NTPEP Committee Work Plan for

Evaluation of Temporary Traffic Control Devices Flexible Delineators

NTPEP Designation: [TTCD 17-01]
INTRODUCTION

The National Transportation Product Evaluation Program (NTPEP) was established to minimize the amount of duplicative testing of transportation materials performed by AASHTO member states by providing a process where manufacturer/suppliers submit their products to NTPEP for laboratory and/or field testing. The results of the testing are then shared with member Departments for their use in product quality verification.

This work plan describes the NTPEP evaluation of Temporary Traffic Control Devices. Test results from this program are provided to NTPEP member departments. In keeping with the NTPEP philosophy of purely testing materials, no conclusions are provided with the test results. The evaluation of the test results is left up to each member department.

The National Transportation Product Evaluation Program (NTPEP) serves the member departments of the American Association of State Highway and Transportation Officials (AASHTO).

1. SCOPE

1.1 This standard practice covers the requirements and testing criteria for the National Transportation Product Evaluation Program (NTPEP) evaluation of temporary traffic control devices under the category of Flexible Delineator Posts. NTPEP serves the member departments of the American Association of State Highway and Transportation Officials (AASHTO).

1.2 The results of this program may be used for product quality verification by individual member Departments. If used for quality verification, a letter of certification from the temporary traffic control devices (TTCD) manufacturer may be required by member Departments indicating testing was conducted by NTPEP that supports published values.

1.3 This standard practice may involve hazardous materials, operations, and equipment. It does not purport to address all safety problems associated with its use. It is the responsibility of the user of this standard practice to establish the appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

2. PRODUCT REQUIREMENTS

2.1 The manufacturer shall submit to the NTPEP Manager the electronic product evaluation form through DATAMINE. The form shall include product literature, technical literature, MSDS information, and program payment for each product submitted for testing.

2.2 Manufacturer's Documentation
2.2.1 **Submittal of Flexible Delineator Posts to NTPEP** - the manufacturer shall supply manufacturer documentation showing the brand name and designation; the composition or description and physical characteristics of the product; the type of retroreflective sheeting and the bonding agent used for surface mounted delineators.

2.2.2 The manufacturer shall certify that as long as a device is furnished under the submitted brand name and designation, the device will be of the same composition and formulation as originally evaluated by the NTPEP. If any change in composition or formulation is made to a product under the submitted brand name and designation, the manufacturer will notify NTPEP and additional testing may be required.

2.2.3 The manufacturer shall certify that the Flexible Delineator Posts meet all requirements as set forth in the latest edition of the Manual on Uniform Traffic Control Devices (MUTCD) as pertaining to such device.

### 3. SAMPLING

#### 3.1 Flexible Delineator Posts: Ground Mount & Surface Mount

The lead state contact person will make arrangements to have the products sampled. TTCD product sampling shall be performed in accordance with the NTPEP temporary traffic control devices protocol. The manufacturer/supplier shall attach product/material literature and material data safety sheets to the Product Evaluation Form (PEF). All collected samples shall be labeled to show the manufacturer name, manufacturer’s product code, type of material, and shall be shipped by and at the manufacturer’s expense via a carrier with a freight tracking system. Samples shall be shipped to the NTPEP testing laboratory. Samples shall be labeled by the sampling agency with the testing center’s reference number. The manufacturer will then be responsible for transportation of the samples to the appropriate testing facility.

3.1.1 Flexible delineator posts shall be randomly sampled by the testing agency or their appointed authority.

3.1.2 The manufacturer shall furnish, at no cost to the lead testing state, ten (10) flexible delineator posts with the appropriate delineator or retroreflectorized sheeting attached. Surface mount delineator posts shall be a minimum of 36” in height. Ground mount delineator posts shall be a minimum of 48” in height above the roadway.

3.1.3 Retroreflective sheeting shall be affixed to the post as recommended by the manufacturer. If there is no recommended sheeting, the manufacturer shall furnish the posts with 3” (wide profile) x 9” (length) retroreflectorized sheeting attached to the test samples. The sheeting shall be positioned ½” inch from the top of delineator.

### 4. FIELD EVALUATIONS

#### 4.1 Generic Test Specifications

4.1.1 Impact vehicle will be modified MASH 1100C small sedan of a model made within the last 10 years.

4.1.2 The impact velocity will vary based on the following categories:

- Low Durability Side of Roadway Applications (55 mph) – Maximum of 10 impacts.
- High Durability Metropolitan Delineator Applications (55 mph).
- High Speed High Durability Applications (70 mph).

4.1.3 A total number of samples tested will include 16 delineator posts and 8 bases for each hot and cold weather testing. The hot weather testing will take place at 82 degrees F or greater while the cold weather testing will take place at 35 degrees F or lower.

4.1.4 The delineator shall be tested at the manufacturer’s suggested maximum installed height.

#### 4.2 Test Installation

4.2.1 Installation of delineators for testing shall be configured in 4 rows. One row will be aligned with the vehicle tires for the wheel over impact and the other row shall be aligned with the opposing vehicle quarter point for the bumper impact. Each delineator will be spaced a minimum of 50”, or 2” greater than the delineator height, from a subsequent delineator to prevent interaction.
4.2.2 Half of the bumper and wheel over impacts will be oriented parallel to the path of the impacting vehicle while the other half of the wheel over and bumper impacts will be oriented 25 degrees from the path of the impacting vehicle.

