



COMMONWEALTH OF KENTUCKY
TRANSPORTATION CABINET

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Andy Beshear
GOVERNOR

Jim Gray
SECRETARY

April 20, 2020

CALL NO. 100
CONTRACT ID NO. 201017
ADDENDUM # 2

Subject: LYON COUNTY, NHPP IM 0242 (076)
Letting April 24, 2020

- (1) Revised - Typical Sections - Pages 25-26 of 127
- (2) Revised - Pavement Summary - Pages 30-31 of 127
- (3) Revised - Special Notes - Page 41 of 127
- (4) Added - Special Note for Microsurfacing - Pages 76(a) - 76(j) of 127
- (5) Revised - Special Note for Non-Tracking Tack Coat - Pages 79 - 81 of 127
- (6) Revised - Proposal Bid Items - Pages 126-127 of 127

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

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

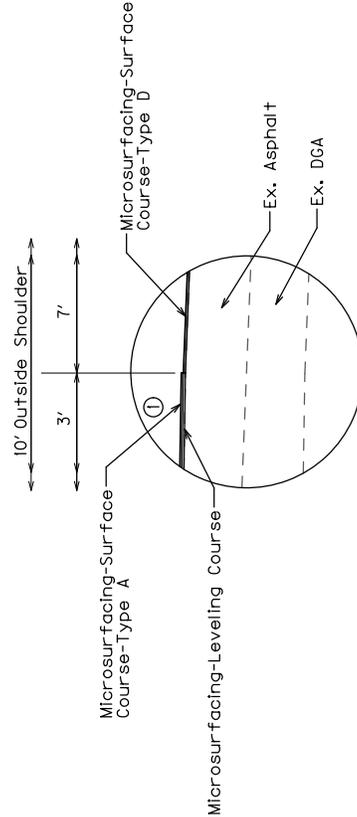
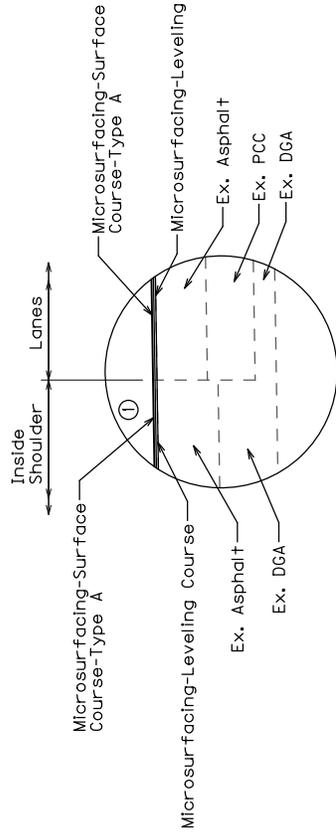
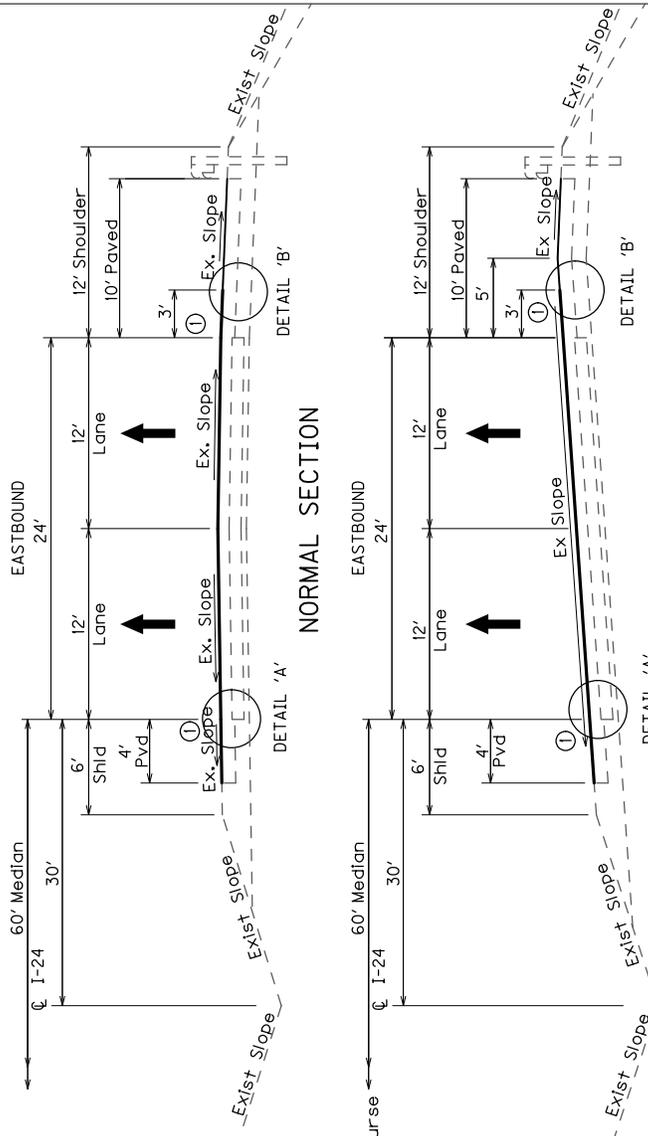
Sincerely,

