
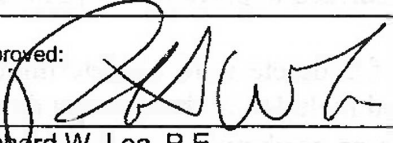


SUPERSEDED BY EB 26-015 EFFECTIVE 12/31/26		New York State Department of Transportation ENGINEERING INSTRUCTION	EI 13-018
Title: RAISED CROSSWALKS			
Target Audience: <input type="checkbox"/> Manufacturers (18) <input checked="" type="checkbox"/> Local Govt. (31) <input checked="" type="checkbox"/> Agencies (32)	<input checked="" type="checkbox"/> Surveyors (33) <input checked="" type="checkbox"/> Consultants (34) <input checked="" type="checkbox"/> Contractors (39) <input type="checkbox"/> _____ ()	Approved:  Richard W. Lee, P.E. Acting Deputy Chief Engineer, Design	8/30/13 Date

ADMINISTRATIVE INFORMATION:

- **Effective Date.** This Engineering Instruction (EI) is effective beginning with projects submitted for the letting of 1/9/2014.
- **Supersede Issuances.** This EI does not supersede any other issuance.
- **Disposition of Issued Materials:** The revisions issued with this EI will be incorporated into a future update of NYSDOT Highway Design Manual (HDM) Chapter 18 *Pedestrian Facility Design*, Chapter 25 *Traffic Calming*, and the future Chapter 26 *Roundabouts*.

PURPOSE: The purpose of this EI is to announce the acceptability of raised crosswalks at multilane roundabouts and select low-speed locations and to issue design guidance.

TECHNICAL INFORMATION:

This EI is being issued concurrently with EB 13-036 *New Standard Sheets 608-07 Sheets 1, 2, and 3 and M608-14 through M608-16 – Raised Crosswalks*.

Location:

Raised crosswalks may be used at:

- Midblock elementary school crossings where the posted speed is 20 mph or less.
- Midblock crosswalks that have or will have very high pedestrian volumes (such as amusement park entrances, entrances to civic centers, large shopping malls, etc.) where the posted speed is 30 mph or less.
- Locations where the posted speed is 30 mph or less and pedestrian crash rates are substantially above (2 times or more) the statewide average.
- Single lane roundabouts that have or will have high pedestrian demand.
- Multilane roundabouts, regardless of the approach posted speed. A roundabout with one or more multilane approaches is considered to be a multilane roundabout.
- Locations where shared-use paths cross commercial driveways or ramps.

In areas with high pedestrian demand, data acquisition to determine pedestrian volumes for raised crosswalks should be performed in accordance with HDM Chapter 5 *Basic Design*, Section 5.2.1.1. At locations where bicycles will routinely use the crossing, cycling volume data may be acquired in the same way.

Design:

Raised crosswalks have gentle 4% approach and departure tapers over an 8' (2.4 m) length that raise and lower traffic by 4" (100 mm).

- A concrete surface is preferred to provide additional visual contrast on Hot Mix Asphalt (HMA) pavements.
- Thickness of concrete is to be determined using the Comprehensive Pavement Design Manual (CPDM), and included in the contract documents
- For contrast or aesthetics, a colored or textured surface may be used, with Type S crosswalk pavement markings.
- The drainage treatment should be included in the contract documents, as needed.
- Locations along a vertical curve should be checked using a loaded lowboy trailer (5" [125 mm] ground clearance with 36' [11.0 m] wheelbase). Ref. *Transportation Research Record*, No. 1356, "Roadway Design Standards to Accommodate Low-Clearance Vehicles."
- Where underground utility access points are present, utility relocations may be required.
- Each raised crosswalk is estimated to add \$5,000 to \$7,000.
- Designers should coordinate with local fire, police or ambulance services along emergency response routes.

Deviations from the raised crosswalk geometrics may dramatically reduce their effectiveness and safety. For instance, a raised crosswalk approach that is too abrupt may cause rear-end accidents, while a raised crosswalk that is too low may fail to reduce motorists' operating speeds.

