CALL NO. 335

CONTRACT ID. 212457

LOGAN COUNTY

FED/STATE PROJECT NUMBER FD05 071 0079 009-011

DESCRIPTION CLARKSVILLE ROAD (US 79)

WORK TYPE PAVEMENT (WITH ALTERNATES)

PRIMARY COMPLETION DATE 9/30/2022

LETTING DATE: October 22,2021

Sealed Bids will be received electronically through the Bid Express bidding service until 10:00 am EASTERN DAYLIGHT TIME October 22,2021. Bids will be publicly announced at 10:00 am EASTERN DAYLIGHT TIME.

NO PLANS ASSOCIATED WITH THIS PROJECT.

REQUIRED BID PROPOSAL GUARANTY: Not less than 5% of the total bid.

TABLE OF CONTENTS

PART I

SCOPE OF WORK

ADMINISTRATIVE DISTRICT - 03

CONTRACT ID - 212457

FD05 071 0079 009-011

COUNTY - LOGAN

PCN - MP07100792101
FD05 071 0079 009-011

CLARKSVILLE ROAD (US 79) (MP 9.770) BEGINNING 697 FEET NORTH OF J MONTGOMERY ROAD, ENDING AT AN ASPHALT JOINT APPROX 450 FEET SOUTH OF THE US 431/KY 3240 INTERSECTION (MP 10.624), A DISTANCE OF 0.85 MILES.PAVEMENT (WITH ALTERNATES)

GEOGRAPHIC COORDINATES LATITUDE 36:49:31.00 LONGITUDE 86:54:47.00

COMPLETION DATE(S):

COMPLETED BY 09/30/2022 APPLIES TO ENTIRE CONTRACT

NATIONAL HIGHWAY

Be advised this project is on the NATIONAL HIGHWAY SYSTEM.

SURFACING AREAS

The Department estimates the mainline surfacing width to be varied 21 to 36 feet.

The Department estimates the total mainline area to be surfaced to be 11,709 square yards.

The Department estimates the shoulder width to be varied 1 to 2 feet on each side.

The Department estimates the total shoulder area to be surfaced to be 1,160 square yards.

ASPHALT MIXTURE

Unless otherwise noted, the Department estimates the rate of application for all asphalt mixtures to be 110 lbs/sy per inch of depth.

DGA BASE

Unless otherwise noted, the Department estimates the rate of application for DGA Base to be 115 lbs/sy per inch of depth.

INCIDENTAL SURFACING

The Department has included in the quantities of asphalt mixtures established in the proposal estimated quantities required for resurfacing or surfacing mailbox turnouts, farm field entrances, residential and commercial entrances, curve widening, ramp gores and tapers, and road and street approaches, as applicable. Pave these areas to the limits as shown on Standard Drawing RPM-110-06 or as directed by the Engineer. In the event signal detectors are present in the intersecting streets or roads, pave the crossroads to the right of way limit or back of the signal detector, whichever is the farthest back of the mainline. Surface or resurface these areas as directed by the Engineer. The Department will not measure placing and compacting for separate payment but shall be incidental to the Contract unit price for the asphalt mixtures.

OPTION B

Be advised that the Department will control and accept compaction of asphalt mixtures furnished on this project under OPTION B in accordance with Sections 402 and 403.

SPECIAL NOTE FOR MICROSURFACING

1. DESCRIPTION. 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 lines, grades, and typical cross-sections in the plans or as established by the Engineer.

Unless otherwise noted, Section references herein are to the 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.

2. MATERIALS AND EQUIPMENT.

2.1 Mineral Filler. Use Portland Cement, Type I, conforming to Section 801.

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 one of the following requirements:

Microsurfacing Type A

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

Microsurfacing Type B

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

Microsurfacing Type D

- No polish-resistant aggregate requirements.

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, 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.

2.3 Water. Conform to Section 803.

2.4 Emulsified Asphalt. The polymer-modified emulsion will be a CQS-1hP or a CQS-1hL latex-modified emulsion conforming to AASHTO M 208 and tested according to T59. Distill sample at 350 ˚F. In addition, ensure that the emulsified asphalt conforms to the following criteria:

Test	**Criteria**
Ductility at 77 ˚F (AASHTO T 51)	40 cm (min)

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

2.5 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.

2.6 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 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.

2.7 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.

2.8 Spreading Equipment. If a leveling or surface course is specified, apply the mixture uniformly by means of a conventional spreader box.

If a rut-fill course is specified, apply the mixture with a 5-6ft width, “V-shaped” rut-filling spreader box. Equip the rut-filling spreader box with a steel strike-off device.

Attach either type of spreader box to the mixer, and equip it with augers mounted on an adjustable shaft 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 neoprene rubber drags to obtain the desired finish. Replace drags having excessive buildup. Do NOT use burlap drags.

2.9 Asphalt Distributor. For the application of the emulsion shall have full circulation spray bar that is adjustable to at least 12 feet wide in 2 feet increments and capable of heating and circulating the emulsion simultaneously, conforming to **Section 406.02.05**. It must have computerized rate control for adjusting and controlling the application from the cab within 0.01 gallons per square yard increments. The distributor shall also be equipped with a volume measuring device and a thermometer for measuring the emulsion temperature in the tank. For each emulsion application, follow manufactures recommendations for proper nozzle type and adjustment.

2.10 Calibration Equipment. Supply all of the equipment, materials, and certified scales necessary to perform the calibration according to Section 3.5 of this note.

3. CONSTRUCTION.

3.1 Preparation and Proportioning of Mixture. 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 that the aggregate that is used in the mix design is listed on the Division of Materials *List of Approved Materials (LAM)* for the type of microsurfacing that is being designed.

Ensure the mix design has a residual asphalt content, by dry weight of aggregate, of 7.0 to 8.5 percent for leveling and surface courses and 6.5 to 8.0 percent for rut-filling mixes. 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.

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 ± 0.5%.

3.2 Mixture Gradation. When performing a single microsurface application, conform to the Type II requirements that are listed in Table 1 for surface and leveling courses. When performing a double microsurface application, conform to the Type III requirements that are listed in Table 2 for leveling and rut-fill courses.

3.3 Weather and Seasonal 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 50ºF and rising and no forecasted temperatures shall be below 40°F within a 24 hour period after placement. Do not place the material between September 30 and May 15.

3.4 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 and wire hand brooms.

Remove pavement markers at least 24 hours in advance of paving operation and fill the areas with microsurface material, asphalt material, or other approved material meeting the engineer's specifications. Remove any loose crack sealing material in advance of paving operation.

Remove existing thermoplastic and/or excessive paint markings prior to application.

Contrary to Section 406, apply an approved tack coat material diluted to 2 to 1 at rate of 0.03 to 0.06 gal/yd^2. Application rate shall be adjusted based on the surface texture and/or porosity. Do not apply tack coat on top of a rut fill or leveling course prior to placing surface course. For a double microsurface treatment, do no not apply a tack coat between the first and second application. Apply tack coat only to surfaces that will be covered by the application in the same day. The tack coat material shall be a polymer-modified emulsion CQS-1HP or CSS-1H emulsion.

3.5 Calibration. Before mix production, calibrate the mixing equipment in the presence of the Engineer. 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.

3.6 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.

If a rut-fill course is specified, apply enough material to fill the wheel paths without excess crowning (overfilling). An excess crown is defined as 1/8 in. after 24 h of traffic compaction. Apply rut-fill courses in widths from 5 to 6 ft for each wheel path. If rut depth exceeds 1.0 inches, apply rut fill course in multiple layers. Provide a smooth, neat seam where two rut-fill passes meet. Restore the design profile of the pavement cross-section. Feather the edges of the rut-fill course to minimize the use of excess material. Rut fill course shall not exhibit drag marks or tears greater than 1 inch in width, ½ inch in depth and greater than 12 inches in length. Rut fill course shall not exhibit excessive flushing or excessive roughness.

If a leveling course is specified, ensure the material covers the entire surface area. The leveling course may exhibit minor raveling upon opening to traffic but shall not exhibit any continued raveling after the first four hours to traffic. Leveling course shall not exhibit drag marks or tears greater than ½ inch wide, ¼ inch in depth and greater than 12 inches in length. Leveling course shall not exhibit flushing or excessive roughness.

