



Matthew G. Bevin
Governor

COMMONWEALTH OF KENTUCKY
TRANSPORTATION CABINET
Frankfort, Kentucky 40622
www.transportation.ky.gov/

Greg Thomas
Secretary

March 19, 2019

CALL NO. 303
CONTRACT ID NO. 191209
ADDENDUM # 1

Subject: FRANKLIN COUNTY, BC53 07-25 CAPCITY AIR
Letting March 22, 2019

- (1) Revised - Summary of Quantities Detail Sheet - Page 11 of 125
- (2) Revised - Pavement Marking Detail Sheet - Page 19 of 125
- (3) Revised - Special Notes - Pages 90-102 of 125
- (4) Revised - Proposal Bid Items - Page 125 of 125
- (5) Added - Addendum Summary - Pages 1-2 of 2

Proposal revisions are available at <http://transportation.ky.gov/Construction-Procurement/>.

If you have any questions, please contact us at 502-564-3500.

Sincerely,

A handwritten signature in black ink that reads "Rachel Mills".

Rachel Mills, P.E.
Director
Division of Construction Procurement

RM:mr
Enclosures



An Equal Opportunity Employer M/F/D



DEFINITION: 03/18/19
 BY: []
 DESCRIPTION: []
 REVISED PER ADDENDUM NO. 1
 DATE: 03/18/19
 1

REV.	DATE	DESCRIPTION
1	03/18/19	REVISED PER ADDENDUM NO. 1

FRANKFORT, KY
 CAPITAL CITY AIRPORT
 AIRFIELD PAVEMENT
 REHABILITATION PROJECT

SUMMARY OF
 QUANTITIES

JOB NO.: 16151131
 DATE: FEB. 5, 2019
 DESIGNED BY: MDU
 DRAWN BY: ALT

REVISIONS
 DATE: ONE INCH
 DRAWING NUMBER: G-102
 CONTRACT ID: 191209
 DRAWING NUMBER: G-102
 CONTRACT ID: 191209
 DRAWING NUMBER: G-102

BIDDING NOTES

- AWARD OF CONTRACT WILL BE MADE TO THE RESPONSIBLE, RESPONSIBLE, AND QUALIFIED BIDDER WITH THE LOWEST TOTAL COST TO THE OWNER.
- THE FUNDS ALLOCATED FOR THE PERFORMANCE OF THIS PROJECT ARE LIMITED. THE OWNER RESERVES THE RIGHT TO LIMIT THE SCOPE OF WORK. THIS MAY RESULT IN THE ELIMINATION OF SOME ITEMS OF WORK WHICH WILL BE TO STAY WITHIN THE LIMITS OF AVAILABLE FUNDS.
- CONTRACT AWARD SHALL BE MADE BASED ON FUNDING CONSTRAINTS.
- ALL BIDDERS MUST BE PREQUALIFIED WITH THE KENTUCKY TRANSPORTATION CABINET (KYTC) FOR CONSIDERATION OF AWARD

SUMMARY OF QUANTITIES							
ITEM NO.	KYTC NO.	SPEC NO.	NOTE	DESCRIPTION	UNIT	PLANNED QUANTITY	INSTALLED QUANTITY
1	40000	SS-120-3.1	1	SITE PREPARATION	LS	1	
2	02569	SS-120-3.2		DEMobilIZATION	LS	1	
3	40003	SS-120-3.3	2	LOCKOUT-TAGOUT AND CC REGULATOR CAL PRO	LS	1	
4	40170	SS-152-5.1	3	SHOULDERING	SY	21,130	
5	40047	SS-152-5.2	4	SODDING	SY	21,130	
6	40169	SS-225-5.1		MICROSURFACING-SURFACE COURSE-TYPE B	SOYD	109,790	
7	40112	SS-225-5.2	5	PAVEMENT SURFACE PREPARATION	LS	1	
8	40044	SS-255-5.1		R/W & T/W PAINT - YELLOW WATERBORNE	SOFT	11,995	
9	40043	SS-255-5.2		R/W & T/W PAINT - WHITE WATERBORNE	SOFT	69,450	
10	40168	SS-255-5.3		R/W & T/W PAINT - BLACK	SOFT	32,509	
11	40069	SS-280-5.1	6	PAVEMENT CRACK REPAIR-METHOD 1	LF	10,500	
12	40113	SS-280-5.2	7	PAVEMENT CRACK REPAIR-METHOD 2	LF	39,100	
13	40046	P-631-7.1	8	REFINED COAL TAR EMUL FOR SLURRY COAT	GAL	4,851	

- NOTES:**
- SITE PREPARATION SHALL INCLUDE BUT NOT BE LIMITED TO, THE CONTRACTOR'S RESPONSIBILITY FOR INSTALLING, MAINTAINING, AND REMOVING THE LOW PROFILE BARRICADES AND RUNWAY CLOSURE MARKERS. THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR LOCKING OR GUARDING THE ACCESS GATE UTILIZE FOR THE HAUL ROAD AT ALL TIMES.
 - LOCKOUT-TAGOUT WILL BE MEASURED AND PAID FOR AT 50% UPON LOCKING OUT THE SYSTEM AND THE FINAL 50% FOR RE-OPENING OF THE AIRFIELD AFTER COMPLETION OF THE TEMPORARY PAVEMENT MARKINGS.
 - SHOULDERING SHALL INCLUDE APPROXIMATELY 550 CY OF FILL AND 300 CY OF CUT. SHOULDERING IS NOT REQUIRED FOR AREAS WHERE EDGE DROP IS LESS THAN 1.5" OR WHERE GRADING WILL CREATE A DRAINAGE DITCH INSIDE THE RSA. TOPSOIL (FILL MATERIAL) SHALL BE OBTAINED OFF-SITE.
 - SODDING SHALL BE ROLLED. IT IS ANTICIPATED TO SOD THE FIRST 8' OFF THE EDGE OF PAVEMENT WHERE SHOULDERING WAS COMPLETED.
 - PAVEMENT SURFACE PREPARATION IS FOR PREPARING THE SURFACE PRIOR TO INSTALLATION OF THE MICROSURFACE. THIS INCLUDES, BUT IS NOT LIMITED TO, THE CLEANING OF THE AIRFIELD PAVEMENT SURFACES AND THE REMOVAL OF ALL EXISTING CURB AND GUTTER. THE REMOVAL OF THE CENTERLINES SHALL BE SUBSIDIARY TO SURFACE PREPARATION.
 - TYPE 1 METHOD SHALL BE USED FOR ALL CRACKS 1" OR LESS IN WIDTH AND WILL BE COMPLETED IN ACCORDANCE WITH DETAIL 1 ON SHEET C-200.
 - TYPE 2 METHOD SHALL BE USED FOR ALL CRACKS GREATER THAN 1" IN WIDTH AND WILL BE COMPLETED IN ACCORDANCE WITH DETAIL 2 ON SHEET C-200. IT IS ANTICIPATED THE LONGITUDINAL JOINTS ALONG THE RUNWAY WILL RECEIVE TYPE 2 CRACK REPAIR AS WELL AS AN ADDITIONAL +1600 LF OF TYPE CRACK REPAIR AROUND THE T-HANGARS.
 - THIS SEAL COAT SHALL BE BLACK, DURABLE, AND FUEL RESISTANT.

