Furnish Video/Radar Detection System

1.0 Description

This specification sets forth the minimum requirements for furnishing a Video/Radar Detection System (VRDS) that monitors vehicles on a roadway by processing video images and electromagnetic radar signals through the air and provides detector outputs to a traffic signal controller or similar device.

2.0 Equipment

Furnish Video/Radar Detection System, meeting all the requirements in this specification.

The furnished VRDS shall consist of the following components, or equal equivalent:

- AI-Based Sensor (Sensor)
- AI-Based Sensor with connected vehicle roadside unit built in (RSU Sensor), one (1) per intersection
- In-cabinet Control Unit
- Antenna
- Standard DIN Rail
- Power DIN Rail (if needed)

All equipment and materials shall be new.

Sensor Unit

Supply Sensor and RSU Sensor with all configuration software.

App Engine

Supply Control Unit, or current model if applicable. The Control Unit shall be compatible to connect to NEMA TS1, NEMA TS2, 170, and 2070 type controllers.

Antenna

Supply 9-in-1 antenna for wireless communications. The antenna shall have cellular leads for 4G/5G cellular connection and Wi-Fi leads for wireless connection to the Sensor.

Standard/Power DIN Rail Assembly

Supply Standard DIN Rail to be secured to a panel in the traffic signal cabinet. The DIN rail will come with external LTE modem, Ethernet switch, terminal blocks, web relay, power supply, service socket, circuit breakers and surge suppressor.

If power to the Sensor Unit is coming from the cabinet, supply Power DIN Rail to be secured to a panel in the traffic signal cabinet. The DIN rail will come with everything needed to supply continuous power to the Sensor.

Necessary Mounting Hardware

All necessary field/cabinet mounting hardware shall be approved by the supplier of the VRDS.

Power/Video Cable

All necessary cable shall be approved by the supplier of the VRDS.

3.0 Functional Capabilities

Each Sensor shall allow for the creation of up to 64 detection zones and assign vehicle presence in these zones to up to 64 outputs to the control cabinet. The Sensor shall include the following functionality:

1. Sensor shall include both radar and video capability.
2. Sensor shall be approach based.
3. RSU Sensor shall have dedicated short-range communication (DSRC) and Cellular Vehicle-to-Everything (V2X) capability.
4. Sensor shall be powered by a 120VAC, 3A power source.
5. Sensor shall pass the requirements set in NEMA TS2 2.2.7.
6. Sensor shall have the ability to connect to the traffic controller via ethernet or WiFi.
    a. WiFi shall be 5.8 GHz.

The VRDS System shall include the following functionality:

1. VRDS shall have one (1) sensor with an RSU built in.
2. VRDS shall be managed via a 24/7 operations center.
3. VRDS shall have 5-years of integrated communication with cloud communication included at no-additional cost to the agency.
    a. Cellular service for 5-years is provided.
4. VRDS shall include Virtual Management Center (VMC) with remote access for 5-years at no-additional cost to the agency.
    a. VRDS shall have the ability to provide traffic alerts, including, but not limited to, traffic collisions, work zones, and other abnormalities.
5. VRDS shall include the following data:
    a. Object classification (light vehicle, heavy vehicle, pedestrian, truck)
    b. Object position (lane, phase, and distance to stop bar)
    c. Object trajectory (direction and speed)

The VRDS shall default to a safe condition (such as a constant call on each active detection channel) in the event of unacceptable interference or loss of the video and/or radar signal. Detection shall be at least 98% accurate in all weather conditions.

4.0 Manuals

Provide user manuals covering installation, operations, trouble shooting, and maintenance directions for each type of equipment and for the VRDS system as a whole. Provide two copies of each manual.

5.0 Installation Support

Provide on-call turn-on assistance by phone from 7:00 am to 6:00 pm (US Agency Local Time Zone) Monday through Friday. Provide on-site turn-on assistance, Monday through Friday, within 5 business days of being requested.

6.0 Training

When requested, provide up to two remote training sessions, with up to three (3) hours each session, to agency personnel for the installation, setup, operation, trouble shooting, and maintenance of the VRDS. For each session, provide instruction and materials for a maximum of 50 persons.

Instruction personnel shall be certified by the equipment manufacturer.

7.0 Support and Hardware Replacement Coverage

Provide a 5-year hardware replacement coverage starting the date the equipment is received by the agency. The hardware replacement coverage is for all supplied equipment and material free from material and workmanship defects. Hardware replacement coverage shall provide equipment replacement for defective components, including shipping. During the hardware replacement coverage, technical support from factory certified personnel shall be available from the supplier via telephone within four business hours of the time a call is placed by a user.

Provide a 5-year, 24/7/365 Network Operations Center (NOC) monitoring service to ensure detection reliability and accuracy of alerting.

Ongoing software support by the supplier shall include updates of all furnished software, utilities, and applications. Any updates to the software shall be approved by the agency before installation.

The supplier shall maintain an adequate inventory of parts to support maintenance and repair of the VRDS system.