

CALL NO. <u>329</u> CONTRACT ID. <u>192018</u> <u>GRAVES COUNTY</u> FED/STATE PROJECT NUMBER <u>FD05 042 0080 012-020</u> DESCRIPTION <u>MAYFIELD TO FARMINGTON ROAD (KY 80)</u> WORK TYPE <u>PAVEMENT (WITH ALTERNATES)</u> PRIMARY COMPLETION DATE <u>9/30/2019</u>

LETTING DATE: January 25,2019

Sealed Bids will be received electronically through the Bid Express bidding service until 10:00 AM EASTERN STANDARD TIME January 25,2019. Bids will be publicly announced at 10:00 AM EASTERN STANDARD 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

- PROJECT(S), COMPLETION DATE(S), & LIQUIDATED DAMAGES
- CONTRACT NOTES
- STATE CONTRACT NOTES
- SURFACING AREAS
- ASPHALT MIXTURE
- INCIDENTAL SURFACING
- COMPACTION OPTION B
- MATERIAL TRANSFER VEHICLE (MTV)
- SPECIAL NOTE(S) APPLICABLE TO PROJECT
- ASPHALT MIX PAVEMENT WEDGE MONOLITHIC OPERATION
- TYPICAL SECTION DIMENSIONS
- TRAFFIC CONTROL PLAN
- DURABLE PAVEMENT EDGE DETAILS
- SKETCH MAP(S)
- SUMMARY SHEET(S)
- TYPICAL SECTION(S)

PART II SPECIFICATIONS AND STANDARD DRAWINGS

- SPECIFICATIONS REFERENCE
- SUPPLEMENTAL SPECIFICATION
- 2016 STANDARD DRAWINGS THAT APPLY

PART III EMPLOYMENT, WAGE AND RECORD REQUIREMENTS

- LABOR AND WAGE REQUIREMENTS
- EXECUTIVE BRANCH CODE OF ETHICS
- KENTUCKY EQUAL EMPLOYMENT OPPORTUNITY ACT OF 1978 LOCALITY / STATE
- PROJECT WAGE RATES / STATE
- PART IV INSURANCE

PART V BID ITEMS

PART I

SCOPE OF WORK

ADMINISTRATIVE DISTRICT - 01

CONTRACT ID - 192018

FD05 042 0080 012-020

COUNTY - GRAVES

PCN - MP04200801901 FD05 042 0080 012-020

MAYFIELD TO FARMINGTON ROAD (KY 80) (MP 12.275) BEGIN KY 303 EXTENDING EAST TO 1758 FEET EAST OF KY 564 (MP 19.854), A DISTANCE OF 07.57 MILES.PAVEMENT (WITH ALTERNATES) GEOGRAPHIC COORDINATES LATITUDE 36:41:32.40 LONGITUDE 88:33:31.71

COMPLETION DATE(S):

COMPLETED BY 09/30/2019 APPLIES TO ENTIRE CONTRACT

CONTRACT NOTES

PROPOSAL ADDENDA

All addenda to this proposal must be applied when calculating bid and certified in the bid packet submitted to the Kentucky Department of Highways. Failure to use the correct and most recent addenda may result in the bid being rejected.

BID SUBMITTAL

Bidder must use the Department's electronic bidding software. The Bidder must download the bid file located on the Bid Express website (www.bidx.com) to prepare a bid packet for submission to the Department. The bidder must submit electronically using Bid Express.

JOINT VENTURE BIDDING

Joint venture bidding is permissible. All companies in the joint venture must be prequalified in one of the work types in the Qualifications for Bidders for the project. The bidders must get a vendor ID for the joint venture from the Division of Construction Procurement and register the joint venture as a bidder on the project. Also, the joint venture must obtain a digital ID from Bid Express to submit a bid. A joint bid bond of 5% may be submitted for both companies or each company may submit a separate bond of 5%.

UNDERGROUND FACILITY DAMAGE PROTECTION

The contractor shall make every effort to protect underground facilities from damage as prescribed in the Underground Facility Damage Protection Act of 1994, Kentucky Revised Statute KRS 367.4901 to 367.4917. It is the contractor's responsibility to determine and take steps necessary to be in compliance with federal and state damage prevention directives. When prescribed in said directives, the contractor shall submit Excavation Locate Requests to the Kentucky Contact Center (KY811) via web ticket entry. The submission of this request does not relieve the contractor from the responsibility of contacting non-member facility owners, whom shall be contacted through their individual Protection Notification Center. Non-compliance with these directives can result in the enforcement of penalties.

REGISTRATION WITH THE SECRETARY OF STATE BY A FOREIGN ENTITY

Pursuant to KRS 176.085(1)(b), an agency, department, office, or political subdivision of the Commonwealth of Kentucky shall not award a state contract to a person that is a foreign entity required by <u>KRS 14A.9-010</u> to obtain a certificate of authority to transact business in the Commonwealth ("certificate") from the Secretary of State under <u>KRS 14A.9-030</u> unless the person produces the certificate within fourteen (14) days of the bid or proposal opening. If the foreign entity is not required to obtain a certificate as provided in <u>KRS 14A.9-010</u>, the foreign entity should identify the applicable exception. Foreign entity is defined within <u>KRS 14A.1-070</u>.

For all foreign entities required to obtain a certificate of authority to transact business in the Commonwealth, if a copy of the certificate is not received by the contracting agency within the time frame identified above, the foreign entity's solicitation response shall be deemed non-responsive or the awarded contract shall be cancelled.

Businesses can register with the Secretary of State at <u>https://secure.kentucky.gov/sos/ftbr/welcome.aspx</u>.

SPECIAL NOTE FOR PROJECT QUESTIONS DURING ADVERTISEMENT

Questions about projects during the advertisement should be submitted in writing to the Division of Construction Procurement. This may be done by fax (502) 564-7299 or email to <u>kytc.projectquestions@ky.gov</u>. The Department will attempt to answer all submitted questions. The Department reserves the right not to answer if the question is not pertinent or does not aid in clarifying the project intent.

The deadline for posting answers will be 3:00 pm Eastern Daylight Time, the day preceding the Letting. Questions may be submitted until this deadline with the understanding that the later a question is submitted, the less likely an answer will be able to be provided.

The questions and answers will be posted for each Letting under the heading "Questions & Answers" on the Construction Procurement website (<u>www.transportation.ky.gov/contract</u>). The answers provided shall be considered part of this Special Note and, in case of a discrepancy, will govern over all other bidding documents.

HARDWOOD REMOVAL RESTRICTIONS

The US Department of Agriculture has imposed a quarantine in Kentucky and several surrounding states, to prevent the spread of an invasive insect, the emerald ash borer. Hardwood cut in conjunction with the project may not be removed from the state. Chipping or burning on site is the preferred method of disposal.

INSTRUCTIONS FOR EXCESS MATERIAL SITES AND BORROW SITES

Identification of excess material sites and borrow sites shall be the responsibility of the Contractor. The Contractor shall be responsible for compliance with all applicable state and federal laws and may wish to consult with the US Fish and Wildlife Service to seek protection under Section 10 of the Endangered Species Act for these activities.