ITEM SS-225 MICROSURFACE

DESCRIPTION

225-1.1 This work consists of constructing a cold-laid, polymer-modified, emulsified asphalt pavement course to fill ruts or provide an intermediate or surface course for existing pavements. The paving mixture is composed of a polymer-modified emulsified asphalt, crushed aggregate, mineral filler, water, and possibly other additives. Follow the requirements outlined in ASTM D 6372, Standard Practice for Design, Testing, and Construction of microsurfacing, with modifications as found in this note. Apply this material according to the locations shown in the plans or as established by the Engineer.

Unless otherwise noted, Section references herein are to the Kentucky Department's Standard Specifications for Road and Bridge Construction, current edition. All applicable portions of the Department's Standard Specifications apply unless specifically modified herein.

MATERIALS

225-2.1 MINERAL FILLER. Use Portland Cement Type I, Conforming to Section 801. Mineral filler shall not exceed 2.0% by weight of the overall mix design unless otherwise approved by the Engineer.

225-2.2 AGGREGATE. Provide 100-percent crushed aggregate conforming to Sections 804 and 805. Contrary to Subsection 403.03.03, provide polish-resistant aggregate in the asphalt mixture conforming to the following requirements:

Microsurfacing Type B

- 100 percent of total combined aggregate is Class B or Class A polish-resistant aggregate.

Contrary to ASTM D 6372, test sand equivalent according to AASHTO T 176, soundness according to Kentucky Method (KM) 64-610, and a maximum LA abrasion resistance of 35 percent when tested according to AASHTO T 96. Ensure all aggregates satisfy ASTM D 6372 for sand equivalent (and be 65 or above), soundness, and LA abrasion listed above.

Do not use mineral aggregates that are inherently porous, such as blast-furnace slag, expanded shale, porous limestone, and lightweight aggregates, in this mixture.

Aggregate shall be free of vegetation, soft particles, clay lumps, dust, and other matter not suitable for microsurfacing.

The Contractor shall be required to notify the Engineering if there is a change in the source of aggregates from what was previously approved. The Contractor shall not bring aggregate to the site without prior approval from the Engineer.

225-2.3 WATER. Conform to Section 803.

225-2.4 EMULSIFIED ASPHALT. The polymer-modified emulsion will be a CQS-1hP conforming to AASHTO M 316 and tested according to T59. Distill sample at 350 °F. In addition, ensure that the emulsified asphalt conforms to the following criteria:

Test

Ductility at 77 °F (AASHTO T 51)

Criteria

40 cm (min)

Ensure the asphalt supplied can be found on the List of Approved Materials.

EQUIPMENT

All equipment necessary for the satisfactory performance of the work shall be on hand and approved before the work is permitted to begin. All equipment, tools, and machines used in the performance of this work shall be maintained in satisfactory working condition.

All trucks shall be covered immediately after loading with a cover of canvas or other suitable material. The cover shall lap down along the sides and rear of the truck bed a minimum of 6 in. and be secured by tie downs at a maximum of 5 ft. spacing along the sides and rear of the truck bed. All trucks must be equipped to meet the above requirements prior to commencing hauling operations.

225-3.1 MIXING EQUIPMENT. Produce the mixture in a self-propelled, front-feed, continuous-loading machine equipped with a conveyer-belt aggregate-delivery system and an interconnected, positive-displacement, water-jacketed gear pump and/or a variable displacement computerized rate control pump, to accurately proportion the aggregate and asphalt emulsion. Locate the mineral filler feed so the proper amount of mineral filler is dropped on the aggregate before discharge into the pug mill. Provide a spray bar to completely pre-wet the aggregate dropping down to the pug mill with additive and water before the introduction of the asphalt emulsion. Provide a twin-shaft, continuous-flow, multi-blade pug mill that is a minimum of 49 in. long. Ensure that the blade size and side clearances meet the equipment manufacturer's recommendations. Introduce the emulsion within the first one-third of the mixer length to ensure proper mixing of all materials before exiting the pug mill.

Equip the machine with opposite-side driving stations to allow full control of the machine from either side. Equip the mixer with a remote, forward-speed control at the rear mixing platform so the rear operator can control the forward speed and level of mixture in the paving or rut box. Provide material control devices that are readily accessible and positioned so the amount of each material used can be determined at any time.

Equip the mixing machine with a water pressure system and nozzle-type spray bar to provide a water spray ahead of and outside the spreader box when required. Apply water at a rate that will dampen the surface but not create free-flowing water ahead of the spreader box.

