Florida Department of Transportation

RON DESANTIS
GOVERNOR

605 Suwannee Street
Tallahassee, FL 32399-0450

JARED W. PERDUE, P.E.
SECRETARY

September 6, 2023

Khoa Nguyen
Director, Office of Technical Services
Federal Highway Administration
3500 Financial Plaza, Suite 400
Tallahassee, Florida 32312

Re: State Specifications Office
Section: 660
Proposed Specification: **6600201 Vehicle Detection System.**

Dear Mr. Nguyen:

We are submitting, for your approval, two copies of the above referenced Supplemental Specification.

The changes are proposed by Derek Vollmer to add requirements for detection systems that use LiDAR technology and adjust the duration of detection system warranty requirements.

Please review and transmit your comments, if any, within two weeks (10 business days). Comments should be sent via email daniel.strickland@dot.state.fl.us.

If you have any questions relating to this specification change, please call me at (850) 414-4130.

Sincerely,

Daniel Strickland, P.E.
State Specifications Engineer

DS/dh
Attachment
cc: Florida Transportation Builders' Assoc.
State Construction Engineer

VEHICLE DETECTION SYSTEM.
(REV 7-11-23)

SUBARTICLE 660-2.1 is deleted and the following substituted:

660-2 Materials.

660-2.1 General: Meet the following requirements:

Traffic Data Detection System- Microwave* .....Section 995
Vehicle Detector- Microwave* .....Section 995
Traffic Data Detection System- Video* .....Section 995
Vehicle Detector- Video* .....Section 995
Traffic Data Detection System- LiDAR* .....Section 995
Vehicle Detector- LiDAR* .....Section 995
Vehicle Loop Detector* .....Section 995
Wireless Magnetometer Assembly* .....Section 995
Automatic Vehicle Identification* .....Section 995
Wrong Way Vehicle Detection Systems* .....Section 995
Loop Sealant* .....Section 995
Highlighted Signs* .....Section 995
*Use products listed on the Department's APL.

ARTICLE 660-2 is expanded by the following new Subarticle:

660-2.2.2.6 Light Detection and Ranging: A light detection and ranging (LiDAR) detection system uses one or more LiDAR sensors and perception hardware and software to detect vehicle presence, provide a detection output, or generate volume, occupancy, and speed data.

ARTICLE 660-3 is expanded by the following new Subarticle:

660-3.8 LiDAR Detection System Installation: Install in accordance with the Contract Documents, manufacturer's recommendations, and as directed by the Engineer.

SUBARTICLE 660-4.1.2 is deleted and the following substituted:

660-4.1.2 Field Acceptance Testing: Verify presence detection accuracy at installed field sites using a reduced method in accordance with 995-2. ~~8.1~~9. Compare sample data collected from the detection system with ground truth data collected by human observation. For site acceptance tests, collect samples and ground truth data for each site for a minimum of five minutes during a peak period and five minutes during an off-peak period. For presence detection at intersections, ensure there are a minimum of three detections for each signal phase. Perform site acceptance tests in the presence of the Engineer.

SUBARTICLE 660-4.3.2 is deleted and the following substituted:

660-4.3.2 Calculation of Speed and Travel Time Accuracy: Verify detector accuracy at installed field sites using a reduced method in accordance with 995-2. ~~10~~11. Calculate speed and travel time accuracy by comparing the speeds and travel times reported by the system against ground truth collected through human observation or another method approved by the Engineer.

ARTICLE 660-5 is deleted and the following substituted:

660-5 Warranty.

Ensure that the detection system has a manufacturer's warranty covering defects for a minimum of ~~2~~1 year~~s~~ from the date of final acceptance by the Engineer in accordance with 5-11 and Section 608.

Ensure the warranty includes providing replacements, within 10 calendar days of notification, for defective parts and equipment during the warranty period at no cost to the Department or the maintaining agency.

ARTICLE 660-6 is deleted and the following substituted:

660-6 Method of Measurement.

The quantity to be paid will be the plan quantity for each inductive loop detector and per assembly for loop assembly completed and accepted.

The quantity to be paid will be the plan quantity for each MVDS, VVDS, WMDS, AVI, ~~or~~ WWVDS, or LiDAR VDS completed and accepted.

The highlighted signs for a WWVDS will be paid for in accordance with Section 700. Only one WWVDS will be paid per exit ramp, regardless of the number of signs.

ARTICLE 660-7 is expanded by the following:

660-7 Basis of Payment.

Price and payment will be full compensation for all work specified in this Section including furnishing, placement, and testing of all materials and equipment, and for all tools, labor, equipment, hardware, operational software packages and firmware, supplies, support, personnel training, shop drawings, warranty documentation, and incidentals necessary for a complete and accepted installation.