If a leveling course is specified for a double layer of microsurfacing, utilize a type III aggregate and apply the paving mixture at a minimum dry aggregate rate of 18 lb/yd^2. If a type II mixture is specified to be use as minor leveling, apply the paving mixture at a minimum dry aggregate rate of 14 lb/yd^2. If a surface course is specified over a leveling course for a double layer, utilize a type II aggregate and apply the paving mixture at a minimum dry aggregate rate of 18 lb/yd^2. If a single layer surface course is specified, utilize a type II aggregate and apply the paving mixture at a dry aggregate rate of 24 lb/yd^2. For leveling course provide an even layer creating a neat center seam with no overlap where two passes meet. For surface courses, provide a smooth, neat center seam with a maximum overlap of 2 inches where two passes meet.

Construct surface courses wide enough to cover the outside edges of rut-fill and leveling courses. Maintain straight edge lines along curbs and shoulders. Do not allow runoff in these areas. Ensure that lines at the intersections are straight. 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.

Ensure the material cures at a rate that will permit traffic on the pavement within one hour of placement or time specified by the engineer.

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.

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.

3.7 Crossovers and Intersections. Prior to allowing traffic, the contractor shall broadcast microsurfacing sand or other approved material as directed by the engineer over turnouts, intersections, and/or crossovers as the microsurface material cures. Once the microsurfacing material has properly cured, sweep all loose sand and debris from the intersection/crossover and properly dispose of the material. Contractor shall repair any damaged areas prior to project completion.

3.8 Curb and Gutter/Sidewalk Ramps. When applying microsurface mixture to curb and gutter/sidewalk ramp areas, ensure the final surface is flush with the edge of the gutter pan and/or ramp. The final surface shall comply with all ADA sidewalk ramp requirements as determined by the Engineer. Failure to satisfy these requirements shall result in corrective work at no expense to the Department.

3.9 Transverse Joints. All transverse joints shall be clean and straight. At the start of each day(s) of production and at approaches, place a 5ft minimum width of paper/plastic on the existing pavement. Cover all bridge ends with paper/plastic to ensure no microsurfacing is placed on the bridge. Remove the paper/plastic once the microsurfacing has cured and dispose the excess material from the project site.

Place and spread all courses as continuously as possible, keeping the number of construction transverse joints to a minimum. When a construction transverse joint is necessary, the paving box must be full of material. Do not spread (drag) the remaining material, emptying the paving box. Once the end of the mat and a straight line is created, the paving box shall be lifted and the remaining material shall be removed and disposed of properly off the project limits.

4.0 ACCEPTANCE AND VERIFICATION.

4.1 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.

4.2 Emulsified Asphalt. Submit samples of the polymer-modified emulsion to the Division of Materials for testing at a frequency of one sample per lot.

4.3 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 Department will apply a reduction on the invoice price of the aggregate as listed in Table 1 and Table 2. Contrary to section 804.10 the Department will impose a reduction in payment no matter the quantities used.

4.4 Documentation. The Contractor shall maintain a daily report including the following information:

- Aggregate used, ton (dry)
- Microsurfacing emulsion used, ton
- Bituminous Materials for Tack Coat, 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

4.5 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 and set time of the material and the ability to perform under traffic. 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. The test strip shall be able to carry normal traffic within 60 minutes. If normal traffic cannot be carried, the emulsion or mixture must be adjusted and another test strip will be required. Upon approval of the test strip, the Contractor can begin application. Payment will only be made for the first test strip.

5. MEASUREMENT. The Department will pay for surface and leveling microsurfacing courses by the number of square yards, complete and accepted in place. The Department will pay for microsurfacing rut-fill course by the number of tons of dry aggregate used, complete and accepted in place. The weight of the dry aggregate used will be based on the calibrated weight of aggregate provided by the paving machine.

The Department will base the width of the pavement course on the width shown on the plans or as directed by the Engineer. The Department will measure the length along the centerline of each roadway or ramp.

The Department will not measure the surface preparation for payment and will consider it incidental to the microsurfacing.

The Department will not measure asphalt material for tack for payment and will consider it incidental to microsurfacing

6. PAYMENT. 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:

Emulsified Asphalt Price Adjustment Schedule

Test	Specification	100% Pay	90% Pay	80% Pay	50% Pay	0% Pay
CQS-1hP/CQS-1hL						
Viscosity, 77 º 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 º 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

TABLE 1

GRADATION - MICROSURFACING TYPE II
SAND

Payment Reduction	Sieve Size-Percent Passing							
	3/8	No. 4	No. 8	No. 16	No. 30	No. 50	No. 100	No. 200
0%	100	90-100	60-90	40-70	25-50	15-30	10-21	5-15
10%			58-59	38-39	23-24	13-14	8-9	4
10%	98-100	88-89	91-92	71-72	51-52	31-32	22-23	16
20%			57	37	22	12	7	3
20%	97	87	93	73	53	33	24	17
30%			56	36	21	11	6	2
30%	96	86	94	74	54	34	25	18
50%			55	35	20	10	5	1
50%	95	85	95	75	55	35	26	19

TABLE 2

GRADATION - MICROSURFACING TYPE III
SAND

Payment Reduction	Sieve Size-Percent Passing							
	3/8	No. 4	No. 8	No. 16	No. 30	No. 50	No. 100	No. 200
0%	100	70-100	45-70	28-50	19-34	12-25	7-18	5-15
10%			43-44	26-27	17-18	10-11	5-6	4
10%	98-100	68-69	71-72	51-52	35-36	26-27	19-20	16
20%			42	25	16	9	4	3
20%	97	67	73	53	37	28	21	17
30%			41	24	15	8	3	2
30%	96	66	74	54	36	29	22	18
50%			40	23	14	7	2	1
50%	95	65	75	55	35	30	23	19

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

Code	Pay Item	Pay Unit
40173	Microsurfacing-Surface Course - Type A	Square Yard
24957EC	Microsurfacing-Surface Course - Type B	Square Yard
24958EC	Microsurfacing-Surface Course - Type D	Square Yard
21652EN	Microsurfacing-Leveling Course	Square Yard
24515EC	Microsurfacing-Rut Fill Course	Ton

SPECIAL NOTE FOR POLISH-RESISTANT AGGREGATE IN NO 4 THINLAY ASPHALT MIXTURES

Contrary to Section 409.03.03 of the *Standards and Specifications*, for 4.75mm asphalt mixtures requiring Class D aggregate, recycled asphalt pavement (RAP) shall not exceed 15% of cold feed percentage, and the use of recycled asphalt shingles (RAS) is prohibited.

Contrary to Section 402 of the *Standards and Specifications*, Warm Mix Asphalt (WMA) will not be permitted for all 4.75mm asphalt mixtures.

Contrary to Section 403.03.01 the NO 4 surface mixtures, do not place the mixture between September 30 and May 1 unless requested in writing and approved by the engineer.

SPECIAL NOTE FOR FINE MILLING

FD05 071 0079 009-011

Perform Fine Milling at areas outlined in the Typical Sections and as directed by the Engineer.

A. Equipment. Provide a cold milling machine with a fine tooth milling drum and an electronic grade control system. The tool spacing of the drum shall not exceed 3/8 inch. The machine shall be equipped with a grade control system capable of determining a mean value from a minimum of three grade sensors. The sensors shall span a minimum length of 20 feet longitudinally. The drum must be capable of producing a macrotexture measurement greater than or equal to 9.5 inches as described in C. Testing.

B. Construction. The milling machine shall be operated as a speed and drum revolution per minute such that the macrotexture measurement is greater than or equal to 9.5 inches as described in C. Testing and the milled pavement profile does not vary longitudinally more than ¼ inch from a 16' straight edge. Maintain the milling drum such that the cross-slope does not vary more than 1/8 inch from a 10 foot straightedge. Milling shall be performed so that the cross-slope breaks between driving lanes and shoulders remain at their existing locations**. Depth of milling shall be set so as to remove rutting, rumble strips, profile errors, heaving sections, etc**. Contractor will take possession of all millings from milling operations. The milled surface shall be swept clean of all loose material after milling and prior to resurfacing. Prior to resurfacing, allow traffic to drive on the milled surface for a minimum of 5 days to permit the removal of fine dust from the milled surface. **Please note, Fine Milling is to be applied to both the Microsurfacing and Thinlay alternates.**

C. Testing. Testing shall be performed to determine the macrotexture of the milled pavement surface at a random location chosen in accordance with Kentucky Method KM 64-113-14. Test area shall be cleaned with a stiff wire and or soft bristle brush and protected with a wind screen as necessary. Pour 200 ml of Type 1 glass beads (meeting AASHTO M247) from a height of 4 inches or less onto the milled pavement surface. Using a round plexiglass disk (8 inches in diameter x ½ inch thick) with a round handle, place gently on the pile of beads and spread in a slow circular motion to disperse the beads in a circular area and create a defined crest around the perimeter. Continue spreading until the beads are well dispersed and the disk rides on top of the high points of the milled pavement surface. Measure the diameter of the pile in inches at 0 degrees, 45 degrees, 90 degrees and 135 degrees. Determine the macrotexture measurement in inches by adding the four measurements and dividing by four. Frequency of testing shall be a minimum of once daily and additional testing will be performed as determined necessary by the project engineer.