ACCESS TO RECORDS

The contractor, as defined in KRS 45A.030 (9) agrees that the contracting agency, the Finance and Administration Cabinet, the Auditor of Public Accounts, and the Legislative Research Commission, or their duly authorized representatives, shall have access to any books, documents, papers, records, or other evidence, which are directly pertinent to this contract for the purpose of financial audit or program review. Records and other prequalification information confidentially

disclosed as part of the bid process shall not be deemed as directly pertinent to the contract and shall be exempt from disclosure as provided in KRS 61.878(1)(c). The contractor also recognizes that any books, documents, papers, records, or other evidence, received during a financial audit or program review shall be subject to the Kentucky Open Records Act, KRS 61.870 to 61.884.

In the event of a dispute between the contractor and the contracting agency, Attorney General, or the Auditor of Public Accounts over documents that are eligible for production and review, the Finance and Administration Cabinet shall review the dispute and issue a determination, in accordance with Secretary's Order 11-004.

April 30, 2018

SPECIAL NOTE FOR RECIPROCAL PREFERENCE

RECIPROCAL PREFERENCE TO BE GIVEN BY PUBLIC AGENCIES TO RESIDENT BIDDERS

By reference, KRS 45A.490 to 45A.494 are incorporated herein and in compliance regarding the bidders residency. Bidders who want to claim resident bidder status should complete the Affidavit for Claiming Resident Bidder Status along with their bid in the electronic bidding software. Submittal of the Affidavit should be done along the bid in Bid Express.

April 30, 2018

SURFACING AREAS

The Department estimates the mainline surfacing width to be 24 feet. The Department estimates the total mainline area to be surfaced to be 294,277 square yards.

The Department estimates the shoulder width to be 1.5 feet on each side.

The Department estimates the total shoulder area to be surfaced to be 53,356 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.

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.

MATERIAL TRANSFER VEHICLE (MTV)

Provide and use a MTV in accordance with Sections 403.02.10 and 403.03.05.

SPECIAL NOTE FOR THERMOPLASTIC PAVEMENT MARKINGS REMOVAL

Remove existing Thermoplastic Pavement Markings just prior to placement of the overlay as directed by the Engineer. The Department will not measure removal of the Thermoplastic Pavement Markings, but shall be incidental to the other items of work.

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 polishresistant 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 conforming to AASHTO M 316 and tested according to T59. Distill sample at 350 •F. In addition, ensure that the emulsified asphalt conforms to the following criteria:

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

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 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 polymermodified 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 crosssection. 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 wide, $\frac{1}{2}$ 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 Acceptance and Verification.

3.7.1 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.

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

3.7.3 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.

3.8 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

3.9 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.

4. **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

5. 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				
Viscosity, 77 ° F (SFS)			15 - 17	12 - 14	9 - 11	≤8
AASHTO T 59	20 - 100	18 - 110	111 - 120	121 - 130	131 - 140	• 141
Residue Penetration, 77 •F			34 - 36	31 - 33	28 - 30	• 27
AASHTO T 59	40 - 90	37 - 98	99 - 108	109 - 120	121 - 130	• 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

				TABL	E 1			
	GRADATION - MICROSURFACING TYPE II SAND							
Payment			Sieve	Size-Perce		5		
Reduction	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

				TABL	E 2			
	GRADATION - MICROSURFACING TYPE III SAND							
Payment			Sieve	Size-Perce	ent Passing	, ,		
Reduction	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		Table 4		Table 5 Payment Based on Rate of Application for 24 lb/yd ²		
Payment Based or Application for		Payment Based on Rate of Application for 14 lb/yd ²				
Rate of Application of Per Day of Production	Reduction of Payment	Reduction Reduction Rate of Application of of Per Day of Production Payment		Rate of Application of Per Day of Production	Reduction of Payment	
(lb/sy)	(%)	(lb/sy)	(%)	(lb/sy)	(%)	
18 and Greater	100	14 and Greater	100	24 and Greater	100	
17.9 - 17.5	95	13.9 - 13.5	95	23.9 - 23.5	95	
17.4 - 17.0	90	13.4 - 13.0	90	23.4 - 23.0	90	
16.9 - 16.5	80	12.9 - 12.5	80	22.9 - 22.5	80	
16.4 - 16.0	70	12.4 - 12.0	70	22.4 - 22.0	70	
15.9 and Below	50	11.9 and Below	50	21.9 and Below	50	

<u>Code</u> 20814EC	Pay Item Micro Surfacing-Surface Course	<u>Pay Unit</u> Square Yard
21652EN	Micro Surfacing-Leveling Course	Square Yard
24515EC	Micro Surfacing-Rut Fill Course	Ton

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

Contrary to Subsection 403.03.03, provide polish-resistant aggregate in the ASPH SURF NO.4 asphalt mixture conforming to one of the following requirements:

ASPH SURF NO.4A

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

ASPH SURF NO.4B

- Total combined aggregate is composed of a Class A and Class B polish-resistant aggregate; or
- Minimum of 85 percent Class B polish-resistant aggregate and maximum 15% Class D aggregate of the total combined aggregate.

Contrary to Section 409.03.03 of the *Standards and Specifications*, for a 4.75mm asphalt mixture requiring a Class A or B polish resistant aggregate, the use of recycled/reclaimed materials is prohibited. For 4.75mm asphalt mixtures requiring Class D aggregate, recycled asphalt pavement (RAP) shall not exceed 15% of effective binder content, and the use of recycled asphalt shingles (RAS) is prohibited.

SPECIAL NOTE FOR MESSAGE BOARD DETAILS

1.00-Specifications of Commodity and/or Service Requirements

PORTABLE VARIABLE MESSAGE BOARD, SOLAR POWERED AND TRAILER MOUNTED

GENERAL: These specifications are intended to describe a trailer-mounted, portable variable message board upon which electronically generated LED lamp messages will be displayed to highway traffic as advisories or for the purposes of warning and/or control. The Solar message board shall be designed with sufficient energy backup to operate for a period of 30 days without any sun. The solar panel generator array shall recharge the battery bank at a rate of 2.5 hours sunlight in 24 hours. The trailer and all mounted equipment shall be structurally adequate for unlimited, normal operation in wind velocities normally encountered on a roadway and shall have the capability to remain operational under inclement weather conditions. The equipment shall be designed to enable one person to perform all transporting and operating functions easily and effectively without assistance. The unit shall be new or current production model and meet the following specifications:

DISPLAY CABINET

SIZE: Approximately 130" long x 72" high x 12" thick; board should have 3 degree taper from top to bottom to help reduce glare.

LETTER ARRANGEMENT: Three lines of 8 characters per line (total 24 letter characters).

MATERIAL: Aluminum construction and assembled as to prevent dissimilar metal action from, painted flat black for non-glare. Top and sides equipped with rain gutters formed into the aluminum sheet metal.

MODULE COVERING: The front face of the sign shall be covered with a clear UV inhibited Lexan polycarbonate sheet. Hinges shall be stainless steel. Covering shall have telescoping prop slides to hold door open for service.

VENTILLATION: Two (2) thermostatically controlled cooling fans will be provided for cooling and to control condensation.

MODULE SERVICEABILITY: Modules shall require only a nut driver and screwdriver for changing. All letters shall be identical and have the ability to be moved from one location to another without any changes to letters.

