NTPEP Committee Work Plan for

Evaluation of Pavement Markers and Adhesives

NTPEP Designation: RPM-15-01
NTPEP Committee Work Plan for

Evaluation of Pavement Markers and Adhesives

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 field testing for up to a two year period. The results of the testing are then shared with member Departments for their use in product quality verification.

This practice provides the NTPEP member departments information on the raised pavement marker and adhesive testing program. 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 states that are involved in testing pavement markers are Georgia, Ohio and Florida.

Georgia is the lead state and is responsible for the acquisition of the raised pavement markers and adhesives for testing and the oversight of the test result data entry into DataMine, the web-based database program. Georgia and Ohio also perform initial laboratory testing and operates a test deck site for the collection of data on raised pavement markers and adhesives exposed to outdoor environmental conditions. Florida assists by performing additional laboratory testing on the pavement markers both before and after field exposure.

1. SCOPE

1.1 This standard practice covers the requirements and testing criteria for the National Transportation Product Evaluation Program (NTPEP) evaluation of standard (non-plowable), snow plowable, temporary and chip seal raised pavement markers and adhesives. The National Transportation Product Evaluation Program (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 raised pavement marker (RPM) manufacturer and the adhesive manufacturer indicating testing was conducted by NTPEP that supports published values may be required by member Departments.

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.

© 2019 by the American Association of State Highway and Transportation Officials.
All rights reserved. Duplication is a violation of applicable law.
2. REFERENCED DOCUMENTS

2.1 AASHTO Standards:

- T237, Testing Epoxy Resin Adhesive

2.2 ASTM Standards:

- D 5, Test Method for Penetration of Bituminous Materials
- D 36, Test Method for Softening Point of Bitumen (Ring-and-Ball Apparatus)
- D 92, Test Method for Flash and Fire Points by Cleveland Open Cup
- D 113, Test Method for Ductility of Bituminous Materials
- D 2240, Test Method for Rubber Property - Durometer Hardness
- D 3236, Test Method for Apparent Viscosity of Hot Melt Adhesives and Coating Materials
- D 4280, Specification for Extended Life Type, Non-plowable, Prismatic, Raised Retroreflective Pavement Markers
- D 4383, Specification for Plowable, Raised Retroreflective Pavement Markers
- D 4499, Test Method for Heat Stability of Hot Melt Adhesives

3. TERMINOLOGY

3.1 Coefficient of Luminous Intensity \( (R_I) \) – Measure of the amount of light that a point source radiates in a given direction.

3.2 NTPEP Manager – The AASHTO/NTPEP administrative manager.

3.3 Lead State Coordinator – The Georgia DOT representative responsible for oversight of the program, including planning, sample acquisition, Data Mine Reviews, and Data Mine releases to the manufacturer.

3.4 Marker Classifications:

- Standard (Non-plowable) Raised Pavement Marker
- Snow Plowable Raised Pavement Marker
- Temporary Raised Pavement Marker
- Temporary Chip Seal Marker
3.5 Adhesive Classifications:

- **Flexible Bituminous Adhesive** – Hot applied thermoplastic bituminous material.
- **Non-Bituminous Hot Melt Adhesive** – Single component non-bituminous thermoplastic material.
- **Epoxy Adhesive** – Epoxy material.

4. SUMMARY OF PRACTICE

4.1 On a yearly basis (summer), raised pavement marker and adhesive manufacturers submit their products to be tested. Raised pavement marker samples are initially tested for retroreflectivity, color and visual appearance. Samples are then placed on actual roadway test decks and exposed to traffic and environmental conditions for a total of two years (six months for temporary markers and one month for chip seal markers). Samples are tested and evaluated at the 6, 12, 18 and 24 month time periods (monthly for temporary markers and weekly for chip seal markers). Georgia DOT and Florida DOT conduct an initial laboratory evaluation on random samples from the raised pavement markers submitted. This testing includes Dimensional Measurements, Retroreflectivity, Compressive Strength, Lens Integrity, Temperature Resistance, Flexural Strength and Abrasion Resistance. Florida DOT also tests roadway samples for retroreflectivity initially, and at 6, 12, 18 and 24 month time periods. Test result data is entered into the web-based DataMine program initially and after each test period.

