

**DEPARTMENT OF TRANSPORTATION**

**STATE OF GEORGIA**

**SPECIAL PROVISION**

**PROJECT NO.:**

**P.I. NO.:**

*Add the following:*

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**Section 999— MISCELLANEOUS (Radar Speed Display Unit)**

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**999.1 General Description**

This work includes furnishing, maintaining, transporting, and using Trailer Mounted Radar Speed Display Unit (RSDU) according to these Specifications at locations shown on the Plans, in the Special Provisions, or as directed by the Engineer. This specification establishes the physical display and operational requirements for solar assisted and battery powered, Radar Speed Display Units used in active work zones to inform motorists of the posted speed and their actual speed.

**999.1.01 Definitions**

General Provisions 101 through 150.

**999.1.02 Related References**

**A. Standard Specifications**

General Provisions 101 through 150.

**B. Referenced Documents**

MUTCD

NCHRP 350

**999.1.03 Submittals**

General Provisions 101 through 150.

**999.2 Materials**

General Provisions 101 through 150.

**999.2.01 Delivery, Storage, and Handling**

General Provisions 101 through 150.

## 999.3 Construction Requirements

### 999.3.01 Personnel

General Provisions 101 through 150.

### 999.3.02 Equipment

Ensure Trailer Mounted Radar Speed Display Unit (RSDU) equipment meets the following requirements:

- A. The minimum requirements of the MUTCD and the crashworthy performance criteria contained in the National Cooperative Highway Research Program (NCHRP) Report 350.
- B. May be either new or used provided the RSDU meets the requirements of this Subsection.
- C. Ensure the Display Unit Panel and Housing meet the following physical requirements as a minimum:
  1. Panel support structure capable of being raised and lowered, and when raised to the upright position, the maximum height to the top of the panel from the ground is eight (8) feet.
  2. Provide capability to mount a standard 24 inch by 30 inch (609mm x762mm) regulatory sign with interchangeable numbers showing the posted speed limit above the message display.
  3. Provide capability to mount a legend "YOUR SPEED" either above or below the message display.
- D. Ensure the Message Display meets the following physical requirements as a minimum:
  1. Provide a bright LED, two digit speed display on a flat black background with bright yellow LEDs.
  2. Each digit contain either a seven-segment layout or matrix-style design. Each digit measure a minimum of eighteen (18) inches (457 mm) in height.
  3. Speed display visible from a distance of at least one-half (1/2) mile (800 m) and legible from a distance of at least 650 ft (198m) during both daytime and nighttime operations.
  4. Display shall adjust for day and night operation automatically with a photocell.
  5. LED technology displaying oncoming vehicle speeds in miles per hour (MPH) from 10 MPH (16 km/h) to 99 MPH (159 km/h).
  6. Equipped to alert motorist when they are traveling over the posted speed by flashing the traveling speed.
  7. Covered by an Ultra Violet (UV) inhibited, clear, non-fading or clouding polycarbonate resin lens, a minimum of 0.25 inch (6.35 mm) in thickness that can be opened or removed for maintenance.
- E. Provide solar powered units meeting the following criteria:
  1. The battery equipped with a battery controller to prevent over-charging and over dis-charging, and an external battery level indicator.
  2. Unit equipped with a minimum of two, heavy duty, deep cycle batteries which shall power the unit 24 hours a day for a minimum of 12 days without assistance of the solar panel(s).
  3. Unit equipped with solar panel(s) which generates sufficient power to enable the system to continually recharge the batteries.
  4. The battery, controller and power panel designed to be protected from the elements and vandalism.
- F. The radar unit shall not be affected by normal radio transmissions and meet the following physical requirements as a minimum:
  1. The complete RSDU designed and certified to operate in ambient air temperatures ranging from -20 °F (-29 °C) to 140 °F (60 °C). The unit and its operation is not affected by adverse weather conditions.
  2. Unit equipped with the manufacturer's radar device that measures speed in miles per hour.
  3. Radar device detecting the speed of oncoming vehicles only from a minimum distance of one-quarter mile (4 km) and capable of accurately sensing speeds of 10 to 99 mph with over speed function that operates when a vehicle approaches over the posted speed limit.
- G. The RSDU is entirely mounted on a trailer meeting all of the requirements of the Georgia Vehicle Code.  
Additional trailer requirements:
  1. The trailer and the components of the RSDU designed to allow one person to perform all transporting and operating functions without assistance.
  2. The trailer designed for unlimited on-highway travel at 70 mph (110 kph).
  3. The trailer has a minimum of four outrigger type leveling jacks, one at each corner of the trailer deck, and designed to be set up at the site with its own chassis and outriggers, without being hitched to a vehicle.
  4. The jacks are mounted to allow them to swivel into a locked position for secure storage during travel.

