



**INDIANA DEPARTMENT OF TRANSPORTATION  
DIVISION OF MATERIALS AND TESTS**

**PROCEDURE FOR BENCH TESTING, FIELD TESTING,  
AND APPROVAL LIST REQUIREMENTS FOR  
WIRELESS VEHICLE DETECTION SYSTEMS (WVDS)  
ITM No. 954-15**

**1.0 SCOPE.**

**1.1** This test procedure covers the methods that a wireless vehicle detection system (WVDS) is bench tested, evaluated in the field, and is placed, maintained, or removed from an approval list.

**1.2** This ITM may involve hazardous materials, operations, and equipment. This ITM does not purport to address all of the safety problems associated with the ITM's use. The ITM user's responsibility is to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

**2.0 REFERENCES.**

**2.1 ITM Standards.**

934 Procedure for Evaluating Vehicle Detection Performance

**2.2 NEMA Standards.**

2003 NEMA Standards Publication TS-2 Traffic Signal Controller Assemblies.

**3.0 TERMINOLOGY.** Definitions for terms and abbreviations shall be in accordance with the Department's Standard Specifications, Section 101 and NEMA TS-2 Section 1.

**4.0 SIGNIFICANCE AND USE.** This ITM is used to evaluate, approve, maintain approval, and remove from the approval listing of wireless vehicle detection systems which is placed on the Department's List of Approved Traffic Controller Equipment. Each model of WVDS will be bench tested and field tested separately.

**5.0 APPARATUS.** A fully functional instrumented intersection, with detector data output logging and live video overlay capabilities

- 6.0 SAMPLING.** The manufacturer shall furnish, at no cost to the Department, one randomly selected production-run wireless vehicle detection system of each model for bench testing and field testing. The model shall include all components and purpose-built cables and connectors necessary for operation.

The wireless vehicle detection system shall consist of all electronic equipment, in-pavement sensors, receiver/processors, repeaters, mounting hardware, cables, and power supplies.

- 7.0 PROCEDURE.** The Department will evaluate the performance of individual vehicle detectors upon successful completion of all other requirements specific to the vehicle detector being tested.

- 8.0 SUBMITTAL REVIEW.** The documentation will be reviewed for usability of the WVDS with Department approved NEMA TS-2 traffic controller assemblies. The documentation will be reviewed for product compliance with the MUTCD and the Department specifications. The manufacturer's recommended schedule and extent of maintenance will be reviewed for acceptability.

- 9.0 BENCH TESTING.** The WVDS will be bench tested for compatibility with all NEMA TS-2 signal controller assemblies used by the Department. The WVDS will be verified for full NEMA TS-2 functionality and full manufacturer's claimed optional functionality.

- 10.0 FIELD TESTING.** Field testing of the WVDS shall be in accordance with ITM 934.

- 11.0 REPORT.** A final report will include the notations and findings from the electronic bench test and field testing results and documentation.

**12.0 APPROVAL LIST.**

- 12.1 Approval of a Wireless Vehicle Detection System.** The WVDS model may be placed on the approval list when the following conditions are met:

**12.1.1** A potential net benefit to the Department is realized by inclusion of the item on the list.

**12.1.2** The bench and field testing are completed with satisfactory results.

**12.1.3** The required documentation is submitted.

**12.1.4** No excessive amount of routine or periodic maintenance is required.

**12.1.5** No failure with any of the different types of NEMA TS-2 traffic controller assemblies or individual traffic control components used by the Department.

**12.1.6** The wireless vehicle detection system shall include:

- a) All manuals & documents
- b) All required software to realize full potential of the WVDS.