4.2 Adhesives are initially laboratory tested by Georgia for properties detailed within this standard practice.

5. SIGNIFICANCE AND USE

5.1 This standard practice utilizes laboratory and field testing to determine raised pavement marker and adhesive properties and evaluate the performance (new and trafficked/weathered) of the raised pavement markers and adhesives. This practice is intended to only determine the physical properties and performance of raised pavement markers and adhesives. Acceptability of each product based upon the data generated as a result of the testing and evaluation in this practice is the responsibility of the user.

6. APPLICATION FOR PRODUCT TESTING

6.1 Submittal of Product Evaluation Form(s) and other information.

The manufacturer will submit electronically to the NTPEP Manager the Product Evaluation Form (PEF), product literature, MSDS information, and program payment for each product submitted for testing. (See Note 2 below for submittal deadline). After review of the PEF(s) for completeness and accuracy, the NTPEP Manager will work with the Lead State Coordinator to decide on the products to be tested. The NTPEP Manager will then advise the manufacturer within two weeks of receipt of the PEF the products approved for testing.
6.2 Assignment of Test Number

A test number shall be assigned to each product approved for testing. The test number shall indicate the Raised Pavement Marker designation (RPM), the year of submission, and a sequential sample number (RPM-Year-01-Sample No.) For example, RPM-2016-01-025. (The “01” is designated as a place holder.)

Note 1 – Raised Pavement Marker (RPM) numbers that are assigned to a Manufacturer’s product will not change for the life of the test. There shall be no product name or model change allowed after the Product Evaluation Form (PEF) has been submitted.

Note 2 – Product Evaluation Form(s) Submittal Deadlines - Product Evaluation Forms (PEF) shall be submitted online to the NTPEP Manager by July 1st of the year in which evaluation is to began.

7. SAMPLING PROTOCOL

7.1 By August of each year, a sample of markers of each type approved to be tested will be taken from each manufacturer's stock by a representative of the member department doing the testing or by an authorized representative. The number of samples will be as listed in the table below.

<table>
<thead>
<tr>
<th>Product Type</th>
<th>Number of Samples Needed for:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-plowable Marker</td>
<td>All field samples will be laboratory tested</td>
<td>200</td>
</tr>
<tr>
<td>Snow plowable Marker</td>
<td>60 reflectors / 5 castings</td>
<td>60 complete with white/red reflectors</td>
</tr>
<tr>
<td>• Lens (unattached)</td>
<td>60 of each color submitted for evaluation (white/red or yellow)</td>
<td>--</td>
</tr>
<tr>
<td>• Housing (without reflectors)</td>
<td>5</td>
<td>--</td>
</tr>
<tr>
<td>Temporary Marker</td>
<td>50</td>
<td>150</td>
</tr>
<tr>
<td>Chip Seal Marker</td>
<td>All field samples will be laboratory tested</td>
<td>200</td>
</tr>
<tr>
<td>Adhesive (Hot applied or Epoxy)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The lead state coordinator will make arrangements to have the products sampled. Raised pavement marker product sampling shall be performed in accordance with the NTPEP raised pavement marker protocol. The manufacturer/supplier shall attach product/material literature and material data safety sheets to the PEF. All collected samples shall be labeled to show the manufacturer’s product code and the manufacturer 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 Lead State Coordinator. Samples shall be labeled by the sampling agency with the RPM reference number.

7.3 Experimental non-plowable permanent raised pavement markers – Experimental non-plowable permanent raised pavement markers may be installed as part of the field test. There shall be only one experimental product allowed for each manufacturer per test deck location. There will be no laboratory data conducted on this product and only the field test data will be reported.
7.4 In the case of experimental permanent non-plowable raised pavement markers submitted for field evaluation, a sample of 160 markers (no samples will be required for laboratory evaluation) will be taken from each manufacturer’s stock by a representative of the member department doing the testing or by an authorized representative.