SIGN SUPPORT: The message sign panel shall be supported on a telescoping upright member in a manner to permit raising the sign for operation and lowering it for transport. The upright shall include a devise to enable 360 degree rotation and shall lock into position after being manually rotated. Sign shall be at least 6.5 feet above the ground when in the fully raised position. In the transport position sign orientation shall minimize wind-drag during towing.

LETTER CHARACTERS

CHARACTER SIZE: shall be a minimum of 18 inches in height and 12 inches in width and composed of a minimum of 35 pixels.

PIXEL TYPE: Shall be composed of four LEDs per pixel constructed so that loss of a single LED will only affect ¹/₄ the pixel.

LED COLOR: Shall be yellow-orange at 590 +/- 4 nm.

LED BRIGHTNESS: The computer shall automatically adjust the sign brightness to maintain legibility at a distance of ¹/₂ mile under both day and night conditions. Legibility shall be maintained without being too dim or intense.

OPTICAL LENSES AND SUNSHADES: Each pixel shall have a snap-in optical lens to enhance brightness and reduce power consumption. A sunshade shall be provided over each letter to eliminate glare.

CONTROL CONSOLE

CONTROL TYPE: Self-contained on-board computer. No lap-top computer required to program or run sign display. Computer shall be equipped with a timer to allow for special on-off timing and special message timing. The computer shall have the capability to display up to six (6) messages in sequence, with variable timing in ¹/₄ second increments. The on-board computer shall be equipped with NTCIP compliant software.

PROGRAMMING EASE: Unit shall have a 'Quick Message Feature' to allow a non-computer literate operator to get a 6 frame sequence on the sign. Instructions and prompting will be displayed on a minimum 7" inch colored LCD pressured sensitive display screen. Ability to review messages on the LCD screen before display on the message sign shall be provided. A minimum of 250 preprogrammed messages shall be by access through an LCD touch screen controller that shall be provided with the unit.

CONSOLE: The computer and power control unit shall be housed in a weather resistant, shock resistant lockable control box which shall include a light for night operation. The power control unit shall contain two current meters, one to show the amperage generated with the battery charger and one to show the amperage from the solar panels to the battery bank. The power control unit shall incorporate a PV regulator with thermal compensation for variances in ambient temperature to regulate the charge rate to the battery bank.

SECURITY: System shall have password protection for programming of message display and to adjust settings. Console shall be protected with an equipped keyed lock and a heavy-duty hasp that will allow for an additional lock. This will provide for a double means of secured entry.

POWER SYSTEM

The Solar Message center shall be designed to accept two (2) power sources. The primary power supply shall be a battery bank consisting of batteries wired in parallel/series to obtain 12V DC output. The battery bank shall be housed in a lockable plastic or aluminum box with aluminum access cover. The battery bank shall be recharged by a solar panel array producing a minimum of 150 watts of power. The solar panel array shall be located over (on top of) the display cabinet. Each solar panel shall have a blocking and by-pass diode arrangement to prevent power back flow should a panel get damaged or shaded. A built in battery charger shall be provided to allow charging from a 120VAC power source if needed.

The secondary power source shall allow the unit to accept 120VAC electrical service.

The two power sources shall be enclosed in an appropriate protective housing.

TRAILER

The trailer shall be structurally adequate to serve both as a carrier and as an operating platform for all components of the complete unit. The base structure shall be structural rectangular steel tubing providing an adequate frame for the unit. All tubing shall be joined by welding and all structural welds shall be continuous bead welds. All tubing ends shall be closed. Axle and suspension systems shall be rated at 3500 pounds minimum. Wheels and tires shall be a minimum of 15 inch, 4 ply rating and shall be rated for towing at highway speeds of 65 miles per hour. A fender shall be installed over each wheel.

The trailer shall be equipped with a hydraulic brake actuator system with an automatic back up release system.

Four crank type, heavy duty, industrial leveling jacks, one on each corner of the trailer, shall be installed.

An LED lighting system shall be provided for the trailer, to include tail lights, stop lights, turn signals, license plate light and reflectors. A trailer electrical cable and connector shall be installed. To eliminate tubing installation chafing all wiring shall be routed and clamped underneath the structural tubing. A 2-inch ball type hitch with double safety chains in accordance with SAE J684F shall be installed.

SIGHT TUBE: A sight tube for aiming the message sign to the desired location shall be provided.

PAINT: The entire message board shall be safety orange powder coated and oven baked.

STANDARD EQUIPMENT: Unit shall contain all standard equipment listed as such in the manufacturer's latest literature unless otherwise stated within these specifications.

ADDITIONAL EQUIPMENT: Unit shall contain any additional equipment, not specifically mentioned but necessary, to make a COMPLETE and WORKABLE unit.

REGULATIONS: Unit shall meet any state or federal OSHA, Manual on Uniform Traffic Control Devices (MUTCD), or DOT regulations as applicable. Unit will be delineated on a permanent basis with retro reflective material in a continuous line on the face of the trailer as seen by oncoming road users.

MANUALS: One (1) operator's manual and one (1) parts & service manual shall be provided with each unit. Routine maintenance of the unit shall be described in these manuals. A detailed electrical schematic shall also be included with the service manual, describing all electronic and solid-state components. All manuals shall be provided at the time of delivery of the units. Any item not produced by the manufacturer and necessary to make a complete and workable unit will also be required to have the same manuals furnished. All manuals to be current with year model of the equipment delivered and shall accompany the delivery of the units.

WARRANTY: Units shall have a manufacturer's warranty against defective parts and materials for a period of two (1) year. Warranty shall include 100 percent parts and labor for warranted repairs. All warranty repairs shall be done on-site and performed "only" by a manufacturer's authorized representative. A warranty card or document shall be provided with each unit.

PARTS AND SERVICE: Successful bidder shall be able to provide OEM repair parts/service within 36 hours after receiving notification from the Division of Equipment of equipment breakdown. Service work shall only be performed by manufacturer trained and certified technician.

PRE-SERVICE: All new equipment must be pre-serviced to the manufacturer's recommendations and in first class operating condition when delivered. All service work shall be done in the vendor's place of business or in another location provided by the vendor. No major assembly or servicing of equipment will be allowed on Highway Department property. Only minor modifications to equipment necessary to bring the item into compliance with specifications will be permitted on Highway Department property.

ADVERTISING: Unit shall be entirely free of any and all advertising attachments of dealer, such as clips, license brackets, mud flaps or other devices bearing vendor's name.

SUGGESTED MODELS WHEN IN ACCORDANCE WITH SPECIFICATIONS:

Ver Mac PCMS1210

SPECIAL NOTE FOR PAVEMENT WEDGE AND SHOULDER MONOLITHIC OPERATION

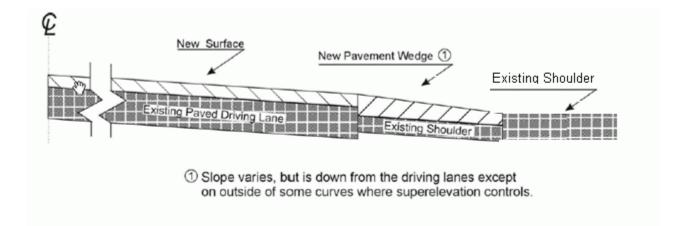
1.0 MATERIALS. Provide an Asphalt Surface Mixture conforming to Section 403 of the Standard Specifications, as applicable to the project, for the pavement wedge.

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.

