



Florida Department of Transportation

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ROADWAY DESIGN BULLETIN 12-13
DCE MEMORANDUM 22-12
(FHWA Approved: 7/13/12)

DATE: July 17, 2012

TO: District Design Engineers, District Construction Engineers, Plans Preparation Manual Holders

FROM: Duane Brautigam, P.E., Director, Office of Design
David A. Sadler, P.E., Director, Office of Construction

CC: Brian Blanchard, Tom Byron, Tim Lattner, Rudy Powell, Greg Davis

SUBJECT: PERMANENT AND TEMPORARY CRASH CUSHION SELECTION

BACKGROUND:

Crash cushions are used to protect motorists from the exposed ends of barriers, fixed objects and other hazards within the clear zone. Crash cushions in work zones may be used in the same manner as permanent crash cushion installations. Crash cushions are approved for use on Department contracts and are listed on the Qualified Products List (QPL) under two sections. Temporary crash cushions are listed under Section 102 and permanent crash cushions are listed under Section 544.

Currently, our method for selecting permanent and temporary crash cushions is based on design speed or the work zone speed. NCHRP (National Cooperative Highway Research Program) Report 350 and MASH (Manual for Assessing Safety Hardware) 09 provide two test matrices which we use to evaluate crash cushions, Test Level 2 (TL-2) and Test Level 3 (TL-3). The impact speed used for the TL-2 matrix is 70 kph (43.5 mph) and for the TL-3 matrix is 100 kph (62.1 mph). The Federal Highway Administration Office of Safety considers that a TL-3 accepted crash cushion is sufficient for speeds greater than 60 mph.

Recently, the Department has required manufacturers to modify their vendor drawings, based on the FHWA guidance for both temporary and permanent crash cushions to specify whether the crash cushions are TL-2 or TL-3. TL-2 crash cushions are required on low speed facilities (45 mph or less). TL-3 crash cushions are required on high speed facilities (50 mph or greater). Certain crash cushion products posted on the Department's QPL website allow for extrapolation below 45 mph, interpolation between 45mph and 60mph, and extrapolation above 60 mph.

Extrapolating for speeds above 60 mph is no longer allowed. This will be reflected on the revised manufacturers' vendor drawings.

DESIGN REQUIREMENTS:

The designer shall provide the following information in the plans in tabular format:

- MOT phase (if applicable)
- Station
- Offset (in feet)
- Side (Lt. or Rt.)
- Speed (work zone speed for temporary, design speed for permanent)
- Crash cushion test level (TL-2 or TL-3)
- Width of hazard to protect (in inches)
- Length restrictions - xx feet vs. none

Separate tables shall be provided for permanent and temporary crash cushions.

Summary of Temporary Crash Cushions							
MOT Phase	Station	Offset (feet)	Side (Lt. or Rt.)	Speed (mph)	Test Level (TL-2 or TL-3)	Width of Hazard (inches)	Length Restrictions (feet)

Summary of Permanent Crash Cushions						
Station	Offset (feet)	Side (Lt. or Rt.)	Design Speed (mph)	Test Level (TL-2 or TL-3)	Width of hazard (inches)	Length Restrictions (feet)

The designer will no longer be allowed to specify a particular brand of crash cushion as allowed in the past. The table will provide the necessary information for a contractor to choose a crash cushion from the QPL.

To select the appropriate crash cushion pay item, the designer should use the flowchart on the last page of this bulletin.

DESIGN IMPLEMENTATION:

These changes are effective with the January 2013 lettings.

CONSTRUCTION IMPLEMENTATION:

On August 15, 2012, accepted revisions to crash cushion vendor drawings will be posted on the QPL. Revisions to some crash cushion vendor drawings will consist of minor modifications requested by FDOT, while others will consist of modifications to the crash cushion lengths for speeds 60 mph and greater. For those where the lengths are modified, new QPL numbers will be issued, and limitations will be placed on the QPL for both the old and new crash cushions.

Verify the contractor is installing crash cushions using the appropriate vendor drawings. After August 15, 2012, the contractor may request to use crash cushions with the QPL limitation of "For use on jobs let on or after January 1, 2013" by submitting a Cost Savings Initiative Proposal that includes the demonstration that the length of need has been evaluated and is satisfied.

CONTACTS:

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Crash Cushion Pay Item Selection