5. The trailer and all mounted equipment are structurally adequate for unlimited normal operation in wind velocities up to 80 mph (130 kph).
6. Trailer height, in the travel position, be from a minimum of 40 inches (1.01m) to a maximum of 84 inches (2.13 m). When in travel position, the display panel shall fold down such that it is parallel to the ground to reduce wind resistance.
7. Trailer height, in the display position, be from a minimum of 82 inches (2.08 m) to a maximum of 122 inches (3.09 m) including the speed limit sign mounted on top of the display panel.
8. Trailer width be from a minimum of 48 inches (1.22m) to a maximum of 72 inches (1.8m).
9. All mechanisms for raising and lowering the sign panel be enclosed to ensure safety and deter vandalism.
10. Trailer hitch having a lockable coupler.
11. Product safety plaques or decals be furnished and affixed at the operator's station and at any hazardous area.
12. The rear of the trailer be equipped with a red tail lamp, a red stop lamp, a turn indicator and a red reflector on each side at the same level and as widely spaced laterally as practicable.

### **999.3.03 Preparation**

General Provisions 101 through 150.

### **999.3.04 Fabrication**

General Provisions 101 through 150.

### **999.3.05 Construction**

#### **A. Utilization Requirements**

1. When set up as a Pay Item in the Contract, utilize RSDU whenever any condition(s) exists that would require extra emphasis in warning motorists of posted speed limit or at any location as directed by the Engineer. Furnish RSDU and have them available on a continuous basis.
2. Locate the RSDU beyond the posted speed limit and prior to the construction activity where conditions exist that would require extra emphasis in warning motorists of the posted speed limit. The location of the RSDU shall be approved by the engineer.
3. Include the location of the RSDU in the approved traffic control plan required in [Section 150-Traffic Control](#).

#### **B. Protection**

Any RSDU in use that is not protected by positive barrier protection shall be delineated by a minimum of three drums that meet the requirement of Section 150.05.A.1. The drum spacing shall not exceed a maximum of ten (10') feet as shown in Detail 150-PCMS. When the RSDU is within twenty (20') feet of the opposing traffic flow, the trailing end of the RSDU shall be delineated with a minimum of three drums spaced in the same manner as the approach side of the RSDU.

When not in use the RSDU shall be removed from the roadway unless protected by positive barrier protection. If the RSDU is not in use and protected by positive barrier protection then the sign panel shall be turned away from traffic.

### **999.3.06 Quality Acceptance**

General Provisions 101 through 150.

### **999.3.07 Contractor Warranty and Maintenance**

Keep the units in good repair and neat and clean in appearance. If the unit fails, malfunctions, or is damaged, immediately repair the unit. Make repairs or replace the unit within 24 hours. Maintenance also includes periodically cleaning the units.

## **999.4 Measurement**

Radar Speed Display Unit, complete with trailer, generating equipment, regulatory speed limit sign and "Your Speed" legend are measured by the unit.

**696.4.01 Limits**

General Provisions 101 through 150.

**999.5 Payment**

Radar Speed Display Unit, complete with appurtenances, will be paid for at the Contract Unit Price Per Each. Payment is full compensation for furnishing, installing, operating, relocating, maintaining and removing the RSDU for the duration of The Work. Each RSDU will be paid for only one time. The RSDU will remain the property of the Contractor.

Payment will be made under:

Item No. 999	Radar Speed Display Unit	Per Each
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**999.5.01 Adjustments**

General Provisions 101 through 150.