D. Measurement. The Department will measure Fine Milling in Sq. Yds. of surface milled.

E. Payment. Payment at the contract unit price per Sq. Yd. of Asphalt Pavement Milling and Texturing (Fine Milling) shall be full compensation for all equipment, labor, materials, and incidentals necessary to complete the operations described herein.

Special Note for Thermo Striping Application

Contrary to Section 714.02.05 of the Standard Specifications for Road and Bridge Construction, thermoplastic application will be required to be by ribbon gun at all locations that are to be applied over milled rumble strips in lieu of an extrusion application.

SPECIAL NOTE FOR FIBER REINFORCED BITUMNOUS MEMBRANE SURFACE TREATMENT (CHIP SEAL WITH FIBERS)

1. DESCRIPTION. Construct a fiber reinforced membrane interlayer (FRM-IL) after which a wearing surface shall be placed upon. Fiber reinforced membrane interlayer shall be constructed in a single operation comprised of a layer of polymer modified asphalt emulsion, a layer of chopped and placed fibers, and second layer of polymer modified asphalt emulsion, to which is covered immediately with aggregate. The FRM-IL shall completely seal the entire pavement surfaced and provide a uniform plane suitable for a wearing surface of Hot Mix Asphalt or Microsurafcing.

2. MATERIAL AND EQUIPMENT.

Asphalt Material. Furnish undiluted CRS-2P polymer modified emulsion that conforms to **AASHTO M 316** and the requirements **Section 806.05.**

When surface cracks have been previously crack sealed, CRS-2P may be required. Otherwise, application shall require undiluted CMS-1P or CMS-1PC polymer modified emulsion that meets requirements below:

EMULSIFIED ASPHALT SPECIFICATION			
PROPERTY	**METHOD**	**SPECIFICATION**	
		CMS-1P	**CMS-1PC**
Test on Emulsion			
Viscosity @ 122 ˚F (SFS)	AASHTO T 59	75 – 275	75-275
Residue, w%, minimum. (1)	AASHTO T 59	67	60
pH	ASTM E 70	2.0-5.0	2.0-5.0
Sieve, w%, max.	AASHTO T 59	0.1	0.1
Oil distillate, w%, max.	AASHTO T 59	0.5	0.5
TEST ON RESIDUE			
Viscosity @ 140 °F, P, maximum.	AASHTO T 201	3000	-
Penetration @ 39.2 °F, minimum.	AASHTO T 49	40	30
Elastic Recovery on residue by distillation, %, minimum (2)	AASHTO T 301	50	50
Test on Polymer:			
Tensile strength, die C dumbbell, psi, minimum	ASTM D 412 (3)	500	800
Swelling in rejuvenating agent, % maximum; 48 hours exposure @ 104 °F	ASTM D 471 (4) Modified	40% intact film	40%
Latex Density @ 73 °F	ASTM D 6937 (5,6)	-	1.00-1.05
TEST ON REJUVENATING AGENT:			
Flash point, COC, °F	AASHTO T 48	380 Min	
Viscosity, 140 °F, CST	AASHTO T 201	50-175	
Saturate, % by wt.	ASTM D 2007	30 Max	
Asphaltenes	ASTM D 2007	1.0 Max.	
Test on Residue from RTFO	AASHTO T 240		
Weight Change, %		6.5 Max.	
Viscosity Ratio		3 Max	

(1) Exception to AASHTO T59: Bring the temperature on the lower thermometer slowly to 350 ± 10 ˚F. Maintain at this temperature for 20 minutes. Complete total distillation in 60 ± 5 min from first application of heat.

(2) Elastic Recovery @ 10 ˚C (50 ˚F): Hour glass sides, pull 20 cm, hold 5 minutes then cut, let sit 1 hour.

(3) Tensile Strength Determination: Samples for testing for tensile strength in accordance with ASTM D412 shall be tested with the following test procedure modifications:

(4) Prepare the polymer film, dilute the waterborne polymer to 40% Total Solids Content and pour 57 g into a Teflon or silicone release mold of dimensions 7" X 7" X ¼". Allow to dry at 23°C (73 °F) and 50% RH (controlled conditions) for 7 – 10 days total time, during which time the film should be flipped around once, preferably after 3 or 4 days. The film should be transparent in the end. To drive out any residual water, place the film in an oven at 50 °C for 30 min. Dried film thickness should be 25 ± 5 mils. Discard films <20 mil. Cut out dumbbell-shaped test specimens of dimension 75 mm total length, 25 mm mid-section (L) and 4 mm width of mid-section. Grip in Instron machine with gap size 1 inch, use 8 in/min cross-head speed.

(5) Polymer testing shall be prepared from polymer as follows: Resistance to Swelling: Using a syringe, place 0.8 g of latex into an 18 mm diameter DSR mold. Allow the sample to dry at ambient lab conditions (air conditioned) on the bench for 72 hours. Sample should be easily removable from the mold. Take the "button" out of the mold and place the sample into a forced air oven at 40 °C (104 °F) for 48 h (on release paper). If at the end of the ambient dry, the sample sticks to the mold, place it into the oven and check it after 1-2 h. After 48 h, cool and weigh the sample to the nearest 0.0001 g and record the weight. Put ½ in of Rejuvenating Agent into a 3 oz penetration tin. Place the "button" on the rejuvenating agent, and add another ½ in of rejuvenating agent, so that the "button" is covered. Put the cap on the penetration tin and place it into the 40 °C oven for 48 h. Remove the "button from the Rejuvenating Agent, blot surface of the "button" to remove excess Rejuvenating Agent, cool the "button" to room temperature and weigh it. Calculate weight gain of the "button", express as a percent.

(6) Replace "Emulsified Asphalt" with "Latex" in text of test method. The testing temperature used should be 25 ± 3 ˚C. The calculation in Section 7 should be as follows:

$$D = (W_f - W_t) * 0.1$$
$$S.G. = D / 8.337$$

Where: W_f = Weight of filled cup (g)
W_t = Weight of empty cup (g)

The Department will require a sample of the polymerized emulsion to be taken from the distributor spray bar at a lot frequency of one sample per 5,000 gallons of emulsion. Take two 1 gallon samples of the heated material and forward the sample to the Division of Materials for testing. Ensure the product temperature is between 160° and 180° F at the time of sampling.

Glass Fibers. Glass fibers shall be Type E in accordance with ASTM D578-05, paragraph 4.2.2 and be certified by supplier. The glass fibers shall be supplied in internally wound spools, coils or cheeses. **During** placement the glass fibers shall be immediately cut into 60mm, (2.38") nominal lengths and uniformly distributed across and between two parallel applications of polymer modified asphalt emulsion.

Aggregate. Provide a cleaned damp aggregate cover material from an approved aggregate producer and shall meet the material requirements that conform to **Section 805**, as applicable. Contrary to section 805.05.04 provide coarse aggregates having no more than 2.0 percent passing the No. 200 sieve.

Equipment. Provide, and keep on the project at all times, an accurate thermometer, hand brooms, and other small tools and equipment essential for completion of the work.

Calibration of equipment application rates shall be completed prior to application or as directed by the engineer. A test strip shall be required at the beginning of each new project or as directed by the engineer.

The asphalt distributor/fiber applicator shall be two separate spray bars, one in front of fiber applicator housing and one following it. The fiber cutter and distributor shall be integrated unit. The integrated applicator shall be comprised of an open bottom spray housing, a fan or blower producing a down draft in the housing, and at least one spray bar mounted on the housing and adapted to extend transversely in the direction of movement of the vehicle on which the applicator is mounted. A number of sources for dispensing cut glass fiber through the open bottom housing to the surface of the emulsion previously sprayed shall also be included. The integrated applicator shall have been calibrated within the last 12 months for transverse and longitudinal distribution application rates according to ASTM D2995, Practice for Determining Application Rate of Bituminous Applicator or other suitable method.The bituminous fiber applicator shall be equipped, maintained and operated so that emulsion materials can be applied at controlled rates from 0.1 l/m2 (0.022 gal/SY) to 2.7 l/m2 (0.56 gal/SY).