8. LABORATORY EVALUATION – STANDARD (NON-PLOWABLE) MARKERS

8.1 Dimensions: The marker’s base dimensions and the angle between the base and the lens face shall be measured. It will also be noted whether the marker has an abrasion resistant lens surface.

8.2 Coefficient of Luminous Intensity: 80 markers submitted will be tested for initial coefficient of luminous intensity. The coefficient of luminous intensity of each reflective surface will be tested in accordance with ASTM D 4280, Section 9.1. Abrasion resistant markers shall also be tested in accordance with ASTM D 4280, Section 9.1.1. All instruments used to collect coefficient of luminous intensity measurements shall have a current, one year calibration certifications.

8.3 Compressive Strength: Five markers will be selected for compressive strength testing in accordance with ASTM D 4280, Section 9.2.2. Failure shall consist of either (1) breakage or significant deformation of the marker; or (2) significant delamination of the shell and the filler material. The load at failure shall be recorded. If RPM’s remain undamaged after a 6000 lb load, the compressive strength will be recorded as 6000+ lbs.

8.4 Lens Impact Strength: Markers having a hard, abrasion-resistant lens surface shall be subjected to lens impact strength testing in accordance with ASTM D 4280, Section 9.4.1. Five markers shall be selected at random for lens impact strength.

8.5 Resistance to Temperature Cycling: Temperature cycling tests shall be conducted on five markers in accordance with ASTM D 4280, Section 9.4.2.

8.6 Flexural Strength (Type F markers): Five markers will be selected for flexural strength testing in accordance with ASTM D 4280, Section 9.2.1. Failure shall consist of either (1) complete rupture; or (2) other loss of integrity evidenced by a sudden decrease in load. The load at failure shall be recorded.

8.7 Abrasion Resistance: Abrasion resistance shall be conducted in accordance with ASTM D 4280, Section 9.5.

9. LABORATORY EVALUATION – SNOW PLOWABLE MARKERS

9.1 Coefficient of Luminous Intensity: Forty reflectors of each color will be tested for initial coefficient of luminous intensity in accordance with ASTM D4383, Section 10.1. All instruments used to collect coefficient of luminous intensity measurements shall have a current, one year calibration certifications.

9.2 Abrasion resistance: Abrasion resistance shall be tested on five reflectors in accordance with ASTM D4383, Section 10.2.

9.3 Compressive Strength: Five reflectors will be tested in accordance with ASTM D4383, Section 10.5. If a reflector only consists of a reflective face and does not have a base, this test will not be conducted.
9.4 **Holder Ramp Hardness Test:** Five holders will be tested in accordance with ASTM D4383, Section 10.6.

9.5 **Lens Impact Strength:** Five reflectors will be subject to lens impact testing in accordance with ASTM D4383, Section 10.4.

9.6 **Resistance to Temperature Cycling:** Five reflectors will be subject to temperature cycling in accordance with ASTM D4383, Section 10.4.

10. **LABORATORY EVALUATION – TEMPORARY MARKERS**

10.1 **Coefficient of Luminous Intensity:** If the marker receives a recommendation to receive testing, all markers submitted will be tested for initial coefficient of luminous intensity. The coefficient of luminous intensity of each reflective surface will be tested in accordance with ASTM D4280, Section 9.1.

10.2 **Hardness:** Five markers will be tested for hardness in accordance with ASTM D2240.

10.3 **Color:** The color of the reflective lens of one marker will be reported as CIE tristimulus values and chromaticity coordinates for white markers. Testing shall be in accordance with ASTM D4280, Section 6.2.4.

10.4 **Resistance to Temperature Cycling:** Temperature cycling tests shall be conducted on five samples in accordance with ASTM D4280, Section 9.4.2.

11. **LABORATORY EVALUATION – CHIP SEAL MARKERS**

11.1 **Coefficient of Luminous Intensity:** If the marker receives a recommendation to receive testing, all 200 markers submitted will be tested for initial coefficient of luminous intensity. The coefficient of luminous intensity of each reflective surface will be tested in accordance with ASTM D4280, Section 9.1.

11.2 **Hardness:** A random sample of 15 markers will be tested for hardness in accordance with ASTM D2240. Hardness testing will be performed on both the marker body and protective cover.

