid for Manhole Frame & Cover F&I. Payment shall represent full compensation for all labor, materials, equipment and incidental items necessary to complete each manhole frame & cover, ready for approval and acceptance by the County.

(IV.41) BASIS OF PAYMENT
All bid items specified shall be paid under the unit and per day pay items noted on the bid form.

(IV.41a) FDOT MANHOLE ADJUSTMENT
The work specified in this section consists of the replacement of sanitary manhole rings and covers and/or adjustment of them to finished grade. The work also includes adjustment of valve boxes to finished grade, pavement and sidewalk removal and replacement, surface restoration, and associated Maintenance of Traffic. All work in FDOT right-of-way shall comply with FDOT standards and requirements, Utility Work Schedules, including coordination with FDOT Successful Bidders, and may include night work. Refer to the applicable FDOT contract documents for additional information. The dates and timing of the work in FDOT right of way shall be determined by FDOT and their Successful Bidders.

The Successful Bidder shall perform the work complete, in place and ready for continuous service and shall include any repairs, replacements, and/or restoration required as a

result of damages caused prior to acceptance by the County.

The Successful Bidder shall furnish and install all materials, equipment and labor which is reasonably and properly inferable and necessary for the proper completion of the work, whether specifically indicated in the Blanket Purchase Order or not.

(IV.39) MANHOLE ADJUSTMENT (ADJUSTMENT RINGS)
(IV.43) WATER VALVE ADJUSTMENT
(V.53) INSTALL CONCRETE COLLAR
ESTIMATED RELEASE ORDER QUANTITIES

The quantities shown on the awarded release order are approximate and are given only as a basis of calculation upon which the award of the release order are to be made. The County does not assume any responsibility for the final quantities, nor shall the Successful Bidder claim misunderstanding because of such estimate of quantities. Final payment will be made only for satisfactorily completed quantity of each item.

WORK OUTSIDE AUTHORIZED LIMITS

No payment will be made for work constructed outside the authorized limits of work.

MEASUREMENT STANDARDS

Unless otherwise specified for the particular items involved, all measurements of distance shall be taken horizontally or vertically.

AREA MEASUREMENTS

In the measurement of items to be paid for on the basis of area of finished work, the lengths and/or widths to be used in the calculations shall be the final dimensions measured along the surface of the completed work within the neat lines shown or designated.

(IV.41a) BASIS OF PAYMENT

All bid items specified shall be paid under the per unit pay item noted on the Bid Form.

(IV.42) FDOT VALVE BOX ADJUSTMENT

The work specified in this section shall be for the adjustment of each valve box to proposed finished grade, as shown on the provided drawings or as directed by the County. Payment shall be made for each valve box adjusted, and shall represent full compensation for all labor, material and equipment, excavation, including rock, bedding, backfill, compaction, concrete, road base, asphalt pavement repair and replacement, disposal of all waste, and any and all other items necessary to complete this Bid Item.

MOBILIZATION FOR UTILITY WORK ON FDOT ROW

Preparatory work and operations in mobilizing startup and breakdown of a project, including, but not limited to, operations necessary for the movement of personnel, equipment, supplies and incidentals to the project site.

MAINTENANCE OF TRAFFIC TO FDOT STDS. AND COORDINATION

Payment for all work included in this Bid Item will be made at the applicable per day price bid for MOT to FDOT Standards & Coordination. This pay item includes furnishing and installing all traffic control for the Work as required by FDOT and Manatee County.

Payment shall represent full compensation for all labor, materials, necessary equipment, and incidentals necessary to complete the work.

(IV.42) BASIS OF PAYMENT
All bid items specified shall be paid under the per unit pay item noted on the Bid Form.

(IV.44) MOBILIZATION
The work specified in this section covers the global Successful Bidders costs (materials, labor, equipment and all incidentals) of moving into and setting up a job site. It is intended to cover costs such as but not limited to, moving of equipment and materials and other incidentals to the job site and establishment of a storage/staging area per release order for each County delivery zone.

(IV.44) BASIS OF PAYMENT
Mobilization will be paid for each release order issued for each County delivery zone. Work areas within a 1/4 mile radius (which may not be directly connected) shall be billed at one mobilization cost.

(IV.46) MAINTENANCE OF TRAFFIC
The work specified in this section covers the below pay items for Maintenance of Traffic and shall conform to the current edition of the FDOT Roadway and Traffic Design **Standards and the current edition of the Federal Highway Administration's (F.H.W.A.'s)** Manual on Uniform Traffic Control Devices (M.U.T.C.D.) for Streets and Highways, (MUTCD). Items will be paid based on the scope of each item used by day or hour.

The items are:

Crew Complete – This includes personnel and equipment to have at least self-transportation, supervision and two flaggers.

Flag Personnel – This includes personnel and equipment to have two flaggers on the job site.

Additional Flag Personnel – This includes personnel and equipment when a single additional flagger is required.

Temporary Signal Detection – This includes the labor and equipment to provide manual input to a traffic signal for vehicle detection when the project has removed the loops and the intersection must continue to operate with detection functional.

Coordination with the maintaining traffic signal authority is also included.

Law Enforcement Personnel – This includes all cost and effort needed to provide a hired, uniformed law enforcement officer with cruiser to be on site for security or traffic control.

(IV.46) BASIS OF PAYMENT

All bid items specified shall be paid under the day / per hour pay item noted on the Bid Form.

(IV.47) FULL DEPTH PAVEMENT RECLAMATION

The work specified in this section shall consist of the preparation of a stabilized base course composed of a mixture of the existing bituminous concrete pavement and existing base course material. The manufacture of the stabilized base course shall be done by in-place pulverizing and blending of the existing pavement and base materials, and the introduction of additives if called for by the County. The process which results in a stabilized base course, shall be accomplished in accordance with these specifications and conform to the lines and grades or as established by the County.

The remaining base material and/or sub grade may be modified to properly accommodate the stabilized base material. Any modification of this nature, if required, such as but not limited to the excavation and replacement of unsuitable materials and shaping and fine grading the sub grade, will be accomplished under separate payment items. Any movement of the stabilized base material for these modifications is also to be accomplished under a separate payment item.

Existing asphalt pavement shall be pulverized by a method that does not damage the material below the depth as directed by the County shown on the appropriate roadway section.

MATERIALS

RAP: RAP materials must meet all requirements specified in the Florida Department of Transportation Standard Specifications for Road and Bridge Construction (SSR&BC) 283-2, except that 98% of all material is required to pass through a 50 mm (2 inch) sieve.

PORTLAND CEMENT: Portland cement shall be type I or II and conform to the latest standard requirements of ASTM C 150 and AASHTO M85, for the type specified.

WATER: The water for the base course shall be clean and free from sewage, oil, acid, strong alkalies, or vegetable matter and it shall be in sufficient supply for mixing and curing. Water of questionable quality shall be tested in accordance with the requirements of AASHTO T 26.

SOIL: The soil base to be reclaimed shall be evaluated by a professional geotechnical engineering laboratory to determine suitability in the stabilization process. The soil shall be free of roots, sod, weeds, and shall not contain gravel or stone retained on a 1-inch (25 mm) sieve, or more than 45% retained on a No. 4 (4.75 mm) sieve, as determined by ASTM C 136.

LABORATORY SOIL TESTS and MIX DESIGN

Prior to base course construction, a minimum of one (1) core sample must be taken for every 5,000 square yards of the roadway. Representative samples of the RAP material, underlying base material and virgin materials, where applicable, shall be supplied to a

nationally accredited laboratory for preliminary testing to determine the optimum moisture content, type of bituminous material and proportions needed to successfully complete this project. Laboratory tests of material to be reclaimed and virgin materials for use as base shall be performed to determine compliance with 3-day and 7-day minimum compressive strength requirements of the mixture and the quantity of cement required in the mix. Test specimens containing various amounts of cement are to be compacted in accordance with ASTM D558, and the optimum moisture for each amount of cement is to be determined. Actual application quantities for the Portland cement will be derived from the mix design. The minimum compressive strength requirements of the mixture shall be determined by the County. The mix design and laboratory testing shall be performed by a geotechnical engineering laboratory and all reports sealed by a professional engineer as approved by the County.

CONSTRUCTION METHODS

EQUIPMENT

Equipment shall be used which will provide the full depth reclamation follows:

a. All reclaiming equipment to be used shall have the capability of introducing and metering additives uniformly and accurately. The Successful Bidder shall ensure that positive displacement pumps accurately meter the planned amount of water and cement material and the reclaiming machine mixes it thoroughly with the RAP and soil materials. The pump shall be mechanically or electronically interlocked with the ground speed of the machine. The cement metering system and water metering system shall be capable of continuously monitoring (GPM) flow, and totaling the quantity of water and cement applied into the mixing chamber. Additives shall be uniformly distributed and mixed with the pulverized material, any existing underlying material as specified.

b. Apply the cement by use of a mobile cement mixer trailer capable of mixing predetermined ratios of cement and water, or by means of cyclone, screw-type or pressure-manifold type distributors. The mixing operation may be accomplished by using either the same machine used for the pulverizing operation or a separate machine designed for in-place continuous mixing approved by the engineer.

c. The use of a spreader bar attached to the cement tanker is unacceptable.

d. Maintain all equipment in a satisfactory operational condition.

WEATHER LIMITATIONS

The soil-cement base shall not be mixed or placed while the atmospheric temperature is below 35 F (2 C) or when conditions indicate that the temperature may fall below 35 F (2 C) within 24 hours, or when the weather is foggy or rainy, or when the soil or sub grade is frozen.