The aggregate spreader shall be a front discharge, continuous mechanical feed, self-propelled aggregate spreader with a screen capable of removing oversized materials. It must have computerized control for adjusting and regulating application rates, as well as width, from the operating platform. Ensure the spreader can evenly distribute the aggregate from the transporting vehicle directly onto the fresh asphalt material in smooth, uniform layers, independent of the forward speed. The spreader must be capable of being filled and moved without discharging aggregate. The spreader must be equipped with a locking mechanism compatible with the triaxle trucks used to supply aggregate.

Rollers. Pneumatic tire roller shall weigh at least 5 tons. Double steel wheel type roller shall weigh at least 5 tons but no more than 8 tons.

3. CONSTRUCTION.

Weather and Seasonal Limitations. Application of chip seal shall be applied when air temperature is at least 50 degrees F and rising and a minimum surface temperature of 70 degrees F. Do not construct when the ambient temperature within the preceding 24 hours has been 35 degrees F or lower. Do not proceed with construction if rain is expected in a minimum period of 4 hours. If an unexpected shower arises during operations, the asphalt distributor should be shut off immediately and placement of aggregate continued until all asphalt has been covered. Material shall not be placed between September 30 and May 1 without approval of Engineer.

Preparation of Mixture. Submit a complete mix design a minimum of 14 days prior to construction. Mix design shall be prepared by an approved laboratory, to verify the compatibility of the aggregate, asphalt emulsion and other additives. Perform the mix design with the same materials that will be used on the project.

Surface Preparation. Prior to operation, the contractor shall remove all existing thermoplastic striping, thermoplastic legends, and raised markers within application limits. 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 and wire hand brooms, when necessary. Clean the edges of the surface providing a full and uniformly clean width of roadway. Where mud or earth exists, remove it in advance and allow surface to thoroughly dry before applying emulsion. Mowing or removal of shoulder vegetation and or brush may be necessary for proper application.

If cracks cannot be adequately filled by emulsion, fill with proper asphalt material or hot pour joint sealer conforming to **Section 807.03.01.** If applicable, apply cover aggregate before applying chip seal application.

4. APPLICATION.

Application Rates of Materials for Chip Seal with Fibers.

Properties	Minimum	Maximum
Application rate of emulsion, gal/sqyd	0.42	0.50
Emulsion temperature, F	120	180
Application rate of fiber, oz/sqyd	2	4
Application rate of aggregate, lb/sqyd	15	20

(Combined application of emulsion is split in 1st and 2nd layers with fiber sandwiched between)

Application of Emulsion and Fibers. Heat and maintain emulsion between 120 and 180 degrees F during application. Polymer modified emulsion shall be applied when air temperature is at least 50 degrees F and rising and a minimum surface temperature of 70 degrees F. Emulsion and fibers shall be applied using a pressure distributor in a uniform, continuous quantity at specified rates. Chopped fibers shall be sandwiched between the two layers of emulsion. The fiber is applied at controlled rates from nominally 2-4 oz/SY. These applications shall be such that a uniform first layer of asphalt emulsion is applied followed by uniform layer of glass fibers that are chopped in place and covered with a uniform layer of asphalt emulsion.

Keep the nozzles of the spray bar clean at all times. Immediately make any streaked areas uniform by use of a hand hose equipped with a nozzle.

Do not allow distributor to apply asphalt material ahead of aggregate spreader for more than 150 feet.

When the chip seal treatment is constructed in half-widths, provide complete coverage by overlapping the 2 applications approximately 4 inches along centerline and sweep the centerline before constructing the adjoining lane.

Prevent spotting or discoloring curbs, headwalls, and other structures. When such discolorations occur, remove them at no expense to KYTC.

Provide and use building paper or other materials approved by the engineer to provide a clean and proper at every construction joint. A straight edge shall be used to ensure a consistent and even joint.

Aggregate. Aggregate cover material shall be cleaned to remove dirt and dust, ensuring appropriate adhesion with emulsion. Aggregate shall be damp during application. Aggregate shall only be stockpiled once per project and must be placed on a pad clean from unwanted materials and debris. The Department will sample and test the aggregate from the stockpile to determine if the aggregate meets the washed gradation and the percent passing the No. 200 sieve requirements before any placement of the aggregate. Reject the stockpile when the aggregate doesn't meet the requirements. Prior to breaking of the emulsion, aggregate shall be continuously and evenly spread with the proper equipment at the specified rates. Spreading equipment shall not contact the asphalt material before it is covered with aggregate. Precautions should be taken not to exceed the designated rate by more than 5 percent. Use hand brooms to correct any irregularities.

Rolling. Two self-propelled pneumatic tire rollers and one double steel wheel roller shall be used for the required rolling of the aggregate. This shall be done no more than 5 minutes after the spreading of aggregate. Operate the rollers parallel to the centerline in a manner preventing the dislodgment of newly applied aggregate. Rolling should proceed from the outer edge to the center, with each pass overlapping the previous by one-half. Rolling shall consist of at least 2 passes or more with pneumatic tire roller, followed by at least 1 pass with the double steel wheel roller when the engineer directs. Roller speeds shall not exceed 5 mph. Additional roller patterns and/or equipment may be required as directed by the engineer depending on speed of application.

Sweeping. Power sweep and/or vacuum the completed application to remove all excess aggregate after each day(s) of production. The curing time shall be determined by the engineer. Surface shall be swept or vacuumed prior to any striping or other surface applications. If directed by the engineer, water may be applied during sweeping process. A second sweeping may be required following the initial application day. If applying an additional surface treatment over the chip seal, it may be opened to traffic for an amount of time specified in the contract or as directed by the engineer. At the end of each day(s) production, the treated portion of the roadway shall be swept.

Little to no aggregate shall be remaining on the following:

Entrances
Exit aprons
Intersections
Crossroads
Driveways
Lawns
Curbs
Shoulders

Final Surface. Prior to any placement of the final surface treatment, the fiber chip seal shall have a curing time of no less than 72 hours and placement shall start before 10 days after the fiber chip seal application.

A tack coat shall be applied on top of chip/scrub seal aggregate before placing the asphalt surface. Contrary to section **406.03.03 B** of the Kentucky Standard Specifications for Road and Bridge Construction, tack coat application rate for 4.75mm thinlay asphalt surface shall for be 0.40lbs – 0.65lbs (0.05 gal – 0.08 gal) per sqyd. The tack coat application rate for emulsified microsurface asphalt surface shall be 0.25lbs – 0.50lbs (0.03 gal – 0.06 gal) per sqyd.

5. MEASUREMENT.

Asphalt Material. KYTC will measure the quantity in tons according to **Section 109.**

Aggregate. KYTC will measure the quantity in sqyd according to **Section 109.**

6. PAYMENT.

Contrary to **Section 805.15**, the department will apply a 50 percent reduction on the bid price for asphalt seal aggregate when exceeding 2 percent on the No. 200 sieve. The washed gradation acceptance will follow section 805.15 guidelines for the aggregate size used for the asphalt seal aggregate. KYTC will make payment for the completed and accepted quantities under the following:

Pay Item	Pay Unit
Fiber Reinforced Bituminous Membrane	Sqyd

KYTC will consider payment as full compensation for all work required under this section.

January, 2020

Liquidated Damages

Complete all paving items by June 30. Paving items are considered as microsurfacing, chip and seal, cape seals, asphalt surface No. 4 mixtures, fog seals and curing seals. No work shall be performed between October 1st and May 15th for the following year. For any paving items performed between October 1st to October 15th and/or May 1st to May 15th of the following year, obtain written approval from the Engineer prior to work. Contrary to section 108.09 of the current standard specifications, Liquidated Damages will be applied for all paving items that are not completed by June 30th. Liquidated Damages will be assessed from Jume 30th to November 30th of the completion year and begin again May 1st of the following year until the work items are complete.

Any non-paving items shall be performed in accordance with specifications.

