

Special Provision to Item 6029

Radar Vehicle Sensing Device (RVSD)



Item 6029, "Radar Vehicle Sensing Device (RVSD)," of the Standard Specifications, is amended with respect to the clauses cited below. No other clauses or requirements of this Item are waived or changed.

Article 6029.2., "Materials." The first paragraph is voided and replaced by the following:

Ensure the RVSD will automatically configure the maximum number of lanes shown on the plans by determining lane boundaries, concrete or metal barriers and detection thresholds. Ensure sensor will automatically configure the number of lanes in the presence of barriers, medians and work zones. Ensure sensor will automatically calibrate vehicle speed, detection levels, sensitivity, and vehicle direction. Ensure the RVSD detects vehicle volume, speed, occupancy, and direction in all weather conditions without performance degradation. Ensure the RVSD is remote accessible; provides multiple connectivity options for integration into the existing system, and supports the communications protocols identified in Section 2.4., "Communication."

Section 6029.2.1., "Sensor Performance." The first, seventh and eighth paragraphs are voided and replaced by the following three paragraphs respectively:

Sensor Performance. Ensure the RVSD provides accurate, real-time volume, average speed, occupancy, and vehicle direction data. Ensure the RVSD provides user configurable settings for a collection interval from 20 sec. to 15 min. and polling intervals from 20 sec. to 1 hr. Ensure the detections are correctly categorized into a minimum of 8 user definable length-based classifications. Ensure vehicle detections occur at a range of 9 ft. to 250 ft. simultaneously from the RVSD. Ensure the RVSD unit or accompanying field equipment provides a minimum of 3 hr. of local storage for detection interval settings of 20 sec. to 15 min. in local storage to reduce data loss during communications outages. Ensure the RVSD transfers locally stored data to the Traffic Management Center's Transportation Sensor System (TSS) when communication is restored.

Ensure per vehicle speed data is accurate within 5 mph for 90% of measurements. Provide true speed detection via dual radar speed trap without the requirement to enter average vehicle lengths for the speed calculation.

Ensure the RVSD automatically configures vehicle direction and that vehicle direction is accurately determined for 90% of wrong-way vehicles. This data shall be available simultaneously and in addition to other data as called for in this specification.

Section 6029.2.4., "Communication." The third paragraph is voided and replaced by the following:

Interval Data Packets. The RVSD must produce interval data packets containing, as a minimum:

- one or more detection zones,
- collection interval durations,
- sensor ID,
- 32-bit time stamps indicating end of collection interval,
- total volume by detection zone,
- average speed in each detection zone during the collection interval. Speed value units must be selectable as either miles per hour or kilometers per hour,
- occupancy in each detection zone during the collection interval, reported in 0.1% increments,
- a minimum of 8 vehicle classifications reported as number of vehicles of each classification identified in each detection zone during the collection interval,
- volume in up to 15 user-defined speed bins,
- volume for both directions of traffic,

- average headway in seconds,
- average gap in seconds,
- 85th percentile speed in either miles per hour or kilometers per hour, and
- vehicle count for correct and wrong-way vehicles in separate correct and wrong-way bins.

Event Data Packets. The RVSD must produce event (per vehicle) data packets containing, as a minimum:

- sensor ID,
- lane assignment,
- per vehicle speed value in either miles per hour or kilometers per hour. Wrong-way vehicles will show a negative speedvalue,
- vehicle length,
- classification using up to 8 user defined classes,
- 32-bit time stamps indicating end of collection interval, and
- range.

Section 6029.2.15., “Mechanical Requirements.” The third paragraph is voided and replaced by the following:

Do not use silicone gels or any other material for enclosure sealing that will deteriorate under prolonged exposure to ultraviolet rays.

Ensure the overall dimensions of the box, including fittings, do not exceed 14 in. x 11 in. x 4 in. Ensure the overall weight of the box, including fittings, does not exceed 5 lb.

Section 6029.3.6., “Testing.” The fourth paragraph is voided and replaced by the following:

Verify speed accuracy with laser speed gun provided by the Department, radar gun provided by the Contractor, or by video speed trap using the frame rate as a time reference. Vehicle speeds should be collected and compared to the per vehicle speed measurement generated by the RVSD. When compared to the speeds collected via laser, the sensor speed data must meet performance requirements as stated in Section 2.1., “Sensor Performance.”

Verify direction accuracy by ensuring that all lanes are configured with the correct directionality. Following this configuration, reverse the direction on one lane and verify that the number of vehicles detected in that lane are correctly placed in the wrong-way detection bin. When compared to the manual counts for this lane, the wrong-way sensor counts must meet the performance requirements as stated in Section 2.1., “Sensor Performance”.