4.3 **Surface Attachment**

4.3.1 All testing will be performed with the intended product and no substitutions will be allowed. Materials and technical specifications shall be submitted with each product.

4.3.2 At least four delineators must be attached with each type of proposed attachment method with at least two of each method being a bumper impact and at least two of each method being a wheel over impact. An equal number of bumper and wheel over impacts will be performed on each method.

4.3.3 If more than two attachment methods are proposed, the number of samples tested at one time can be increased at the testing facility’s discretion and testing may be repeated with a new set of 4 or more delineator samples to qualify untested methods.

4.4 **Documentation**

4.4.1 Material classification data shall be submitted with test samples and will be retained by the testing lab. ASTM D5630 (Ash Testing) and Fourier Transform Infrared Spectrometry (FTIR) ASTM E168 and E1252 are preferred methods. Material and technical specifications shall be submitted with test samples and will be included in the report.

4.4.2 Complete fabrication drawings detailing all component dimensions and thicknesses shall be submitted with test samples. General drawings shall be submitted with test samples and will be included in the report.

4.4.3 Detailed instructions for installation shall be submitted for each attachment method to be tested. Two additional randomly selected samples shall be submitted for potential destructive testing to verify the documentation information submitted is accurate.

4.4.4 All tests will be videotaped using standard frame rate. A counter showing impact number should be in view of the standard rate camera during testing. The following lists the photos (at a minimum) that will be taken during testing:

- Photo of Counter showing impact number
- Photos of system: Longitudinal, Perpendicular, Oblique
- Delineator: Identifying label for test sample, frontal face of delineator, any damage to delineator, close up shot of reflective sheeting to document damage
- Impacting vehicle: Frontal, Perpendicular (wheel over side), Oblique

4.4.5 Photos will be taken at the following times:

- Prior to testing
- After first impact
- After 5th impact
- After 10th impact
- After 20th impact
- After 50th impact
- After 100th impact
- After 150th impact
- After 200th impact

4.4.6 Written documentation will list the following information at the specified times:

- Measurement of list and lean
  - Prior to testing
  - After 1st impact
  - After 10th impact
  - After 100th impact
  - After 200th impact
- Document any damage to delineator
- Document any failures and on what impact they occurred
- Failure of delineator to self-restore to within 15° of vertical in any direction
Measurement will be taken within 5 minutes last impact
Testing will be postponed until either all samples are deemed within 15° of vertical or the suspect sample is deemed failed

4.5  Testing

4.5.1  All impacts shall be made in the same direction of travel and only fresh untested samples will be used. Bases may be reused at the discretion of manufacturer and testing lab. All 200 impacts will be performed on the same samples. All hot temperature impacts will occur at a temperature greater than 82°F and all cold temperature impacts will occur at a temperature less than 35°F. Hot temp testing will be qualified separately than cold temp testing.

4.6  Evaluation of Testing

4.6.1  If a representative attachment method fails prematurely, the attachment method can be reevaluated only once. A full installation of eight samples of the failed method must be tested. This method will be qualified separately from all other attachment methods. Samples are considered to have failed if they do not self-restore to within 15° from vertical within 5 minutes of being impacted.

4.7  Reported Values

4.7.1  The following values will be reported on the specified timeline:

• Number of impacts resisted by each sample
• Average number of impacts resisted for each surface attachment method
  o Average number of tire impacts resisted
  o Average number of bumper impacts resisted
  o Average number of impacts resisted
• Average number of impacts resisted for all samples
  o Average number of tire impacts resisted
  o Average number of bumper impacts resisted
  o Average number of impacts resisted
• Table of images for each delineator

4. EVALUATION FACILITY REQUIREMENTS

7.1  The testing state facility must participate in the (AASHTO) Accreditation Program through the American Association of State Highway Transportation Officials and obtain a Certificate of Accreditation.

7.1.1  The scope can be obtained by viewing the AAP directories of accredited laboratories at www.nist.gov/amrl or by contacting AMRL.

5. REPORT

The report shall include manufacturer’s name, location, product information and description. The report will also include the initial and final data collected for the Field evaluations for the Flexible Delineator Posts.

5.1  Test results will be reported to the NTPEP Manager in the web-based data base – DataMine as follows. Once the data is reported to the manager, the NTPEP Manager will forward each manufacturer’s data to them for their review. When the manufacturer reviews and accepts the data, the NTPEP manager will release the data to the public.

5.2  Evaluation data will be compiled and made available to all participating states and testing companies through the AASHTO/NTPEP DataMine. This report will include data only. No judgment as to a product’s acceptability will be made in this report. End user participants will establish individual criteria for product acceptability.

