

MaineDOT Qualified Products Acceptance Criteria

Mountable Curb Systems and Delineators

Overview

This acceptance criteria sets forth the requirements of Mountable Curb Systems and Delineators. For more information please see: Maintenance of Traffic National Cooperative Highway Research Program Report 350 NCHRP 350 or MASH, Manual on Uniform Traffic Control Devices MUTCD 2009 Edition, Part 6. Temporary Traffic Control.

The Mountable Curb Systems and Delineators listed on the QPL have been reviewed by the Highway, Safety, Traffic Related Items Product Evaluation Committee and found to be in compliance with the prequalification criteria listed herein.

These units are therefore prequalified for use on MaineDOT construction and maintenance projects with any limitations on their use noted on the QPL for Mountable Curb Systems and Delineators.

Criteria

All products must comply with MaineDOT Standard Specifications: Current Version, Section(s) 652, Manual on Uniform Traffic Control Devices: Current Version, and Manual for Assessing Safety Hardware (MASH): Current Version.

All retroreflective sheeting on the delineator posts shall be tested Through AASHTO Product Evaluation and Audit Solutions (formerly NTPEP) and meet the minimum requirements listed herein. Retroreflective sheeting on posts that are used in a work zone shall meet the requirements in the current edition of MaineDOT's Standard Specifications.

Thermo-Plastic Polycarbonate Mountable Curb Systems and Flexible Delineators Posts

General Requirements

Mountable Curb shall be thermo-plastic polycarbonate or polyethylene and shall have the option to be anchored with either bolts or adhesives. Mountable curb shall have interlocking delineators that allows replacement.

Posts shall be thermo-plastic polycarbonate and be 2 – 4 inches in diameter. or steel (see requirements below).

Thermo-plastic polycarbonate posts shall have the upper end of the post/marker shall accommodate retroreflective sheeting. Delineators shall be resistant to overturning, twisting, leaning, displacement or kinking.

Have anchors/bases that hold the delineator in place by locking mechanism or by bolts for easy installation and/or replacement (simplicity will be taken into consideration)

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Anchor/base Requirements: The surface mount base shall be thermo-plastic polycarbonate and height shall not exceed 2 inches. It shall have the option to be fastened to ground by bolts or adhesives.

Drivable Soil Anchor: The anchor for the tubular delineator post must be easily drivable in compacted gravel and durable enough to be reused in most cases as posts become damaged.

Soft Soil Plastic Anchor: The plastic anchor shall meet the same physical properties as the thermo-plastic polycarbonate delineator posts, soft soil anchor shall be a minimum of 12 in. length, and of sufficient strength so as to resist pull out in multiple high-speed impacts. Anchors shall be capable of being placed in slots at the bottom tip of posts prior to installation.

The delineator can also be used on the guardrail as a delineator when attached to the post for the guardrail with the use of a single bolt or lag.

Steel Anchor: The steel anchor unit shall be a hot rolled rail steel or new billet steel meeting the physical requirements of ASTM A499 and the chemical requirements of ASTM A1. The steel anchor shall be a uniform flanged channel post with nominal weight of 1.12 #/ft. (.418 kg) before holes are punched. Anchors shall be a minimum of 12" (304.5mm) in length and have a sufficient number of 3/8" (9.5mm) General Requirements

Mountable Curb shall be thermo-plastic polycarbonate or polyethylene and shall have the option to be anchored with either bolts or adhesives. Mountable curb shall have interlocking delineators that allows replacement.

Posts shall be thermo-plastic polycarbonate and be 2 – 4 inches in diameter. or steel (see requirements below).

Thermo-plastic polycarbonate posts shall have the upper end of the post/marker shall accommodate retroreflective sheeting. Delineators shall be resistant to overturning, twisting, leaning, displacement or kinking.

Have anchors/bases that hold the delineator in place by locking mechanism or by bolts for easy installation and/or replacement (simplicity will be taken into consideration)

Anchor/base Requirements

Surface Mount Base: The surface mount base shall be thermo-plastic polycarbonate and height shall not exceed 2 inches. It shall have the option to be fastened to ground by bolts or adhesives.

Drivable Soil Anchor: The anchor for the tubular delineator post must be easily drivable in compacted gravel and durable enough to be reused in most cases as posts become damaged.

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Soft Soil Plastic Anchor: The plastic anchor shall meet the same physical properties as the thermo-plastic polycarbonate delineator posts, soft soil anchor shall be a minimum of 12 in. length, and of sufficient strength so as to resist pull out in multiple high-speed impacts. Anchors shall be capable of being placed in slots at the bottom tip of posts prior to installation.