SPECIAL NOTE FOR NON-TRACKING TACK COAT

1. DESCRIPTION AND USEAGE. This specification covers the requirements and practices for applying a non-tracking tack asphalt coating. Place this material on the existing pavement course, prior to placement of a new asphalt pavement layer. Use when expedited paving is necessary or when asphalt tracking would negatively impact the surrounding area. This material is not suitable for other uses. Ensure material can "break" within 15 minutes under conditions listed in 3.2.

2. MATERIALS, EQUIPMENT, AND PERSONNEL.

2.1 Non-Tracking Tack. Provide material conforming to Subsection 2.1.1.

2.1.1 Provide a tack conforming to the following material requirements:

Property	Specification	Test Procedure
Viscosity, SFS, 77 ˚ F	20 – 100	AASHTO T 72
Sieve, %	0.3 max.	AASHTO T 59
Asphalt Residue[1], %	50 min.	AASHTO T 59
Oil Distillate, %	1.0 max.	AASHTO T 59
Residue Penetration, 77 ˚ F	20 max.	AASHTO T 49
Original Dynamic Shear (G*/sin δ), 82 ˚ C	1.0 min.	AASHTO T 315
Softening Point, ˚ F	149 min.	AASHTO T 53
Solubility, %	97.5 min.	AASHTO T 44

[1] Bring sample to 212 ˚F over a 10-15 minute period. Maintain 212 ˚F for 15-20 minutes or until 30-40 mL of water has distilled. Continue distillation as specified in T59.

2.2. Equipment. Provide a distributor truck capable of heating, circulating, and spraying the tack between 170 ˚F and 180 ˚F. Do not exceed 180 ˚F. Circulate the material while heating. Provide the correct nozzles that is recommend by the producer to ensure proper coverage of tack is obtained. Ensure the bar can be raised to between 14" and 18" from the roadway.

2.3. Personnel. Ensure the tack supplier has provided training to the contractor on the installation procedures for this product. Make a technical representative from the supplier available at the request of the Engineer.

3. CONSTRUCTION.

3.1 Surface Preparation. Prior to the application of the non-tracking tack, ensure the pavement surface is thoroughly dry and free from dust or any other debris that would inhibit adhesion. Clean the surface by scraping, sweeping, and the use of compressed air. Ensure this preparation process occurs shortly before application to prevent the return of debris pavement. If rain is expected within one hour after application, do not apply material. Apply material only when the surface is dry, and no precipitation is expected.

3.2 Non-tracking Tack Application. Ensure the roadway temperature is a minimum of 40 ˚F and rising during the application of the tack. This material is not suitable for use in colder temperatures. Prior to applying the tack, demonstrate competence in applying the tack according to this note to the satisfaction of the Engineer. Heat the tack in the distributor to between 170 – 180 ˚F. After initial heating to between 170 – 180 ˚F, the material may be sprayed between 165 ˚F and 180 ˚F. Do not apply outside this temperature range. Apply material at a minimum rate of 0.70 pounds (0.08 gallons) per square yard. Ensure full coverage of the material on the pavement surface. Full coverage of this material is critical. If full coverage is not achieved, material application rate may be increased to ensure full coverage. Do not heat material more than twice in one day.

3.3 Non-tracking Tack Certification. Furnish the tacks certification to the Engineer stating the material conforms to all requirements herein prior to use.

3.4 Sampling and Testing. The Department will require a sample of non-tracking tack be taken from the distributor at a rate of one sample per 15,000 tons of mix. Take two 1 gallon samples of the heated material and forward the sample to the Division of Materials for testing within 7 days. Ensure the product temperature is between 170 and 180 °F at the time of sampling.

4. MEASUREMENT. The Department will measure the quantity of non-tracking tack in tons. The Department will not measure for payment any extra materials, labor, methods, equipment, or construction techniques used to satisfy the requirements of this note. The Department will not measure for payment any trial applications of non-tracking tack, the cleaning of the pavement surface, or furnishing and placing the adhesive. The Department will consider all such items incidental to the non-tracking tack.

5. PAYMENT. The Department will pay for the non-tracking tack at the Contract unit bid price and apply an adjustment for each manufacturer’s lot of material based on the degree of compliance as defined in the following schedule. When a sample fails on two or more tests, the Department may add the deductions, but the total deduction will not exceed 100 percent.

Non-Tracking Tack Price Adjustment Schedule						
Test	Specification	100% Pay	90% Pay	80% Pay	50% Pay	0% Pay
Viscosity, SFS, 77 ˚ F	20 – 100	19 - 102	17 - 18 103 - 105	15 - 16 106 - 107	14 108 - 109	≤13 ≥ 110
Sieve, %	0.30 max.	≤ 0.40	0.41 - 0.50	0.51 - 0.60	0.61 - 0.70	≥ 0.71
Asphalt Residue, %	50 min.	≥49.0	48.5 – 48.9	48.0 – 48.4	47.5-47.9	≤ 47.4
Oil Distillate, %	1.0 max.	≤1.0	1.1-1.5	1.6 - 1.7	1.8-1.9	>2.0
Residue Penetration, 77 ° F	20 max.	≤ 21	22 - 23	24 - 25	26 - 27	≥ 28
Original Dynamic Shear (G*/sin δ), 82 ˚ C	1.0 min.	≥0.95	0.92 – 0.94	0.90 – 0.91	0.85 - 0.89	≤ 0.84
Softening Point, º F	149 min.	≥145	142 - 144	140 - 141	138 - 139	≤ 137
Solubility, %	97.5 min.	≥ 97.0	96.8 – 96.9	96.6 – 96.7	96.4 – 96.5	≤ 96.3

Code	Pay Item	Pay Unit
24970EC	Asphalt Material for Tack Non-Tracking	Ton

January 28, 2020

SPECIAL NOTE FOR PAVEMENT WEDGE AND SHOULDER MONOLITHIC OPERATION

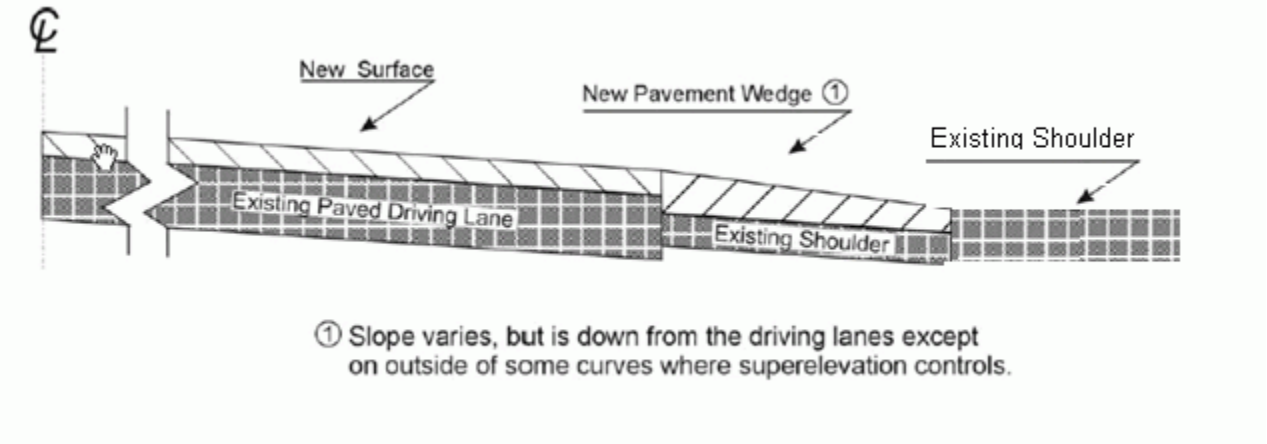
1.0 MATERIALS. Provide an Asphalt Surface Mixture conforming to Section 403 of the Standard Specifications, as applicable to the project, for the pavement wedge.

2.0 CONSTRUCTION. Place the specified Asphalt Surface Mixture on shoulders monolithically with the driving lane. Prime the existing shoulder with tack material as the Engineer directs before placing the wedge. Construct according to Section 403.03 of the Standard Specifications.

Equip the paver with a modified screed that extends the full width of the wedge being placed and is tapered to produce a wedge. Obtain the Engineer's approval of the modified screed before placing shoulder wedge monolithically with the driving lane.

The wedge may vary in thickness at the edge of the milled area in the shoulder. If the area to receive the shoulder wedge is milled prior to placement, during rolling operations pinch the outside edge of the new inlay wedge to match the existing shoulder elevation not being resurfaced. Unless required otherwise by the Contract, construct rolled or sawed rumble strips according to Section 403.03.08, as applicable.