The mixer shall be equipped with a computerized material monitoring system with integrated material control devices that are readily accessible and positioned so the amount of each material used can be determined at any time. The mixer shall be equipped with a back-up electronic or air actuated materials counter that is capable of recording running count totals for each material being monitored. The mixer shall include an attached radar ground measuring device or comparable device. Each material control device shall be calibrated prior to each mix application and at the discretion of the Engineer. The computer system shall have the capability to record, display, and print the following information:

- Individual sensor counts for emulsion, aggregate, cement, water and additive
- Aggregate, emulsion, and cement output in pounds per minute
- Ground travel distance
- Spread rate in pounds per square yard
- Percentages of emulsion, cement, water and additive
- Cumulative totals of aggregate, emulsion, cement, water and additive
- Scale factor for all materials

The computer system shall be functional at the beginning of work, and throughout the entire work operation. If the computer monitoring system stops working while the job is in progress, the backup counters can be used until the computer system repairs are made.

225-3.2 AGGREGATE EQUIPMENT. In an effort to eliminate oversize materials in the finished mat, aggregate shall be screened directly into the trucks. The inspector shall view the screen for oversized aggregate and if it is found to have gaps, it shall be replaced or repaired before continuing to place the material.

225-3.3 SPREADING EQUIPMENT. If a leveling or surface course is specified, apply the mixture uniformly by means of a conventional spreader box.

A variable width spreader box shall be used. This box shall be designed to apply microsurfacing material and a slurry seal spreader box will not be allowed. The spreader box shall allow the operator to adjust the width of the box during the application process. The box shall be equipped with augers to continually agitate and distribute the materials throughout the box. Ensure that the equipment provides sufficient turbulence to prevent the mix from setting in the box or causing excessive build-up or lumps. To prevent loss of the mixture from the box, attach flexible seals, front and rear, in contact with the road. Operate the spreading equipment in such a manner as to prevent the loss of the mixture on super-elevated curves.

For surface courses, attach a secondary strike-off device to the spreader. Use rubber drags to obtain the desired finish. The texture produced by the rubber drags shall be uniform across the full width of the pass. The drags shall be cleaned as necessary to prevent drags in the surface and to ensure a uniform and acceptable surface texture is achieved. Replace drags having excessive buildup. Do **NOT** use burlap drags.

The spreading equipment shall be thoroughly cleaned at the end of each work day. In addition to cleaning at the end of each work day, the Contractor shall inspect the spreading equipment periodically to prevent any material build up. In the event of material build up, the Contractor shall stop operations and clean the equipment.

CONSTRUCTION METHODS

225-4.1 PREPARATION AND PROPORTIONING OF MIXTURES. Submit a complete mix design to the Division of Construction and to the Division of Materials, Asphalt Branch and Aggregate Section. Mix design shall be prepared by an approved laboratory, to verify the compatibility of the aggregate, asphalt emulsion, mineral filler, and other additives. Perform the mix design with the same materials that will be used on the project.

Ensure the mix design has a residual asphalt content, by dry weight of aggregate, of ~~12.0% to 13.5%~~ 8.5% to 12.0% for surface courses. Also ensure the mixture contains no reclaimed materials and a mineral filler content between 0.25 and 2.0 percent by dry weight of aggregate.

At a minimum, the mix design shall have a cover letter with the date the mix design was created and reference the project and contract. The mix design shall include the type and percentages (by dry weight of aggregate) for each material in the mix design.

In addition to the mix design information required by KM 64-421, provide the following (all percentages are based on the dry weight of aggregate):

- minimum and maximum percentage of water; and
- percentage of mix-set additives, if required.
- county and contract listed

Provide test results from an accredited laboratory that conform to ASTM D 6372.

Submit the mix design and two full 5-gallon buckets of the aggregate blend for the mixture to the Division of Materials for verification according to Subsection 402.03 a minimum of four weeks prior to initial use for testing and approval.

When requested by the Engineer, the Contractor shall calculate the % asphalt content of the mixture from the equipment computer display readings. If no request is made by the Engineer, the Contractor shall calculate the % asphalt content of the mixture from the equipment computer display readings randomly, a minimum of 3 times a day. The quality control tolerances from the mix design is $\pm 0.5\%$.

225-4.2 MIXTURE GRADATION. Mixture shall conform to the requirements listed in the table below:

Gradation of Aggregates	
Sieve Size	Type IA
<i>3/8 in.</i>	<i>100</i>
<i>No. 4</i>	<i>98 - 100</i>
<i>No. 8</i>	<i>85 - 95</i>
<i>No. 16</i>	<i>50 - 75</i>
<i>No. 30</i>	<i>30 - 50</i>
<i>No. 50</i>	<i>18 - 35</i>
<i>No. 100</i>	<i>10 - 21</i>
<i>No. 200</i>	<i>5 - 10</i>
<i>Residual asphalt content percent dry weight of aggregate</i>	<i>8.5% - 12.0%</i>

225-4.3 WEATHER LIMITATIONS. In addition to the applicable requirements in ASTM D 6372, apply the mixture only when rain is not imminent and the existing pavement surface temperature is at least 50°F. The ambient temperature shall be at least 50°F and rising and no forecasted temperatures shall be below 32°F within a 24 hour period after placement. Do not place the material between November 1 and May 1.

225-4.4 SURFACE PREPARATION. All surfaces intended for application shall be thoroughly cleaned of all vegetation, loose material, dirt, or other objectionable material immediately before application of emulsion using a mechanical sweeper , wire hand brooms, vacuum assisted brooms, and blowers.

Remove pavement markings at least 24 hours in advance of paving operations.

Remove any loose crack sealing material in advance of paving operation. Prior to application of the microsurface, the Contractor shall properly seal all cracks in accordance with SS-280.

Remove Existing Thermoplastic markings and clean existing waterborne paint markings prior to the application of the microsurface. See SS-2555 for additional information about cleaning of the airfield pavement markings.

Any vegetation overgrowth along the shoulders shall be cut back from the pavement surface.

No tack coat will be required.