1-3232-DS Pavement Wedge Monolithic 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

Do not erect lane closures during the following days and hours:

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

At locations with three or more lanes, maintain one lane of traffic in each direction at all times during construction. At locations with two lanes, maintain alternating one way traffic during construction. Provide a minimum clear lane width of 11 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.

Traffic Control Plan Page 2 of 10

CHANGEABLE MESSAGE SIGNS

Provide **NEW** changeable message signs in advance of and within the project at locations determined by the Engineer. If work is in progress concurrently in both directions or if more than one lane closure is in place in the same direction of travel, provide additional changeable message signs as directed by the Engineer. Place changeable message signs one mile in advance of the anticipated queue at each lane closure. As the actual queue lengthens and/or shortens, relocate or provide additional changeable message signs so that traffic has warning of slowed or stopped traffic at least one mile but not more than two miles before reaching the end of the actual queue. The Engineer may vary the designated locations as the work progresses. The Engineer will determine the messages to be displayed. In the event of damage or mechanical/electrical failure, repair or replace the Changeable Message Sign within 24 hours. The Department will measure for payment the maximum number of Changeable Message Signs in concurrent use at the same time on a single day on all sections of the contract. The Department will measure individual Changeable Message Signs 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 Changeable Message Signs or for signs the Engineer directs be replaced due to poor condition or readability.

The Department will retain possession of the changeable message signs upon completion of the work. The changeable message signs shall be NEW Ver Mac PCMS1210's

ARROW PANELS

Use arrow panels as shown on the Standard Drawings or as directed by the Engineer. The Department will measure for payment the maximum number of arrow panels in concurrent use at the same time on a single day on all sections of the contract. The Department will measure for payment the maximum number of Arrow Panels in concurrent use at the same time on a single day on all sections of the contract. The Department will measure 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 Arrow Panels or for payment. Retain possession of the Arrow Panels upon completion of the work.

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

Traffic Control Plan Page 3 of 10

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.

THERMOPLASTIC INTERSECTION MARKINGS

Consider the locations listed on the summary as approximate only. Prior to milling and/or resurfacing, locate and document the locations of the existing markings. After resurfacing, replace the markings at their approximate existing locations or as directed by Engineer. Place markings not existing prior to resurfacing as directed by the Engineer.

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 the work.

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 exceptions:

- 1. Include edge lines in Temporary Striping; and
- 2. Place Temporary or Permanent Striping before opening a lane to traffic; and
- 3. If the Contractor's operations or phasing requires temporary markings that must

Traffic Control Plan Page 4 of 10

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 $1\frac{1}{2}$ ". 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.

Traffic Control Plan Page 5 of 10

USE AND PLACEMENT OF CHANGEABLE MESSAGE SIGNS

The following policy is based upon current Changeable Message Signs (CMS) standards and practice from many sources, including the Federal Highway Administration (FHWA), other State Departments of Transportation, and Traffic Safety Associations. It is understood that each CMS installation or use requires individual consideration due to the specific location or purpose. However, there will be elements that are constant in nearly all applications. Accordingly these recommended guidelines bring a level of uniformity, while still being open to regional experience and engineering judgment.

Application

The primary purpose of CMS is to advise the driver of unexpected traffic and routing situations. Examples of applications where CMS can be effective include:

- Closures (road, lane, bridge, ramp, shoulder, interstate)
- Changes in alignment or surface conditions
- Significant delays, congestion
- Construction/maintenance activities (delays, future activities)
- Detours/alternative routes
- Special events with traffic and safety implications
- Crash/incidents
- Vehicle restrictions (width, height, weight, flammable)
- Advance notice of new traffic control devices
- Real-time traffic conditions (must be kept up to date)
- Weather /driving conditions, environmental conditions, Roadway Weather Information Systems
- Emergency Situations
- Referral to Highway Advisory Radio (if available)
- Messages as approved by the County Engineer's Office

CMS should not be used for:

- Replacement of static signs (e.g. road work ahead), regulatory signage (e.g. speed limits), pavement markings, standard traffic control devices, conventional warning or guide signs.
- Replacement of lighted arrow board
- Advertising (Don't advertise the event unless clarifying "action" to be taken by driver e.g. Speedway traffic next exit)
- Generic messages
- Test messages (portable signs only)
- Describe recurrent congestion (e.g. rush hour)
- Public service announcements (not traffic related

Traffic Control Plan Page 6 of 10

<u>Messages</u>

Basic principles that are important to providing proper messages and insuring the proper operation of a CMS are:

- Visible for at least ¹/₂ mile under ideal daytime and nighttime conditions
- Legible from all lanes a minimum of 650 feet
- Entire message readable twice while traveling at the posted speed
- Nor more than two message panels should be used (three panels may be used on roadways where vehicles are traveling less than 45 mph). A panel is the message that fits on the face of the sign without flipping or scrolling.
- Each panel should convey a single thought; short and concise
- Do not use two unrelated panels on a sign
- Do not use the sign for two unrelated messages
- Should not scroll text horizontally or vertically
- Should not contain both the words left and right
- Use standardized abbreviations and messages
- Should be accurate and timely
- Avoid filler/unnecessary words and periods (hazardous, a, an, the)
- Avoid use of speed limits
- Use words (not numbers) for dates

<u>Placement</u>

Placement of the CMS is important to insure that the signs is visible to the driver and provides ample time to take any necessary action. Some of the following principles may only be applicable to controlled access roadways. The basic principles of placement for a CMS are:

- When 2 signs are needed, place on same side of roadway and at least 1,000 feet apart
- Place behind semi-rigid/rigid protection (guardrail, barrier) or outside of the clear zone
- Place 1,000 feet in advance of work zone; at least one mile ahead of decision point
- Normally place on right side of roadway; but should be placed closest to the affected lane so that either side is acceptable
- Signs should not be dual mounted (one on each side of roadway facing same direction)
- Point trailer hitch downstream
- Secure to immovable object to prevent thief (if necessary)
- Do not place in sags or just beyond crest
- Check for reflection of sun to prevent the blinding of motorist
- Should be turned ~3 degrees outward from perpendicular to the edge of pavement
- Bottom of sign should be 7 feet above the elevation of edge of roadway
- Should be removed when not in use
- •

Traffic Control Plan Page 7 of 10

Standard Abbreviations

The following is a list of standard abbreviations to be used on CMS.