CONSTRUCTION METHOD

The existing pavement and base material shall be pulverized and blended so the entire mass of material shall be uniformly graded and the cement and water shall be uniformly

dispersed throughout the processed material.

The pulverized material shall conform to the following gradation:

SIEVE SIZE	PERCENT PASSING
2"	98 - 100
1-1/2"	95

Material gradation may vary due to local aggregates and conditions.

The reclaimed material, cement and water shall be combined in place to meet the requirements specified in such proportions that the reclaimed mixture is of acceptable composition and stability. Field adjustments shall be made as necessary to the recommended mix design under the guidance of a knowledgeable and competent technician to obtain a satisfactory reclaimed mixture of consistent composition and stability throughout the Project.

After the material has been processed, it shall be compacted to the lines, grades, and depth as shown on the plans and cross section. Water may be applied to ensure optimum moisture content at the time of mixing and compaction.

COMPACTING RECLAIMED BASE

The requirements for compaction shall include:

1. Commence rolling at the low side of the course, except leave 75 mm (3 in.), to 150 mm (6 in.) from any unsupported edge or edges unrolled initially to prevent distortion. **Density readings shall be taken by Successful Bidder's licensed nuclear gauge** operator and witnessed by the County. A control strip of not less than 500 feet shall be constructed to develop proper rolling/compaction patterns and methods to obtain desired density.

2. Roll with a self-propelled pneumatic-tired roller (20-25 ton) and/or a double-drum vibratory roller (10 ton or larger).

3. The number, weight and type of rollers furnished shall be sufficient to obtain the required compaction of the reclaimed material. The field density of the compacted mixture shall be at least 95 percent of the maximum density of laboratory specimens prepared from samples of the cement-treated base material taken from the material in place. The specimens shall be compacted in accordance with ASTM D 558. The in-place field density shall be determined in accordance with ASTM D 2922.

4. Rollers shall move at a uniform speed that shall not exceed 8 km/hour (5 miles/hour). For static rollers, the drive drum normally shall be in the forward position or nearest to the paver. Vibratory rollers shall be operated at the speed, frequency and amplitude required to obtain the required density and prevent defects in the mat.

5. Whenever there is a change in the reclaimed material or compaction method, equipment or unacceptable results occur, a new control strip shall be constructed,

tested and analyzed.

6. Any pavement shoving or other unacceptable displacement shall be corrected. The cause of the displacement shall be determined and corrective action taken immediately and before continuing rolling. Care shall be exercised in rolling the edges of the reclaimed mixture so the line and grade of the edge are maintained.

CONSTRUCTION JOINTS

At the end of each day's run, a transverse construction joint shall be formed by a header or by cutting back into the compacted material to form a true vertical face free of loose material. The protection provided for construction joints shall permit the placing, spreading, and compacting of base material without injury to the work previously laid. Where it is necessary to operate or turn any equipment on the completed base course, sufficient protection and cover shall be provided to prevent damage to the finished surface. A supply of mats or wooden planks shall be maintained and used as approved and directed by the County.

FINISHING

Finishing operations shall be completed and the base course shall conform to the required lines, grades, and cross section. If necessary, the surface shall be lightly scarified to eliminate any imprints made by the compacting or shaping equipment. The surface shall then be recompacted to the required density.

PROTECTION AND CURING

After the base course has been finished as specified herein, it shall be protected against drying for a period of 5 to 7 days by the application of bituminous material or other acceptable methods. The curing method shall begin as soon as possible, but no later than 24 hours after the completion of finishing operations.

The finished base course shall be kept moist continuously until the curing material is placed.

The bituminous material specified shall be uniformly applied to the surface of the completed base course at the rate of approximately 0.1 to 0.2 gallon per square yard (0.92 liter/square meter) with approved heating and distributing equipment. The exact rate and temperature of application to provide complete coverage without excessive runoff shall be as specified.

At the time the bituminous material is applied, the surface shall be dense, free of all loose and extraneous material, and shall contain sufficient moisture to prevent penetration of the bituminous material. Water shall be applied in sufficient quantity to fill the surface voids immediately before the bituminous curing material is applied.
The curing material shall be maintained and applied as needed by the Successful Bidder during the 7-day protection period so that all of the soil-cement will be covered effectively during this period.

Finished portions of soil-cement that are used by equipment in constructing an adjoining section shall be protected to prevent equipment from marring or damaging the completed

work.

When the air temperature may be expected to reach the freezing point, sufficient protection from freezing shall be given the soil-cement for 7 days after its construction and until it has hardened.

THICKNESS
The average thickness of the base constructed during one day shall be within 1/2 inch (12 mm) of the thickness shown on the plans, except that the thickness of any one point may be within 3/4 inch (19 mm) of that shown on the plans. Where the average thickness shown by the measurements made in one day's construction is not within the tolerance given, the County shall evaluate the area and determine if, in his/her opinion, it shall be reconstructed at the Successful Bidder's expense or the deficiency deducted from the total material in place.

PREPARATION
The area to be paved with hot mix asphalt shall be graded and shaped to conform to the grades and typical cross section shown on the plans. Any soft or yielding areas in the sub grade shall be removed and replaced with acceptable soil and compacted as specified.

3) SAMPLING AND TESTING METHODS

FIELD SAMPLING AND TESTING
Presented in Table A are the materials sampling and testing procedures for Full Depth Reclamation. The sampling and testing methods referred to are either those of the American Society for Testing and Materials (ASTM) or the American Association of State Highway and Transportation Officials (AASHTO).

TESTING SURFACE
The finished surface of the reclaimed base course shall be checked with a template cut to the required cross slope and with a 15 ft. (4.572 m) straightedge laid parallel to the centerline of the roadway. All irregularities greater than 0.5 in. (13 mm) shall be corrected.

TEST FOR DEPTH OF FINISHED BASE COURSE
The depth of Reclaimed Bituminous Base Course shall be determined by measuring uncompacted reclaimed material immediately behind the screed in conjunction with measuring the milling depth prior to placement of reclaimed material. One depth measurement for each 1000 square yards of completed base course shall be made. Any section deficient by 0.5 in (12 mm) or more from the specified depth shall be removed and satisfactorily replaced by the Successful Bidder at no additional cost.

WEATHER LIMITATIONS
The recycled base course may be placed on the sub grade when the air temperature is at least 4C (40F) and rising, provided the sub grade upon which it is to be placed is not frozen or noticeably affected by frost.

SECTION E – TECHNICAL SPECIFICATIONS
ADDENDUM # 3

TABLE A

Control Testing for Full Depth Reclamation Field Sampling & Testing

Type of Testing	Purpose of Testing	Frequency	Sample Location & Size
RAP and Soil-Cement Base Gradation, 50 mm & 37.5mm	Specification Compliance with Maximum RAP Size	Each 3,000 Square Yards or Minimum of Once Per Day[1]	From hopper, minimum weight of 9.1 kg(20 lb)[2]
Moisture-Density Relations of Soil Cement Mixtures	Establish Target for Density Specification Compliance	Each 1,000 Square Yards or Minimum of Once per Day	Sample at point of each Nuclear Density Measurement, min. weight of 15 kg (33 lbs) [3]
Compressive Strength of Soil-Cement Cylinders[4]	Check on 3-Day Design Compressive Strength	Each 3,000 Square yards or Once Per Day[1]	From hopper, minimum weight of 15 kg (33 lbs)
Portland Cement, Type I or II	Check on Specification Compliance with ASTM C150	Mill Certification Provided with each load	
In-Place Field Density[3]	To Determine Specification Compliance for Density	Each 1,000 Square yards[1]	Random locations after spreading and Compaction operations[6]
Moisture Added to RAP and soil-cement[5]	Adjustment of Water Content for Proper Mixing and Compacting/Correction of Nuclear Gauge Wet Density	Each 1,000 Square yards[1]	Reclaimed Lift Depth Sample at Point of each Nuclear Density Measurement minimum weight of 1.4kg (3lbs)
Quality of water to be used in concrete	Check on Specification Compliance with AASHTO T26	Verify source of water and potable	

Table A Notes

1. Additional sampling and testing may be required if major changes in RAP characteristics are observed, such as a much coarser or finer gradation or a noticeable difference in asphalt content, or when considerable variability is occurring in the field test

results.

2. It is recommended that RAP sampling generally should be in accordance with ASTM D 979 or AASHTO T 168 procedures for Sampling Bituminous Paving Mixtures.

3. Target densities for reclaimed mix compaction are established by the laboratory compaction of specimens in accordance with ASTM D558. Due to the variability in thickness of some hot mix asphalt pavements to be reclaimed, an equal proportion of RAP throughout the reclaimed base course cannot be attained. Therefore, it is necessary to obtain sample for laboratory compaction at the point of each field density test location. The compacted field density is normally measured with a nuclear density/moisture gauge since it is generally not possible to obtain cores during construction. The procedure generally followed is in accordance with ASTM D 2922-Density of Soil and Soil Aggregates by Nuclear Methods-Direct Transmission Method.

4. The density obtained **will be a "wet density" as conversion to a true "dry density"** by the gauge is not possible with these types of mixes. A more accurate dry density may be obtained by sampling the reclaimed mix at the nuclear gauge test location, determining the moisture content by drying and correcting the gauge wet density using the sample moisture content.