12. **LABORATORY EVALUATION - STANDARD BITUMINOUS ADHESIVE**

12.1 **Standard Bituminous Adhesive:** If the adhesive receives a recommendation for testing, a sample will be tested in the laboratory in accordance with ASTM D4280, Annex A1.

13. **LABORATORY EVALUATION - FLEXIBLE BITUMINOUS ADHESIVE**

13.1 **Properties:** Flexible bituminous adhesives shall be subjected to the following tests:

<table>
<thead>
<tr>
<th>Property</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Penetration 25°C</td>
<td>ASTM D 5</td>
</tr>
<tr>
<td>Softening point</td>
<td>ASTM D 36</td>
</tr>
<tr>
<td>Brookfield viscosity 204°C</td>
<td>ASTM D 3236</td>
</tr>
</tbody>
</table>
Ductility @ 25°C 5 mm/min  ASTM D 113
Ductility @ 4°C 1 mm/min  ASTM D 113
Asphalt Compatibility  ASTM D 5329
Flexibility

13.2  **Flexibility**: Flexibility is to be determined as follows:

13.2.1  The samples are prepared using 3.2 mm thick steel shims that enclose an opening which is 25 mm wide and 100 mm long on a sheet of release paper or a release treated metal plate. The heated adhesive is poured into the opening until it is slightly overfilled. After one hour of cooling the excessive adhesive is trimmed flush with the shims using a hot knife and then the sample is removed from the shims. The trimmed samples are placed in a freezer maintained at -7°C ± 1°C for a minimum of four hours. The conditioned samples are removed from the freezer and immediately bent through an arc of 90° at a uniform rate in 10 seconds (9° per second) over a 25-mm diameter mandrel. Record whether cracking occurs in the test sample.

14.  **LABORATORY EVALUATION - NON-BITUMINOUS HOT MELT ADHESIVE**

14.1  **Properties**: Non-bituminous, hot-melt adhesives shall be subjected to the following tests:

<table>
<thead>
<tr>
<th>Property</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Penetration, 100g, 5 sec., 25°C</td>
<td>ASTM D 5</td>
</tr>
<tr>
<td>Softening point</td>
<td>ASTM D 36</td>
</tr>
<tr>
<td>Brookfield viscosity, 204°C</td>
<td>ASTM D 3236</td>
</tr>
<tr>
<td>Ductility</td>
<td>ASTM D 113</td>
</tr>
<tr>
<td>Flow</td>
<td>ASTM D 5329</td>
</tr>
<tr>
<td>Heat Stability</td>
<td>ASTM D 4499</td>
</tr>
<tr>
<td>Flash point</td>
<td>ASTM D 92</td>
</tr>
<tr>
<td>Flexibility</td>
<td>As explained in Tests for Flexible Bituminous Adhesives</td>
</tr>
</tbody>
</table>

15.  **LABORATORY EVALUATION – EPOXY ADHESIVE**

15.1  The epoxy system, when mixed according to the manufacturer's recommendations, shall be tested in accordance with AASHTO T237 for the following physical characteristics:

- Pot life at 25°C
- Bond strength at 1 hour at 25°C
- Bond strength at 24 hours at 25°C
- Infra-red spectrophotometric analysis

15.2  Prior to test the components shall be conditioned for 24 hours at a room temperature of 24°C ± 3°C. After conditioning, each component should be stirred so as to redisperse any settled material. Care should be taken not to contaminate one component with the other.

16.  **SITE SELECTION FOR FIELD EVALUATIONS**
16.1 Site Selection

16.1.1 Test sites for clear/red raised pavement markers and marker adhesives shall consist of both asphaltic concrete and Portland cement concrete pavements. Sites will generally have the following characteristics:

- Fully access controlled freeway
- Should not require crack sealing or extensive patching during the evaluation period
- Average Daily Traffic over 35,000
- Generally free of horizontal and vertical curves
- Speed limit between 80 and 120 km/hr (50 and 75 mph)

- Test sites for Snow Plowable markers shall have a minimum average snowfall of 635 mm (25 inch) per year controlled by a combination of plowing and/or the application of salt, brine, cinders or sand.