The following sketch is primarily for the computation of quantities; however, the wedge will result in a similar cross-section where sufficient width exists. Do not construct a shoulder for placing the wedge unless specified elsewhere in the Contract.



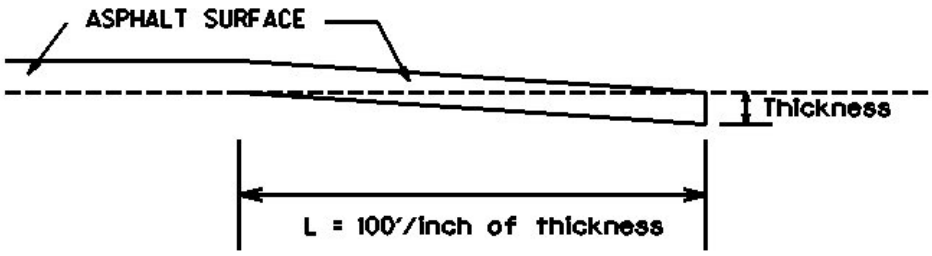
3.0 MEASUREMENT. The Department will measure Asphalt Surface Mixture placed as the pavement wedge according to Section 403.

4.0 PAYMENT. The Department will make payment for the completed and accepted quantities of Asphalt Surface Mixtures on pavement wedges according to Section 403.

SPECIAL NOTE FOR EDGE KEY

Construct Edge Keys at the beginning of project, end of project, at railroad crossings, and at ramps, as applicable. Unless specified in the Contract or directed by the Engineer, do not construct edge keys at intersecting streets, roads, alleys, or entrances. Cut out the existing asphalt surface to the required depth and width shown on the drawing and heel the new surface into the existing surface. The Department will make payment for this work at the Contract unit price per square yards for Fine Milling, which shall be full compensation for all labor, materials, equipment, and incidentals for removal and disposal of the existing asphalt surface required to construct the edge key.

EDGE KEY



Thickness = 0.75 Inches

L = 75 LF

L= Length of Edge Key

1-3309 Edge key by Ton
01/02//2012

SPECIAL NOTE FOR TYPICAL SECTION DIMENSIONS

Consider the dimensions shown on the typical sections for pavement and shoulder widths and thickness' to be nominal or typical dimensions. The Engineer may direct or approve varying the actual dimensions to be constructed to fit existing conditions. Do not widen existing pavement or shoulders unless specified elsewhere in this proposal or directed by the engineer.

1-3725 Typical Section Dimensions
01/02/2012

TRAFFIC CONTROL PLAN

TRAFFIC CONTROL GENERAL

Except as provided herein, maintain and control traffic in accordance with the Standard and Supplemental Specifications and the Standard and Sepia Drawings, current editions. Except for the roadway and traffic control bid items listed, all items of work necessary to maintain and control traffic will be paid at the lump sum bid price to "Maintain and Control Traffic".

Contrary to Section 106.01, furnish new, or used in like new condition, traffic control devices at the beginning of the work and maintain in like new condition until completion of the work.

PROJECT PHASING & CONSTRUCTION PROCEDURES

The Engineer may specify days and hours when lane closures will not be allowed.

Maintain alternating one way traffic during construction. Provide a minimum clear lane width of 9.5 feet; however, provide for passage of vehicles of up to 16 feet in width. If traffic should be stopped due to construction operations, and a school bus on an official run arrives on the scene, make provisions for the passage of the bus as quickly as possible.

LANE CLOSURES

Do not leave lane closures in place during non-working hours.

SIGNS

Sign posts and splices shall be compliant with NCHRP 350 or MASH. Manufacturer's documentation validating this compliance shall be provided to the Engineer prior to installation. Signs, including any splices, shall be installed according to manufacturer's specifications and installation recommendations. Contrary to section 112.04.02, only long-term signs (signs intended to be continuously in place for more than 3 days) will be measured for payment. Short-term signs (signs intended to be left in place for 3 days or less) will not be measured for payment but will be incidental to Maintain and Control Traffic.

CHANGEABLE MESSAGE SIGNS

If deemed necessary by the Engineer, the Department will furnish, operate, and maintain Changeable Message Signs.

TEMPORARY ENTRANCES

The Engineer will not require the Contractor to provide continuous access to farms, single family, duplex, or triplex residential properties during working hours; however, provide reasonable egress and ingress to each such property when actual operations are not in progress at that location. Limit the time during which a farm or residential entrance is blocked to the minimum length of time required for actual operations, not extended for the Contractor's convenience, and in no case exceeding six (6) hours. Notify all residents twenty-four hours in advance of any driveway or entrance closings and make any accommodations necessary to meet the access needs of disabled residents.

Except as allowed by the Phasing as specified above, maintain direct access to all side streets and roads, schools, churches, commercial properties and apartments or apartment complexes of four or more units at all times.

The Department will measure asphalt materials required to construct and maintain any temporary entrances which may be necessary to provide temporary access; however, the Department will not measure aggregates, excavation, and/or embankment, but shall be incidental to Maintain and Control Traffic. The Engineer will determine the type of surfacing material, asphalt or aggregate, to be used at each entrance.

BARRICADES

The Department will not measure barricades used in lieu of barrels and cones for channelization or delineation, but shall be incidental to Maintain and Control Traffic according to Section 112.04.01.

The Department will measure barricades used to protect pavement removal areas in individual units Each. The Department will measure for payment the maximum number of barricades in concurrent use at the same time on a single day on all sections of the contract. The Department will measure individual barricades only once for payment, regardless of how many times they are set, reset, removed, and relocated during the duration of the project. The Department will not measure replacements for damaged barricades the Engineer directs to be replaced due to poor condition or reflectivity. Retain possession of the Barricades upon completion of construction.

PAVEMENT MARKINGS

If there is to be a deviation from the existing striping plan, the Engineer will furnish the Contractor a striping plan prior to placement of the final surface course.

Install Temporary Striping according to Section 112 with the following exception:

If the Contractor's operations or phasing requires temporary markings that must subsequently be removed from the final surface course, use an approved removable lane tape; however, the Department will not measure removable lane tape for separate payment, but will measure and pay for removable lane tape as temporary striping.

PAVEMENT EDGE DROP-OFFS

Do not allow a pavement edge between opposing directions of traffic or lanes that traffic is expected to cross in a lane change situation with an elevation difference greater than 1½". Place Warning signs (MUTCD W8-11 or W8-9A) in advance of and at 1500' intervals throughout the drop-off area. Dual post the signs on both sides of the traveled way. Wedge all transverse transitions between resurfaced and unresurfaced areas which traffic may cross with asphalt mixture for leveling and wedging. Remove the wedges prior to placement of the final surface course.

Protect pavement edges that traffic is not expected to cross, except accidentally, as follows:

Less than 2" - No protection required.

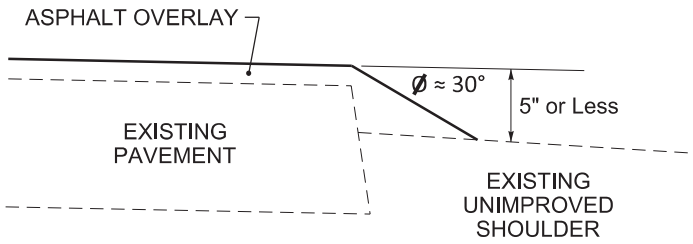
2" to 4" - Place plastic drums, vertical panels, or barricades every 50 feet. During daylight working hours only, the Engineer will allow the Contractor to use cones in lieu of plastic drums, panels, and barricades. Wedge the drop-off with DGA or asphalt mixture for leveling and wedging with a 1:1 or flatter slope in daylight hours, or 3:1 or flatter slope during nighttime hours, when work is not active in the drop-off area.

Greater than 4" - Protect drop-offs greater than 4 inches within 10 feet of traffic by placing drums, vertical panels, or barricades every 25 feet. The Engineer will not allow the use of cones in lieu of drums, vertical panels, or barricades for drop-offs greater than 4". Place Type III Barricades directly in front of the drop-off facing on coming traffic in both directions of travel. Provide warning signs as shown on the Standard Drawings or as directed by the Engineer

Pedestrians & Bicycles - Protect pedestrian and bicycle traffic as directed by the engineer.