5. Compressive Strength shall be determined in accordance with ASTM D1633.

6. The moisture content can be determined with ASTM D 1461 or AASHTO T 110 for Moisture or Volatile Distillates in Bituminous Paving Mixtures. Also, the moisture content appears can be determined adequately by weighing and drying to a constant weight using a forced draft oven as for ASTM D 2216 or AASHTO T 265 or by microwave oven drying as for ASTM D 4643.

7. For each length or lot size quantity specified, materials sampling can be completed on a random basis using the procedures of ASTM D 3365 for Random Sampling of Construction Materials.

DOCUMENTATION

DELIVERY TICKETS

All delivery tickets and notes regarding any materials brought to the project site to complete this Release Order must be given to the County upon delivery to the project site.

METER READING

Before the start and at the end of each day's work, the County must be permitted access to the mixing equipment in order to read the meter to verify the quantity of cement applied **during the day's work.**

PREVIOUS PROJECT EXPERIENCE

The Successful Bidder must provide references on the Attachment "A" Contractor's Questionnaire of five previous successfully completed projects in the State of Florida **with** the bid.

SECTION E – TECHNICAL SPECIFICATIONS
ADDENDUM # 3

PAYMENT

ITEM NO.	PAY ITEM		PAY UNIT
1	Preparation, pulverizing, shaping, compaction and finishing		SY
2	Additives, (cement)		TN
3	Imported Material		CY
4	Removal of Unsuitable Material		CY

(IV.47) BASIS OF PAYMENT
All bid items specified shall be paid under the respective pay item noted on the Bid Form.

(IV.48) HOT MIX IN-PLACE ASPHALT RECYCLING
The **work specified in this section is generally described as milling approximately 1" of** existing asphalt pavement, heating and mixing with additional aggregates and an asphalt rejuvenator and laid in place immediately on the pavement. The closely followed by the **1" overlay of a virgin S**-III while still hot and compacted with a single compaction effort. This work shall consist of the preparation of an asphalt stabilized base course composed of a mixture of the existing bituminous concrete pavement and existing base course material. The manufacturing of the asphalt stabilized base course shall be done by in-place crushing and blending of the existing pavement and base materials. The pulverization, blending, and addition of asphaltic emulsion to the existing material results in an asphalt stabilized base course and shall be accomplished in accordance with these specifications.

In general, the Successful Bidder shall utilize equipment specifically manufactured to effectively pulverize, crush, mix, and blend the materials to be recycled. The equipment to be used must also have the capability of introducing an asphalt emulsion uniformly and accurately to the recycled materials. Successful Bidder to furnish Asphalt Emulsion AE 200-H.

CONSTRUCTION METHOD
The existing pavement and base material shall be crushed and blended to a depth specified by the County and the gradation should be two (2) inches and under so that the entire mass of material shall be uniformly graded and the new asphalt stabilizer shall be uniformly dispersed throughout the processed material.

The Successful Bidder will be responsible for the safety of his equipment and personnel throughout the duration of the blanket purchase order.

TESTING
The County shall obtain the services of a certified testing laboratory to sample the existing pavement and base material to provide an acceptable design mix for the number of inches of base course, as specified, that meets the following requirements:

Modified Marshall Stability 1000 to 3100

Layer Coefficient	.18 to .32
Residual Asphalt Content (%)	0 to 4

The County shall obtain the services of a certified testing laboratory to ensure base is compacted to not less than ninety-eight (98%) percent of the maximum dry density at optimum moisture content using a modified Proctor Test in accordance with ASTM 1557.

METHOD OF MEASUREMENT
"Asphalt Stabilized Base Course" will be measured for payment by the square yard complete, in-place, and accepted by the County.

(IV.48) BASIS OF PAYMENT:
All bid items specified shall be paid under the square yard pay item noted on the Bid Form.

(IV.53) SAND SEAL COATING
The work specified in this section shall provide a sand seal coat composed of bituminous material applied in one application and covered with sand cover material applied in a single application. Construct this work on cement-treated subgrade.

Proportioning
Use the approximate proportions for the sand seal coat as follows:

Bituminous Material .....0.15 - 0.25 gal/yd^2 [0.7 to 1.1 L/m^2]
Cover Material .....0.10 - 0.20 ft^3/yd^2 [0.003 to 0.007 m^3/m^2]
The County will designate the actual spread for each material.

Materials
Bituminous Material: Meet the following requirements:

Asphalt Cement, Viscosity Grade AC-5 916-1
Emulsified Asphalt, Grade RS-2 916-4

During the months of November through April, use emulsified asphalt. During the remaining months of the year, use asphalt cement or emulsified asphalt, unless asphalt cement is specified

Cover Material: Use clean and nonplastic sand composed of hard durable grains and free from loam, roots, clay balls, and other deleterious substances. The Successful Bidder **may use local sand if it meets the above requirements. Obtain the County's approval of** the sand.

Weather Limitations
Do not apply bituminous material when the air temperature in the shade and away from artificial heat is less than 60°F [15°C] at the location where the application is to be made, or when weather conditions or the surface conditions are otherwise unfavorable.

Construction Methods
Application of Bituminous Material: Meet the requirements as specified for bituminous surface treatments in 310-9.

Application of Cover Material: Apply sand uniformly at the rate designated by the County. If the County considers it necessary for the proper distribution of the spread, lightly drag the sand with a drag broom. Roll the entire area of the sand with at least ten passes of a traffic roller. Prior to the placing of concrete pavement over the sand seal coat, remove any excess sand from the surface of the cement-treated subgrade.

(IV.53) BASIS OF PAYMENT

All bid items specified shall be paid under the square yard pay item noted on the Bid Form.

MATERIALS

The asphalt rejuvenating agent shall be composed of a petroleum resin oil base uniformly emulsified with water. The material shall have a record of satisfactory service as an asphalt rejuvenating agent. Satisfactory service being based on the capability of the material to increase the ductility, penetration and durability of the asphalt binder in the recycled asphalt. Each shipment delivered to the project shall be accompanied by a letter of compliance from the manufacturer that certifies the material conforms to the following physical properties:

Properties	Limits	ASTM Test Method
Viscosity @25°C, SFS	20-145	D-244
Sieve Test, % by weight	0.1 max.	D-244 (1)
Particle Charge Test	Positive	D-244
Cement Mixing Test, % by weight	1.80 max.	D-244
Pumping Stability	(2)	
5 day Settlement Test, % by weight	4.77 max.	D-244
Residue, % by weight	53 min.	D-244 (3)
Viscosity @ 60°C CST (4)	990-4100	D-2170
Maltene Distribution Ration (4) (5)	0.7-1.1	D-2006-70
PC/S Ratio (4) (6)	0.5 min.	D-2006-70
Asphaltenes, % by weight (4)	10.8 max.	D-2006-70

1. Distilled water shall be used in place of the sodium oleate solution.
2. Pumping stability is determined by charging 450 ml of emulsion into a one liter beaker and circulating the emulsion through a gear pump (Roper 29.B22621) having a 0.25 inch inlet and outlet. The emulsion passes if there is no significant oil separation after circulating for 10 minutes.
3. Heat the sample to 300 +/- 5F, until foaming ceases. Then cool the sample immediately and calculate the results.
4. Test is performed on the residue from the emulsion.
5. The ratio is (PC + A1) (S + A2) where:
   PC = polar compounds
   A1 = first acidaffins
   A2 = second acidaffins

S = saturated hydrocarbons

6. PC = polar compounds and S = saturated hydrocarbons

EQUIPMENT

The equipment used for cleaning the pavement shall be capable of cleaning the pavement in accordance with this specification. The equipment used for heating, scarifying, and remixing shall be a self-contained, self-propelled unit designed for this purpose. The heating unit shall be of the radiant heat type, with sufficient capacity to heat the pavement material as necessary for efficient scarifying, remixing, and recompaction. Direct flame heating will not be permitted. The heating unit shall have shut-off controls clearly identified and easily operable both from the operator's station and from the ground. The shut-off control system shall be capable of reducing the heating element temperature from operating to near ambient in approximately 30 seconds. The machine shall have an adjustable, heated screed capable of placing the mixture to the required cross-section, profile and alignment in an acceptable, finished condition ready for compacting. Adequate provisions shall be made for the safety of persons in the vicinity of the equipment, and for preventing damage to adjacent property and facilities, public or private. The scarifying unit shall be capable of loosening and remixing the heated pavement material to the specified depth in a uniform pattern and in condition for immediate recompaction.

The equipment used for applying the asphalt rejuvenating agent shall be attached to the heater scarifier machine so it is capable of applying the rejuvenating agent in front of the scarifier tooling. The asphalt shall then be scarified and mixed with the rejuvenating agent by means of rotating augers prior to the compaction process. The equipment shall apply the asphalt rejuvenating agent at the specified rate with uniform pressure over the required width of application. The rate of application shall be hydrostatically controlled and metered to maintain the specified application rate for changes in the operating speed of the heater scarifier. A meter shall be incorporated into the distribution system for recording the quantity of asphalt rejuvenating agent applied to the scarified pavement.

COMPACTING MIXTURE

A. PROVISIONS APPLICABLE TO ALL TYPES:

1. Equipment and Sequence:
   For each paving or leveling train in operation, the Successful Bidder shall furnish a separate set of rollers with their operators. The following equipment, sequence and coverage are suggested for use based on past successful performance; however, when density is required, the Successful Bidder may select his own equipment, sequence and coverage of rolling to meet the minimum density requirement specified. Regardless of the rolling procedure used, the final rolling must be complete before the internal pavement temperature has dropped below 175° F.