5.3  DataMine – This web-based data base can be accessed through the AASHTO-NTPEP web site link at www.data.ntpep.org.
6. EVALUATION FREQUENCY

6.1 If the TTCD does not perform adequately during the initial testing, the manufacturer may, at his option, withdraw the product from the current evaluation process. The report will show only the data of the evaluation process completed before withdrawal. The manufacturer may submit the device for retesting during the next, or any subsequent, testing cycle.

7. TIMELINE

7.1 The Intent of the timeline is to give the manufacturer and or supplier a reasonably time frame for the completion of the evaluation process. See table 1

| Table 1 --- Timeline of submittal to completion of the evaluation process |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Details         | Duration (Months) | Time Line (months) |
| April Administration | Testing Cycle is posted | - | 2 | 1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| April Submissions | 0               | - | - | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| May Assignment letters | 1.5 | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| June Product Sampling | 1    | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| July Product Application | 1    | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| August Product Testing | Testing Cycle 1 | 1 | - | 1 | 2 | 3 | - | - | - | - | - | - | - | - | - | - |
| Dec / Feb Testing Cycle 2 | 6    | 1 | 2 | 3 | 4 | 5 | - | - | - | - | - | - | - | - | - | - |
| March Product Reporting | Results | 0 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| March / April Final Results | 1    | - | 1 | 2 | - | - | - | - | - | - | - | - | - | - | - | - |
| March / April Manufacturer Review | Final Results | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| May Report/Data Release | Final Results | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

8. KEYWORDS

8.1 NTPEP; Flexible Delineator Posts (Ground Mount) Flexible Delineator Posts (Surface Mount); DataMine.
APPENDIXES

APPENDIX A

Temporary Traffic Control Sampling Protocol

The NTPEP Manager will send to the testing state (Tennessee) the PEFs for all products in the testing cycle.

The testing state will contact by phone and email the sampling state(s) with instructions and location information on where to sample within their state (manufacturer information, location and the product(s) name). Attached Form 1.0 and Form 1.1

The testing state will supply labels (Attached Form 1.2) to be placed on the products as they are sampled. The labels are sent to the manufacturers or suppliers’ marked with a label on the outside stating DO NOT OPEN until sampling state representative is present (shown below).

AASHTO NTPEP OVERSIGHT COMMITTEE
REQUEST

DO NOT OPEN
UNTIL REPRESENTATIVE FROM STATE IS PRESENT
THIS PACKET CONTAINS LABELS FOR SAMPLING OF
delineators for NTPEP evaluation
FOR INFORMATION REGARDING THIS PACKET
PLEASE CONTACT THE
Tennessee Department of Transportation
615.350.4175

The sampling state representative sets a scheduled date and time to sample the product(s).

The sampling state representative will randomly select samples from a randomly selected lot of a manufactures or suppliers’ inventory.

The sampling state representative will initial and place the labels on the selected samples.

The Manufacturer or supplier will then ship the sampled products to the testing state.
State Materials Engineer  
Washington State DOT  
P O Box 47365  
Olympia, WA  98504-7365

RE: AASHTO NTPEP Oversight Committees request for sampling of Roadside Delineators for NTPEP evaluation

Dear State Materials Engineer,

This letter is to ask for your assistance in the matter of the sampling of Roadside Delineators for NTPEP evaluation. Attached along with this letter is a sheet containing the request and contact information for the manufacturer located within your state. In addition, a packet containing labels to be place on the samples of the products to be evaluated is sent to the manufacturer within your state. Along with the instructions not to open until a representative from your Department is present. The representative from your Department then shall randomly select samples from a randomly selected lot. The labels are then placed on each sample selected and initialed by the representative from your Department. After the labels are placed, the manufacturer sends the samples to the lead state (Tennessee Department of Transportation) for evaluation.

Your assistance in this matter will be greatly appreciated. If you have any questions please call 615.350.4175.

Sincerely,

Danny L. Lane  
Division of Materials and Tests  
Transportation Manager  
Research and Product Evaluation
AASHTO NTPEP OVERSIGHT COMMITTEE

REQUEST FOR SAMPLING OF DRUMS AND DELINEATORS FOR NTPEP EVALUATION

LEAD STATE: TENNESSEE

SAMPLING STATE: WASHINGTON

MANUFACTURER: ACME Delineators

CONTACT: JOHN HIGHWAY

PHONE: 555.284.9000  FAX: 555.284.8000

SAMPLING OF DELINEATORS

TTCD (20 10 W – S) - 3 ACME Ground Mount Delineator

The sampling state will take 16 random samples (at state discretion) of each product. Place a label (Lead State provided) on each drum or delineator, and then the manufacturer will ship the samples to the Lead State.

A sample of the label is shown below. Note that if label is lost or destroyed sampling state inspector may initial or place another label at their discretion.

Thanks for your cooperation in this matter; if you have any questions please call Danny Lane at 615.350.4175.

AASHTO NTPEP OVERSIGHT COMMITTEE
REQUEST FOR SAMPLING OF DELINEATORS FOR NTPEP EVALUATION

State of Washington
TTCD 20 10 (W – S) - 3

LOT NO: ___________ SAMPLE NO: _____1_____
INSPECTOR: ___________ DATE: ___________