16.1.2 Test sites for amber/amber raised pavement markers shall consist of both asphaltic concrete and Portland cement concrete pavements. Sites will generally have the following characteristics:

- Secondary state route
- Average Daily Traffic less than 35,000

16.2 Test sites for Temporary raised pavement markers may consist of both asphaltic concrete and Portland cement concrete pavements or asphaltic concrete only. Sites will generally have the following characteristics:

- 2 or 4 lane Secondary state route
- Average Daily Traffic greater than 10,000

16.3 Test sites for Chip Seal markers shall consist of chip seal or slurry seal surfaces with known ADT.

17. INSTALLATION OF PRODUCTS

17.1 Installation (General Information): Test installations of markers and adhesives will be completed in October or November of each year. The marker manufacturer shall supply all material, equipment and labor to install markers. The marker manufacturer may select the adhesive type. The manufacturer’s representative will also certify that their markers were installed to their satisfaction. Marker test decks shall be installed in the right outside lane or the centerline depending on the marker color. The adhesive manufacturer shall supply all material (including the raised pavement markers), equipment, and labor to install markers. Traffic control will be furnished by the testing facility.

17.2 Installation of Raised Pavement Markers: There will be a total of 160 markers installed with 80 markers placed on a Portland cement concrete pavement and 80 markers placed on an asphaltic concrete pavement. In addition to the evaluated markers, a total of 160 control markers, selected by the testing state, will be placed throughout the test deck locations. If a large number of markers are submitted, the normal spacing may be altered.

17.3 Installation of Snow Plovable Markers: Each sample of 60 RPM’s will be divided into 6 groups of 10 units. Thirty RPM’s will be installed on Portland cement concrete pavement and thirty RPM’s will be installed on asphalt concrete pavement. Each group of 10 units will be randomly
placed in the test sections.

*It should be understood that if premature failure of more than 10% of the installed castings occurs during the first 12 months, the manufacturer shall make provisions to remove all castings and repair the pavement surface to the satisfaction of the testing state. This work will be done at no cost to the testing state.*

17.4 **Installation of Temporary markers:** Yellow markers will be placed on the centerline and white markers shall be placed on the edgeline. Temporary markers are to be installed with the manufacturer’s recommended adhesive; 150 markers of each color will be installed on 3 meter centers on the centerline or the edgeline.

17.5 **Installation of Chip Seal markers:** Each test installation shall consist of 200 markers on 3 meter centers. After the surface treatment is completed, the protective covers will be removed and any damage to the markers caused by the surfacing process will be noted.

### 18. FIELD OBSERVATIONS OF RAISED PAVEMENT MARKERS AND ADHESIVES

18.1 **Field Observations (General Information):** Testing will commence upon completion of installation and continue for a period of two years. Field observations will be made every six months (monthly for six months for temporary markers and weekly for one month for chip seal markers) and the following data will be gathered:

- Marker case condition
- Lens or reflective surface condition
- Night Visibility

<table>
<thead>
<tr>
<th>Condition</th>
<th>Marker Case Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Excellent; Completely Intact, “Like New” Condition</td>
</tr>
<tr>
<td>4</td>
<td>Good; Minor Scrapes and Scratches</td>
</tr>
<tr>
<td>3</td>
<td>Fair; Obvious Damage but still Functional</td>
</tr>
<tr>
<td>2</td>
<td>Poor; Major Damage, Marginally Functional</td>
</tr>
<tr>
<td>1</td>
<td>Very Poor; Non-functional</td>
</tr>
<tr>
<td>0</td>
<td>Missing</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Condition</th>
<th>Lens or Reflective Surface Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Excellent; Completely Intact, “Like New” Condition</td>
</tr>
<tr>
<td>4</td>
<td>Good; Minor Scrapes/Scratches visible on close examination of surfaces</td>
</tr>
<tr>
<td>3</td>
<td>Fair; Some cuts but none larger than 10 mm</td>
</tr>
<tr>
<td>2</td>
<td>Poor; Some cuts larger than 10 mm</td>
</tr>
<tr>
<td>1</td>
<td>Very Poor, Showing significant wear, no longer protecting reflector</td>
</tr>
<tr>
<td>0</td>
<td>Missing or damaged beyond use</td>
</tr>
</tbody>
</table>