Contractor is required to protect all electrical equipment and fixtures within the project limits from any microsurfacing operations. Any damage to this equipment, shall be repaired by the Contractor at his/her expense.

Contractor is required to protect all pavements NOT included in the project limits.

Contractor shall provide written certification the surface has been properly prepared (cleaned) and ready for application of the microsurface application.

225-4.5 CALIBRATION. Before mix production, calibrate the mixing equipment in the presence of the Engineer. The equipment shall be calibrated with the materials to be used on the project. Generate documentation for the Engineer, including individual calibrations of each material at various settings. Perform a new calibration if there is any change in the mix design. Following calibration and adjustments for changes in the mix design, do not make any further calibration adjustments to the mixing equipment without the Engineer’s approval.

225-4.6 APPLICATION. Apply the paving mixture in a manner to fill minor surface irregularities and achieve a uniform surface without causing streaking, drag marks, skips, lumps, or tears. Carry a sufficient

amount of material in the spreader box at all times to ensure complete and uniform coverage. Avoid overloading the spreader box. Do not allow lumping, balling, or unmixed aggregate in the spreader box.

Maintain straight edge lines along shoulders. Do not allow runoff in these areas. Immediately remove excess material from the ends of each run.

Use squeegees and lutes to spread the mixture in areas inaccessible to the spreader box and areas requiring hand-spreading. With the Engineer's approval, adjust the mix-set additive to provide a slower setting time if hand-spreading is needed. Do not adjust the water content. If hand-spreading, pour the mixture in a small windrow along one edge of the surface to be covered, and spread it uniformly by a hand squeegee or lute. Do not over spray the mixture with water by the use of a hose or other equipment. Hand squeegee may be required to ensure microsurface material is applied to the outer edge of the pavement surface.

The Contractor will be required to roll the microsurface prior to opening to aircraft traffic. The rolling operations shall be completed by a pneumatic-tire roller to improve durability. The surface shall be subjected to a minimum of two (2) full passes by the roller. These rolling passes are to be completed as soon as the microsurface will support the roller without damaging the surface. The number of required roller passes will be established on the test strip. The surface shall be rolled until all aggregate is noticeably embedded in the emulsion and to the approval of the engineer. At no time will a steel drum roller be allowed to roll the microsurface.

The fresh microsurface shall be protected by barricades and markers and permitted to dry for four (4) to 24 hours, depending on weather conditions. Any damage to uncured microsurface shall be repaired at the expense of the Contractor.

If the final surface is not uniform in texture, free from streaks, drag marks, lumps, or tears, stop applying mixture and correct the problem. Do not resume work until the engineer is satisfied the problem has been corrected. If surface correction is necessary, due to traffic, rain, or other causes during construction of the project, repair areas of the surface.

The finished surface shall have no more than four (4) tear or drag marks greater than 1/2 inch wide and 4 inch long in any 12-foot by 22-foot section. It shall have no tear or drag marks greater than 1 inch wide and 3 inch long. The finished surface shall have no transverse ripples of 1/4 inch or more in depth, as measured with a 12-foot straightedge laid upon the surface. Adjacent lanes shall be lapped at the edges a minimum of 2 inch with a maximum of 4 inch to provide complete sealing at the overlap. Construction longitudinal and transverse joints shall be neat and uniform without buildup, uncovered areas, or unsightly appearance. All joints shall have no more than 1/4 inch difference in elevation when measured across with a 12-foot straightedge.

If excessive flushing or bleeding occurs within 30 to 60 days after the treatment is applied, corrective work will be required at the contractor's expense.

Upon completion of the project, the Contractor shall sweep the finished surface with a conventional power rotary broom, to remove any potential loose material from the surface. The material removed by sweeping shall be disposed of in a manner satisfactory to the Engineer.

The Contractor is responsible for protecting the newly applied microsurface from damage.

ACCEPTANCE AND VERIFICATION

225-5.1 PROPORTION AND SPREAD RATE. Maintain continuous control of the emulsified asphalt-to-dry aggregate proportion to conform to the approved mix design within a tolerance of ± 2 gal/ton. Ensure the spread rate satisfies the specified quantity of aggregate per square yard on a dry-weight basis.

The Contractor shall calculate the yield of the course being placed from the equipment computer display

readings. If no request is made by the Engineer, the Contractor shall calculate the yield of the course being placed from the equipment computer display readings randomly, a minimum of 3 times a day and at the end of each day(s) of production.

The Department will base acceptance of the emulsified asphalt-to-dry aggregate proportion and the spread rate on the Engineer's summary of daily quantities. The Department will accept a day's application of microsurfacing provided the Engineer's summary indicates conformance with the requirements for proportion and spread rate.

225-5.2 EMULSIFIED ASPHALT. Submit samples of the polymer-modified emulsion to the Division of Materials for testing at a frequency of one sample per lot.

225-5.3 MIXTURE GRADATION. The Department will perform combined-gradation determinations on the aggregates used in the microsurfacing at a frequency of one per day of production. When the combined-gradation fails to meet the master range for the type of aggregate, the entire surface will be rejected

225-5.4 DOCUMENTATION. The Contractor shall maintain a daily report including the following information:

- Aggregate used, ton (dry)
- Microsurfacing emulsion used, ton
- Cement used, ton
- Water used in mixture, gallons
- Additive used in mixture, gallons
- Moisture Content
- Yield, dry aggregate lb/yd²
- Square yards placed
- Rate of Application

225-5.5 TEST STRIP CONSTRUCTION. Prior to production application, the Contractor shall place a test section 1,000 ft. in length and one lane wide. The test strip shall demonstrate the mix, rate verification, roller operations, surface texturing, and set time of the material. If handwork will be required on the project, include handwork in the test strip. The test strip shall be placed at the same general time of day as paving is to take place (night or day), and under similar ambient conditions. If aggregate cannot be properly embedded or if excessive drag marks are present in the surface, the emulsion or mixture must be adjusted and another test strip will be required. Upon approval of the test strip, the Contractor can begin full production. Payment will only be made for the first test strip accepted by the Engineer and will be included in the quantity for microsurface application.