<u>Word</u>	Abbrev.	<u>Example</u>
Access	ACCS	ACCIDENT AHEAD/USE ACCS RD
		NEXT RIGHT
Alternate	ALT	ACCIDENT AHEAD/USE ALT RTE
		NEXT RIGHT
Avenue	AVE	FIFTH AVE CLOSED/DETOUR
		NEXT LEFT
Blocked	BLKD	FIFTH AVE BLKD/MERGE LEFT
Boulevard	BLVD	MAIN BLVD CLOSED/USE ALT RTE
Bridge	BRDG	SMITH BRDG CLOSED/USE ALT RTE
Cardinal Directions	N, S, E, W	N I75 CLOSED/ DETOUR EXIT 30
Center	CNTR	CNTR LANE CLOSED/MERGE LEFT
Commercial	COMM	OVRSZ COMM VEH/USE I275
Condition	COND	ICY COND POSSIBLE
Congested	CONG	HVY CONG NEXT 3 MI
Construction	CONST	CONST WORK AHEAD/EXPECT
		DELAYS
Downtown	DWNTN	DWNTN TRAF USE EX 40
Eastbound	E-BND	E-BND I64 CLOSED/DETOUR
		EXIT 20
Emergency	EMER	EMER VEH AHEAD/PREPARE TO STOP
Entrance, Enter	EX, EXT	DWNTN TRAF USE EX 40
Expressway	EXPWY	WTRSN EXPWY CLOSED/DETOUR
		EXIT 10
Freeway	FRWY, FWY	GN SYNDR FWY CLOSED/DETOUR
		EXIT 15
Hazardous Materials	HAZMAT	HAZMAT IN ROADWAY/ALL TRAF
		EXIT 25
Highway	HWY	ACCIDENT ON AA HWY/EXPECT
		DELAYS
Hour	HR	ACCIDENT ON AA HWY/2 HR
		DELAY
Information	INFO	TRAF INFO TUNE TO 1240 AM
Interstate	Ι	E-BND I64 CLOSED/DETOUR
		EXIT 20
Lane	LN	LN CLOSED/MERGE LEFT
Left	LFT	LANE CLOSED/MERGE LFT
Local	LOC	LOC TRAF USE ALT RTE
Maintenance	MAINT	MAINT WRK ON BRDG/SLOW
Major	MAJ	MAJ DELWAYS I75/USE ALT RTE

Traffic Control Plan Page 8 of 10

Mile	MI	ACCIDENT 3 MI AHEAD/ USE ALT RTE
Minor	MNR	ACCIDENT 3 MI MNR DELAY
Minutes	MIN	ACCIDENT 3 MI/30 MIN DELAY
Northbound	N-BND	N-BND I75 CLOSED/ DETOUR EXIT 50
Oversized	OVRSZ	OVRSZ COMM VEH/USE I275 NEXT RIGHT
Parking	PKING	EVENT PKING NEXT RGT
Parkway	PKWY	CUM PKWAY TRAF/DETOUR
-		EXIT 60
Prepare	PREP	ACCIDENT 3 MIL/PREP TO STOP
Right	RGT	EVENT PKING NEXT RGT
Road	RD	HAZMAT IN RD/ALL TRAF EXIT 25
Roadwork	RDWK	RDWK NEXT 4 MI/POSSIBLE
		DELAYS
Route	RTE	MAJ DELAYS I75/USE ALT RTE
Shoulder	SHLDR	SHLDR CLOSED NEXT 5 MI
Slippery	SLIP	SLIP COND POSSIBLE/ SLOW SPD
Southbound	S-BND	S-BND I75 CLOSED/DETOUR
		EXIT 50
Speed	SPD	SLIP COND POSSIBLE/ SLOW SPD
Street	ST	MAIN ST CLOSED/USE ALT RTE
Traffic	TRAF	CUM PKWAY TRAF/DETOUR EXIT 60
Vehicle	VEH	OVRSZ COMM VEH/USE 1275 NEXT RIGHT
Westbound	W-BND	W-BND I64 CLOSED/DETOUR EXIT 50
Work	WRK	CONST WRK 2MI/POSSIBLE DELAYS

Certain abbreviations are prone to inviting confusion because another word is abbreviated or could be abbreviated in the same way. DO NO USE THESE ABBREVIATIONS.

<u>Abbrev.</u>	Intended Word	Word Erroneously Given
ACC	Accident	Access (Road)
CLRS	Clears	Colors
DLY	Delay	Daily
FDR	Feeder	Federal
L	Left	Lane (merge)
LOC	Local	Location
LT	Light (traffic)	Left
PARK	Parking	Park
POLL	Pollution (index)	Poll
RED	Reduce	Red
STAD	Stadium	Standard