The delineator can also be used on the guardrail as a delineator when attached to the post for the guardrail with the use of a single bolt or lag.

Steel Anchor :

The steel anchor unit shall be a hot rolled rail steel or new billet steel meeting the physical requirements of ASTM A499 and the chemical requirements of ASTM A1. The steel anchor shall be a uniform flanged channel post with nominal weight of 1.12 lbs./ft. (.418 kg) before holes are punched. Anchors shall be a minimum of 12" (304.5mm) in length and have a sufficient number of 3/8" (9.5 mm) diameter holes on 1" (25.38 mm) centers to facilitate attachment to flexible guideposts. Anchors shall be supplied with attachment hardware as recommended by the manufacturer.

Color: Delineators shall be constructed of UV-stabilized polymers and colors. The color shall be solid throughout and stabilized to resist ultraviolet and infrared degradation. Color shall be Gray/Light Gray, unless otherwise specified.

Retroreflective Sheeting, when specified, retroreflective sheeting shall be 3" wide x 9" tall and applied to the flattened area of the post on one or both sides. Retroreflective sheeting shall be tested through NTPEP and comply with ASTM D4956 Type IV or XI diamond grade requirements, depending on application, and shall be white, yellow, red or green, as specified. The retroreflective sheeting shall be positioned within 2 inches of the top and applied in such a manner as to ensure that the sheeting will not become detached from the post/marker before the reflectivity has faded below acceptable levels.

Crashworthiness: Delineators, guardrail markers and bases are required to meet the crashworthy criteria for category I devices contained in the testing and acceptance guidelines of the Manual for Assessing Safety Hardware (2016). Impact Resistance data for tests that have been performed on the identical product by the AASHTO NTPEP test location that includes both hot and cold weather conditions must be included with application for acceptance. An official copy of the test report along with evidence that the product referenced is identical to that submitted for prequalification shall be available upon request.

Longevity: The following test reports, certified by a professional engineer, shall be available upon request: 1) Performance data for the tubular delineator and guardrail markers with regard to

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resistance to heat and cold, static rigidity and colorfastness; and 2) Performance data for the tubular delineator/drivable anchor system with regard to repetitive vehicular impacts, including combined bumper and direct wheel hits.

Extrusion Delineator Posts and Guardrail Markers: Shall consist of a single curve, C-shaped thermoplastic extrusion a minimum of 3.75 inches wide, with 0.160-inch (typical) walls, comprised of a uniformly curved profile with a 3.0" radius. All delineator posts shall be capable of sustaining a minimum of ten (10) direct wheel-over impacts at 60 MPH (100 KPH) without damage to the post or the reflective sheeting applied to the post. All posts shall be constructed of UV-stabilized thermo-plastic polycarbonate (PC) for superior durability and weathering, conforming to the following material specifications:

Property	Test	Results
Width		3.75-inch minimum
Wall thickness		0.160-inch minimum
Radius & Shape		Curved with 3-inch radius
Impact Testing	AASHTO's Product Evaluation & Audit Solutions: TTCD – Flexible delineators	10 direct wheel-over impacts at 60 MPH
Specific Gravity (typical)	ASTM D 792	1.20
Hardness (min., R-scale)	ASTM D 785	100
Water Absorption, 24 hours, 73 F	ASTM D 570	0.576
Tensile Elongation @ break (min. %)	ASTM D 638	30 %
Izod Impact, 1/8" Notched, (ft. lbs./in.)	ASTM D 256	12.0
Izod Impact, 1/8" Un-notched, (ft. lbs./in.)	ASTM D 256	No Break
Cold Temp. Impact Test (-7°F)	Florida DOT	Pass

Steel Delineators

General Requirements: Flexible steel delineator posts shall be capable of withstanding repeated impacts and wheel overs by vehicles with minimal damage to the post or vehicle.

The posts shall have a convex cross-sectional shape and shall have the following approximate dimensions: 66 inches in height x 1/16" thick x 4" wide. Post shall be constructed of 0.05-inch flexible steel.