225-5.6 QUALITY CONTROL PLAN. The Contractor is responsible for providing a quality control plan associated with the microsurfacing application. This quality control plan shall be presented to all parties at the preconstruction meeting. No work shall commence without an approved quality control plan. At a minimum, the quality control plan shall include the material being tested, the frequency of the tests (sampling), and the corrective actions in lieu of failed test. Contractor shall also include their calibration methods in the quality control plan.

Sieve Analysis of Fine and Coarse Aggregates (AASHTO T27, ASTM C136) – one test per 500 tons of aggregate.

Standard Test Method for Oversized Particles in Emulsified Asphalts (ASTM D6933) – one test per day or one test for each transport load delivered to site, whichever occurs more frequently.

Mineral filler sampling and testing shall be once per day.

METHOD OF MEASUREMENT AND PAYMENT

225-4.1 The surface microsurfacing course shall be measured by the number of square yards, complete and accepted in place.

The width of the pavement course will be based on the width shown on the plans and as directed by the Engineer. The length of pavement will be measured along the centerline of the runway.

225-4.2 Surface Preparation shall be measured and paid for as a lump sum completed item. This shall consist of preparing the surface for installation of the microsurface. This includes, but not limited to, cleaning of the airfield pavement markings and pavement surface.

BASIS OF PAYMENT

255-5.1 The Department will consider the unit bid price per square yard to include all labor, materials, and equipment necessary to complete the work. The Department will make payment for the completed and accepted quantities according to the following:

Test	Specification	100% Pay	90% Pay	80% Pay	50% Pay	0% Pay
CQS-1hP						
Viscosity, 77 ° F (SFS) AASHTO T 59	20 - 100	18 - 110	15 - 17 111 - 120	12 - 14 121 - 130	9 - 11 131 - 140	≤8 ≥ 141
Residue Penetration, 77 °F AASHTO T 59	40 - 90	37 - 98	34 - 36 99 - 108	31 - 33 109 - 120	28 - 30 121 - 130	≤ 27 ≥ 131
Softening Point, AASHTO T 53	≥ 135	≥ 130	127 - 134	128 - 129	126 - 127	≤ 125
Distillation Residue, % AASHTO T 59, 350°F	≥ 62.0	≥ 60.0	59.5	59.0	58.5	≤ 58.4
Sieve, % AASHTO T 59	≤ 0.1	≤ 0.3	0.31 - 0.45	0.46 - 0.60	0.61 - 0.75	≥ 0.76
Residue Elastic Recovery @ 50 ° F, % AASHTO T 301	≥ 60.0	≥ 58.0	57.0	56.0	55.0	≤ 54.9
Residue Ductility @ 77 ° F, cm	≥ 40	≥ 38	37	36	35	≥ 34

If the Department determines that the minimum rate of application has not been obtained for each day of production, then the Department will reduce the bid payment as according to Tables 3, 4, and 5 listed below:

Table 3

Payment Based on Rate of Application for 18 lb/yd²	
Rate of Application of Per Day of Production (lb/sy)	Reduction of Payment (%)
18 and Greater	100
17.9 - 17.5	95
17.4 - 17.0	90
16.9 - 16.5	80
16.4 - 16.0	70
15.9 and Below	50

Table 4

Payment Based on Rate of Application for 14 lb/yd²	
Rate of Application of Per Day of Production (lb/sy)	Reduction of Payment (%)
14 and Greater	100
13.9 - 13.5	95
13.4 - 13.0	90
12.9 - 12.5	80
12.4 - 12.0	70
11.9 and Below	50

Table 5

Payment Based on Rate of Application for 24 lb/yd²	
Rate of Application of Per Day of Production (lb/sy)	Reduction of Payment (%)
24 and Greater	100
23.9 - 23.5	95
23.4 - 23.0	90
22.9 - 22.5	80
22.4 - 22.0	70
21.9 and Below	50

Payment will be made under:

Item SS-225-5.1
 Item SS-225-5.2

Micro Surfacing-Surface Course – per Square Yard
 Surface Preparation – Lump Sum

END OF ITEM SS-225

ITEM SS-255 PAVEMENT MARKING

DESCRIPTION

255-1.1 This item shall consist of the preparation and painting of numbers, runway markings, and centerline stripes on the airfield in accordance with these specifications and at the locations shown on the plans, or as directed by the Engineer. The terms “paint”, “striping”, and “marking material” as well as “painting” and “application of markings” are interchangeable throughout this specification.

MATERIALS

255-2.1 PAINT. Materials for pavement marking shall be KYTC waterborne acrylic paint that conforms to the composition requirements in the table below. In general, taxiway centerline pavement markings are yellow and runway pavement markings are white. Waterborne black outline paint will be required on all airfield pavement markings and as noted on the plans. Paint for outlining the markings shall be furnished in black (37038) in accordance with Federal Standard No. 595. The black outline shall be six inches in width. Material for black paint shall be submitted to the Engineer for review prior to application. No black outline will be necessary on the taxiway centerline markings

Table 1. Paint Composition:

Property and Test Method	Yellow	White
Daytime Color (CIELAB) Spectrophotometer using illuminant D65 at 45° illumination and 0° viewing with a 2° observer	L * 81.76 a * 19.79 b * 89.89 Maximum allowable variation of 4.0ΔE*	L * 93.51 a * -1.01 b * 0.70 Maximum allowable variation of 4.0ΔE*
Nighttime Color (CIELAB) Spectrophotometer using illuminant D65 at 45° illumination and 0° viewing with a 2° observer	L * 86.90 a * 24.80 b * 95.45 Maximum allowable variation of 4.0ΔE*	L * 93.45 a * -0.79 b * 0.43 Maximum allowable variation of 4.0ΔE*
Heavy Metal Contents	Comply with 40 CFR 261	Comply with 40 CFR 261
TiO ₂ ASTM D4746	NA	10% by wt. of pigment min.
VOC ASTM D2369 and D4017	1.25-lb/gal max.	1.25-lb/gal max.
Contrast Ration (at 15 mils wft.)	0.97	0.99

The Contractor shall furnish manufacturer’s certified test reports for each material shipped to the project. The certified test reports shall include a statement that the materials meet the specification requirements. Clearly state the manufacturer, product name, product code, lot number(s), expiration date, color, sampling method, test results of manufacturer required testing, and quantity delivered. Manufacturer’s test results that are required by the Engineer are those listed in Section 842.03 Manufacturer’s Testing of the Standard Specifications for Road and Bridge Construction, Kentucky Transportation Cabinet, 2012 Edition, or latest edition.