Traffic Control Plan Page 9 of 10

> TEMP WRNG

Temporary Warning Temperature Wrong

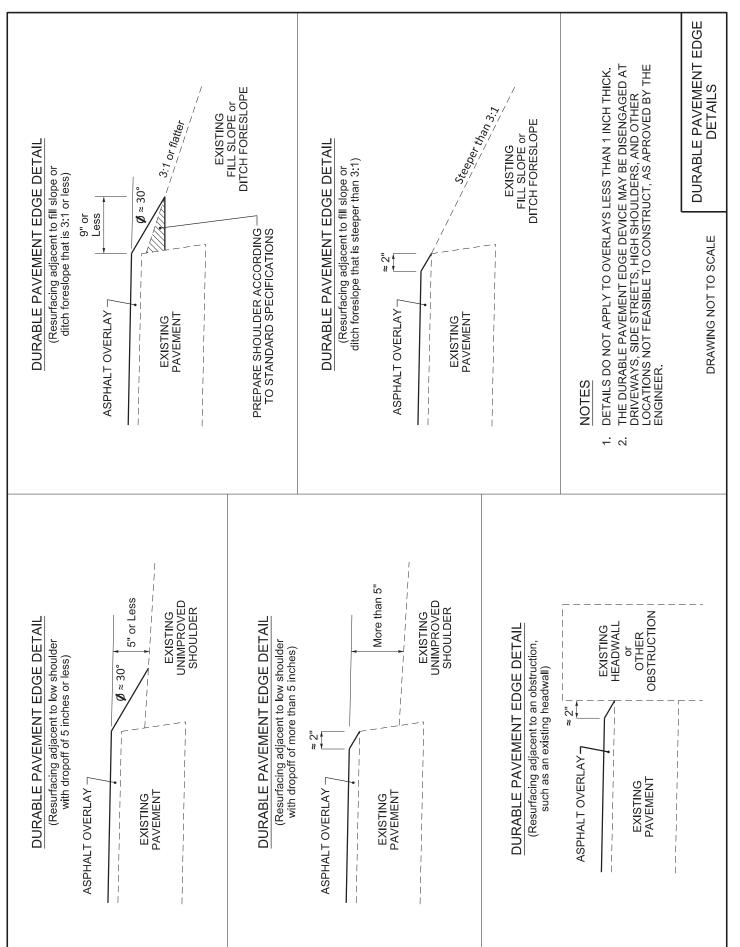
TYPICAL MESSAGES

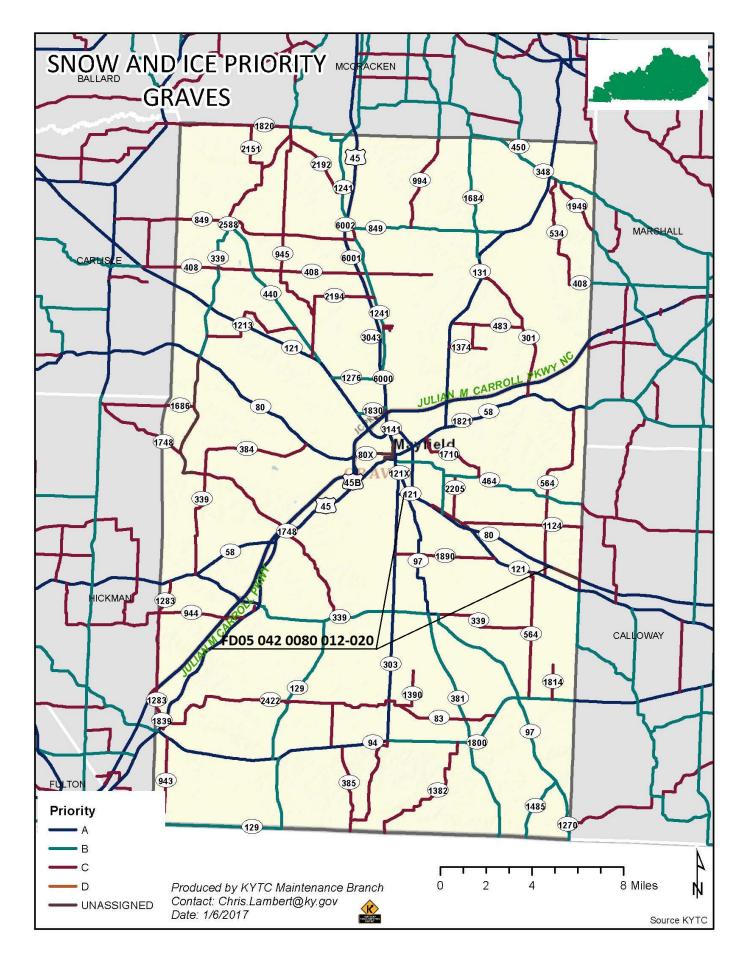
The following is a list of typical messages used on CMS. The list consists of the reason or problem that you want the driver to be aware of and the action that you want the driver to take.

Reason/ProblemACCIDENTACCIDENT/XX MILESXX ROAD CLOSEDXX EXIT CLOSEDBRIDGE CLOSEDBRIDGE/(SLIPPERY, ICE, ETC.)CENTER/LANE/CLOSEDDELAY(S), MAJOR/DELAYSDEBRIS AHEADDENSE FOGDISABLED/VEHICLEEMER/VEHICLES/ONLYEVENT PARKINGEXIT XX CLOSEDFLAGGER XX MILESFOG XX MILESFREEWAY CLOSEDFRESH OILHAZMAT SPILLICEINCIDENT AHEADLANES (NARROW, SHIFT, MERGE, ETC.)LEFT LANE CLOSEDLEFT SHOULDER CLOSEDLOSE GRAVELMEDIAN WORK XX MILESMOVING WORK ZONE, WORKERS IN ROADWAY	Action ALL TRAFFIC EXIT RT AVOID DELAY USE XX CONSIDER ALT ROUTE DETOUR DETOUR XX MILES DO NOT PASS EXPECT DELAYS FOLLOW ALT ROUTE KEEP LEFT KEEP RIGHT MERGE XX MILES MERGE LEFT MERGE RIGHT ONE-WAY TRAFFIC PASS TO LEFT PASS TO RIGHT PREPARE TO STOP REDUCE SPEED SLOW SLOW DOWN STAY IN LANE STOP AHEAD STOP XX MILES TUNE RADIO 1610 AM USE NN ROAD USE CENTER LANE USE DETOUR ROUTE USE LEFT TURN LANE
LEFT SHOULDER CLOSED LOOSE GRAVEL MEDIAN WORK XX MILES	USE CENTER LANE USE DETOUR ROUTE USE LEFT TURN LANE
MOVING WORK ZONE, WORKERS IN ROADWAY NEXT EXIT CLOSED NO OVERSIZED LOADS NO PASSING NO SHOULDER ONE LANE BRIDGE	USE NEXT EXIT USE RIGHT LANE WATCH FOR FLAGGER

Traffic Control Plan Page 10 of 10

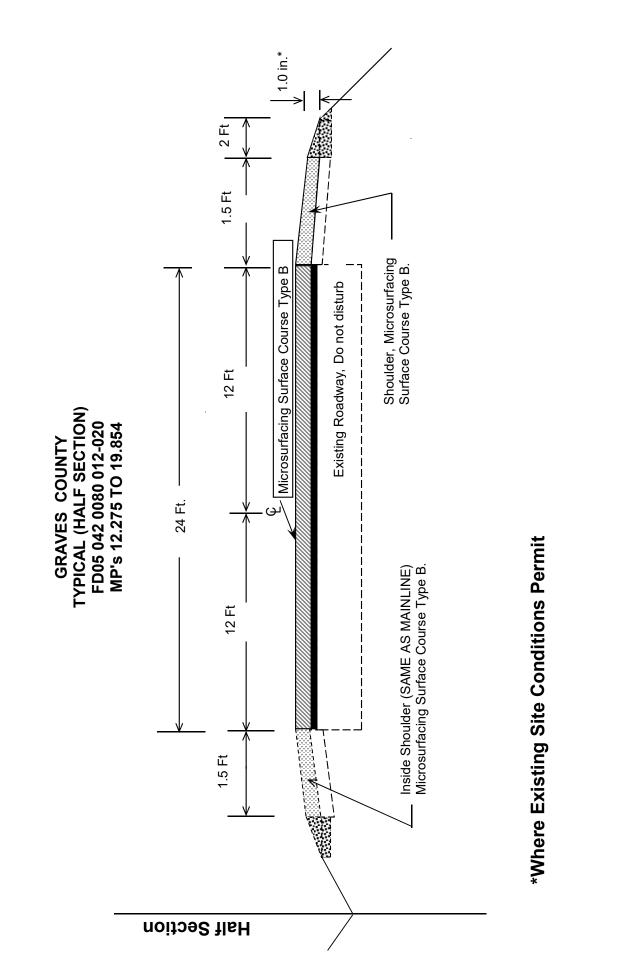
> PEOPLE CROSSING RAMP CLOSED RAMP (SLIPPERY, ICE, ETC.) **RIGHT LANE CLOSED RIGHT LANE NARROWS RIGHT SHOULDER CLOSED** ROAD CLOSED ROAD CLOSED XX MILES ROAD (SLIPPERY, ICE, ETC.) ROAD WORK ROAD WORK (OR CONSTRUCTION) (TONIGHT, TODAY, TOMORROW, DATE) ROAD WORK XX MILES SHOULDER (SLIPPERY, ICE, SOFT, BLOCKED, ETC.) NEW SIGNAL XX MILES SLOW 1 (OR 2) - WAY TRAFFIC SOFT SHOULDER STALLED VEHICLES AHEAD TRAFFIC BACKUP TRAFFIC SLOWS TRUCK CROSSING TRUCKS ENTERING TOW TRUCK AHEAD **UNEVEN LANES** WATER ON ROAD WET PAINT WORK ZONE XX MILES WORKERS AHEAD



