

**PROPRIETARY-MATERIAL-USE  
PUBLIC-INTEREST FINDING**

*PROGRAMMATIC APPROVAL*

PROGRAMMATIC APPROVAL PERIOD: July 1, 2014 – June 30, 2016

FHWA OVERSIGHT: YES  NO

**PROPRIETARY MATERIAL:**

Sensys Networks, Inc.

VDS240 Wireless Vehicle Detection System

Background

The VDS240 Wireless Vehicle Detection System received programmatic approval on May 16, 2012 for a two year term that ends on June 30, 2014.

Product Selection

Recurring special provision 805-T-173 contains specifications for wireless vehicle detection, which is a common alternative to inductive vehicle detection loops at signalized intersections. The VDS240 Wireless Vehicle Detection System is a useful alternative to the conventional method in the following situations:

- An inductive loop design will not function well due to limitations such as right-of-way, geometrics, pavement conditions, obstructed conduit paths, etc.
- A full inductive loop design has been considered and there is significant post-design life cycle cost advantage to using a full wireless vehicle detection system.
- A hybrid design using inductive loops at the stop line and wireless detectors for the advance vehicle detection and the hybrid design is the most cost effective, based on post-design life cycle cost.
- Temporary use at a temporary traffic signal or at a permanent traffic signal until such time as other vehicle detection methods can be installed.

Designers will have to submit a completed Wireless Vehicle Detection System Justification Form, when specifying wireless vehicle detection on a particular project. A copy of this Form is attached as Appendix A.

Product Components

The VDS240 Wireless Vehicle Detection System includes all of the components necessary for a complete installation, including:

- AP240 – Access Point Series
- APCC – Access Point Contact Closure Card
- Master (CC) and Expansion (EX) Cards

- RP240 – Repeater Series
- VSN240 – Sensor Series

### Product History

The VDS240 Wireless Vehicle Detection System is listed on INDOT's Approved Materials List for Traffic Signal Control Equipment under the non-counting loop amplifier section. Even though it is listed as a non-counting loop amplifier, it does have vehicle counting capabilities and is the only one of the three that currently has this capability. The ability to count vehicles and communicate this data is important if a vehicle detection device is to be a true alternative to traditional inductive vehicle detection loops.

### Project Compatibility.

The product desired would be compatible with many traffic signal installation and traffic signal modernization projects throughout the State. The product would be intended for use at all traffic signal projects when its advantages outweigh its disadvantages.

### Product Availability

The product desired is the only product of its type that is currently available in the United States. A Google search for "wireless vehicle detection" will turn up as the only relevant product. There are other manufacturers that make a similar device that is intended only for parking or home/business security.

### Product Cost

The most recent unit price summaries show a unit price of \$625.81 each for a Wireless Magnetometer Detector (pay item 805-10107) and a total quantity statewide of 508 units. The conventional inductive loop may be more or less than this depending on the amount of conduit, saw cutting and signal cable necessary. For projects where the Wireless Vehicle Detection System would be less expensive, the designer will show this in the project file, a copy of the justification form is attached as Appendix A.

### Maintenance

The product has some maintenance costs associated with it, as the batteries in the sensors must be replaced every ten years. However, the inductive loops also require periodic maintenance because the conductor wires are susceptible to being torn over time by the pavement. Therefore, depending on pavement condition, the maintenance work for wireless vehicle detectors can be less expensive and it has the advantage of being easier to schedule since it is known when the batteries will need to be replaced.

Product Alternatives – Summary Table

	Wireless Vehicle Detection Systems	Video Detection Systems	Microloop Detectors	Traditional Inductive Loops
Avoids using conduit to connect detectors with controller	Yes, the sensors are connected wirelessly	Yes, system installed on traffic signal mast arms	Yes, system bored underneath pavement	No, requires saw cutting for loops
High Accuracy Rate	Yes, meets <u>ITM 934</u>	No, see JTRP Report 2005-30	Yes, meets <u>ITM 934</u>	Yes, meets <u>ITM 934</u>
Acceptable if pavement is in poor condition	Yes, the sensor is sealed in a 4" pavement core	Yes, system installed on traffic signal cantilever	Yes, detectors bored underneath pavement	No, cables can be cut by deteriorating pavement
Capable of Providing Vehicle Counts	Yes, Type T Sensor	Yes	Yes	Yes
Proprietary Item	Yes, <u>VDS 240</u> by Sensys Networks	No, multiple manufacturers	Yes, <u>Canoga</u> by GTT	No, multiple manufacturers

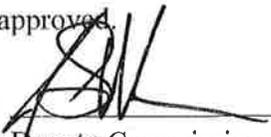
PREPARED BY:

Date: 3/27/2014

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Based upon the above finding, the use of the proprietary material listed is in the public interest and is hereby approved.

APPROVED:

  
Deputy Commissioner, Engineering  
& Asset Management, INDOT

  
Division Administrator, FHWA

Date: 4/16/2014

Date: 4/23/2014

APPENDIX A

WIRELESS VEHICLE DETECTION SYSTEM – JUSTIFICATION FORM

Intersection: \_\_\_\_\_

Des No: \_\_\_\_\_ Contract No: \_\_\_\_\_

A wireless vehicle detection system is needed at the intersection listed above for the following reason(s):

Check all that apply

- An inductive loop design will not function due to physical limitations described below

Physical Limitations
 Right-of-Way or Intersection Geometrics (attach aerial photo or intersection diagram)
 Pavement Condition (attach pavement photos)
 Obstructed Conduit Paths (attach intersection diagram)
 Other: \_\_\_\_\_

- A full inductive loop design for vehicle detection has been evaluated and there is a post-design life cycle cost advantage, summarized below, to using a full wireless vehicle detection system

Post-Design Life Cycle Cost Estimate for Full Loop Install
Full Loop Installation Cost: \_\_\_\_\_
Signal Conduit Quantity: \_\_\_\_\_
Full Loop Maintenance Cost: \_\_\_\_\_
Full WVDS Installation Cost: \_\_\_\_\_
Full WVDS Maintenance Cost: \_\_\_\_\_

- A hybrid design using inductive loops at the stop line and wireless detectors for the advance vehicle detection is the most cost-effective vehicle detection method based post-design life cycle costs, as summarized below

Post-Design Life Cycle Cost Estimate for Hybrid Install
Full Loop Installation Cost: \_\_\_\_\_
Signal Conduit Quantity: \_\_\_\_\_
Full Loop Maintenance Cost: \_\_\_\_\_
Hybrid WVDS Installation Cost: \_\_\_\_\_
Hybrid WVDS Maintenance Cost: \_\_\_\_\_

- Temporary use

Reason for Temporary Use
 Temporary Traffic Signal
 Permanent Traffic Signal \_\_\_\_\_
(enter timeframe needed)

RECOMMENDED:

APPROVED:

Name: \_\_\_\_\_
Title: \_\_\_\_\_

Name: \_\_\_\_\_
District Traffic Engineer

Date \_\_\_\_\_

Copies To:
Project Manager
Highway Design & Tech Support Office