The Contractor will be responsible for providing sufficient material to KYTC representatives for quality control and material testing for the pavement markings to be used on the project.

255-2.2 REFLECTIVE MEDIA. Use beads that will ensure the pavement marking material will meet retroreflectivity requirements. Glass beads shall meet the gradation requirements of at least one of the requirements listed below. The Contractor will be responsible for evaluating the gradation of the selected beads used on this project. The Contractor shall have gradation test results readily available for Engineer’s review.

KYTC Type I Glass Beads
 FAA TT-B-1325D Type I

FAA TT-B-1325D Type III
FAA TT-B-1325D Type IV

Glass beads shall be treated with all compatible coupling agents recommended by the manufacturers of the paint and reflective media to ensure adhesion and embedment.

Glass beads shall be distributed upon the marked areas to receive glass beads immediately after final application of the paint. A dispenser shall be furnished that is properly designed for attachment to the marking machine and suitable for evenly dispensing glass beads. Glass beads shall be applied at the rate shown in Table 3. Glass beads shall adhere to the cured paint or all marking operations shall cease until corrections are made. Regular monitoring of glass bead embedment should be performed.

Retroreflectivity requirements shall be those required in Section 713.03.05A "Proving Period - Requirements" of the Standard Specifications for Road and Bridge Construction, Kentucky Transportation Cabinet, 2012 Edition, or latest edition.

KYTC will be responsible for performing and recording the retroreflectivity test results. The Contractor will be responsible for paying for any additional retest resulting from failed tests. Retroreflectivity shall be measured by a portable retro reflectometer according to ASTM E1710 and practices in ASTM D7585 shall be followed for taking retroreflectivity readings with a portable retro reflectometer and computing measurement averages. These measurements shall be taken between 30 and 60 days after installation of final markings.

Minimum retroreflectivity requirements:

White: 300 mcd/lux/square meter
Yellow: 225 mcd/lux/square meter

CONSTRUCION METHODS

Pavement Marking shall be constructed in accordance with the applicable requirements of Section 713 of the Standard Specifications for Road and Bridge Construction, Kentucky Transportation Cabinet, 2012 Edition, or latest edition – "Permanent Pavement Striping", unless augmented within this specification.

255-3.1 WEATHER LIMITATIONS. The painting shall be performed only when the surface is dry and when the surface temperature is at least 70°F and rising and at least 5°F above dew point or meeting manufacture's recommendations. Markings shall not be applied when the pavement temperature is greater than 120°F. Markings shall not be applied when the wind speed exceeds 10 mph unless windscreens are used to shroud the material guns.

255-3.2 EQUIPMENT. Equipment shall include the apparatus necessary to properly clean existing surface (*low-pressure water blaster with vacuum recovery system*), a mechanical marking machine, a bead dispensing machine, and such auxiliary hand-painting equipment as may be necessary to satisfactorily complete the job.

The mechanical marker shall be an atomizing spray-type or airless-type marking machine suitable for application of traffic paint. It shall produce an even and uniform film thickness at the required coverage and shall apply markings of uniform cross-sections and clear-cut edges without running or spattering and without over spray.

255-3.3 PREPARATION OF SURFACE FOR MICROSURFACING. Prior to installation of the microsurface, the Contractor shall adequately clean the markings with a combination of bleach, water, and other additives necessary to thoroughly clean the pavement markings and ensure a good bond for the microsurface to the underlying pavement markings. The Contractor shall NOT remove the markings, nor

damage the surrounding airfield pavements. Any damaged caused during the marking removal shall be repaired by the Contractor at no additional cost to the Owner.

The existing runway and taxiway pavement marking stripes shall be cleaned without damaging the existing pavement. The markings shall be removed through the use of high-pressure water or other methods approved by the Engineer before removal operations begin.

255-3.4 PREPARATION OF SURFACE FOR PAVEMENT MARKINGS. After the microsurface has been completed and immediately before application of the paint, the surface shall be dry and free from dirt, grease, oil, laitance, or other foreign material that would reduce the bond between the paint and the pavement. The area to be painted shall be cleaned by waterblasting or by other methods as required to remove all contaminants without damage to the pavement surface. Use of any chemicals or impact abrasives during surface preparation shall be approved in advance by the Engineer. After the cleaning operations, sweeping, blowing, or rinsing with pressurized water shall be performed to ensure the surface is clean and free of grit or other debris left from the cleaning process.

Prior to the initial application of markings, the Contractor shall certify in writing that the surface has been prepared in accordance with the paint manufacturer's requirements, that the application equipment is appropriate for the type of marking paint and that environmental conditions are appropriate for the material being applied. This certification along with a copy of the paint manufacturer's surface preparation and application requirements must be submitted and approved by the Engineer prior to the initial application of markings.

For rework only, the existing painted surface shall be cleaned by high-pressure water blasting, as required, to remove all foreign material which would reduce the bond between the new paint and the old paint. No separate payment will be made for rework.

255-3.5 LAYOUT OF MARKINGS. The proposed markings shall be laid out in advance of the paint application. The marking layout has been provided in the plans. The Contractor is responsible for laying out the markings by a licensed surveyor. Glass beads shall be applied to all final white and yellow pavement markings. The Contractor shall leave time in his/her schedule to complete this layout. No separate measurement or payment will be made for layout of markings.