18.2 **Marker Case Condition**
- 5 – Excellent; Completely Intact, “Like New” Condition
- 4 – Good; Minor Scrapes and Scratches
- 3 – Fair; Obvious Damage but still Functional
- 2 – Poor; Major Damage, Marginally Functional
- 1 – Very Poor; Non-functional
- 0 – Missing

18.3 **Housing (or Holder) Condition for Snow Plowable Markers**
- 5 – Excellent, Completely intact, in “Like New” condition, good adhesion
- 4 – Good, Minor scrapes/scratches visible on close examination of surfaces
- 3 – Fair, Some cuts but none larger than 10 mm
- 2 – Poor, Some cuts larger than 10 mm
- 1 – Very Poor, Showing significant wear, no longer protecting reflector
- 0 – Missing or damaged beyond use

18.4 **Lens or Reflective Surface Condition**
- 5 – Excellent; Completely Intact, “Like New” Condition
- 4 – Good; Minor Scrapes and Scratches
- 3 – Fair; Some Abrasion or discoloration and Scars none greater than 5 mm, but still
Functional
- 2 – Poor; Major Scarring or Discoloration over Large Areas, Some large cuts/cracks/chips greater than 5 mm, Marginally Functional
- 1 – Very Poor; Non-functional, Showing significant wear, significant discoloration
- 0 – Missing or damaged beyond use

18.5 Night Visibility for Snow Plowable Markers **
- 5 – Excellent, completely intact, Bright, in “Like New” condition
- 4 – Good, Clearly visible from greater than 100 m (328 ft)
- 3 – Fair, Some loss in reflectivity, barely visible from 100 m (328 ft)
- 2 – Poor, Significant loss of reflectivity, visible from 50 m (165 ft)
- 1 – Very Poor, Significant loss of reflectivity, barely visible, discoloration
- 0 – Missing or totally Nonreflective

** Night visibility will be conducted during complete darkness by viewing the RPM’s at 122 meters (400 feet) from a typical automobile, using low-beam headlights.

18.6 Coefficient of Luminous Intensity for Raised Pavement markers: Laboratory coefficient of luminous intensity measurements will be taken on 10% of the installed raised pavement markers biannually in accordance with ASTM D 4280, Section 9.1. These markers will be removed by a means that will not damage the marker case or lens face. All instruments used to collect coefficient of luminous intensity measurements shall have current one year calibration certifications.

18.7 Coefficient of Luminous Intensity for Snow Plowable Raised Pavement Markers: At the 1-year evaluation period, nine markers from the asphalt location and nine markers from the concrete location will be removed from the castings and laboratory tested for retroreflectivity. At the 2-year evaluation period, the remaining markers will be removed and laboratory tested for retroreflectivity. These samples will be removed after night visibility readings are taken.

18.8 Coefficient of Luminous Intensity for Temporary markers: Coefficient of luminous intensity measurements will be taken monthly on-site using a portable retroreflectometer in accordance with ASTM E1696.

18.9 Coefficient of Luminous Intensity for Chip Seal markers: Laboratory coefficient of luminous intensity measurements will be taken on 20% of the installed chip seal markers weekly in accordance with ASTM D 4280, Section 9.1. If a marker appears to be missing due to lack of adhesion, it will be noted on the evaluation.

18.10 Adhesives
- Number of markers retained
- Number of markers missing
- Average temperature for the test period
- Movement of markers
- Tracking of adhesive onto face of marker

19. EVALUATION RESULTS AND DATA
19.1 Test results will be reported to the NTPEP Manager in the web-based data base – DataMine as follows.