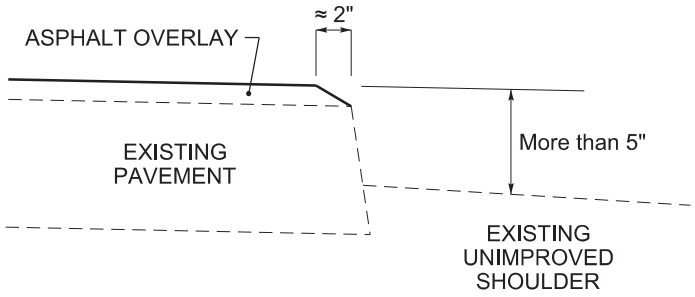
DURABLE PAVEMENT EDGE DETAIL

(Resurfacing adjacent to low shoulder with dropoff of 5 inches or less)



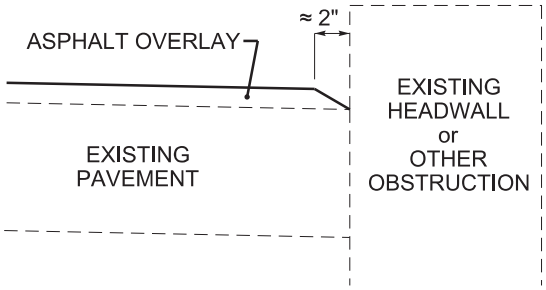
DURABLE PAVEMENT EDGE DETAIL

(Resurfacing adjacent to low shoulder with dropoff of more than 5 inches)



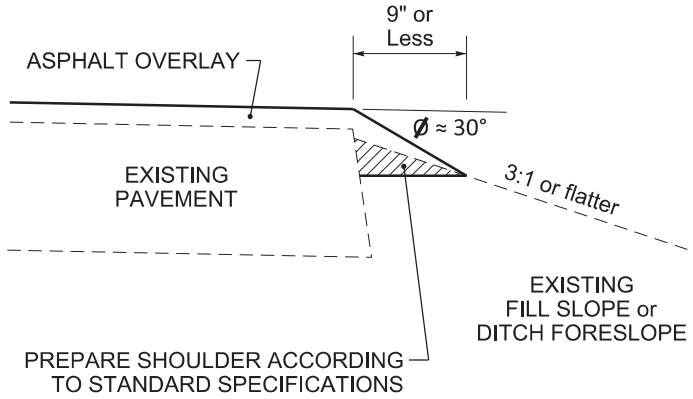
DURABLE PAVEMENT EDGE DETAIL

(Resurfacing adjacent to an obstruction, such as an existing headwall)



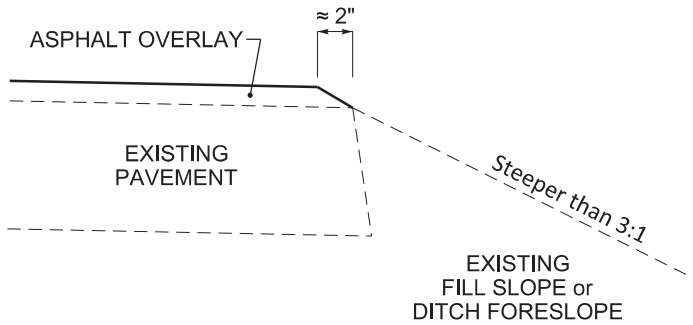
DURABLE PAVEMENT EDGE DETAIL

(Resurfacing adjacent to fill slope or ditch foreslope that is 3:1 or less)



DURABLE PAVEMENT EDGE DETAIL

(Resurfacing adjacent to fill slope or ditch foreslope that is steeper than 3:1)

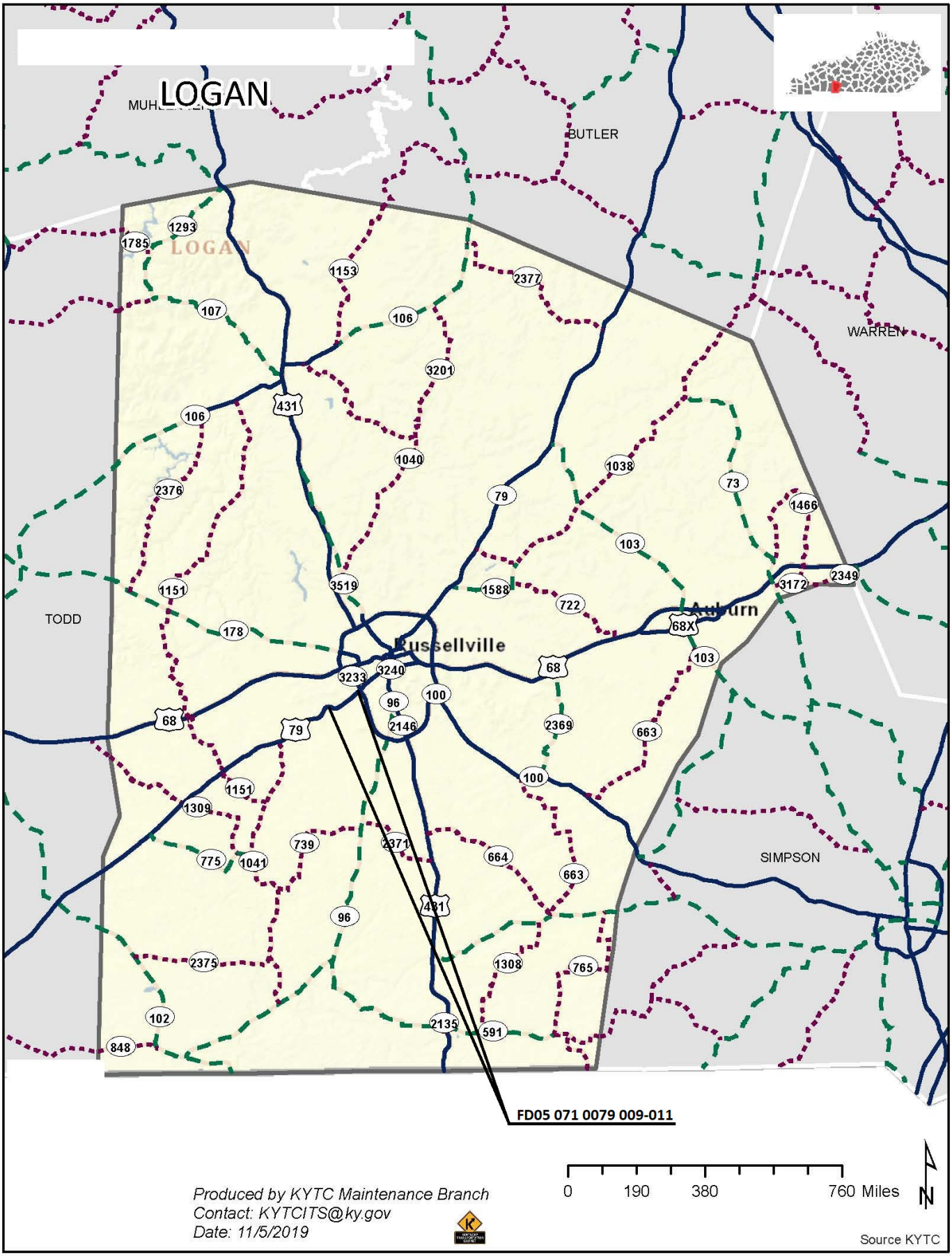


NOTES

1. DETAILS DO NOT APPLY TO OVERLAYS LESS THAN 1 INCH THICK.
2. THE DURABLE PAVEMENT EDGE DEVICE MAY BE DISENGAGED AT DRIVEWAYS, SIDE STREETS, HIGH SHOULDERS, AND OTHER LOCATIONS NOT FEASIBLE TO CONSTRUCT, AS APROVED BY THE ENGINEER.