   (a) Seal rolling, using tandem steel rollers (vibratory or static) weighing 5 to 12 tons, following as close behind the spreader as is possible without pick-up, undue displacement or blistering of the material

Vibratory rollers shall be used in the static mode for layers of one inch or less in thickness.

(b) Rolling with self-propelled pneumatic-tired rollers, following as close behind the seal rolling as the mix will permit. The roller shall cover every portion of the surface with at least five passes.

(c) Final rolling with the 8 to 12 ton tandem steel roller, to be done after the seal rolling and pneumatic-tired rolling have been completed, but before the internal pavement temperature has dropped below 175 degrees F.

Once the Successful Bidder has selected the equipment and established the rolling procedures and these have been used for the control strip density determination, then the Successful Bidder must continue to use the same equipment and rolling procedures for all asphalt mix represented by the control strip. Changes in equipment or procedures will require a new control strip density determination. The County must be notified prior to changing the rolling process.

When density is not required, as for all patching courses, leveling and intermediate courses less than one inch thick, overbuild courses of variable thicknesses (when the minimum thickness is less that one inch) and open-graded friction courses, the compaction will be applied in accordance with the standard specifications. The specified rolling procedures must be followed when density determinations will not be made.
When density is not required on those courses indicated in the foregoing paragraph; but the Successful Bidder wants to use other rollers, patterns or sequences than those specified, Successful Bidder may request approval from the County. Approval may be granted for leveling and intermediate courses 1/2 inch and thicker and overbuild courses when these courses are placed with a paving machine.

Density requirements will be in accordance with the provisions of the first paragraph of 1.04.C (Density Control-Nuclear method), Table A and Table B. Approval for a change on patching course, variable thickness leveling courses place with motor graders and open-graded friction courses will not be granted.

2. Compaction at Crossovers, Intersections, Etc.:
When a separate paving machine is being used to pave the crossovers, the compaction of the crossovers may be done by one 8- to 10-ton tandem steel roller. If crossovers, intersections and acceleration and deceleration lanes are placed with the main run of paving, a traffic roller shall also be used in the compaction of these areas.

3. Rolling Procedures:
The initial rolling shall be longitudinal. Where the lane being placed is adjacent to a previously placed lane, the center joint shall be pinched or rolled, prior to the rolling of the rest of the lane.

Rolling shall proceed across the mat, overlapping the adjacent pass by at least six inches. The motion of the roller shall be slow enough to avoid displacement of the mixture, and any displacement shall be corrected at once by the use of rakes, and the addition of fresh mixture if required. Final rolling shall be continued until all roller marks are eliminated.

4. Speed of Rolling:
Rolling with the self-propelled, pneumatic-tired rollers shall proceed at a speed of 6 to 10 miles per hour. The area covered by each roller shall not be more than 4,000 square yards per hour; except that for Type S Asphaltic Concrete, this maximum rate of coverage shall be 3,000 square yards per hour.

5. Number of Pneumatic-Tired Rollers Required:
A sufficient number of self-propelled pneumatic-tired rollers shall be used to assure that the rolling of the surface for the required number of passes will not delay any other phase of the laying operation nor result in excessive cooling of the mixture before the rolling is complete. In the event that the rolling falls behind, the laying operation shall be discontinued until the rolling operations are sufficiently caught up.

6. Compaction of Areas Inaccessible to Rollers:
Areas which are inaccessible to a roller (such as areas adjacent to curbs, headers, gutters, bridges, manholes, etc.) shall be compacted by the use of hand tamps or other satisfactory means.

7. Rolling Patching and Leveling Courses:
Self-propelled pneumatic-tired rollers shall be used for the rolling of all patching and leveling courses. Where the initial leveling course is placed over broken concrete pavement, the pneumatic-tired roller shall weigh at least 15 tons.

For Type S-III Asphaltic Concrete leveling courses, the use of a steel-wheeled roller, to supplement the traffic rollers, will be required. On other leveling courses, the use of a steel-wheeled roller will be required on all passes after the first.

8. Correcting Defects:
The rollers shall not be allowed to deposit gasoline, oil or grease onto the pavement, and any areas damaged by such deposits shall be removed and replaced as directed by the County. While rolling is in progress, the surface shall be tested continuously and all discrepancies corrected to comply with the surface requirements. All drippings, fat or lean areas and defective construction of any description shall be removed and replaced. Depressions which develop before the completion of the rolling shall be remedied by loosening the mixture and adding new mixture to bring the depressions to a true surface.

Should any depression remain after the final compaction has been obtained, the full depth of the mixture shall be removed and replaced with sufficient new mixture to form a true and even surface. All high spots, high joints and honeycomb shall be corrected as directed by the County. Any mixture remaining unbonded after rolling shall be removed and replaced. Any mixture which becomes loose or broken, mixed or coated with dirt or in any way defective, prior to laying the wearing course shall be removed and replaced with fresh mixture which shall be immediately compacted to conform with the surrounding area.

9. Use of Traffic Roller on First Overbuild Course:
A self-propelled pneumatic-tired roller shall be used on the first overbuild course. Coverage shall be a minimum of five passes.

10. Use of Traffic Roller on first Structural Layer:
A self-propelled pneumatic-tired roller shall be used on the first structural layer placed on a milled surface. Coverage shall be a minimum of three passes.

B. PROVISIONS APPLICABLE TO SHOULDER PAVEMENT:
Shoulder pavements wider than three feet shall be compacted by the use of equipment of the type required for other asphaltic concrete pavements. Density determinations will be required on shoulder pavements wider than three feet when the thickness is one-inch or greater. These density determinations (including the control strip) will be separate from the pavement lane even when the pavement lane and shoulder are placed in the same pass. Density determinations will not be required on asphaltic concrete or sand-asphalt hot mix shoulders three feet or less in width. The compactive effort shall be done by the use of tandem steel rollers not exceeding 12 tons in weight. In restricted areas other equipment that will effectively exert a compactive effort may be approved by the County. The Successful Bidder shall state what equipment and compactive effort (coverage) is proposed to be used.

This must be approved by the County before the Successful Bidder starts the operation. Where sand-asphalt hot mix shoulders are constructed within the limits of curb and gutter, compaction shall be done by light weight rolling equipment, approved by the County which will not displace the previously constructed curb and gutter.

C. DENSITY CONTROL:
1. Density Control Nuclear Method:
The in-place density of each course of asphalt mix construction, with the exceptions of patching courses, leveling and intermediate courses less than one-inch thick or a specified spread rate less than 100 pounds per square yard, over build courses where the minimum thickness is less than one-inch, and open-graded friction courses, shall be determined by the use of the Nuclear Density Backscatter Method as specified by FM 1-T238 (Method B). The required density of a completed course shall be at least

98 percent of the average density of the control strip.

2. Control Strips:
One or more control strips shall be constructed for the purpose of determining the control strip density. A control strip shall be constructed at the beginning of asphalt construction and one thereafter for each successive course. Any change in the composition of the mix will require the construction of a new control strip. The County may require an additional control strip when necessary to establish a new control strip density or conform the validity of the control strip density being used at that time. The Successful Bidder may request a confirmation of the control strip density also. The control strip must be constructed as a part of a normal day's run. The Successful Bidder will not be permitted to construct the control strip separately.

The length of the control strip shall be 300 feet, regardless of the width of the course being laid. When the control strip is to be constructed for the first day of asphalt construction or at the beginning of a new course, it shall be started between 500 and 1,000 feet from the beginning of the paving operation. The thickness of the control strip shall be the same as that specified for the course of which it is a part. The control strip will be constructed using the same mix, the same procedures as those used in laying the asphalt course of which the control strip is to become a part. Every control strip will remain in place and become a portion of the completed roadway.

When the compaction of the control strip has been completed, ten density determinations will be made at random locations within the control strip. No determinations will be made within one foot of any unsupported edge. The average of these ten determinations will be the Control Strip Density. For purposes of determining the percent of laboratory density, as required in Table A, a correction factor will be developed from cores or by direct transmission nuclear determination where applicable.

TABLE A
Roadway Requirements for Bituminous Concrete Mixes

Mix Type	Density*	Minimum Control Strip Density (%)	Surface* Tolerance
S-I	X	96 Lab. Dens.	X
S-II	X	96 Lab. Dens.	X
S-III	X	96 Lab. Dens.	X
Type II	X	96 Lab. Dens.	X
Type III	X	96 Lab. Dens.	X
SAHM	X	96 Lab. Dens.	X
ABC-1	X	96 Lab. Dens.	**
Mix Type	Density*	Minimum Control Strip Density (%)	Surface* Tolerance

ABC-2	X	96 Lab. Dens.	**
ABC-3	X	96 Lab. Dens.	**
FC-1	X	96 Lab. Dens.	X
FC-2	No Density Required	96 Lab. Dens.	X
FC-4	X	96 Lab. Dens.	X

*X - Denotes test is required
** - Shall meet the straightedge requirements of 200-7

3. **LOTs**

For the purpose of acceptance and partial payment, each day's production will be divided into LOTs. The standard size of a LOT shall consist of 5,000 lineal feet of any pass made by the paving train regardless of the width of the pass or the thickness of the course. Pavers traveling in echelon will be considered as two separate passes. When at the end of a day's production or the completion of a given course or at the completion of the project, a partial LOT will be redefined to include this partial LOT and the evaluation of the LOT will be based on either six or seven sublot determinations. If the partial LOT contains three or four sublots with their appropriate test results, this partial LOT will be redefined to be a whole LOT and the evaluation of it will be based on the three or four sublot determinations.