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

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

RM:mr
Enclosures

TYPICAL SECTIONS - MICROSURFACE ALTERNATE I-24 CONSTANT WIDTH MEDIAN



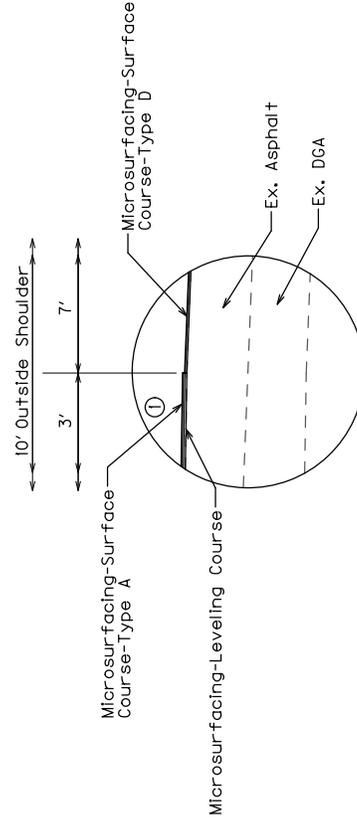
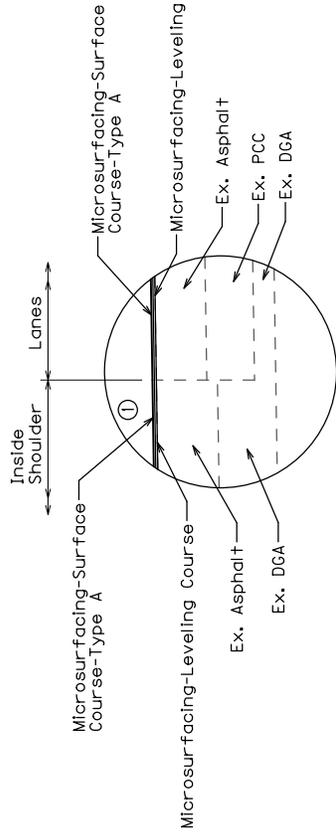
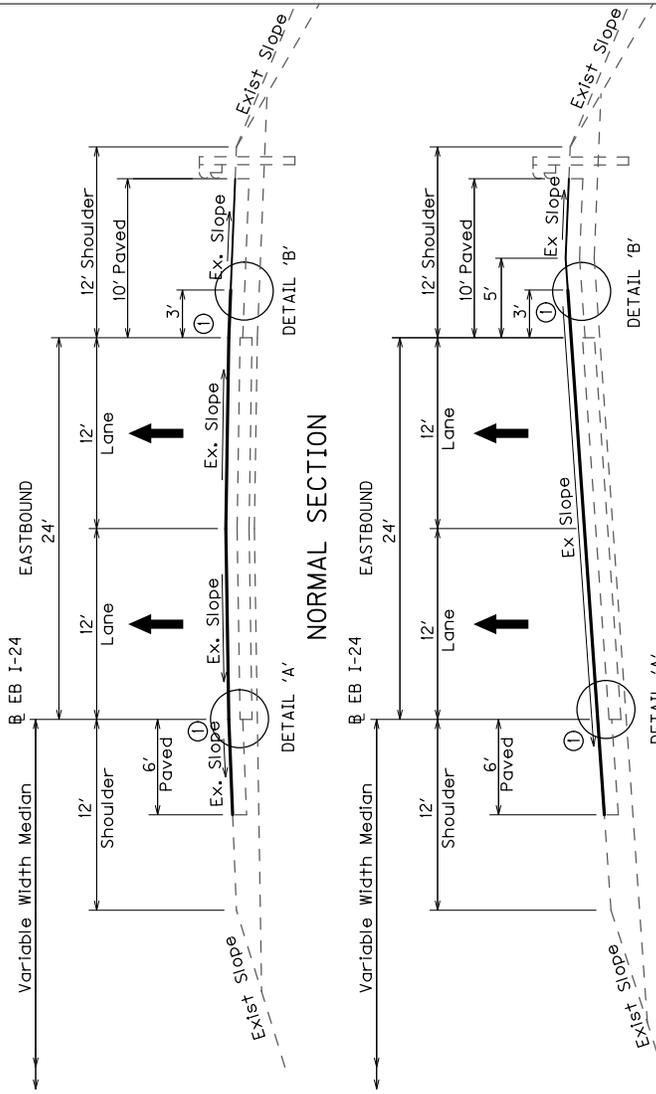
**EASTBOUND I-24
PAVEMENT REHABILITATION
DRIVING LANES, INSIDE SHOULDER &
3 FT OF OUTSIDE SHOULDER**

