



COMMONWEALTH OF KENTUCKY
TRANSPORTATION CABINET
www.transportation.ky.gov/

Andy Beshear
GOVERNOR

Jim Gray
SECRETARY

August 6, 2021

CALL NO. 101
CONTRACT ID NO. 211036
ADDENDUM # 1

Subject: Hopkins County, NHPP 9004(034)
Letting August 20, 2021

- (1) Added - Summary Sheet - Page 25(a) of 120
- (2) Revised - Special Notes Applicable - Page 57 of 120
- (3) Added - Special Notes - Pages 71(a)-71(e) of 120
- (4) Revised - Proposal Bid Items - Pages 119-120 of 120

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

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

Sincerely,

Rachel Mills,

A handwritten signature in cursive script that reads "Rachel Mills".

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

RM:mr
Enclosures

QUEUE PROTECTION/SYSTEM SUMMARY SHEET

Hopkins County
Edward T. Breathitt Pennyrile Parkway
SYP 2-20025.00

BID ITEM	DESCRIPTION	UNIT	QUANTITY
25075EC	QUEUE PROTECTION VEHICLE	HOUR	0
25117EC	FURNISH QUEUE PROTECTION VEHICLE	MONT	0
26136EC	PORTABLE QUEUE WARNING ALERT SYSTEM	MONT	2
26137EC	QUEUE WARNING PCMS	MONT	12
26138EC	QUEUE WARNING PORTABLE RADAR SENSORS	MONT	12

*Bid Items have not been carried forward to the General Summary

NOTE: See Special Note for Traffic Queue Protection Vehicle (if applicable)
See Special Note for Portable Queue Warning Alert System (if applicable)

**SPECIAL NOTES APPLICABLE TO
PENNYRILE PARKWAY (EB-9004) REHABILITATION PROJECT
HOPKINS COUNTY
ITEM NO. 2-20025.00**

- FIXED COMPLETION DATE AND LIQUIDATED DAMAGES
- GENERAL NOTE 444 – ASPHALT PAVEMENT RIDE QUALITY
- GENERAL NOTE 447 – COMPACTION OF ASPHALT MIXTURES
- GEOCOMPOSITE REINFORCEMENT FOR ASPHALT
- HMA ELECTRONIC DELIVERY MANAGEMENT SYSTEM (HMA e-TICKETING)
- EXPERIMENTAL KYCT AND HAMBURG TESTING
- NON-TRACKING TACK COAT
- LONGITUDINAL PAVEMENT JOINT ADHESIVE
- 1i - PORTABLE CHANGEABLE MESSAGE SIGNS
- WASTE AND BORROW SITES
- PORTABLE QUEUE WARNING ALERT SYSTEM
- TYPICAL SECTION DIMENSIONS

Additional Special Notes May Apply.

Special Note for Portable Queue Warning Alert System

1.0 Description

This item shall consist of furnishing, installing, relocating, operating, servicing, and removing various components of a portable, quickly deployable, real-time automated ITS queue warning alert system (PQWAS), in accordance with the standard specifications and this special provision. The Contractor shall also provide the maintenance of the complete system for the duration of the project or as directed by the Project Engineer. The Department is willing to look at different technologies (i.e. allow the use of crowd sourcing data to be used in lieu of the portable radar sensors). Any changes to the below requirements must be submitted and approved by the Engineer.

2.0 Materials

Materials shall be in accordance as follows:

All materials used shall meet the manufacturer's specifications and recommendations.

All PQWAS materials installed on the project shall be provided by the Contractor in excellent quality condition, shall be corrosion resistant and in strict accordance with all of the details shown within Contractor's Plans approved by KYTC. The Contractor shall maintain an adequate inventory of parts and replacement units to support maintenance and repair of the PQWAS. Pre-deployment is a condition of the system's acceptance and is based on the successful performance demonstration for a (5) day continuous period in accordance to this specification and as set forth in the plans. Ensure compliance to all FCC and Department specifications.

The Contractor shall maintain this system and shall be locally available to service and maintain system components, move portable devices as necessary and respond to emergency situations. The Contractor has oversight responsibility for directing placement of devices in the project area. The Contractor is to be accessible seven (7) days a week and twenty-four (24) hours a day while the system is deployed. The Contractor shall provide contact information for the system's coordinator and others responsible for maintenance of the system prior to installation of the system. Furnish a System Coordinator for monitoring the PQWAS throughout all periods of deployment.