For the standard size LOT (5,000 lineal feet), five density determinations - one for each sublot - will be made at random locations within the LOT, but not to be taken within one foot of any unsupported edge. The statically derived random number tables are furnished by the County. These will also be used for partial LOTs, for the Successful Bidder to receive full payment for density, the average density of a LOT will be a minimum of 98.0 percent of the control strip density. Once the average density of a LOT has been determined, the Successful Bidder will not be permitted to provide additional compaction to raise the average.

4. **Acceptance:**

The completed pavement will be accepted with respect to density on a LOT basis. Partial payment will be made for those LOTs that have an average density less than 98.0 percent of the Control Strip Density based on the following schedule:

TABLE B - Payment Schedule for Density

Percent of Control Strip Density*	Percent of Payment
98.0 and above	100%
97.0 to less than 98.0	95%
96.0 to less than 97.0	90%
**Less than 96.0	75%

*In calculating the percent of control strip density, **do not round off** the final percentage.

**If approved by the County based on an engineering determination that the material is acceptable to remain in place, the Successful Bidder may accept the indicated partial pay, otherwise the County will require removal and replacement at no cost. The Successful

Bidder has the option to remove and replace at no cost to the County at any time.

JOINTS

TRANSVERSE JOINTS

Placing of the mixture shall be as continuous as possible and the roller shall not pass over the unprotected end of the freshly laid mixture except when the laying operation is to be discontinued long enough to permit the mixture to become chilled. When the laying operation is interrupted, a transverse joint shall be constructed by cutting back on the previous run to expose the full depth of the mat.

LONGITUDINAL JOINTS:

For all layers of pavement except the leveling course, placing of each layer shall be accomplished to cause longitudinal construction joints to be offset 6 to 12 inches laterally between successive layers. The County may waive this requirement where offsetting is not feasible due to the sequence of construction.

(IV.55) FOG SEAL

The work specified in this section consists of furnishing and applying fog seal on existing roads at application rates described here-in. Fog seals are a method of adding asphalt to an existing pavement surface to improve sealing or waterproofing, prevent further stone loss by holding aggregate in place, or simply improve the surface appearance. Generally, fog seal is a light spray application of diluted asphalt emulsion used primarily to seal an existing asphalt surface to reduce raveling and enrich dry and weathered surfaces. However, inappropriate use can result in slick pavements and tracking of excess material.

Materials

The emulsion types recommended for fog seals may be cationic (i.e., a positive surface charge on the asphalt particles), or anionic (i.e., a negative surface charge on the asphalt particles). The primary types used are CSS-1h and SS-1h. In some circumstances, CQS-1h (and LMCQS-1h) will give a faster set.

Liquid emulsified bituminous material for dilution: CSS-1h liquid bituminous material conforming to the requirements of AASHTO M 208 or SS-1h conforming to the requirements of AASHTO M 140 (except as modified herein) shall be utilized. The Successful Bidder shall certify the liquid bituminous material meets the aforementioned specifications

The asphalt emulsion may contain up to 43% water prior to dilution. Original emulsion water and dilution water shall be limited to and not exceed for any reason 50% by volume. Therefore, residual asphalt shall equal 50% (+1%, -0%).

Dilution Water and Emulsion Water: Water introduced into the asphalt must be potable and free from detectable solids or incompatible soluble salts (hard water).

Material Samples: The County will require the Successful Bidder to sample and test each load of emulsion prior to delivery. The Successful Bidder will also provide a sample of the emulsion, on site, prior to commencing work.

SECTION E – TECHNICAL SPECIFICATIONS
ADDENDUM # 3

The County will require the Successful Bidder to provide sample containers and a local Independent testing laboratory for the analyzing of emulsion. The Successful Bidder will be responsible for the cost of the testing. The County reserves the right to test any shipment of emulsion that is believed to be of substandard. All samples shall be shipped and stored in clean air tight sealed wide mouth jars or bottles made of plastic.

Equipment

Distributor: The liquid bituminous material shall be applied with a truck mounted, pressure distributor that has been calibrated within the previous twelve (12) months, for transverse and longitudinal application rate. The distributor shall be equipped, maintained and operated so that the bituminous material can be applied at controlled temperatures and rates from .03 to .22 gallons per square yard with nozzles adjusted to allow minimum overlap of 3x. The distributor shall be capable of applying bituminous material of variable widths up to sixteen (16) feet. The distributor shall uniformly apply the bituminous material to the specified rate with a maximum allowed variation of 0.015 gallons per square yard. Distributor equipment shall include tachometer, accurate volume measuring device, a **calibrated tank and a thermometer for measuring the temperature of the tank's contents.** Distributors shall be equipped with an asphalt pump and full circulating spray bars adjustable laterally and vertically. Distributors and transport trailers shall be equipped with a sampling valve. Distributor trucks shall be of the pressure type with insulated tanks. The use of gravity distributors will not be permitted. The valves shall be operated by levers so that one or all valves may be quickly opened or closed in one operation. The valves which control the flow from nozzles shall act positively so as to provide a uniform unbroken spread of bituminous material on the surface.

The distributor shall be equipped with devices and charts to provide for accurate and rapid determination and control of the amount of bituminous material being applied and with a bitumeter of the auxiliary wheel type registering speed in feet per minute, and trip and total distance in feet.

Additional equipment

Additional equipment will be needed to complete the operations required by this technical provision. All equipment necessary for the successful completion of projects governed by this technical provision shall be included in the unit costs associated herein. Availability of quality assurance devices shall be the responsibility of the Successful Bidder.

Experience

Bidders must submit a minimum of five Fog Seal project references that have been completed within the past three years **on Attachment "A", Contractor's** Questionnaire. Bidders may be required to submit detailed information regarding the staff that they propose for this project. Successful Bidder shall be capable of meeting all the requirements of this specification at the time of the bid. Staff shall have the option to **inspect the Successful Bidder's equipment and if found deficient, it shall be the basis for dismissal of Successful Bidder's bid.**

Construction

Layout:
The Successful Bidder will be responsible for the lay out of the roadway and project planning and sequencing to meet traffic control requirements prior to paving.

Weather and Seasonal limitations: The fog seal shall not be applied to a wet surface or when rain is occurring or the threat of rain is present immediately before placement. The surface treatment shall not be applied when the temperature is less than 50 degrees Fahrenheit in the shade. When applying emulsions, the temperature of the surface shall be a minimum of 59°F, and no more than 140°F.

If unexpected rain occurs prior to the emulsion breaking, the area shall be re-fogged at **no cost to the county. Further, the Successful Bidder's traffic control and project** monitoring shall continue until the surface is either free of emulsion or the emulsion applied has broken or the resultant surface is not slippery or dangerous to vehicular travel.

Preparation of Surface

The Successful Bidder will be responsible for blowing or sweeping the road immediately ahead of the fog seal operation to make sure the road is free of loose aggregate and other debris. The surface shall be clean and dry prior to the application.

Application of bituminous material:

The emulsion shall be diluted no more than 24 hours before its intended use to avoid settlement of the diluted emulsion. Water shall be introduced into the emulsion. Introducing emulsion into water is not permitted.

The emulsion shall be circulated using a centrifugal or other suitable pump to ensure uniformity as needed.

Properly calibrated distributor trucks with 4 to 5 mm (1/8" to 3/16") opening spray nozzles shall be used to apply the emulsion. The emulsion may be heated to 122°F maximum, or may be applied at ambient temperatures conforming to the requirements of this technical provision. The emulsion shall be sprayed at a rate as directed in the field by the County. Application will be determined dependent upon the surface conditions.

Tight Surface (low absorbance and relatively smooth) - .09-.14 gal/sy

Open Surface (relatively porous and absorbent with open voids) - .18-.22 gal/sy

Exceptions: When fog seal is required as a subsequent treatment to chip seal, OGCM, or other method described in this blanket purchase order, materials, equipment and application shall be as described in this technical provision and as amended in the technical provision appropriate to the work the fog seal is subsequent to. If discrepancies occur, the County shall determine the appropriate specification.

SECTION E – TECHNICAL SPECIFICATIONS
ADDENDUM # 3

Traffic Control
The Successful Bidder shall furnish all necessary traffic control, barricades, signs and flagmen, to ensure the safety of the traveling public and to all working personnel. Traffic shall not travel on fresh fog seal until material is sufficiently broke such that tire pickup does not occur. The Successful Bidder shall submit an M.O.T plan indicating all facets of traffic control for the project area. The MOT plan must be approved in writing by the County prior to commencing any work. All traffic control shall be in accordance with the FDOT Roadway Design Standards, most current edition and TP-102. M.O.T. and associated devices shall be checked daily and periodically throughout the project for compliance; and where adjustments or corrections are needed, prompt revisions shall be made.

Method of Measurement
If a pay item is listed on the Bid Form for work required in this Technical Specification, the quantity to be paid shall be as specified in the Bid Form including all items of work described herein. Any item necessary for Fog Seal, and not specifically listed in another item in the Bid Form, shall be included in this item.

(IV.55) BASIS OF PAYMENT
The quantities to be paid for under the Technical Specification shall be included in the per **square yard price for Fog Seal. There will be a bid item for "Tight Surfaces" (.09-.14 gal/sy) and a separate bid item for "Open Surfaces" (.18-**.22 gal/sy) as listed in the Bid Form. The unit price includes all items listed in the blanket purchase order, including all Technical Specifications pertaining to Fog Seal, including all items of work described herein. No additional payment will be provided for any item necessary for the completion of this blanket purchase order as detailed in the specifications.