SURFACE ---- MICROSURFACING-SURFACE COURSE-TYPE A (SECOND COURSE)
SURFACE ---- MICROSURFACING-LEVELING COURSE (FIRST COURSE)

7 FT OF OUTSIDE SHOULDER

① Construct Sawed Rumble Strips
SURFACE ---- MICROSURFACING-SURFACE COURSE-TYPE D

TYPICAL SECTIONS - MICROSURFACE ALTERNATE I-24 BIFURCATED SECTION



**EASTBOUND I-24
PAVEMENT REHABILITATION
DRIVING LANES, INSIDE SHOULDER &
3 FT OF OUTSIDE SHOULDER**

SURFACE --- MICROSURFACING-SURFACE COURSE-TYPE A (SECOND COURSE)
SURFACE --- MICROSURFACING-LEVELING COURSE (FIRST COURSE)

7 FT OF OUTSIDE SHOULDER

① Construct Sawed Rumble Strips

① Construct Sawed Rumble Strips

① Construct Sawed Rumble Strips

**I-24 REHABILITATION PROJECT
 LYON COUNTY
 ITEM NO. 1-20009.00**

PAVEMENT SUMMARY - MICROSURFACE ALTERNATE				
ITEM CODE	ITEM		UNIT	TOTAL EASTBOUND I-24
1	DENSE GRADED AGGREGATE	(1)	TON	939
100	ASPHALT SEAL AGGREGATE	(2)	TON	114.9
103	ASPHALT SEAL COAT	(3)	TON	13.9
2676	MOBILIZATION FOR MILLING & TEXTURING		LS	1
2677	ASPHALT PAVEMENT MILLING & TEXTURING	(4)	TON	48
20362ES403	SHOULDER RUMBLE STRIPS-SAWED		LF	71,196
20814EC	MICROSURFACING-SURFACE COURSE - TYPE A	(5)	SQ YD	125,132
21652EN	MICROSURFACING-LEVELING COURSE	(5)	SQ YD	125,132
23071EN	OVERBAND CRACK SEALING	(6)	LBS	12,815
24958EC	MICROSURFACING-SURFACE COURSE - TYPE D	(5)	SQ YD	27,687

NOTES:

- (1) 898 tons carried forward from the Erosion Repair At Type 3 End Treatments Summary and 41 tons carried forward from the Fill Slope Erosion Repair Summary.
- (2) 104.1 tons carried forward from the Erosion Repair At Type 3 Guardrail End Treatments Summary and 10.8 tons carried forward from the Fill Slope Erosion Repair Summary
- (3) 12.4 tons carried forward from the Erosion Repair At Type 3 Guardrail End Treatments Summary and 1.5 tons carried forward from the Fill Slope Erosion Repair Summary.
- (4) Estimated at 110 pounds per square yard per inch depth. Asphalt millings will become the property of the Contractor.
- (5) See the special note for Microsurfacing.
- (6) For sealing the cracks on eastbound I-24 driving lanes prior to placement of the microsurfacing course as directed by the Engineer. Quantity estimated at 0.18 lb/ft. See the Special Note For Overband Crack Sealing.