A. General Capabilities and Performance Requirements

1. Overall PQWAS capabilities and performance requirements include the following:
 - a. Furnish a system capable of providing advance traffic information to motorists when there is a queueing of traffic due to congestion resulting from lane reductions, emergency events or other conditions. The condition-responsive notification to the motorist occurs with the use of Portable Changeable Message Signs (PCMS) in accordance to the below capabilities and performance requirements, activated through real-time traffic data collected downstream of the PCMS locations. This equipment must

be a packaged system, pre-programmed and operates as a stand-alone PQWAS meeting this specification. Conditions might exist that require relocation of the portable sensors at any given time, the sensors shall be portable and shall not require re-calibration in the field for fast deployments. Due to the potential need to replace damaged sensors or to change the position of one or more sensors at any given time, sensors must be interchangeable and relocatable by an unskilled laborer. The system must continue to function if as many as half the sensors fail to function.

- b. Provide a PQWAS that consists of the following field equipment: portable radar sensors and portable changeable message signs (PCMS). Provide a system capable of withstanding inclement weather conditions while continuing to provide adequate battery power. The portable radar sensor battery, in a stand-alone state and without a solar panel for recharging, shall be capable of keeping power and capable of sending data for (10) consecutive days or longer. The system shall notify drivers of real-time queue events via specifically placed PCMS units up stream of the work zone. All predetermined/preprogrammed messages are to be approved by KYTC. The number and location of portable radar sensors and PCMS units shall be as directed by the Project Engineer. The decision to deploy or relocate field equipment is made by the Project Engineer and instrumented through the System Coordinator. The decision for equipment removal is made by the Project Engineer after work is complete. The sensors and PCMS units shall be identifiable via global positioning system (GPS) and shall contain an accelerometer to detect and alert of unauthorized movement.
- c. The portable radar sensor shall be capable of collecting traffic speed data. The processed data is used to remotely control PCMS units to display user definable, Engineer approved and locally stored messages. The message trigger state thresholds for slow and stopped speeds shall be user configurable and revisable in less than {1} hour from the Project Engineer's request. Weekly Traffic Data Reports shall be presented to the Project Engineer and shall include speed data per sensor location, travel times, and queue lengths in graphical and numerical formats. In the event the Project Engineer requires a report, other than a weekly report, for any reason; then the Contractor shall provide report within (48) hours of request. Unlimited data reports shall be included within price of system. Sensors shall require no calibration adjustments in the field. Sensor should begin transmitting data within (30) seconds of being turned on. Satellite (SAT) communications will be required when cellular service does not provide continuous communications. Contractor shall identify the most trustworthy cellular provider within the project area.
- d. Data shall be accessible through a website and the Contractor shall provide a username and password for protection. The website shall be accessible seven (7) days a week and twenty - four (24) hours a day. The website shall provide historical & real-time data in graphical and numerical formats and shall have the capability of being integrated within the Department's Traffic Management Center (if requested). The website should be compatible to most hand held devices. Data shall be saved on the manufacturer's network for up to (5) years from the deployment date of system and shall be provided at the request

of the Department at any time within the (5) year window. The use of the website shall be included within the price of system.

- e. Warning Alerts: queue events, low battery voltage warnings, sensor movement alerts, high and low speed alerts shall be provided via cellular text messaging and/or via email messaging at the request of select Contractor personnel and KYTC officials.
- f. The PQWAS system shall have the capabilities to provide alternate route messaging on specifically placed portable changeable message units and/or fixed Variable Message Systems (VMS). The intent of this service is to provide alternate route messaging to motorists before entering the project limits from all directions and giving them appropriate time to adjust their routes. Alternative routes shall be predefined and approved by KYTC. Additional PCMS units may be required for alternate route messaging and will be as per Section 5.0 of this note. KYTC's Traffic Management Center will provide detour messages via fixed VMS units during the term of the project.

B. Portable Radar Sensor Capabilities and Performance Requirements

The PQWAS shall include portable radar sensors (PRD) to monitor and detect queue events.

1. The Radar Sensor shall be FHWA accepted to meet NCHRP 350 test requirements
2. The Radar Sensor shall be locatable at all times via an internal Global Positioning System (GPS) and shall be capable of Cellular or SAT Communications.
3. The Radar Sensor shall have a dry-cell battery capable of powering the system for (10) consecutive days or longer
4. The Radar sensor shall be K-Band technology and have a line of sight up to 200 linear feet without obstruction
5. The Radar sensor shall have the ability to be charged in the field through adaptable solar recharging technology in the case the sensor is utilized for more than 10 consecutive days

C. PCMS Capabilities and Performance Requirements

The PQWAS shall include portable changeable message signs (PCMS) designated to relay automated messaging of queue events, alternate route messages, and caution for the work area defined by the project limits. PCMS placements shall meet the requirements set forth by the Cabinet in each direction of the National Highway System (NHS).