- Initial photos of each marker or ID type (views - top, bottom, and front/side)
- Average daily traffic count (AADT) at the test site
- Number of lanes at test site
- Percentage of truck traffic at the test site
- Rainfall data during the test period at the test site
- Extreme high and low temperatures during the test period at the test site
- Laboratory test data
- A general description of the test deck
- Age of the test deck pavement surface
- Type of marker adhesive
- Field observations

19.2 Snow Plowable Markers

- Type of plow blades used during the testing period
- Number of days of plowing each week
- Number of days sand and cinders were used each week
- Millimeters of snow and rain during testing period at each site

19.3 Once the data is reviewed by the Lead State coordinator, he will release the data to each manufacturer for their review. When the manufacturer reviews and accepts the data, the manufacturer will release the data to the public.

19.4 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.

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

20. RE-EVALUATION FREQUENCY FOR:

- Standard (Non-Plowable) Raised Pavement Markers (4 years)
- Plowable Raised Pavement Markers (4 years)
- Temporary Raised Pavement Markers
- Chip Seal Pavement Markers
- Adhesives (4 years)

20.1 A complete product re-evaluation (field and lab testing) is recommended every 4 years (starting after initial NTPEP 2 year evaluation is completed) for standard and snowplowable markers. Re-evaluation data may be used by member departments for the purpose of product acceptance, as noted below.

- A complete product re-evaluation is recommended one year after initial NTPEP evaluation is
completed for companies and their products submitted to or currently listed by NTPEP for which any of the following are applicable:

- Ownership/management of the product manufacturing facility transferred to or bought by another company
- Product name or style designation has changed
- Manufacturing process(es) has changed or the production line has been upgraded or somehow modified
- Manufacture of the product has been moved to another manufacturing facility or another production line within the same facility
- Products where there are noticeable changes to the product appearance or performance
- Products manufactured outside the USA – products sampled at US distribution/warehouse facility or at member department construction project sites for NTPEP testing.
- The same product is manufactured at multiple plants or multiple production lines, requiring QA tests at the other plants or production lines not sampled during initial product qualification testing.

21. **TIMELINE**

21.1 The following schedule will be used in the evaluation of standard (non-plowable) raised pavement markers, plowable pavement markers, and pavement marker adhesives (Evaluation and data release times will be adjusted for temporary and chip seal markers due to the shorter field testing time.):

- July 1st – Product submittal
- August 1st – Samples received
- September – Laboratory evaluation
- October – November 15th – Field installation
- 6-Month Field Evaluation – Six months (± 1 week) from date of installation (May 1st)
- 12-Month Field Evaluation – 12 months (± 1 week) from date of installation (November 1st)
- 18-Month Field Evaluation – 18 months (± 1 week) from date of installation (May 1st)
- 24-Month Field Evaluation – 24 months (± 1 week) from date of installation (November 1st)

21.2 The schedule indicating completion dates for DataMine Events is as follows:

<table>
<thead>
<tr>
<th>DataMine Events</th>
<th>Completion Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Initial Laboratory data, 6 month, 12 and 24 month field data entered by GDOT AND FDOT</strong></td>
<td>January 1st</td>
</tr>
<tr>
<td>Data reviewed by GDOT and released to industry – 30 day clock starts</td>
<td>February 1st</td>
</tr>
<tr>
<td>Data reviewed by industry and GDOT notified if data is accepted</td>
<td>February 1st - March 1st</td>
</tr>
<tr>
<td>Industry releases data to public</td>
<td>February 1st - March 1st</td>
</tr>
<tr>
<td>Note: Once data is released from GDOT to industry, the data is auto released to public after 30 days, if the clock is not stopped.</td>
<td>March 1st</td>
</tr>
<tr>
<td><strong>6 and 18 month field data entered by GDOT AND FDOT</strong></td>
<td>July 1st</td>
</tr>
<tr>
<td>Data reviewed by GDOT and released to industry – 30 day clock starts</td>
<td>August 1st</td>
</tr>
<tr>
<td>Data reviewed by industry and GDOT notified if data is accepted</td>
<td>August 1st - September 1st</td>
</tr>
</tbody>
</table>
Industry releases data to public | August 1st - September 1st

Note: Once data is released from GDOT to industry, the data is auto released to public after 30 days, if the clock is not stopped.

September 1st

22. KEYWORDS

Adhesives; DataMine; marker adhesives; markers; NTPEP; pavement markers; raised pavement markers;