



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

**PROCEDURE FOR BENCH TESTING, FIELD TESTING,
AND APPROVAL LIST REQUIREMENTS FOR
ACCESSIBLE PEDESTRIAN SIGNALS (APS)
ITM No. 937-18**

1.0 SCOPE.

- 1.1** This test procedure covers the methods that an accessible pedestrian signal (APS) is bench tested, evaluated in the field, and is placed on, maintained on, or removed from an approval list.
- 1.2** The values stated in either English or acceptable SI metric units are to be regarded separately as standard, as appropriate for a specification with which this Indiana Testing Method (ITM) is used. Within the text, SI metric units are shown in parenthesis. The values stated in each system may not be exact equivalents; therefore each system shall be used independently of the other, without combining values in any way.
- 1.3** 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 Indiana Test Methods

806 Approval List Requirements

2.2 NEMA Standards.

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

2.3 Manual on Uniform Traffic Control Devices

Section 4E.08 Pedestrian Detectors

Section 4E.09 Accessible Pedestrian Signals and Detectors- General

Section 4E.10 Accessible Pedestrian Signals and Detectors- Location

Section 4E.11 Accessible Pedestrian Signals and Detectors-Walk Indications

Section 4E.12 Accessible Pedestrian Signals and Detectors- Tactile Arrows and Locator Tones

Section 4E.13 Accessible Pedestrian Signals and Detectors- Extended Pushbutton Press Features

2.4 INDOT Specifications

INDOT Standard Specifications

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.

3.1 Abbreviations Wherever the following abbreviations are used in this ITM, they are to be construed the same as the respective expressions represented.

APS

Accessible Pedestrian Signal

4.0 SIGNIFICANCE AND USE.

4.1 This Indiana Testing Method (ITM) is used to evaluate, approve, maintain approval, and remove from the approval listing of accessible pedestrian signals which are placed on the Department's List of Approved Traffic Controller Equipment. Each model of accessible pedestrian signal will be bench tested and field tested separately.

5.0 APPARATUS.

5.1 Complete APS pushbutton assembly.

5.2 Complete central control unit (if applicable).

6.0 SAMPLING. The manufacturer shall furnish, at no cost to the Department, four randomly selected production-run accessible pedestrian signal pushbutton assemblies of each model and one central control unit (if applicable) for bench testing and field testing. The model shall include all components and purpose-built cables and connectors necessary for operation.

The accessible pedestrian signal system shall consist of all electronic equipment, mounting hardware, power supplies, push buttons, and sign faces which provide both a raised vibrating tactile arrow and a variety of audible sounds for different traffic signal functions.

7.0 PROCEDURE.

7.1 The manufacturer of the material shall fill out the Preliminary Product Material Evaluation Form in Appendix A for each model type of accessible pedestrian signal which the manufacturer is requesting to be added to the listing.

7.2 The manufacturer of the material shall submit with the Evaluation Form the following:

- 7.2.1 An invoice showing an initial zero dollar amount (\$0.00) for the use of the evaluation sample material during the evaluation. The invoice shall also list the deferred cost of the material that INDOT would pay if it is decided to purchase the tested samples instead of returning them upon the successful completion of the evaluation.
 - 7.2.2 A certification of environmental testing shall be furnished indicating it has been tested and is in accordance with the environmental requirements from NEMA TS-2. A complete log of each test shall be provided to the Department and will be maintained by the Department. The log shall show which, if any, component failed during the test, when it failed, and what steps were taken to repair the unit. The log shall include the date of testing, name and title of person conducting the tests, a record of conditions throughout the tests, and a temperature and humidity versus time chart. The maximum report interval of any time chart shall be 24 hours. The chart shall be from a recording machine used to monitor the status of the environmental chamber during testing.
 - 7.2.3 Operation and Maintenance Manual(s), including theory of operation, schematics and components parts listing. Schematics may be substituted by extended warranty periods, at the department's discretion, if the material is considered to be non-repairable by agency staff.
 - 7.2.4 Four randomly selected production run accessible pedestrian signal pushbutton assemblies and a central control unit (if applicable) for bench testing.
 - 7.2.5 List of required software and any additional items required to realize full potential of product.
- 8.0 SUBMITTAL REVIEW.** The documentation will be reviewed for usability of the accessible pedestrian signal with Department approved NEMA TS-2 traffic controller assemblies. The documentation will be reviewed for product compliance with the MUTCD and INDOT specifications. The manufacturer's recommended schedule and extent of maintenance will be reviewed for acceptability.
- 9.0 BENCH TESTING.** The accessible pedestrian signal will be bench tested for compatibility with all NEMA TS-2 signal controller assemblies used by the Department. The accessible pedestrian signal will be verified for full NEMA TS-2 functionality & full manufacturer's claimed optional functionality.
- 9.1 The bench testing of the accessible pedestrian signal will consist of installing the accessible pedestrian signal in a traffic signal cabinet to determine the following:
 - 9.1.1 A log of any failures of the accessible pedestrian signal.