DRAWING NOT TO SCALE

DURABLE PAVEMENT EDGE DETAILS

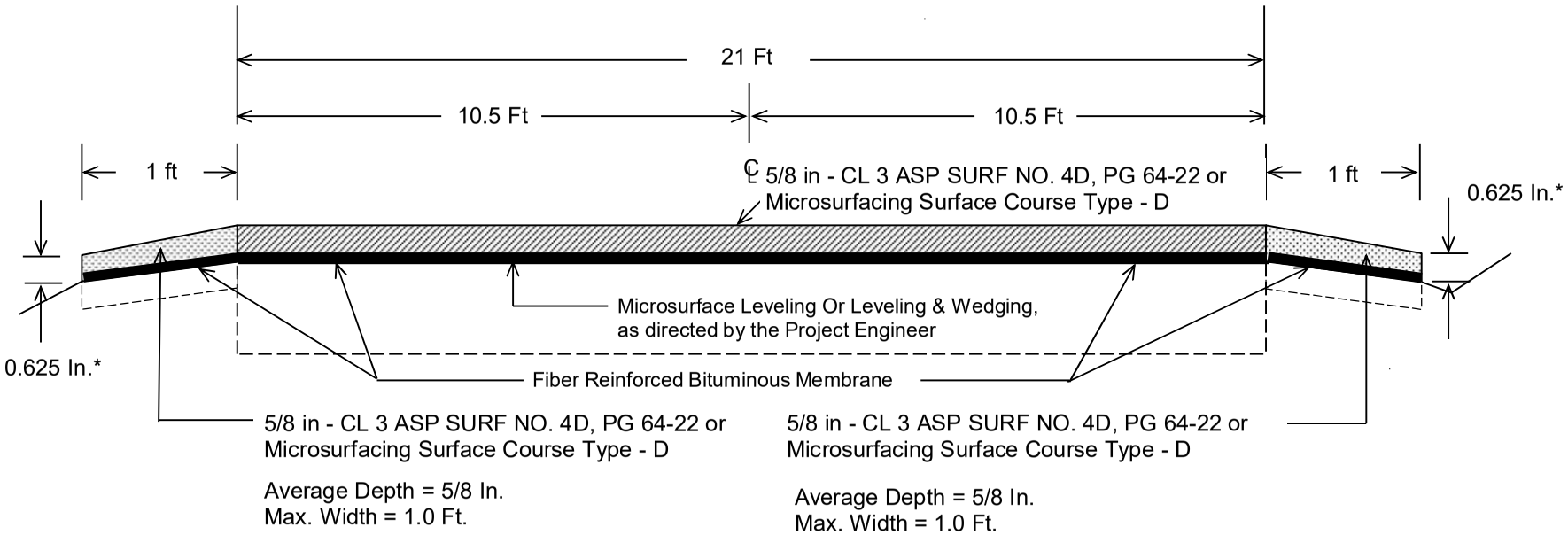

LOGAN
BUTLER
WARREN
SIMPSON
TODD
Russellville
Auburn
FD05 071 0079 009-011
Produced by KYTC Maintenance Branch
Contact: KYTCITS@ky.gov
Date: 11/5/2019
0 190 380 760 Miles
N
Source KYTC

Milling
Summary
FD05 071 0079 009-011

			TOTAL	12869
Milepoint	**Comment**	**Length**	**Width**	**Sq Yds**
9.770 - 10.624	**FULL WIDTH**			**12869**
				0
				0
				0
				0
				0
				0
				0
				0
				0
				0
				0
				0
				0
				0
				0
				0
				0
				0
				0
				0
				0
				0
				0
				0
				0
				0
				0

Logan County

FD05 071 0079 009-011
TYPICAL SECTION
MILEPOINTS 9.770 to 10.460

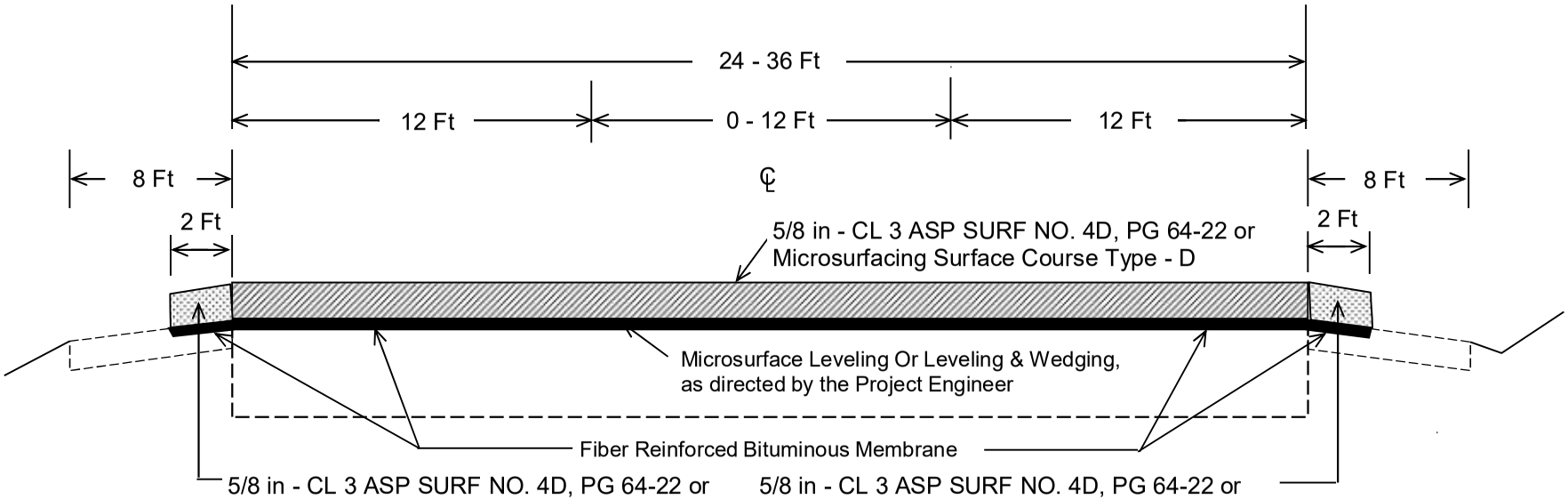


INSTALL EDGE LINE RUMBLE STRIPE ONLY

***Where Existing Site Conditions Permit**

FINE MILLING Width = FULL WIDTH

Logan County
FD05 071 0079 009-011
TYPICAL SECTION
MP's 10.504 - 10.624



FINE MILLING
Max Width = 40 Feet

PART II

SPECIFICATIONS AND STANDARD DRAWINGS

2020 KENTUCKY STANDARD DRAWINGS

PART III

EMPLOYMENT, WAGE AND RECORD REQUIREMENTS

PART IV

INSURANCE

Refer to
Kentucky Standard Specifications for Road and Bridge Construction,
current edition

PART V

BID ITEMS

212457

PROPOSAL BID ITEMS

Report Date 9/29/21

Section: 0001 - MICROSURFACE

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0010	21652EN		MICROSURFACING-LEVELING COURSE (REVISED 9-21-2021)	4,727.00	SQYD		$	
0020	24958EC		MICROSURFACING-SURFACE COURSE - TYPE D	12,869.00	SQYD		$	

Section: 0002 - THINLAY

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0030	00190		LEVELING & WEDGING PG64-22 (REVISED 9-21-2021)	195.00	TON		$	
0040	24570EC		CL3 ASPH SURF NO.4D PG64-22	442.00	TON		$	
0050	24961EC		ASPHALT SEAL AGGREGATE - TYPE D	12,869.00	SQYD		$	
0060	24970EC		ASPHALT MATERIAL FOR TACK NON-TRACKING (REVISED 9-21-2021)	5.00	TON		$	

Section: 0003 - ROADWAY

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0070	00001		DGA BASE	100.00	TON		$	
0080	02562		TEMPORARY SIGNS	140.00	SQFT		$	
0090	02650		MAINTAIN & CONTROL TRAFFIC	1.00	LS		$	
0100	02676		MOBILIZATION FOR MILL & TEXT (REVISED 9-21-2021)	1.00	LS		$	
0110	02697		EDGELINE RUMBLE STRIPS	8,152.00	LF		$	
0120	06510		PAVE STRIPING-TEMP PAINT-4 IN	9,100.00	LF		$	
0130	06600		REMOVE PAVEMENT MARKER TYPE V	100.00	EACH		$	
0140	24964EC		FINE MILLING (REVISED 9-21-2021)	12,869.00	SQYD		$	
0150	24995EC		PAVE STRIPING-SPRAY THERMO-6 IN W	9,100.00	LF		$	
0160	24996EC		PAVE STRIPING-SPRAY THERMO-6 IN Y	9,100.00	LF		$	
0170	26143EC		FIBER REINFORCED BITUMINOUS MEMBRANE	12,869.00	SQYD		$	

Section: 0004 - DEMOBILIZATION

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0180	02569		DEMOBILIZATION	1.00	LS		$	