255-3.6 APPLICATION. Paint shall be applied at the locations and to the dimensions and spacing shown on the plans. Paint shall not be applied until the layout and condition of the surface has been approved by the Engineer. The edges of the markings shall not vary from a straight line more than 1/2 inch in 50 feet, and marking dimensions and spacing shall be within the following tolerances:

Table 2. Tolerances:

Dimension and Spacing	Tolerance
36 inch or less	±1/2 inch
greater than 36 inch to 6 feet	±1 inch
greater than 6 feet to 60 feet	±2 inch
greater than 60 feet	±3 inch

The paint shall be mixed in accordance with the manufacturer's instructions and applied to the pavement with a marking machine at the rate shown in Table 3. The addition of thinner will not be permitted. When pavement markings are required on a newly placed pavement or surface treatment, the pavement markings shall be completed in two applications. The first application shall be 33% of the application rate specified in Table 1. The second application shall be 100% of the application rate specified in Table 1. A minimum period of 24 hours shall elapse between placement of a new pavement or surface treatment and the first application of pavement marking. A minimum period of 30 days shall elapse between placement of a proposed pavement and the final application of the pavement marking. All glass beads shall only be included in the final application of the pavement markings.

Prior to the initial application of markings, the Contractor shall certify in writing that the surface has been prepared in accordance with the paint manufacturer’s requirements, that the application equipment is appropriate for the marking paint and that environmental conditions are appropriate for the material being applied. This certification along with a copy of the paint manufactures application and surface preparation requirements must be submitted to the Engineer prior to the initial application of markings.

Table 3. Application Rates For Paint And Glass Beads:

Material	Paint Application Rate ¹	Glass Bead Application Rate
Yellow Waterborne Paint	Min. of 24.8 gal/mi. (107 ft ² /gal min. 115 ft ² /gal max.)	Min. of 6-lb/gal.
White Waterborne Paint	Min. of 24.8 gal/mi. (107 ft ² /gal min. 115 ft ² /gal max.)	Min. of 6-lb/gal

¹Application rates have been modified to meet the requirements for this specific project.

Glass beads shall be distributed upon the white and yellow marked to receive glass beads immediately after final application of the paint. A dispenser shall be furnished that is properly designed for attachment to the marking machine and suitable for dispensing glass beads. Glass beads shall be applied at the rate shown in Table 1. Glass beads shall not be applied to black paint or green paint. Glass beads shall adhere to the cured paint or all marking operations shall cease until corrections are made. Different bead types shall not be mixed. Regular monitoring of glass bead embedment should be performed.

All emptied containers shall be returned to the paint storage area for checking by the Engineer. The containers shall not be removed from the airport or destroyed until authorized by the Engineer.

Prior to the final application of airfield markings, the Contractor shall produce a test strip in the presence of the Engineer. The test strip shall include the application of a minimum of 5 gallons of paint and application of 50 lbs of glass beads. The test strip shall be used to establish thickness/darkness standard for all markings. The test strip shall cover no more than the maximum area prescribed in Table 1 (e.g., for 5 gallons of waterborne paint shall cover no more than 450 square feet).

255-3.7 PROVING PERIOD. Proving period requirements, failures, and corrective work shall meet the requirements of Section 713.03.05 of the Standard Specifications for Road and Bridge Construction, Kentucky Transportation Cabinet, 2012 Edition, or latest edition – “Permanent Pavement Striping”. The Engineer will reserve the right to make final acceptance of pavement markings based on retroreflectivity test results.

255-3.8 PROTECTION AND CLEANUP. After application of the markings, all markings shall be protected from damage until dry. All surfaces shall be protected from excess moisture and/or rain and from disfiguration by spatter, splashes, spillage, or drippings. The Contractor shall remove from the work area all debris, waste, loose or unadhered reflective media, and by-products generated by the surface preparation and application operations to the satisfaction of the Engineer. The Contractor shall dispose of these wastes in strict compliance with all applicable state, local, and Federal environmental statutes and regulations.

METHOD OF MEASUREMENT AND PAYMENT

255-4.1 No separate measurement or payment shall be made for surface preparation associated with preparing the surface prior to installation of the pavement markings. All work associated with cleaning or preparing the surface for layout and pavement marking shall be subsidiary to the individual paint items.

255-4.2 The quantity of pavement markings to be paid for shall be the number of square feet of painting performed in accordance with the specifications and accepted by the Engineer. Reflective media shall not be measured for separate payment but shall be considered subsidiary to runway and taxiway painting items. Measurement for “R/W & T/W Paint - Yellow Waterborne”, “R/W & T/W Paint - White Waterborne” and “R/W & T/W Paint – Black” shall be based on markings installed as shown on the plans and as

described on the summary of quantities plan sheet not to exceed plan quantities. These quantities are believed to be correct and shall be utilized for final marking payment notwithstanding any adjustments to the project by written direction of the Engineer. Should the contractor find discrepancies and/or errors, he/she shall bring the discrepancy and/or error to the attention of the Engineer immediately and corrections shall be made to the marking quantities paid for by change order. No separate payment will be made for black paint markings used to outline the runway hold positions.

If multiple pavement marking applications are specified, temporary pavement markings shall be paid for as 33% of the bid contract bid price for runway and taxiway markings and final pavement markings shall be paid for as 67% of the contract bid price. If either the temporary or final application of pavement markings are not required, the contract quantity shall be adjusted according to the markings actually completed.

255-4.3 No separate payment will be made for black outline paint associated with the runway markings or runway hold position markings.

255-4.4 Surface Preparation of the pavement markings prior to installation of the microsurface, will NOT be measured and paid for under SS-255. Rather this shall be considered subsidiary to the Surface Preparation associated with cleaning of the airfield pavements prior to installation of the microsurface. This shall be measured and paid for under SS-225 Microsurface.

BASIS OF PAYMENT

255-5.1 Payment shall be made at the respective contract price per square foot for pavement markings. This price shall be full compensation for furnishing all materials including reflective media if required and for all labor, equipment, tools, and incidentals necessary to complete the item.