SECTION V – STORMWATER, WASTEWATER and UTILITIES
The work specified in this section shall reference FDOT specifications Section 425-430; and Manatee County Specifications chapters 202.0 to 202.5, requirements as listed on Bid Form with the exception of V.39, V.54, V.55 and V.56.

(V.39) ALTERNATIVE MANHOLE ADJUSTMENT
The work specified in this section covers the adjustment of a structure by the backfill of the adjustment hole with S-III Asphalt Concrete. It also requires heating, scarification and reworking of the existing asphalt surrounding the adjustment, blend with new material as needed and compact.

(V.39) BASIS OF PAYMENT
All bid items specified shall be paid under the per unit pay item noted on the Bid Form.

(V.54) REMOVE CONCRETE COLLAR
(V.55) REMOVE BOX INLET
(V.56) REMOVE CONCRETE DRAINAGE STRUCTURE
The work specified in the section shall include all equipment, labor and incidentals to expose remove and dispose of a concrete collar, box inlet and concrete drainage structure.

SECTION E – TECHNICAL SPECIFICATIONS
ADDENDUM # 3

(V.54, V.55, V.56) BASIS OF PAYMENT
All bid items specified shall be paid under the each and day pay Item noted on the Bid Form.

SECTION VI – CURB AND GUTTER, SIDEWALKS AND DRIVEWAYS

DESCRIPTION OF WORK
The work specified in this section shall reference FDOT Specifications 520 & 522; and Manatee County Specifications chapters 200 & 300 requirements as listed on Bid Form with the exception of VI.3, VI.11, VI.12, VI.13,VI.14, VI.15,VI.16, VI.17, VI.18 and VI.19.

(VI.3) MODIFIED TYPE "F" CURB
The items under this section are the same as "F" curb, see Manatee County specifications **for "F" curb 201.2,** except that the width of the curb may vary, by being less, to meet the necessary field conditions.

(VI.3) BASIS OF PAYMENT
All bid items specified shall be paid under the linear feet pay item noted on the Bid Form.

(VI.11) MISCELLANEOUS CONCRETE FORMED AND POURED
The work specified under this section shall include all equipment, material (including rebar) and labor necessary to frame and pour concrete of any shape or dimension at the direction of the County and type of concrete.

(VI.11) BASIS OF PAYMENT
All bid items specified under this section shall be paid under the cubic yards and pounds of rebar (reinforced steel) used under the pay item noted on the Bid Form.

(VI.12) REMOVE CONCRETE SIDEWALK/DRIVEWAY (2500PSI)
The work specified in the section shall include all equipment, labor and incidentals to expose remove and dispose of a concrete sidewalk/driveway.

(VI.12) BASIS OF PAYMENT
All bid items specified shall be paid under the square yards pay item noted on the Bid Form.

(VI.13) REMOVE CONCRETE CURB & GUTTER
The work specified in this section shall include all equipment, labor and incidentals to expose remove and dispose of a concrete curb and gutter.

(VI.13) BASIS OF PAYMENT
All bid items specified shall be paid under the each and day pay Item noted on the Bid Form.

(VI.14) CONSTRUCT ASPHALT SIDEWALK / DRIVEWAY
The work specified in this section includes all equipment, materials and labor necessary to constructed asphalt paths of the dimension and material noted. The task includes the

excavation of the path area such that the path matches the existing grade of the surrounding area and the compaction of the excavation bottom.

(VI.14) BASIS OF PAYMENT
All bid items specified under this section shall be paid under the lineal foot and cubic yards under the pay item noted on the Bid Form.

(VI.15) PREPARATION FOR CURB AND GUTTER (NEW INSTALL)
The work specified under this section includes all equipment, materials and labor necessary to prepare a job site location for the installation of curb. The area will be cleared of all organic materials and excavated to the required elevation and compacted. When additional fill is required it will be installed to bring the base area to correct elevation and compacted in place.

(VI.15) BASIS OF PAYMENT
All bid items specified shall be paid under the following pay item noted on the Bid Form.

Preparation - lineal feet
Additional fill – cubic yard
Additional excavation – cubic yard

(VI.16) CONCRETE PUMPING
The work specified under this section includes all equipment, materials and labor associated with the use of a concrete pump on the job site to pump concrete to the actual pour location. This item will be paid by either the hour or day.

(VI.16) BASIS OF PAYMENT
All bid items specified shall be paid by either the hour or day noted on the Bid Form.

(VI.17) ADA TRUNCATED DOME FURNISH AND INSTALL
The work specified in this section includes all equipment, materials and labor to install truncated domes at sidewalk locations directed by the County. The domes must meet the requirements of Manatee County specification 302.3 and FDOT Design Standards, Index 304. This item will be paid for in square feet.

(VI.17) BASIS OF PAYMENT
All bid items specified shall be paid under the square foot pay item noted on the Bid Form.

(VI.18) STANDARD MAIL BOX RELOCATE
The work specified in this section includes all equipment, material and labor to keep an address with a proper functioning mail box during the duration of the project. This may require the installation of a standard US Postal Service mail box and wooden post, the relocation of existing mailbox and/or the reinstallation of the original mailbox once the project is complete.

(VI.18) BASIS OF PAYMENT
All bid items specified shall be paid under the each (unique address / mailbox for the duration of the release order (project) pay item noted on the Bid Form.

SECTION E – TECHNICAL SPECIFICATIONS
ADDENDUM # 3

(VI.19) IRRIGATION CAP

The work specified in this section includes all equipment, labor and materials necessary to cap various irrigation lines that may be encountered within a job site. The caps must match the existing irrigation material and be a permanent glue type. This item is paid for by each cap installed.

(VI.19) BASIS OF PAYMENT

All bid items specified shall be paid under the each (cap installed) pay item noted on the Bid Form.

SECTION VII – TRAFFIC CONTROL

The work specified and basis of payment in this section shall reference the respective FDOT specifications edition 2015.

SECTION VIII – PAVEMENT BASE CONSTRUCTION

The work specified and basis of payment in this section shall reference the respective FDOT specifications edition 2015.

The detailed statement of work must be supported by all necessary documentation to indicate that adequate planning to accomplish the work has been performed. A schedule of completion of the work shall be included in the detailed cost package, if the schedule is not dictated to the successful bidder(s) by the County. Costs for the aforementioned documentation shall be included in the successful bidders bid prices and will not be paid separately by the County.

The successful bidder(s) shall be expected to expeditiously prepare its detailed cost package and in no event shall the preparation time exceed **15 calendar days**. The successful bidder(s) shall submit its detailed cost package to the County, who will evaluate same and, if approved, will issue a written release order. The County reserves the right to not issue a release order for the specific work. The County has no obligation to issue a release order.

By submitting a detailed cost package, the successful bidder attests that it has carefully examined the site of the job and all conditions which can in any way affect the work to be done pursuant to the pending release order.

If additional quantities are required to complete the work, a "revised" release order detailing the additional work will be issued. However, it shall be the successful bidder's responsibility to advise the County and obtain prior approval for additional quantities to be utilized beyond those specified in the release order.

B.12 PAYMENT

Upon receipt of a complete invoice after services have been rendered or materials have been delivered and accepted, the County shall pay the total amount due in accordance with Florida Statute 218.70, Prompt Payment Act.

If appropriate, successful bidder(s) may apply for partial payment on monthly estimates, based on the amount of work completed and accepted.

B.13 ROAD BUILDING SERVICES - NO RELEASE ORDERS OVER $299,999.99 (ADDENDUM # 3)

No single construction project estimated to exceed $299,999.99 shall be performed under this Agreement. A project exceeding $300,000.00 shall be solicited under a separate formal, sealed process in order to comply with FS 255.0525.

B.14 ROAD BUILDING SERVICES - TIMELY PERFORMANCE

The successful bidder shall perform all services as expeditiously as is consistent with professional skill and care and the orderly progress of the work identified on the release order, in accordance with the mutually agreed schedule indicated on the release order.

County reserves the right to prioritize the sequence of work when a successful bidder is responsible for rendering services under multiple release orders at a given time.

B.15 SUBCONTRACTORS

All subcontracts shall: (1) require each subcontractor to be bound to successful bidder(s) to the same extent successful bidder(s) is bound to County by the terms of the blanket purchaser order

ADDENDUM # 3 IFB# 16-0212-DS
HOT- in PLACE SPECIFICATIONS

PART I

1.1 GENERAL

The Contractor shall furnish all labor, material, consumables, tools and equipment necessary to perform all operations for "hot-in-place" recycling of street asphalt, addition of a recycling agent, and subsequent resurfacing of the street, at selected streets within Manatee County, on an as-needed basis. The list of street names and surfaces selected for application will be provided by the County after the bid award. Asphaltic concrete used to complete this work shall conform to the applicable Technical Specifications sections, unless otherwise modified herein. The quality of workmanship and materials used in restoration shall produce a surface equal to or better than the condition before the Work began.

1.2 SCOPE OF WORK

The essential portions of the proposed Work for the Project are summarized as follows: The Work consists of street cleaning and a single pass, single machine process of heating, scarifying, and reworking existing pavement, adding a recycling agent, redistributing the processed materials and placing an asphalt concrete surface course overlay of Type S-III asphalt concrete, at a rate of 110 pounds per square yard. Surface adjustment of manhole rings, as requested by the County, will be required. Striping, Markings and Restoration of vehicle detector loops will also be required.