**12.1.7** Only minimal maintenance operations were necessary during the field testing.

**12.2 Maintaining Approval.** Maintaining approval of the WVDS shall be in accordance with ITM 934.

**12.3 Removal from Approval List.** Removal from the approval list shall be in accordance with ITM 934.

INDIANA DEPARTMENT OF TRANSPORTATION  
DIVISION OF OPERATIONS SUPPORT  
PRELIMINARY INFORMATION FOR PRODUCT MATERIAL EVALUATION

Trade Name \_\_\_\_\_ Date \_\_\_\_\_

Manufacturer \_\_\_\_\_ Patented? Yes \_\_\_\_\_ No \_\_\_\_\_ Applied for \_\_\_\_\_

Address \_\_\_\_\_  
Street No (P. O. Box) City State Zip Code

Representative \_\_\_\_\_ Phone No ( ) \_\_\_\_\_

Address \_\_\_\_\_  
Street No (P. O. Box) City State Zip Code

Product Information \_\_\_\_\_  
\_\_\_\_\_

Materials Composition \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\*\* Is this product considered HAZARDOUS MATERIAL when disposing of non-used or surplus materials? Yes \_\_\_\_\_ No \_\_\_\_\_

\*\* What is the shelf life of this material? Years \_\_\_\_\_ Months \_\_\_\_\_ N/A \_\_\_\_\_

Recommended Use-Primary \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Recommended Use-Alternate \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Advantages and/or Benefits \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\*\* Materials specifications by manufacturer, installation/operation manual, maintenance manual, literature, test results, guarantee, hazardous material data sheets, plan, picture or sketch must be submitted with this form. In the case of electronic devices the schematic diagram, parts list, and parts layout diagram must be submitted for each printed circuit board within the device.

Meets following specifications:

AASHTO \_\_\_\_\_

ASTM \_\_\_\_\_

OTHER \_\_\_\_\_

Use by highway authorities or similar agencies in other states.

Agency	Years Used	Remarks
_____	_____	_____
_____	_____	_____
_____	_____	_____

\*\* Has product ever been evaluated by and rejected for use by a governmental agency?

Yes \_\_\_\_\_ No \_\_\_\_\_ If yes, by what agency and for what reason?

\_\_\_\_\_

\_\_\_\_\_

Will demonstration be provided? Yes \_\_\_\_\_ No \_\_\_\_\_

Availability: Seasonal \_\_\_\_\_ Nonseasonal \_\_\_\_\_ Delivery at site \_\_\_\_\_

After receipt of order, are quantities limited? Yes \_\_\_\_\_ No \_\_\_\_\_

\*\* Will FREE SAMPLES be furnished? Yes \_\_\_\_\_ No \_\_\_\_\_  
If yes, Quantity Furnished \_\_\_\_\_

\*\* If the sample is salvageable, do you desire to have it returned Yes \_\_\_\_\_ No \_\_\_\_\_

(Desired return of salvageable samples will be at the supplier's expense.)  
(The manufacturer agrees upon the return of salvageable samples, such samples may be damaged or non-operable. Normal care will be taken that the samples, when returned, are in operable condition; INDOT, however, does not guarantee that the returned samples are operable.)

Will laboratory analysis be furnished? Yes \_\_\_\_\_ No \_\_\_\_\_

\*\* Approximate cost \_\_\_\_\_ Royalty Cost \_\_\_\_\_

When was the product introduced to the market? \_\_\_\_\_

This product is an alternate for what product? \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Will warranty be provided? Yes \_\_\_\_\_ No \_\_\_\_\_ If yes, for how long? \_\_\_\_\_

Background of company, including principal products \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

What offices of the Indiana Department of Transportation have been contacted?

\_\_\_\_\_

Additional Information \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

(Attach additional sheets as necessary)

Person furnishing information \_\_\_\_\_  
Name Title

Address \_\_\_\_\_  
Street No (P. O. Box) City State Zip Code

Items marked \*\* MUST BE RESPONDED TO or further consideration may not be given for this product.

Please mail this form to: Director, Traffic Engineering  
100 N. Senate Ave., Room N758-TE  
Indianapolis, IN 46204

If INDOT elects to evaluate your product/material - traffic signal equipment shall be shipped to:

Electronic Technician Supervisor  
Indiana Department of Transportation  
8620 E. 21<sup>st</sup> Street  
Indianapolis, IN 46219

While all other materials to be evaluated will be shipped to:

Traffic Evaluations  
Indiana Department of Transportation  
8620 E. 21<sup>st</sup> Street  
Indianapolis, IN 46219