9.1.2 The relative ease of use for field personnel.

9.1.3 Overall build quality and expected lifecycle of the accessible pedestrian signal.

10.0 REPORT. A final report will include the notations and findings from the electronic bench test results and documentation.

11.0 APPROVAL LIST

11.1 Approval of an accessible pedestrian signal. The accessible pedestrian signal model may be placed on the approval list when the following conditions are met:

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

11.1.2 The bench and field testing are completed with satisfactory results.

11.1.3 The required documentation is submitted.

11.1.4 No excessive amount of routine or periodic maintenance is required.

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

11.1.6 The accessible pedestrian signal shall include:

- All manuals & documents
- All required software to realize full potential of the accessible pedestrian signal.

11.1.7 Only minimal maintenance operations were necessary during the field testing.

11.2 Maintaining Approval. The product will be maintained on the approved list provided that the following conditions are met:

11.2.1 The Highway Operations Division Evaluations Section shall be notified each time an update or revision of the firmware or software is released, explaining the changes and the benefits of the change. Operations Support Division will determine if and to what extent a revision is to be placed into field operation and may fully re-evaluate the accessible pedestrian signal with the revision.

11.2.2 If the manufacturer makes any changes to an approved model to correct a

non-NEMA compliant or safety issue, the Department shall be notified immediately. The manufacturer shall correct all existing equipment purchased by the Department either directly, by contract, or through agreement prior to the change being incorporated at the manufacturer's production level.

11.2.3 A design change to an approved model shall require a submittal of documented changes. At the discretion of the Department, resubmission of the model for testing and evaluation may be required. Permanent addition or removals of component parts or wires, printed circuit board modifications, or revisions to memory or processor software, are examples of items that are considered to be design changes.

11.3 Removal from Approval List. Accessible pedestrian signals will be removed from an approval list for, but not limited to, the following reasons:

11.3.1 Changes in the accessible pedestrian signal's components or production process that fail testing and/or evaluation;

11.3.2 If three consecutive years elapse without furnishing the accessible pedestrian signal;

11.3.3 Performance of the accessible pedestrian signal no longer meets the intended purpose;

11.3.4 Recurring similar product failures indicative of a manufacturer's defect.

11.3.5 Failure to provide or notify the Department of items in 11.2.

APPENDIX A
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 (Model # / Name) _____

Materials Composition _____

Advantages and/or Benefits to INDOT _____

Materials specifications by manufacturer, installation/operation 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 _____

Will supporting Manuals and supporting software be included with sample?

Yes _____ No _____

Similarly used 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 FREE SAMPLES be furnished? Yes _____ No _____

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.)

Will laboratory analysis be furnished? Yes _____ No _____

Approximate unit cost _____ Additional supporting costs (Software) _____

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

Please mail/fax/email this form to:

Deann Knoche
INDOT – Borman Traffic Management Center
7701 E. Melton Rd
Gary, IN 46403
Fax: 219-939-3675
dknoche@indot.in.gov

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

Electronic Technician Lab
Indiana Department of Transportation
8620 E. 21st Street
Indianapolis, IN 46219