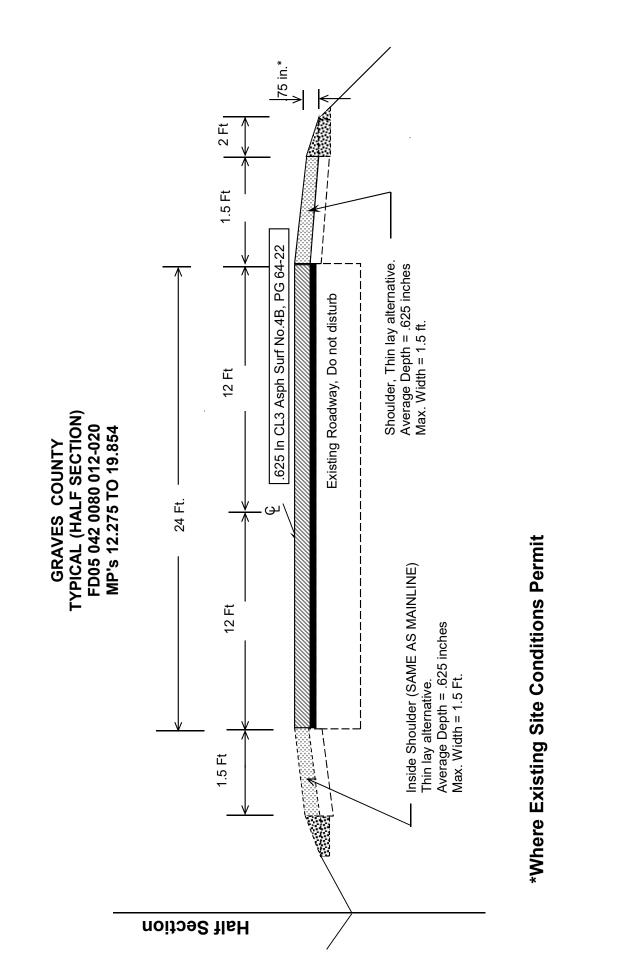


Graves County THERMOPLASTIC INTERSECTION PAVEMENT MARKINGS SUMMARY FD05 042 0080 012-020

NOTES **CROSS BUCK 16"** ٤ RAILROAD "R" 6 FOOT Ā CATRAXX 6 INCH LF "ONLY" Ч 26 4 2 2 4 4 4 2 4 COMB Ч 2 2 ARROWS STR EA 2 2 CURVE Ā 0 0 2 2 2 4 9 ო ო ø و 9 59 2 2 ო 9 2 STP BARS 24 INCH LF 35 35 175 35 35 35 X-WALKS 6 INCH LF FLOOD RD GALLOWAY RD KY 97 / KY 121 INTERSECTION HAYES SCH RD KY 121 X KY 121 X ADAIR RD KY 121 X KY 121 X KY 1124 KY 940 KY 303 KY 564 KY 121 12.862 12.884 12.884 12.884 12.51 12.51 12.51 12.51 12.51 12.820 14.450 11.2275 15.473 15.473 15.473 15.473 15.473 16.098 18.073 18.073 18.073 19.571 18.073 19.5711 19.5711 19.5711 19.5711 19.5711 1 12.687 12.716 12.687 12.716 MPT. TOTAL



Micro typical



Thin lay typical

PART II

SPECIFICATIONS AND STANDARD DRAWINGS

SPECIFICATIONS REFERENCE

Any reference in the plans or proposal to previous editions of the *Standard Specifications* for Road and Bridge Construction and Standard Drawings are superseded by Standard Specifications for Road and Bridge Construction, Edition of 2012 and Standard Drawings, Edition of 2016.

SUPPLEMENTAL SPECIFICATIONS

The contractor shall use the Supplemental Specifications that are effective at the time of letting. The Supplemental Specifications can be found at the following link:

http://transportation.ky.gov/Construction/Pages/Kentucky-Standard-Specifications.aspx

2016 KENTUCKY STANDARD DRAWINGS

CURVE WIDENING AND SUPERELEVATION TRANSITIONS
SUPERELEVATION FOR MULTILANE PAVEMENTRGS-002-06
MISCELLANEOUS STANDARDS
APPROACHES, ENTRANCES, AND MAIL BOX TURNOUT
LANE CLOSURE TWO-LANE HIGHWAY TTC-100-04
SHOULDER CLOSURE
PAVEMENT CONDITION WARNING SIGNS
MOBILE OPERATION FOR PAINT STRIPING CASE ITTS-100-02
MOBILE OPERATION FOR PAINT STRIPING CASE IITTS-105-02

PART III

EMPLOYMENT, WAGE AND RECORD REQUIREMENTS

TRANSPORTATION CABINET DEPARTMENT OF HIGHWAYS

LABOR AND WAGE REQUIREMENTS APPLICABLE TO OTHER THAN FEDERAL-AID SYSTEM PROJECTS

I. Application

II. Nondiscrimination of Employees (KRS 344)

I. APPLICATION

1. These contract provisions shall apply to all work performed on the contract by the contractor with his own organization and with the assistance of workmen under his immediate superintendence and to all work performed on the contract by piecework, station work or by subcontract. The contractor's organization shall be construed to include only workmen employed and paid directly by the contractor and equipment owned or rented by him, with or without operators.

2. The contractor shall insert in each of his subcontracts all of the stipulations contained in these Required Provisions and such other stipulations as may be required.

3. A breach of any of the stipulations contained in these Required Provisions may be grounds for termination of the contract.

II. NONDISCRIMINATION OF EMPLOYEES

AN ACT OF THE KENTUCKY GENERAL ASSEMBLY TO PREVENT DISCRIMINATION IN EMPLOYMENT KRS CHAPTER 344 EFFECTIVE JUNE 16, 1972

The contract on this project, in accordance with KRS Chapter 344, provides that during the performance of this contract, the contractor agrees as follows:

1. The contractor shall not fail or refuse to hire, or shall not discharge any individual, or otherwise discriminate against an individual with respect to his compensation, terms, conditions, or privileges of employment, because of such individual's race, color, religion, national origin, sex, disability or age (forty and above); or limit, segregate, or classify his employees in any way which would deprive or tend to deprive an individual of employment opportunities or otherwise adversely affect his status as an employee, because of such individual's race, color, religion, national origin, sex, disability or age forty (40) and over. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.

2. The contractor shall not print or publish or cause to be printed or published a notice or advertisement relating to employment by such an employer or membership in or any classification or referral for employment by the employment agency, indicating any preference, limitation, specification, or discrimination, based on race, color, religion, national origin, sex, or age forty (40) and over, or because the person is a qualified individual with a disability, except that such a notice or advertisement may indicate a preference, limitation, or specification based on religion, national origin, sex, or age forty (40) and over, or because the person is a qualified individual with a disability, when religion, national origin, sex, or age forty (40) and over, or because the person is a qualified individual with a disability, is a bona fide occupational qualification for employment. 3. If the contractor is in control of apprenticeship or other training or retraining, including on-the-job training programs, he shall not discriminate against an individual because of his race, color, religion, national origin, sex, disability or age forty (40) and over, in admission to, or employment in any program established to provide apprenticeship or other training.

4. The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representative of the contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment. The contractor will take such action with respect to any subcontract or purchase order as the administrating agency may direct as a means of enforcing such provisions, including sanctions for non-compliance.

Revised: January 25, 2017

EXECUTIVE BRANCH CODE OF ETHICS

In the 1992 regular legislative session, the General Assembly passed and Governor Brereton Jones signed Senate Bill 63 (codified as KRS 11A), the Executive Branch Code of Ethics, which states, in part:

KRS 11A.040 (7) provides:

No present or former public servant shall, within six (6) months following termination of his office or employment, accept employment, compensation, or other economic benefit from any person or business that contracts or does business with, or is regulated by, the state in matters in which he was directly involved during the last thirty-six (36) months of his tenure. This provision shall not prohibit an individual from returning to the same business, firm, occupation, or profession in which he was involved prior to taking office or beginning his term of employment, or for which he received, prior to his state employment, a professional degree or license, provided that, for a period of six (6) months, he personally refrains from working on any matter in which he was directly involved during the last thirtysix (36) months of his tenure in state government. This subsection shall not prohibit the performance of ministerial functions, including but not limited to filing tax returns, filing applications for permits or licenses, or filing incorporation papers, nor shall it prohibit the former officer or public servant from receiving public funds disbursed through entitlement programs.

