Origination Form

Specifications

Name:	Ronald Meyer	**Specification Number:**	660-2.2, 660-2.2.1.1, 660-2.2.2, 660-2.2.2.6, 660-5
Email:	ronald.meyer@dot.state.fl.us	**Associated Specs:**	None
Date:	2024-06-18T20:40:00Z	**Verified:**	VERIFIED

Summary:

Adding content to differentiate functional capabilities of different detection products on the APL (i.e., detectors that can perform stop bar presence detection, advance detection, or both).

Justification:

Need a way to differentiate functional capabilities of certain vehicle detection systems on the APL. Warranty language needs to be updated for consistency with other sections and to remove unnecessary internal cross reference re: final acceptance.

Do the changes affect other types of specifications?

Neither

List Specifications Affected:

Other Affected Documents/Offices	Contacted	Yes/No
Other Standard Plans		No
Florida Design Manual		No
Structures Manual		No
Basis of Estimates Manual		No
Approved Product List		No
Construction Office		No
Maintenance Office		No
Materials Manual		No
Traffic Engineering Manual		No

Are changes in line with promoting and making progress on improving safety, enhancing mobility, inspiring innovation, and fostering talent; explain how?

Yes. Changes reflect stakeholder needs and improve consistency of specification content.

What financial impact does the change have; project costs, pay item structure, or consultant fees?

No expected financial impact.

What impact does the change have on production or construction schedules?

No expected impacts to production or construction schedules.

How does this change improve efficiency or quality?

Changes improve efficiency and quality via consistency with similar requirements and adherence to standardized formatting styles.

Which FDOT offices does the change impact?

Traffic Engineering and Operations

What is the impact to districts with this change?

No expected impact to Districts.

Does the change shift risk and to who?

No expected shift in risk.

Provide summary and resolution of any outstanding comments from the districts or industry.

Comments and Responses are available on the Track the Status of Revisions hyperlink located on the Specifications landing page: https://www.fdot.gov/programmanagement/Specs.shtm

What is the communication plan?

Through the established specification revision process (e.g., Internal and Industry Review)

What is the schedule for implementation?

The Standard Specifications eBook and Workbook are effective July 1st every year.

VEHICLE DETECTION SYSTEM
(REV 6-20-24)

SUBARTICLE 660-2.2 is deleted and the following substituted:

660-2.2 Classification of Types: Vehicle detection and data collection systems are classified by the type of function they perform ~~and~~, and the type of technology that they employ, and where they are used for detection.

660-2.2.1 Functional Types: Provide the functional type detailed in the Plans.

660-2.2.1.1 Vehicle Presence Detection Systems: Vehicle presence detection systems produce a corresponding output any time that a vehicle occupies the physical or virtual area of the detector.

660-2.2.1.1.1 Stop Bar Detectors: Stop bar detectors are designed to detect vehicles at or near the stop bar at intersections.

660-2.2.1.1.2 Advance Detectors: Advance detectors are designed to detect vehicles at variable distances upstream of an intersection stop bar.

660-2.2.1.2 Traffic Data Detection Systems: Traffic data detection systems provide presence, volume, occupancy, and speed data for the lanes they are configured to monitor.

660-2.2.1.3 Probe Data Detection Systems: Probe data detection systems provide speed data and travel times for a road segment. Probe data detectors use automatic vehicle identification (AVI) technologies to establish a unique identifier for each vehicle they detect. This identifier is then transmitted to a central site where it can be matched to past or future detections of the same vehicle at different detector locations.

660-2.2.1.4 Wrong Way Vehicle Detection Systems: Wrong way vehicle detection systems produce an alarm output when a vehicle is detected traveling in the wrong direction and may consist of more than one detection zone and may use any of the technology types. For both mainline and ramp installations, the detection system must monitor all lanes for one direction, including shoulders. The wrong way detection system must not interfere with other vehicle presence or traffic data detection systems.

660-2.2.2 Technology Types: Provide the detection technology type detailed in the Plans. Detection technology types include inductive loop, video, thermal, microwave, wireless magnetometer, ~~and~~ AVI, and Light Detection and Ranging (LiDAR) systems.

660-2.2.2.1 Inductive Loop: An inductive loop detection system uses a minimum of one inductive loop and loop detector. The system operates by energizing and monitoring wire embedded in the road surface to detect vehicle presence and provide an output to traffic controllers or other devices that can generate volume, occupancy, and speed data (detection output).

660-2.2.2.1.1 Loop Wire: Use No. 12 AWG or No. 14 AWG stranded copper wire with Type XHHW cross-linked polyethylene insulation and an additional outer sleeve composed of polyvinylchloride or polyethylene insulation that meets the requirements of International Municipal Signal Association (IMSA) 51-7.

660-2.2.2.1.2 Shielded Lead-in Cable: Use No. 14 AWG two conductor, stranded copper wire with shield and polyethylene insulation, meeting the requirements for IMSA 50-2.

660-2.2.2.1.3 Splicing Material: Butt-end connectors may be used for splicing the loop wire to the lead-in cable. Butt-end connectors must be non-insulated. Use resin-core solder for soldered splices. Splicing tape must be self-fusing silicone rubber. Ensure insulated tubing used to cover splice is heat-shrinkable, cross-linked polyethylene with a silicon sealant inside the tubing and an insulation rating of at least 600 V.

660-2.2.2.2 Video: A video vehicle detection system (VVDS) uses one or more cameras recommended by the manufacturer or an integrated thermal sensor and video analytics hardware and software to detect vehicle presence, provides a detection output, or generates volume, occupancy, and speed data.

660-2.2.2.3 Microwave: A microwave vehicle detection system (MVDS) transmits, receives, and analyzes a FCC-certified, low-power microwave radar signal to detect vehicle presence, provide a detection output, or generate volume, occupancy, and speed data.

660-2.2.2.4 Wireless Magnetometer: A wireless magnetometer detection system (WMDS) uses one or more battery-powered wireless sensors embedded in the road surface, which communicates data by radio to a roadside receiver. Wireless magnetometer systems detect vehicle presence and provide a detection output to traffic controllers or other devices that can generate volume, occupancy, and speed data.

660-2.2.2.5 Automatic Vehicle Identification (AVI): An AVI detection system uses one or more different methods to collect information that can be used to establish a unique identifier for each vehicle detected and the time and location that the vehicle was detected. AVI detection systems collect data using radio-frequency identification (RFID), optical character recognition, magnetic signature analysis, laser profiling, Bluetooth®, or other methods to establish vehicle identifier, time, and location.

660-2.2.2.6 Light Detection and Ranging (LiDAR): 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 660-5 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.