The estimated quantities and Contract Pay Items are listed in the Invitation for Bid.

1.3 ESTIMATED QUANTITIES

The estimated quantities listed in the bid for the various Contract Pay Items shall be used for the purposes of comparing bids. Certain estimated quantities listed are greater than the quantities required to complete the Work. The greater quantities and quantities of work items not shown may be for contingent work; compensation for contingent work will be made if required and approved by the Engineer. The County reserves the right to vary the estimated quantities or to delete the Work and the corresponding Contract Pay Items from the Contract. The Contractor will be compensated for work actually performed as indicated in the Specifications or as authorized by the Engineer, all in accordance with the unit prices and lump sum prices contained in the bid. The bidder shall quote in the bid a unit or lump sum price for which he will perform the work for each bid item.

1.4 SAFEGUARDING SURVEY MARKS

The Contractor shall safeguard all existing property monuments, benchmarks, and other survey marks adjacent to and within the Project limits, and shall bear the cost of reestablishing them if disturbed or destroyed.

1.5 INSPECTION AUTHORITY

The Engineer has ultimate responsibility for contract administration and inspection for this bid. The Engineer may assign field inspection responsibilities to a Design Professional and/or County Inspector.

Each step of construction is subject to approval by the Engineer prior to proceeding with a subsequent step. During the progress of the Work and up to the date of the final acceptance, the Contractor shall, at all times, afford representatives of the City, the County, the State, the Department of Environmental Protection, the Department of Labor, or any other agency with jurisdiction, every reasonable, safe, and proper facility for observation of the Work done or being done at the site, and also the manufacture or preparation of materials and equipment at the place of such manufacture or preparation.

1.6 QUALIFICATIONS

The bidder shall have a minimum of three years experience in applying the product proposed for use in this specification. He must submit with his bid a list of five similar projects on which he worked. He shall indicate the project dates, number of square yards treated in each and the name and phone number of the official in charge of each project.

1.7 SUBMITTALS

The bidder must submit with his bid the manufacturer's certification that the material proposed for use is in compliance with the specification requirements. The bidder must submit with his bid previous use documentation and test data conclusively demonstrating that; the rejuvenating agent has been used successfully for a period of five years by government agencies such as Cities, Counties, etc; and that the asphalt rejuvenating agent has been proven to perform, as heretofore required, through field testing by government agencies as to the required change in the asphalt binder viscosity and penetration number. Testing data shall be submitted indicating such product performance on a sufficient number of projects, each being tested for a minimum period of three years to insure reasonable longevity of the treatment, as well as product consistency.

1.7 SUBMITTALS (Continued)

The Contractor shall submit shop drawings, and samples where specified for the following materials:

Equipment
Asphaltic Concrete Type S-III
Recycling Agent

The Contractor shall submit to the County in writing the proposed asphalt design mixes and sufficient samples for study and testing.

1.8 WARRANTY

The Contractor shall provide workmanship and labor warranty for a period of at least 12 months from the date of application. The material warranty shall be as offered by the manufacturer.

1.9 DELIVERY AND STORAGE

Contractor shall deliver materials in ample quantities to ensure the most speedy and uninterrupted progress of the Work to complete the Work within the allotted time. The Contractor shall also coordinate deliveries in order to avoid delay in, or impediment of, the progress of the Work of any related contractor. The Contractor shall provide space for storage of materials and equipment.

1.10 WORK SCHEDULE AND PROGRESS SCHEDULE

Normal working hours are 7:00 AM to 7:00 PM, Monday through Friday. Work on holidays, weekends, and evenings will be done if determined by the Engineer. The Contractor shall schedule his work so as to maintain at least a one-way traffic and shall provide effective dust control at all times. Two lane traffic shall be maintained whenever possible. No interruption of access to property shall be made unless prior arrangements acceptable to the occupant or owner of the property have been made by the Contractor in writing.

Contractor shall prepare and submit to the Engineer a **Progress Schedule** showing the order in which the Contractor proposes to carry out the Work, the start dates and the completion dates of the salient features of the Work. It shall clearly depict the order, inter-dependence, and duration of each activity. Any changes to the Progress Schedule shall be in writing, and shall be cleared by the Engineer in advance. If the Engineer orders a phase of construction to be stopped due to the Contractor's neglect to adhere to the sequence of operations or any other non-conformance of specifications, as outlined herein, the Stop Work Order shall not constitute a basis for an extension of time.

PART II MATERIALS AND EQUIPMENT

2.0 GENERAL

A. All materials, appliances, and types of construction shall be in accordance with the F.D.O.T. Standard Specifications for Road and Bridge Construction, 2000 edition, and shall, in no event, be less than that necessary to conform to the requirements of any applicable State, County, Federal, laws, ordinances, and codes.

B. All materials and equipment to be incorporated into the Work shall be new, unused and correctly designed.

They shall be of standard first grade quality, produced by expert workmen, and be intended for the use for which they are offered. Materials or equipment which, in the opinion of the Engineer, are inferior or of a lower grade than indicated, specified, or required, will not be accepted.

C. For detailed specifications for Type S-III Asphaltic material, and Asphaltic Concrete Pavement, the Contractor shall consult F.D.O.T. Standard Specifications for Road and Bridge Construction, 2000 edition.

D. Only "Asbestos-Free" materials shall be incorporated into the Work, unless the Technical Specifications specifically call for otherwise. Material suspected of being Regulated Asbestos Containing Material (RACM), includes but is not limited to: thermal and acoustic insulation, joint compound, mastic, adhesive, vinyl floor tile and sheeting, ceiling tile, plaster, wall board, roofing felt, and shingle. Shop drawings for material or equipment suspected of being RACM shall list all contents, shall be noted "Asbestos-Free," and shall be screened by the Contractor prior to submittal to confirm that it is "Asbestos-Free." All materials delivered to the Project site shall have been approved through the shop drawing procedure and shall be in their original labeled and unopened containers.

E. In the event that asbestos-containing material installed by the Contractor is discovered either during construction, following completion of construction, or following acceptance of the Contract Work by the County and closeout of the Contract, it will be the responsibility of the Contractor to pay all costs incurred to remove and replace those materials, including repair or replacement of all adjacent materials which are affected by the abatement process.

2.1 EQUIPMENT

A. The machine used to recycle the existing pavement shall be designed and built for this specific purpose. The machine shall be capable of heating by infrared heat, scarifying to a minimum of one-inch depth, applying a recycling agent, reworking and redistribution of the existing asphalt concrete surface course (minimum ten-foot width), and a concurrent application of the final surface course of Type III material in a single machine operation. The machine shall have the capability of maintaining a recycled mat temperature of 225 degrees F throughout the repaving operation, including application of the final course.

B. The machine shall also be capable of reworking the material around manholes and other obstacles. The machine shall be equipped to add the recycling agent and mix the pavement material evenly, and shall be equipped with a leveling blade and screed for regrading the existing asphalt concrete surface course. The screed shall be a heated vibratory screed equipped with crown controls and be capable of adjustment to redistribute the existing asphalt concrete surface course in order to produce the desired longitudinal grade and transverse cross section.

C. The machine shall be on the site in operating condition sufficiently in advance of beginning of the surface-recycling project to allow full evaluation.

As required by the Engineer, the Contractor shall demonstrate that the machine he proposes to use will achieve the results specified.

2.2 ASPHALTIC CONCRETE PAVEMENT

Unless otherwise specified elsewhere, all asphalt concrete shall be Type S-III mix as specified in the F.D.O.T. Standard Specifications for Road and Bridge Construction, 2000 Edition. Asphalt concrete shall be placed and compacted to provide a minimum thickness as specified on the Plans. Samples of the material shall meet the quality requirements as specified in ASTM D979, to determine conformance to the approved design mix. Construction material and workmanship shall conform to the applicable requirements of DOT-SSRBC sections 320, 330, 331 and 332.

2.3 TYPE S-III ASPHALT CONCRETE

Type S-III asphalt concrete shall be used for an alternate for the final surface (no friction course specified), and, as the final layer of structural course only. The composition and physical test properties for Type S-III are described below.

Minimum Marshall Stability (lbs)	1500
Flow (.01 in.) in %	8-14
Minimum VMA in %	15
Air Voids in %	3-7
Minimum Effective Asphalt Content	5.5
Percent by weight total aggregate passing sieves	--See Section 331 (FDOT 2000)
Asphalt Cement Viscosity Grade AC-20	--See Section 916-1
Mineral Filler	--See Section 917-1, 917-2
Course Aggregate, Stone, Slag or Crushed Grave	--See Section 901
Fine Aggregate	--See Section 902

The aggregate shall be clean and shall not contain any deleterious substances. Course or fine aggregate containing any appreciable amount of phosphate shall not be used.

2.4 RECYCLING AGENT

A. General

The recycling agent, or restorative agent, shall be an emulsified asphalt-recycling agent as approved by the County. These specifications establish the requirements and uses for recycling agents used in the repaving of asphaltic surfaced streets. Recycling agents are used to restore the plasticity to existing asphaltic paving. Either the agent is used independently an emulsified agent is used in conjunction with cationic emulsified asphalt.