KRS 11A.040 (9) states:

A former public servant shall not represent a person or business before a state agency in a matter in which the former public servant was directly involved during the last thirty-six (36) months of his tenure, for a period of one (1) year after the latter of:

- a) The date of leaving office or termination of employment; or
- b) The date the term of office expires to which the public servant was elected.

This law is intended to promote public confidence in the integrity of state government and to declare as public policy the idea that state employees should view their work as a public trust and not as a way to obtain private benefits.

If you have worked for the executive branch of state government within the past six months, you may be subject to the law's prohibitions. The law's applicability may be different if you hold elected office or are contemplating representation of another before a state agency.

Also, if you are affiliated with a firm which does business with the state and which employs former state executive-branch employees, you should be aware that the law may apply to them.

In case of doubt, the law permits you to request an advisory opinion from the Executive Branch Ethics Commission, 3 Fountain Place, Frankfort, Kentucky 40601; telephone (502) 564-7954.

Revised: January 27, 2017

Kentucky Equal Employment Opportunity Act of 1978

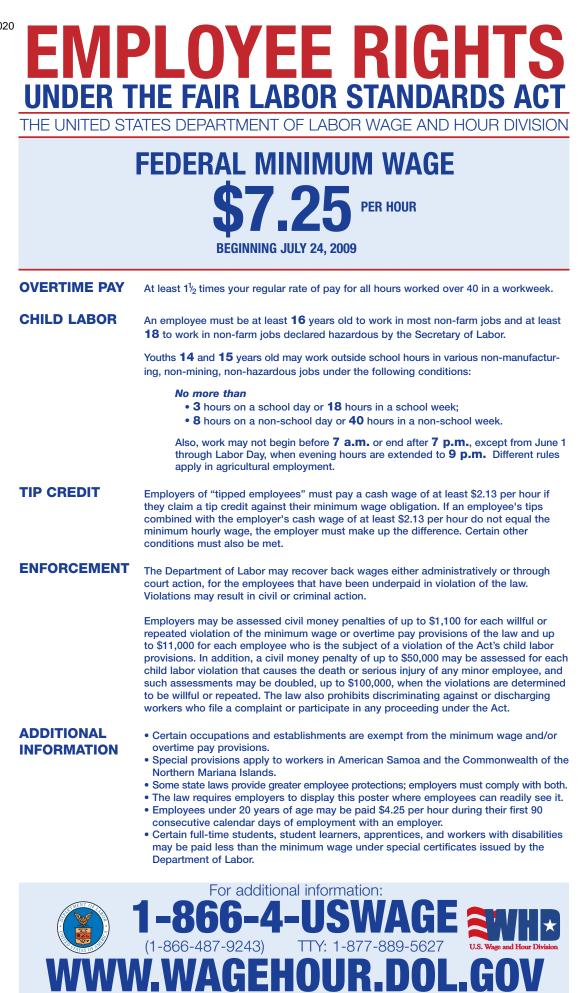
The requirements of the Kentucky Equal Employment Opportunity Act of 1978 (KRS 45.560-45.640) shall apply to this Contract. The apparent low Bidder will be required to submit EEO forms to the Division of Construction Procurement, which will then forward to the Finance and Administration Cabinet for review and approval. No award will become effective until all forms are submitted and EEO/CC has certified compliance. The required EEO forms are as follows:

- EEO-1: Employer Information Report
- Affidavit of Intent to Comply
- Employee Data Sheet
- Subcontractor Report

These forms are available on the Finance and Administration's web page under *Vendor Information, Standard Attachments and General Terms* at the following address: <u>https://www.eProcurement.ky.gov</u>.

Bidders currently certified as being in compliance by the Finance and Administration Cabinet may submit a copy of their approval letter in lieu of the referenced EEO forms.

For questions or assistance please contact the Finance and Administration Cabinet by email at **finance.contractcompliance@ky.gov** or by phone at 502-564-2874.



U.S. Department of Labor | Wage and Hour Division

PART IV

INSURANCE

INSURANCE

The Contractor shall procure and maintain the following insurance in addition to the insurance required by law:

- Commercial General Liability-Occurrence form not less than \$2,000,000 General aggregate, \$2,000,000 Products & Completed Aggregate, \$1,000,000 Personal & Advertising, \$1,000,000 each occurrence.
- 2) Automobile Liability- \$1,000,000 per accident
- 3) Employers Liability:
 - a) \$100,000 Each Accident Bodily Injury
 - b) \$500,000 Policy limit Bodily Injury by Disease
 - c) \$100,000 Each Employee Bodily Injury by Disease
- 4) The insurance required above must be evidenced by a Certificate of Insurance and this Certificate of Insurance must contain one of the following statements:
 - a) "policy contains no deductible clauses."
 - b) "policy contains ______ (amount) deductible property damage clause but company will pay claim and collect the deductible from the insured."
- 5) KENTUCKY WORKMEN'S COMPENSATION INSURANCE. The contractor shall furnish evidence of coverage of all his employees or give evidence of self-insurance by submitting a copy of a certificate issued by the Workmen's Compensation Board.

The cost of insurance is incidental to all contract items. All subcontractors must meet the same minimum insurance requirements.

PART V

BID ITEMS

192018

PROPOSAL BID ITEMS

Page 1 of 1

Report Date 12/26/18

Section: 0001 - MICROSURFACE

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
			MICROSURFACING-SURFACE COURSE -					
0010	24957EC		TYPE B	347,633.00	SQYD		\$	

Section: 0002 - THINLAY

LINE	BID CODE	ALT DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0020	00356	ASPHALT MATERIAL FOR TACK	146.00	TON		\$	
0030	23307EC	CL3 ASPH SURF NO.4B PG64-22	10,116.00	TON		\$	

Section: 0003 - ROADWAY

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP AMOUNT
0040	02562		TEMPORARY SIGNS	570.00	SQFT		\$
0050	02650		MAINTAIN & CONTROL TRAFFIC	1.00	LS		\$
0060	02671		PORTABLE CHANGEABLE MESSAGE SIGN	2.00	EACH		\$
0070	02775		ARROW PANEL	2.00	EACH		\$
0080	06510		PAVE STRIPING-TEMP PAINT-4 IN	200,000.00	LF		\$
0090	06514		PAVE STRIPING-PERM PAINT-4 IN	400,000.00	LF		\$
0100	06568		PAVE MARKING-THERMO STOP BAR-24IN	175.00	LF		\$
0110	06573		PAVE MARKING-THERMO STR ARROW	2.00	EACH		\$
0120	06574		PAVE MARKING-THERMO CURV ARROW	59.00	EACH		\$
0130	06575		PAVE MARKING-THERMO COMB ARROW	2.00	EACH		\$
0140	06576		PAVE MARKING-THERMO ONLY	26.00	EACH		\$
0150	06600		REMOVE PAVEMENT MARKER TYPE V	1,200.00	EACH		\$

Section: 0004 - DEMOBILIZATION

LINE	BID CODE	ALT DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0160	02569	DEMOBILIZATION	1.00	LS		\$	