(added to District Questionnaire)

1. Smart Workzone Walkback Flagger Replacement Option (End of Queue Detection and Warning) [618] (Revised 5-16-24 M)

Description. Furnish a smart work zone system capable of detecting and protecting the end of queue in lieu of a walk back flagger.

General.

* + 1. End of Queue Detection and Warning. Furnish, install, maintain, adjust, and remove smart work zone technology to replace the walk back flagger. Install this system at flagging or signal control operations where a minimum of 10 vehicles are stopped at the location for more than 50% of the time or when sight distance to the signal or flagger is impaired.

Install radar sensors at the following signs: W3-3, R2-1, and W3-5.

Install a variable message board capable of displaying messages based on the input from the sensors 1500 feet from the estimated max queue location.

Adjust the radar sensors and message boards accordingly to protect the end of the queue.

Provide an online dashboard capable of showing the systems function and performance in real time; including but not limited to:

* + - * 1. traffic speed at the individual sensors.
				2. battery life.
				3. system connectivity; and
				4. message displayed on the variable message board. The following table lists the approved messages to display for each condition:

|  |  |  |
| --- | --- | --- |
| Average Speed at R2-1 | VMS Phase 1 | VMS Phase 2 |
| when system is not in use.  | Project specific safety message  |  |
| > 35 MPH  | Signal (or Flagger) Ahead | Reduce speed Ahead  |
| ˂ 34 MPH | Stopped Traffic Ahead | Prepare to Stop |
| Traffic Stopped at any Sensor | Stopped Traffic Ahead  | Prepare to Stop |
| Fail Safe Mode  | Signal (or Flagger) Ahead | Flashing Caution ( 4 corners) |

The system must provide the following:

* A failsafe system if communications go down or a fault is detected in the system for more than 2 minutes.
* A system that will revert to a failsafe mode in which the message board displays the message shown above.
* A network extender if installed in areas with little or no cell network coverage.
* Speed data from sensors at the request of and no cost to the Department.

Sensor and message board locations must be included in the traffic control plan and approved by the Project Manager.

* + 1. Portable variable message signs. Furnish portable variable message signs that can execute the requirements set forth above. Furnish VMS that meet MUTCD requirements including 18” character height.
		2. Non-intrusive sensors. Furnish sensors that are portable, non-intrusive, capable of recording speed, detect traffic over multiple lanes, detect stopped traffic, and maintain performance in all weather conditions.

If a safe and visible installation location cannot be found, construct a pad that provides a safe, level location to install the message board adjacent to traffic.

Select the following option for TC-unit bid item:

* 1. Method of Measurement. Smart Work Zone Systems are measured by each system per day. One system is defined as one message board and 3 sensors.
	2. Basis of Payment. Smart Work Zone Systems will be paid for by each system at a rate of 500 units per day.

This item will be paid under group 37 of traffic control rate schedule.

Select the following option for TC-Lump Sum or TC- Day bid item:

C. Measurement and Payment. Smart Work Zone Systems will be included in the Traffic Control – Lump Sum or Traffic Control - Day bid item.