1. The PCMS unit shall be a Full Matrix 24 rows x 50 columns and shall be capable of 1 line, 2line or 3 line messages
2. The PCMS unit shall be legible from a distance over twelve hundred feet (1200')
3. The height and size of characters shall be 18" to 58"
4. The PCMS shall be capable of storing up to 199 pre-programmed messages and up to 199 user-defined messages
5. The PCMS shall have a weather tight control cabinet with back lit LCD handheld controller.
6. The PCMS shall utilize a hydraulic lift to raise the unit to display height
7. The PCMS unit shall include solar recharging ports to allow for recharging of the portable radar sensors when they are not deployed.
8. The PCMS shall be NTCIP compliant and shall have an active Modem with active cellular service.

9. The user shall have the ability to communicate and override the PCMS remotely in the event of an emergency, Amber Alert, etc.
10. The PCMS unit shall have a docking station to include safety rails that allow a commercial safety strap to tie down the portable radar sensors while in transport. The docking station shall hold-up to (4) sensors safely and securely at all times

3.0 Construction Requirements

All communication costs include cellular telephone services, FCC licensing, wireless data networks, satellite and internet subscription charges, and battery charging and maintenance. Additional to these requirements, the Contractor shall assume all responsibility for any and all damaged equipment due to crashes, vandalism, and adverse weather that may occur during the contract period.

The PQWAS shall operate continuously (24 hours/ 7 Days) when deployed on the project. The system is in a constant "data collection" mode when deployed. The Contractor shall provide technical support for the PQWAS for all periods of operation.

In the event communication is lost with any component of the PQWAS, provide a means and staff to manually program a PCMS message. If communication is lost for more the 10 consecutive minutes, the system shall revert to a fail-safe ROADWORK/# MILES/AHEAD message displayed on the PCMS units until communication is restored.

System Operator, local control function and remote management operation must be password protected.

The PQWAS shall be capable of acquiring traffic information and selecting messages automatically without operator intervention after system utilization. The lag time between changes in threshold ranges and the posting of the appropriate PCMS message(s) shall be no greater than (60) seconds. The system operation and accuracy must not be appreciably degraded by inclement weather or degraded visibility conditions including precipitation, fog, darkness, excessive dust, and road debris.

The system shall be capable of storing ad-hoc messages created by the System Coordinator and logging this action when overriding any default or automatic advisory message.

The PQWAS communication system shall incorporate an error detection/correction mechanism to insure the integrity of all traffic conditions data and motorists information messages. Any required configuration of the PQWAS communication system shall be performed automatically during system initialization.

The system's acceptance is based on the successful performance demonstration of PQWAS for a (5) day continuous period in accordance to this specification and as set forth in the plans. Ensure compliance to all FCC and Department specifications.

4.0 Equipment Maintenance.

Maintain system components in good working condition at all times. Repair or replace damaged or malfunctioning components, at no cost to the Department, as soon as possible and within (12) hours of notification by the Engineer. Periodically clean PCMS units if necessary.

5.0 Measurement. The Department will measure each item below in Months. For partial months the Department will pay in 0.25 increments based on the number of calendar days in the below table.

Partial Month Payment Schedule

Days	Increment
0-7 days	0.25
8-14 days	0.50
15-21 days	0.75
22-31 days	1.00

5.1 Portable Queue Warning Alert System includes cellular (SAT communications will be required if cellular is not available), all supporting field equipment, website, and unlimited data reports accessible by the Engineer. It will be measured by the number of months authorized by the Engineer for use on the project.

5.2 Queue Warning PCMS will be measured by each individual unit multiplied by the number of months authorized by the Engineer for use on the project.

5.3 Queue Warning Portable Radar Sensors will be measured by each individual unit multiplied by the number of months authorized by the Engineer for use on the project. Queue Warning Portable Radar Sensors will not be measured for payment if the Contractor utilizes a system operating on crowd sourcing data. Crowd sourcing data systems will only be allowed as approved by the engineer and will be considered incidental to Portable Queue Warning Alert System.

6.0 Payment.

<u>Code</u>	<u>Pay Item</u>	<u>Pay Unit</u>
26136EC	Portable Queue Warning Alert System	Month
26137EC	Queue Warning PCMS	Month
26138EC	Queue Warning Portable Radar Sensors	Month

