**DATE:** July 14, 2015

**SUBJECT:** Guide Rail End Treatment Inspection Process

**TO:** District Executives

**FROM:** R. Scott Christie, P.E.  
Deputy Secretary for Highway Administration

Scott Christie /s/

The intent of this Strike-Off Letter is to establish an updated process for the inspection and data management of guide rail end treatments.

In 2005, the FHWA determined that ET-Plus guard rail end terminal met the relevant crash test criteria and therefore was eligible for Federal-aid highway funding. In the Fall of 2014, a jury issued a verdict that Trinity made a false or fraudulent claim to FHWA when it sought the eligibility determination for the ET-Plus. Additionally, a number of parties have raised concerns about the in-service performance of the ET-Plus and the potential variability in the dimensions of installed units of the ET-Plus. As a result, FHWA is undertaking a number of efforts to assess these issues. The FHWA continues to evaluate and study these end treatments, but to date there are no findings or test results to indicate that they are unsafe.

Questions continue to arise regarding this issue. Accordingly, it is appropriate to define PennDOT’s Standard of Care regarding guide rail inspection:

1. Publication 23, Maintenance Manual, Section 11.5 states that “inspections should be made at least twice a year, in the spring after the snow season is over, and in the fall prior to the snow season. These inspections should be concerned with alignment, appearance and general condition. Any sections in need of repairs or maintenance must be noted and scheduled for repair by the County Manager.”

   Also stated, “it is important that damaged guide rail systems in need of repair are done so in a timely manner to minimize risk exposure to the department and our motorists. Particular emphasis is to be placed on completing necessary springtime guide rail system repairs following the winter maintenance season, especially those repairs that could not physically be made over the winter months. By May 20th all identified springtime repairs are to be completed on the interstate and expressway highways.”

2. Through the Systematic Techniques to Analyze and Manage Pennsylvania’s Pavements (STAMPP) program, existing guide rail is currently surveyed on a four year cycle. With regard to end treatments, the survey indicates whether or not there has been damage. End treatment repairs/upgrades/replacements are generally addressed through construction contracts or through District/County guide rail contracts.

Both Trinity Industries and PennDOT conducted surveys of ET-Plus end treatments in the Fall of 2014. These surveys uncovered a need to review end treatment inspection and maintenance policies, and consider changes.
After consideration of various options, the STAMPP program will continue to be the process for cataloging and surveying the end treatments for damage and maintenance needs. The semi-annual inspections described in the Maintenance Manual will also continue.

However, in light of the determined need for improved survey data, the STAMPP survey process will be enhanced by including the attached General End Treatment Inspection Checklist in Publication 33 (Shoulder and Guide Rail Condition Survey Field Manual). Any items listed on the checklist, noted as “no” from the inspection will be defined as damaged.

STAMPP data undergoes Quality Assurance review and is stored in the Roadway Management System (RMS). Damaged guide rail end treatment data can be viewed and reported. To that end, the Bureau of Maintenance and Operations, Asset Management Division, will provide year end reports to identify all locations of damaged end treatments, along with the type and date surveyed.

It is also recommended to identify guide rail needs as part of the Scoping Field View Process for highway construction projects. The attached inspection check list may be used to document conditions and locations to be addressed, and can be attached to Field View minutes.

The updated STAMPP survey process will be incorporated into the next edition of Pub. 33, and will be implemented for the 2016 surveys.

Comments or questions concerning this letter may be directed to J. Michael Long, PE, Chief, Asset Management Division, by calling 717-787-6899.

Attachment

4950/JML/jml

cc: Renee Sigel, Division Administrator, FHWA
    Bradley J. Heigel, P.E., Chief Engineer, PA Turnpike Commission
    Charles C. Goodhart, Executive Director, Pennsylvania Asphalt Paving Association
    John Becker, P.E., President, American Concrete Pavement Association-PA
    Eric Madden, Executive Vice President, ACEC
    Jenna Earley, Director of Marketing, ACEC
    Assistant District Executives – Construction
    Assistant District Executives – Design
    Assistant District Executives – Maintenance
    Maintenance Service Executives
    Gavin Gray, P.E., Special Assistant, Highway Administration
    Richard Heineman, Acting Special Assistant, Highway Administration
    Richard Roman, P.E., Director, BOMO
    Brian Thompson, P.E., Director, BOPD
    Andrew Blum, Policy Specialist, Policy Office
    Melissa Batula, P.E., Chief, Highway Delivery Division, BOPD
    J. Michael Long, P.E., Chief, Asset Management Division, BOMO
    Glenn Rowe, P.E., Chief, Highway Safety and Traffic Operations Division, BOMO
    Steven Koser, P.E., Chief, Pavement Testing and Asset Management Section, BOMO
    Lydia Peddicord, P.E., Chief, Pavement Design Unit, BOPD
    Janice Arellano, P.E., Chief, Roadway Testing and Inventory Unit, BOMO
    John Van Sickle, Senior Civil Engineer Supervisor, BOMO
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<tr>
<th>ITEM</th>
<th>Yes</th>
<th>No</th>
<th>Comment</th>
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<tr>
<td>Top of rail is between 26 ½ inches and 27 ¾” above shoulder or finish grade.</td>
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<td>Soil tubes should not protrude above the ground more than 4”.</td>
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<td>If present, the bolts at the top of the foundation tubes are not over-tightened, deforming the walls of the tube.</td>
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<td>Impact heads are parallel to top of rail and are not tilted sideways.</td>
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<td>The impact head does not encroach on the shoulder.</td>
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<td>Impact head has not moved to where the rail element is not butted up to the beginning of the bending slot or cutting blades.</td>
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<td>If present, 8”x8” bearing plate at post 1 is positioned with the 5” dimension up and the 3” dimension down and has been secured to prevent rotation with a bent galvanized nail.</td>
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<td>Any cables are taut. Generally deflection should be one inch or less when hand pressure is applied.</td>
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<td>Cables are not twisted.</td>
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<td>All bolts are snug.</td>
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<td>Wood breakaway posts have two 3 ¼” breakaway holes located parallel to the roadway with the center of the top hole located at the ground line.</td>
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<td>If present, the cable anchor brackets are properly attached to the W-beam guardrail.</td>
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<td>Composite or wood offset blocks are not rotated and have been secured to prevent rotation.</td>
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