**I-24 REHABILITATION PROJECT
 LYON COUNTY
 ITEM NO. 1-20009.00**

PAVEMENT AREAS - MICROSURFACE ALTERNATE	
ITEM	TOTAL EASTBOUND I-24 SQUARE YARDS
DRIVING LANES & SHOULDERS	
ASPHALT PAVEMENT MILLING & TEXTURING (1)	2,088
DRIVING LANES & INSIDE SHOULDER & 3' OF OUTSIDE SHOULDER	
MICROSURFACING-LEVELING COURSE (FIRST COURSE)	125,132
MICROSURFACING-SURFACE COURSE - TYPE A (SECOND COURSE)	125,132
REMAINING 7' OF OUTSIDE SHOULDER	
MICROSURFACING-SURFACE COURSE - TYPE D	27,687

(1) See Vertical Pavement Tapers At Bridges detail sheet and the Edge Key Detail sheet.

- C. MILLING AND PAVING.** After milling, where milling is called for in the proposal, correct settlement over pipes and culverts and remove de-bonded or flaking courses.
- D. DISPOSAL OF WASTE.** Dispose of all cuttings, debris, and other waste off the right-of-way at approved sites obtained by the Contractor at no additional cost to the Department. The Contractor will be responsible for obtaining any necessary permits for this work. Temporary openings in the right-of-way fence for direct access to waste sites off the right-of-way or for access to other public roads will not be allowed. No separate payment will be made for the disposal of waste and debris from the project or obtaining the necessary permits, but will be incidental to the other items of the work.
- E. FINAL DRESSING, CLEANUP, AND SEEDING.** After all work is completed, completely remove all debris from the job site. Perform Final Dressing Class A on all disturbed areas. This item is incidental to the other items of the work. Sow all disturbed earthen areas with the seed mixtures specified by the Engineer or place Erosion Control blanket on the areas if directed to do so by the Engineer.
- F. PAVEMENT STRIPING AND PAVEMENT MARKERS.** Permanent striping will be in accordance with Section 714, except that:
- (1) Striping will be 6" in width;
 - (2) Temporary Striping will be in place before a lane is opened to traffic;
 - (3) Permanent Striping will be Pave Striping-Thermo-6 inch W or Y;
 - (4) Inlaid Pavement Markers will be required.
- G. ON SITE INSPECTION.** Each Contractor submitting a bid for this work shall make a thorough inspection of the site prior to submitting a bid and shall be thoroughly familiarized with existing conditions so that the work can be expeditiously performed after a contract is awarded. Submission of a bid will be considered evidence of this inspection having been made. The Department will not honor any claims resulting from site conditions.
- H. PROPERTY DAMAGE.** The Contractor shall be responsible for all damage to public and/or private property resulting from the Contractor's work. Restore all disturbed features in like kind materials and design to the existing or proposed grades, as applicable, at no additional cost to the Department.
- I. CAUTION.** Information shown on the drawings and in this proposal and the types and quantities of work listed are not to be taken as an accurate or complete evaluation of the material and conditions to be encountered during construction. The bidder must draw his own conclusion as to the conditions encountered. The department does not give any guarantee as to the accuracy of the data and will not consider any claim for additional compensation if the conditions encountered are not in accordance with the information shown.

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:

<u>Test</u>	<u>Criteria</u>
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 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 $\pm 0.5\%$.

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

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 September 30 and May 1.

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/yd². 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 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/yd². 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/yd². 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/yd². 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/yd². 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 ° 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

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
20814EC
21652EN

Pay Item
Microsurfacing-Surface Course - Type A
Microsurfacing-Leveling Course

Pay Unit
Square Yard
Square Yard

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	15 - 16	14	≤13
			103 - 105	106 - 107	108 - 109	≥ 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, ° 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

<u>Code</u>	<u>Pay Item</u>	<u>Pay Unit</u>
24970EC	Asphalt Material for Tack Non-Tracking	Ton

January 28, 2020

PROPOSAL BID ITEMS

Report Date 4/20/20

Section: 0001 - PAVING-MICROSURFACE

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0010	00001		DGA BASE	939.00	TON		\$	
0020	00100		ASPHALT SEAL AGGREGATE	114.90	TON		\$	
0030	00103		ASPHALT SEAL COAT	13.90	TON		\$	
0040	02676		MOBILIZATION FOR MILL & TEXT	1.00	LS		\$	
0050	02677		ASPHALT PAVE MILLING & TEXTURING	48.00	TON		\$	
0060	20362ES403		SHOULDER RUMBLE STRIPS-SAWED	71,196.00	LF		\$	
0070	20814EC		MICROSURFACING-SURFACE COURSE - TYPE A	125,132.00	SQYD		\$	
0075	21652EN		MICROSURFACING-LEVELING COURSE (ADDED: 4-20-20)	125,132.00	SQYD		\$	
0080	23071EN		OVERBAND CRACK SEALING	12,815.00	LB		\$	
0090	24958EC		MICROSURFACING-SURFACE COURSE - TYPE D	27,687.00	SQYD		\$	