PROPOSAL BID ITEMS

Report Date 8/6/21

Section: 0001 - PAVING

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0010	00001		DGA BASE	737.00	TON		\$	
0020	00100		ASPHALT SEAL AGGREGATE	126.00	TON		\$	
0030	00103		ASPHALT SEAL COAT	15.10	TON		\$	
0050	00193		ASPHALT SCRATCH COURSE PG76-22	1,941.00	TON		\$	
0060	00219		CL4 ASPH BASE 1.00D PG76-22	5.00	TON		\$	
0070	00312		CL3 ASPH SURF 0.50D PG64-22	1,385.00	TON		\$	
0080	00335		CL4 ASPH SURF 0.50A PG76-22	5,079.00	TON		\$	
0090	02058		REMOVE PCC PAVEMENT	44.00	SQYD		\$	
0100	02676		MOBILIZATION FOR MILL & TEXT	1.00	LS		\$	
0110	02677		ASPHALT PAVE MILLING & TEXTURING	8,406.00	TON		\$	
0120	20071EC		JOINT ADHESIVE	36,268.00	LF		\$	
0130	20362ES403		SHOULDER RUMBLE STRIPS-SAWED	35,557.00	LF		\$	
0140	20757ED		PAVEMENT REPAIR	4,014.00	SQYD		\$	
0150	24970EC		ASPHALT MATERIAL FOR TACK NON-TRACKING	52.10	TON		\$	

Section: 0002 - ROADWAY

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0160	01982		DELINEATOR FOR GUARDRAIL MONO DIRECTIONAL WHITE	7.00	EACH		\$	
0170	02014		BARRICADE-TYPE III	6.00	EACH		\$	
0180	02367		GUARDRAIL END TREATMENT TYPE 1	2.00	EACH		\$	
0190	02381		REMOVE GUARDRAIL	282.00	LF		\$	
0200	02562		TEMPORARY SIGNS	500.00	SQFT		\$	
0210	02650		MAINTAIN & CONTROL TRAFFIC	1.00	LS		\$	
0220	02671		PORTABLE CHANGEABLE MESSAGE SIGN	4.00	EACH		\$	
0230	02704		SILT TRAP TYPE B	4.00	EACH		\$	
0240	02705		SILT TRAP TYPE C	2.00	EACH		\$	
0250	02726		STAKING	1.00	LS		\$	
0260	02775		ARROW PANEL	2.00	EACH		\$	
0270	02929		CRASH CUSHION TYPE IX	2.00	EACH		\$	
0280	06401		FLEXIBLE DELINEATOR POST-M/W	140.00	EACH		\$	
0290	06404		FLEXIBLE DELINEATOR POST-M/Y	30.00	EACH		\$	
0300	06511		PAVE STRIPING-TEMP PAINT-6 IN	36,617.00	LF		\$	
0310	06542		PAVE STRIPING-THERMO-6 IN W	22,949.00	LF		\$	
0320	06543		PAVE STRIPING-THERMO-6 IN Y	17,837.00	LF		\$	
0330	06546		PAVE STRIPING-THERMO-12 IN W	2,760.00	LF		\$	
0340	06549		PAVE STRIPING-TEMP REM TAPE-B	5,000.00	LF		\$	
0350	06550		PAVE STRIPING-TEMP REM TAPE-W	2,500.00	LF		\$	
0360	06551		PAVE STRIPING-TEMP REM TAPE-Y	2,500.00	LF		\$	
0370	10020NS		FUEL ADJUSTMENT	7,456.00	DOLL	\$1.00	\$	\$7,456.00
0380	10030NS		ASPHALT ADJUSTMENT	15,062.00	DOLL	\$1.00	\$	\$15,062.00
0390	20194ED		REMOVE & RESET TRAFFIC SIGN	3.00	EACH		\$	
0400	20432ES112		REMOVE CRASH CUSHION	2.00	EACH		\$	
0410	21802EN		G/R STEEL W BEAM-S FACE (7 FT POST)	237.50	LF		\$	

PROPOSAL BID ITEMS

Report Date 8/6/21

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0420	24489EC		INLAID PAVEMENT MARKER	330.00	EACH		\$	
0425	26136EC		PORTABLE QUEUE WARNING ALERT SYSTEM (ADDED 8-6-21)	2.00	MONT		\$	
0426	26137EC		QUEUE WARNING PCMS (ADDED 8-6-21)	12.00	MONT		\$	
0427	26138EC		QUEUE WARNING PORTABLE RADAR SENSORS (ADDED 8-6-21)	12.00	MONT		\$	

Section: 0003 - DRAINAGE

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0430	02165		REMOVE PAVED DITCH	110.00	SQYD		\$	
0440	02237		DITCHING	1,702.00	LF		\$	
0450	02483		CHANNEL LINING CLASS II	74.00	TON		\$	
0460	02484		CHANNEL LINING CLASS III	147.00	TON		\$	
0470	03260		CLEAN ROADWAY DRAINS	2.00	EACH		\$	
0480	05950		EROSION CONTROL BLANKET	1,400.00	SQYD		\$	
0490	24662EC		CLEAN PERFORATED PIPE HEADWALL	33.00	EACH		\$	

Section: 0004 - DEMOBILIZATION &/OR MOBILIZATION

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