Raised crosswalks shall be designed and built in compliance with current ADA accessibility guidelines (ADAAG/PROWAG). In some cases, where raised crosswalks are retrofitted into existing roads, an optional curbside drainage treatment will be necessary to ensure adequate drainage. Achieving ADA counter slope and turning space guidelines in the area outside of the vehicular travel lane will usually not be possible in these situations. The alteration must, however, provide accessibility to the maximum extent possible. This instruction will serve as documentation of technical infeasibility for full compliance for retrofitted raised crosswalks. For new construction, drainage shall be addressed in a way that ensures the raised crosswalk is fully compliant with ADA guidelines.

In addition to the concrete or asphalt items recommended by the Regional Materials Engineer, the following supplemental items may be needed:

- 402.018902 True & Leveling F9, Superpave HMA, 80 Series Compaction
- 490.30 or 490.40 Miscellaneous Cold Milling
- 407.01 Tack Coat
- 502.91 Constructing Transverse Joints
- 502.9110 Constructing Longitudinal Joints
- 502.9210 Sealing Transverse Contraction Joints – Highway Joint Sealant
- 556.0102 Epoxy Coated Steel Fabric Reinforcement
- 556.0202 Epoxy Coated Bar Reinforcement

IMPLEMENTATION:

Raised crosswalks are optional safety measures for locations meeting the criteria described in this instruction. They may be used before the 1/9/2014 effective letting date. Raised crosswalks on state

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highways shall conform to USC Standard Sheets 608-07, sheets 1 through 3 or metric Standard Sheets M608-14 through M608-16 issued concurrently with EB 13-036.

TRANSMITTED MATERIALS: None.

BACKGROUND: New York State's Complete Streets Law, which became effective in February 2012, identifies raised crosswalks as one of a number of roadway design features that "accommodate and facilitate convenient access and mobility by all users."

Raised crosswalks have been used throughout the country, including locations within New York State. They have been found to substantially lower operating speeds, according to NCHRP 674: *Crossing Solutions at Roundabouts and Channelized Turn Lanes for Pedestrians with Vision Disabilities*. They have also been found to increase compliance rates with motorists yielding to pedestrians within the crosswalk. Speed reductions at multilane roundabouts may be difficult to achieve using standard deflections since the fastest path uses both lanes. This is particularly true for roundabouts designed to accommodate large vehicles such as the WB-67 (WB 20) tractor trailer combination vehicle.

Based on NCHRP 500 Volume 10 *A Guide for Reducing Collisions Involving Pedestrians*, the risk of auto crashes with pedestrians increases for highways with posted speeds over 30 mph and the chance of death greatly decreases with lower speeds (from 5% at 20 mph, 45% at 30 mph, to around 90% at 40 mph). Based on FHWA's Engineering Countermeasures for Reducing Speeds, raised crosswalks (a.k.a. speed tables) have been found to reduce operating speeds 14% to 24%.

While HDM Chapter 25 (Table 25-1) only recommends the use of raised crosswalks on local streets and roads, and prohibits the use of speed humps/speed bumps (including all vertical measures) to control speed on New York state highways, it has become evident that raised crosswalks are often appropriate in applications that have been excluded by this chapter.

The raised crosswalk standard sheets have been developed to achieve an acceptable balance among emergency services, snow removal, motor vehicle safety, construction costs, and pedestrian safety. Effectively, the design provides an algebraic difference in slope of 4% that operates similar to a vehicle crossing the normal crown of a major highway. The concrete approach slabs help provide a visual contrast and the illusion that the vertical change is greater than 4" (100 mm).

CONTACT: Direct questions regarding this issuance to Richard D. Wilder, P.E. of the Design Services Bureau at (518) 457-5922 or via e-mail at Rick.Wilder@dot.ny.gov or Kara Phillips, RLA, of the Design Services Bureau at (518) 485-8829, or via e-mail at Kara.Phillips@dot.ny.gov.