Color: All faces of the post shall have a smooth gloss white powder coat finish of 2.75 mils. in thickness over a thermal diffusion anticorrosive protective coating

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Post shall exhibit quality workmanship and be free of roughness, sharp edges, discoloration, and other objectional marks and defects which may affect appearance, serviceability, and the attachment of reflective sheeting

Retroreflective Sheeting: The retroreflective sheeting shall be white and measure 4-inch by 8-inch. The sheeting shall have been tested through NTPEP and shall comply with ASTM D4956 Type IV or Type VII, VIII, IX. This will be dependent on the intended placement of the post.

Property	Requirement
Material	0.05-inch flexible steel
Surface Coating	Powder coated to minimum 2.75 mils thickness over ArmorGalv™ thermal diffusion galvanized substrate.
Overall Width (facing traffic)	4 inches
Delineator face width	4 inches
Length	66 inches
Recommended installation depth.	16 inches below ground
Shape	"C" channel – 0.4-inch depth. Radius 4-7/8 in.
Manufacturing Tolerances	Width & Length Tolerance shall be +/- 5%. Curvature Tolerance shall not exceed 1/8" Thickness Tolerance is +/- 5%
Packaging	Boxes of 10 with installation instructions included. 50 boxes per pallet. 500 units per pallet.

PRODUCT CONFORMITY: At the discretion of MaineDOT, any shipment of product to a MaineDOT location may be tested, such as by infrared or gas chromatography, for compliance with the SDS and uniformity with the formulation of the approved product (where applicable).

NOTE: MaineDOT may require a field evaluation before final acceptance and inclusion on the Qualified Products List (QPL).

A vendor who wishes to have products preapproved for future use should contact MaineDOT's Product Evaluation Coordinator via email at NewProducts.MaineDOT@maine.gov or by calling (207) 557-1788. More information can also be found on our website, including our electronic submittal and recertification forms.

Submittals

Product Submittal Packets shall include the following information:

- [Electronic New Product Submittal](#) form
- Current Technical Data Sheet

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- Current Safety Data Sheet (SDS)
- Third Party, Independent Test Results OR AASTHO Product Evaluation & Audit Solutions (formerly NTPEP) testing ID for those products requiring this testing

Incomplete submittals will not be evaluated for inclusion on MaineDOT's Product Lists.

All reports shall be issued and signed by an authorized laboratory representative. The report shall include date of testing, product name, and the physical and/or chemical requirements stated herein.

Product Changes

Any change in a product, such as formulation, shall require re-testing (through AASTHO Product Evaluation & Audit Solutions (formerly NTPEP) if required) or independent, third-party lab. Manufacturers shall notify MaineDOT of products changes and resubmit as a new product for re-evaluation, failure to do so may result in removal of product from MaineDOT's QPL.

Manufacturers shall submit, for re-evaluation, an updated independent analytical laboratory report (or AASTHO Product Evaluation & Audit Solutions (formerly NTPEP) testing ID) prior to approval or purchase by MaineDOT.

Recertifications

MaineDOT requires re-certification by all manufacturers every five years (except for electrodes used for field welding which are recertified every year) to ensure that product names and formulations have remained the same since the product was originally placed on this list and that products are still relevant and in production. Where applicable, this shall include the most recent AASTHO Product Evaluation & Audit Solutions (formerly NTPEP) testing ID. Additionally, AASTHO Product Evaluation & Audit Solutions (formerly NTPEP) provides for retesting products. A lapse of AASTHO Product Evaluation & Audit Solutions (formerly NTPEP) testing/audit schedule as set forth in the associated workplan shall result in disqualification of the product.

Manufacturers of any products requiring MASH testing must contact MaineDOT Product Evaluation Program of any changes to their products. Manufacturers are responsible for tracking their recertification dates, reminders will not be sent. Failure to recertify products may result in removal from the QPL. Recertifications can be completed using the [Electronic Certificate of Compliance](#) found on our website.

Other Information

The Department continues to evaluate its Acceptance Criteria and reserves the right to revise the criteria and/or withdraw product qualification at any time for any reason without notice.

Furthermore, the ability of a product to meet these requirements does not necessarily guarantee

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addition to the Qualified Products List. Reminder that, products once placed on the Qualified Products List are to be considered prequalified for use only, meaning that they have undergone preliminary review for compliance with MaineDOT, and AASHTO specifications. As with all products, final approval rests with the Designer, Project Manager, Supplier and/or Resident to determine if a product best suits the need of a particular project.

If you are experiencing difficulties reading or printing this page, or have questions regarding the Qualified Products List website, please contact the Product Evaluation Program Coordinator at (207) 557-1788 or by email at: NewProducts.MaineDOT@maine.gov