Payment will be made under:

Item SS-255-5.1	R/W & T/W Paint - Yellow Waterborne – per Square Foot
Item SS-255-5.2	R/W & T/W Paint - White Waterborne – per Square Foot
Item SS-255-5.3	R/W & T/W Paint - Black – per Square Foot

END OF ITEM SS-255

PROPOSAL BID ITEMS

191209

Page 1 of 1

Report Date 3/19/19

Section: 0001 - PAVING

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0010	40000		SITE PREPARATION	1.00	LS		\$	
0020	40003		LOCKOUT-TAGOUT AND CC REGULATOR CAL PRO	1.00	LS		\$	
0030	40043		R/W & T/W PAINT-WHITE WATERBORNE	69,450.00	SQFT		\$	
0040	40044		R/W & T/W PAINT-YELLOW WATERBORNE	11,995.00	SQFT		\$	
0050	40046		REFINED COAL TAR EMUL FOR SLURRY COAT	4,851.00	GAL		\$	
0060	40047		SODDING	21,130.00	SQYD		\$	
0070	40069		PAVEMENT CRACK REPAIR-METHOD 1	10,500.00	LF		\$	
0080	40112		PAVEMENT SURFACE PREPARATION	1.00	LS		\$	
0090	40113		PAVEMENT CRACK REPAIR-METHOD 2	39,100.00	LF		\$	
0100	40168		R/W & T/W PAINT-BLACK (REVISED: 3-19-19)	32,509.00	SQFT		\$	
0110	40169		MICROSURFACING-SURFACE COURSE - TYPE B	109,790.00	SQYD		\$	
0120	40170		SHOULDERING	21,130.00	SQYD		\$	

Section: 0002 - DEMOBILIZATION &/OR MOBILIZATION

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0130	02569		DEMOBILIZATION	1.00	LS		\$	



2525 Harrodsburg Rd
Suite 405
Lexington, KY 40504
TEL 859.219.0659
FAX 859.410.2600
www.GarverUSA.com

CELEBRATING
ONE HUNDRED YEARS

1919 to 2019



Addendum No. 1

March 18, 2019

Capital City Airport – Airfield Rehabilitation Project – KYTC Contract ID: 191209

This addendum shall be a part of the Plans, Contract Documents and Specifications to the same extent as though it were originally included therein, and it shall supersede anything contained in the Plans, Contract Documents and Specifications with which it might conflict.

Modifications to Plans:

1. Summary of Quantities Page G1-02
Item No. 10 / KYTC No. 40168 / Spec No. SS-255-5.3 / R/W & T/W Paint – Black / **Revised Quantity from 47,570 SF to 32,509 SF**
2. Pavement Rehabilitation Details Page C-200
Revised Note No. 4 for Detail 2/C2.00. **Specified the milled thickness to 2.25 inches.**

Modifications to Specifications:

1. Item SS-225 Microsurface
Revise Paragraph 225-4.1: Submit a complete mix design to the Division of Construction and to the Division of Materials, Asphalt Branch and Aggregate Section. Mix design shall be prepared by an approved laboratory, to verify the compatibility of the aggregate, asphalt emulsion, mineral filler, and other additives. Perform the mix design with the same materials that will be used on the project.

Ensure the mix design has a residual asphalt content, by dry weight of aggregate, of ~~42.0% to 43.5%~~ **8.5% to 12.0%** for surface courses. Also ensure the mixture contains no reclaimed materials and a mineral filler content between 0.25 and 2.0 percent by dry weight of aggregate.
2. Item SS-255 Pavement Marking
Revise Paragraph 255-2.1: Materials for pavement marking shall be KYTC waterborne acrylic paint that conforms to the composition requirements in the table below. In general, taxiway centerline pavement markings are yellow and runway pavement markings are white. Waterborne black outline paint will be required on all airfield pavement markings and as noted on the plans. The Paint for outlining the markings shall be furnished in black (37038) in accordance with Federal Standard No. 595. The black outline shall be six inches in width. Material for black paint shall be submitted to the Engineer for review prior to application. ~~No black outline will be necessary on the taxiway centerline markings~~
3. Item SS-255 Pavement Marking
Revise Paragraph 255-3.6: Prior to the final application of airfield markings, the Contractor shall produce a test strip in the presence of the Engineer. The test strip shall include the application of a minimum of 5 gallons of paint and application of 50 lbs of ~~Type III~~ glass beads. The test strip shall be used to establish thickness/darkness standard for all markings. The test strip shall cover no more than the maximum area prescribed in Table 1 (e.g., for 5 gallons of waterborne paint shall cover no more than 450 square feet).

Questions and Answers:

1. Question: What type of beads will be permitted on this project?
Answer: The contractor shall use glass beads as specified in section SS-255-2.2 Reflective Media.
2. Question: Can the milled sections (Type II Crack Repair) remain open over night?
Answer: Yes. The milled sections may remain open over night as the runway will be closed.
3. Question: Is the runway closed to fixed wing aircraft only?
Answer: Yes. The runway is closed to fixed wing aircraft only. However, rotary aircraft will still have access to the terminal apron.
4. Question: Is the runway closed to fixed wing aircraft only?
Answer: Yes. The runway is closed to fixed wing aircraft only. However, rotary aircraft will still have access to the terminal apron.
5. Clarification: Item SS-255 – Application rates listed in Table 3 on Page SS-255-4 are the maximum allowable application rate permitted on this project. The Contractor shall determine the applicable application to ensure adequate bead embedment and prevent curling of the pavement markings after being applied to the microsurface. The Contractor shall utilize a test strip to determine the optimum application rate.

ADDENDUM NO. 1 BY:
Mark D. Upchurch, P.E. KY #31589



Attachments:

- G-102 Summary of Quantities
- C-200 Pavement Rehabilitation Details
- Item SS-225
- Item SS-255 Pavement Marking