B. Use of agent without addition of emulsified asphalt tightly or equal:

Flash Point, CCC, Degrees C	195 Min. Viscosity, mPa Sec
100 Degrees C	15-22
60 Degrees C	90-180
38 Degrees C	500-1500
Refractive Index	1.5460 Min.
Four Point, Degrees C	+27 Max.
Specific Gravity, 15.6115.6 Degrees C	980-1.040
Analine Point, Degrees C	48 Max.
Molecular Analysis, Clay Gel, %	
Polar Compounds	8 Min.
Aromatics	65 Max.
Saturates	27 Max.
Asphaltenes	.2 Max

Note: mPa Sec = Centipoise

C. Use of agent in conjunction with Cationic emulsified asphalt AE30OR or equal:

Viscosity, Saybolt Furol at 77 Deg F, Sec	15-100
Sieve Test, %	.10 Max
Miscibility	No coagulation
Particle Charge	Positive
Residue, % by weight (2)	60 Min.
Tests on residue from Evaporation Test	
Flash Point, COC, Degrees F	400 Min.
Viscosity at 140 Degrees F, cSt	75-250
Viscosity at 275 Degrees F, cSt	7.0 Max

D. Sampling and Testing:

The Contractor shall submit samples of the recycling agents along with samples of existing pavement to a competent laboratory, which will select a formulation suited for the Project, and determine the rate of application for the recycling agent that will provide the desired viscosity in the recycled pavement. The Engineer reserves the right to make changes in the recycling agent formulation and rate of application at any time throughout the construction duration.

PART III EXECUTION

3.1 HOT-IN-PLACE ASPHALTIC RECYCLING

A. The existing pavement shall be removed to varying depths in a manner which will restore the pavement surface to a uniform longitudinal profile and cross slope of ¼ inch per foot. Minimum removal depth shall be 1 inch, or as directed by the Engineer.

B. Prior to recycling, the pavement shall be cleaned by the Contractor so as to be reasonably free from sand, dirt and other deleterious substances that would affect the quality of the recycled mix.

C. The entire width of pavement surface being processed in a single pass shall be uniformly heated in such a manner as to soften the existing pavement to the extent that it can be scarified in a manner that will result in a layer of uniformly loosened material without appreciable ridges of undistributed material which will provide sufficient scarified material to allow the pavement surface to be restored to the shape specified. Spot leveling may be necessary as directed by the Engineer.

D. An approved recycling agent shall be applied to the scarified material, which then shall be distributed evenly over the width being processed so as to produce a uniform cross section. The exact amount of recycling agent will be determined by a competent laboratory and will generally range between 0.008 and 0.15 gallon per square yard as directed by the County.

E. Asphaltic Concrete used shall be Type S-III.

3.2 ADJUSTMENT OF EXISTING MANHOLE COVERS AND VALVE BOXES

The Contractor shall make vertical adjustments to existing manhole covers and valve boxes within or adjacent to all proposed construction. Covers and valve boxes shall be adjusted to elevations compatible to proposed roadway or parkway grades. The manhole covers and valve boxes, if needed, shall be supplied by the Contractor.

3.3 STREET RESURFACING WORK

A. The Contractor shall clean, to the satisfaction of the County, existing surfaces to be resurfaced and shall maintain said clean surfaces until completion of resurfacing work. Prior to the Contractor's sweeping-cleaning operations, the County Maintenance Department, if given a minimum of 48 hours notice by the Contractor, will schedule to scrape and pull the curb line where there are heavy accumulations of dirt and/or debris. The Contractor shall furnish and apply the tack coat prior to placing of the asphaltic concrete.

B. Where it becomes necessary, the Contractor will adjust manhole rings, as directed by the County. Manhole rings will be adjusted by the use of adjustment rings supplied by the Contractor. All such work shall be accomplished as ordered by the County.

C. At streets intersected by streets being resurfaced, resurfacing shall be feathered along the radii of all returns, so as to maintain the drainage pattern of the intersection, or at the direction of the Engineer.

3.4 FINISHED SURFACE

The finished surface shall have a reasonable uniform texture and shall be within ¼ inch of a true profile grade and shall have no deviation in excess of ¼ inch from a straight edge applied to the pavement perpendicular to the centerline. Areas varying from a true surface in excess of the above state tolerance may be accepted without correction if the Engineer determines that they were caused by pre-existing condition, which could not have reasonably been corrected. Any unsuitable texture or profile, as determined by the Engineer, shall be corrected by the Contractor at no additional compensation.

3.5 STRIPING AND MARKING SPECIFICATIONS

Consult the manual on Uniform Traffic Control Devices (MUTCD).

3.6 WORK IN PRIVATE PROPERTY AND RESIDENT NOTIFICATION

A. The Contractor shall distribute by hand, a typed notice to all residences and businesses on the street to be treated. The notice will be delivered no more than 24 hours prior to the treatment of the road. The notice will have a local phone number that residents may call to ask questions. The notice shall be of the door hanger type, which secures to the door handle of each dwelling. Unsecured notices will not be allowed. The Contractor shall also place the notice on the windshield of any parked cars on the street. Hand distribution of this notice will be considered incidental to the contract.

B. In the event that, in the opinion of the Contractor, obtaining a temporary construction easement outside the limits of the public right-of-way, of County-owned property, or of the easements obtained by the County is necessary or desirable, it shall be the sole responsibility of the Contractor to obtain such easement from the owner of the property. If such easement is obtained by the Contractor it shall contain provisions to hold the County harmless from any operations of the Contractor within the easement limits. The Contractor shall not conduct construction operations on private property outside the limits of the public right-of-way, of County-owned property, or of the easements obtained by the County unless a copy of the Temporary Construction Easement Agreement is filed with the Engineer.

C. Upon completion of Work in easements, the Contractor shall restore the property, including all fences or other structures disturbed by his operations, as nearly as possible to the condition in which he found it. No material shall be used or removed from private property without the approval of the Engineer.

3.7 TRAFFIC CONTROL

A. The work consists of maintaining traffic within the limits of the Project for the duration of the construction period, including any temporary suspensions of the Work. It shall include the construction and maintenance of any necessary detour facilities; the providing of necessary facilities for access to residences, businesses, etc., along the Project; the furnishing, installing, and maintaining of traffic control and safety devices during construction; the control of dust; and any other special requirements for safe and expeditious movement of traffic as may be called for on the Plans.

B. The term, "traffic control" shall include all of such facilities, devices, and operations as are required for the safety and convenience of the public as well as for minimizing public nuisance; all as specified.

C. The Contractor shall schedule his operations and carry out the work in a manner to cause the least disturbance and/or interference with the normal flow of traffic over the areas to be treated. Treated portions of the pavement surfaces shall be kept closed and free from traffic until penetration, in the opinion of the Engineer, has become complete and the area is suitable for traffic.

D. If for any reason, permanent traffic lines cannot be placed due to incomplete work, it shall be the Contractor's responsibility to place temporary traffic stripes prior to completing the day's operations.

E. When, in the opinion of the Engineer, traffic must be maintained at all times on a particular street, then the Contractor shall apply asphalt-rejuvenating agent to one lane at a time. Traffic shall be maintained in the untreated lane until the traffic may be switched to the completed lane.

F. The Contractor shall be responsible for all traffic control and signing required to permit safe travel. The Contractor shall notify the police and fire departments as to the streets that are to be treated each day.

G. If, in the opinion of the Engineer, proper signing is not being used, the Contractor shall stop all operations until safe signing and barricading is achieved.

3.8 UTILITIES

Prior to construction, the Contractor shall familiarize himself with the location of all existing utilities and facilities within the project sites, and work in close co-operation with the utility company, so as not to disturb, destroy or otherwise harm any existing infrastructure.

3.9 DAMAGES

Access to the work sites shall be over public streets and highways. Any damage to existing pavement surface and base or other surface improvements outside the Contract Pay Limits, that are attributable to the Contractor's activities, shall be restored to like-new condition by the Contractor at his own expense.

3.10 METHOD OF MEASUREMENT, BASIS OF PAYMENT

A. Mobilization:

The cost of required insurance, consideration for indemnification to the County and the Engineer, and any other pre-construction expenses necessary for the start of the Work, excluding the cost of construction materials, shall be included in the various unit prices bid. No separate payment will be made.

B. Traffic Control:

The Scope of Work consists of maintaining traffic for the duration of the construction period, including any temporary suspensions of the work details of which are mentioned in Section 3.11. Payment for traffic control shall be included in the various unit prices bid. No separate payment will be made.

C. Hot In-Place Asphalt Recycling:

Payment under this Pay Item provides for all costs for hot in-place asphalt recycling existing asphaltic concrete roadway, including but not limited to: cleaning the surface, scarifying, mixing the recycling agent, mixing the concrete and redistributing the final mixture, rolling and compacting the placed mixture, and any temporary traffic control markings as required by the Engineer. The price quoted shall be on a per square yard basis.

D. Asphaltic Concrete Type S-III:

Payment under this Pay Item provides for all costs for furnishing and placing Type S-III asphaltic concrete for mixing into the recycled material, including but not limited to trucking to job site and placing in mixer. The price quoted shall be on a per ton basis.

E. Recycling Agent:

Payment under this Pay Item provides for all costs for furnishing the recycling agent to be mixed into the scarified material at a rate of .008 to 0.15 gallon per square yard, including but not limited to delivery to the job site and adding to the mix. The price quoted shall be on a per gallon basis.

F. Bid Items:

PAY ITEM	PAY UNIT
Hot In-Place Asphalt Recycling	SY
Recycling Agent	GAL
Furnish and Place S-III Asphalt	TON

END OF SECTION