Payment will be made under:

Item No. 660-1	Inductive Loop Detector - each.
Item No. 660-2	Loop Assembly – per assembly.
Item No. 660-3	Vehicle Detection System - Microwave - each.
Item No. 660-4	Vehicle Detection System - Video - each.
Item No. 660-5	Vehicle Detection System - Wireless Magnetometer - each.
Item No. 660-6	Vehicle Detection System - AVI - each.

Item No. 660-7	Vehicle Detection System - WWVDS - each.
Item No. 660-8	Traffic Data Detection System - Microwave - each.
Item No. 660-9	Traffic Data Detection System - Video - each.
Item No. 660-10	Vehicle Detection System – LiDAR – each.
Item No. 660-11	Traffic Data Detection System – LiDAR – each.

VEHICLE DETECTION SYSTEM.
(REV 7-11-23)

SUBARTICLE 660-2.1 is deleted and the following substituted:

660-2 Materials.

660-2.1 General: Meet the following requirements:

Traffic Data Detection System- Microwave* .....Section 995
Vehicle Detector- Microwave*.....Section 995
Traffic Data Detection System- Video* .....Section 995
Vehicle Detector- Video* .....Section 995
Traffic Data Detection System- LiDAR* .....Section 995
Vehicle Detector- LiDAR* .....Section 995
Vehicle Loop Detector* .....Section 995
Wireless Magnetometer Assembly* .....Section 995
Automatic Vehicle Identification*.....Section 995
Wrong Way Vehicle Detection Systems*.....Section 995
Loop Sealant* .....Section 995
Highlighted Signs*.....Section 995
*Use products listed on the Department's APL.

ARTICLE 660-2 is expanded by the following new Subarticle:

660-2.2.2.6 Light Detection and Ranging: A light detection and ranging (LiDAR) detection system uses one or more LiDAR sensors and perception hardware and software to detect vehicle presence, provide a detection output, or generate volume, occupancy, and speed data.

ARTICLE 660-3 is expanded by the following new Subarticle:

660-3.8 LiDAR Detection System Installation: Install in accordance with the Contract Documents, manufacturer's recommendations, and as directed by the Engineer.

SUBARTICLE 660-4.1.2 is deleted and the following substituted:

660-4.1.2 Field Acceptance Testing: Verify presence detection accuracy at installed field sites using a reduced method in accordance with 995-2. 9. Compare sample data collected from the detection system with ground truth data collected by human observation. For site acceptance tests, collect samples and ground truth data for each site for a minimum of five minutes during a peak period and five minutes during an off-peak period. For presence detection at intersections, ensure there are a minimum of three detections for each signal phase. Perform site acceptance tests in the presence of the Engineer.

SUBARTICLE 660-4.3.2 is deleted and the following substituted:

660-4.3.2 Calculation of Speed and Travel Time Accuracy: Verify detector accuracy at installed field sites using a reduced method in accordance with 995-2. 11. Calculate speed and travel time accuracy by comparing the speeds and travel times reported by the system against ground truth collected through human observation or another method approved by the Engineer.

ARTICLE 660-5 is deleted and the following substituted:

660-5 Warranty.

Ensure that the detection system has a manufacturer's warranty covering defects for a minimum of 1 year from the date of final acceptance by the Engineer in accordance with 5-11 and Section 608.

Ensure the warranty includes providing replacements, within 10 calendar days of notification, for defective parts and equipment during the warranty period at no cost to the Department or the maintaining agency.

ARTICLE 660-6 is deleted and the following substituted:

660-6 Method of Measurement.

The quantity to be paid will be the plan quantity for each inductive loop detector and per assembly for loop assembly completed and accepted.

The quantity to be paid will be the plan quantity for each MVDS, VVDS, WMDS, AVI, WWVDS, or LiDAR VDS completed and accepted.

The highlighted signs for a WWVDS will be paid for in accordance with Section 700. Only one WWVDS will be paid per exit ramp, regardless of the number of signs.

ARTICLE 660-7 is expanded by the following:

660-7 Basis of Payment.

Price and payment will be full compensation for all work specified in this Section including furnishing, placement, and testing of all materials and equipment, and for all tools, labor, equipment, hardware, operational software packages and firmware, supplies, support, personnel training, shop drawings, warranty documentation, and incidentals necessary for a complete and accepted installation.

Payment will be made under:

Item No. 660-1	Inductive Loop Detector - each.
Item No. 660-2	Loop Assembly – per assembly.
Item No. 660-3	Vehicle Detection System - Microwave - each.
Item No. 660-4	Vehicle Detection System - Video - each.
Item No. 660-5	Vehicle Detection System - Wireless Magnetometer - each.
Item No. 660-6	Vehicle Detection System - AVI - each.
Item No. 660-7	Vehicle Detection System - WWVDS - each.

Item No. 660-8	Traffic Data Detection System - Microwave - each.
Item No. 660-9	Traffic Data Detection System - Video - each.
Item No. 660-10	Vehicle Detection System – LiDAR – each.
Item No. 660-11	Traffic Data Detection System – LiDAR – each.