Section: 0002 - PAVING-THINLAY

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0100	00001		DGA BASE	939.00	TON		\$	
0110	00100		ASPHALT SEAL AGGREGATE	114.90	TON		\$	
0120	00103		ASPHALT SEAL COAT	13.90	TON		\$	
0130	02676		MOBILIZATION FOR MILL & TEXT	1.00	LS		\$	
0140	02677		ASPHALT PAVE MILLING & TEXTURING	57.00	TON		\$	
0150	20362ES403		SHOULDER RUMBLE STRIPS-SAWED	71,196.00	LF		\$	
0160	23071EN		OVERBAND CRACK SEALING	12,815.00	LB		\$	
0170	24570EC		CL3 ASPH SURF NO.4D PG64-22	1,142.00	TON		\$	
0180	24970EC		ASPHALT MATERIAL FOR TACK NON-TRACKING	38.00	TON		\$	
0190	25005EC		CL4 ASPH SURF NO.4A PG76-22	5,162.00	TON		\$	

Section: 0003 - ROADWAY

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0200	00078		CRUSHED AGGREGATE SIZE NO 2	108.00	TON		\$	
0210	01897		ASPHALT WEDGE CURB	25.00	LF		\$	
0220	02014		BARRICADE-TYPE III	4.00	EACH		\$	
0230	02381		REMOVE GUARDRAIL	228.00	LF		\$	
0240	02562		TEMPORARY SIGNS	500.00	SQFT		\$	
0250	02575		DITCHING AND SHOULDERING	35,598.00	LF		\$	
0260	02650		MAINTAIN & CONTROL TRAFFIC	1.00	LS		\$	
0270	02671		PORTABLE CHANGEABLE MESSAGE SIGN	2.00	EACH		\$	
0280	02726		STAKING	1.00	LS		\$	
0290	02775		ARROW PANEL	1.00	EACH		\$	
0300	02929		CRASH CUSHION TYPE IX	4.00	EACH		\$	
0310	05950		EROSION CONTROL BLANKET	5,000.00	SQYD		\$	
0320	06401		FLEXIBLE DELINEATOR POST-M/W	281.00	EACH		\$	
0330	06511		PAVE STRIPING-TEMP PAINT-6 IN	80,096.00	LF		\$	

PROPOSAL BID ITEMS

Report Date 4/20/20

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0340	06542		PAVE STRIPING-THERMO-6 IN W	44,498.00	LF		\$	
0350	06543		PAVE STRIPING-THERMO-6 IN Y	35,598.00	LF		\$	
0360	06549		PAVE STRIPING-TEMP REM TAPE-B	4,000.00	LF		\$	
0370	06550		PAVE STRIPING-TEMP REM TAPE-W	2,000.00	LF		\$	
0380	06551		PAVE STRIPING-TEMP REM TAPE-Y	2,000.00	LF		\$	
0390	06600		REMOVE PAVEMENT MARKER TYPE V	445.00	EACH		\$	
0400	20411ED		LAW ENFORCEMENT OFFICER	200.00	HOUR		\$	
0410	22664EN		WATER BLASTING EXISTING STRIPE	80,096.00	LF		\$	
0420	24489EC		INLAID PAVEMENT MARKER	445.00	EACH		\$	

Section: 0004 - DRAINAGE

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0430	00462		CULVERT PIPE-18 IN	20.00	LF		\$	
0440	02165		REMOVE PAVED DITCH	40.00	SQYD		\$	
0450	02220		FLOWABLE FILL	2.00	CUYD		\$	
0460	02483		CHANNEL LINING CLASS II	404.00	TON		\$	
0470	02484		CHANNEL LINING CLASS III	115.00	TON		\$	
0480	03260		CLEAN ROADWAY DRAINS	2.00	EACH		\$	
0490	20366NN		REPLACE GRATE	1.00	EACH		\$	

Section: 0005 - DEMOBILIZATION &/OR MOBILIZATION

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0500	02569		DEMOBILIZATION	1.00	LS		\$	