

## BRIDGE DESIGN BULLETIN 2019-2

TO: All Bridge Designers

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CC: Chad Matty (Federal Highway Administration)

DATE: November 5, 2019

RE: ADOT MASH Compliant Bridge Rail

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### Purpose

The purpose of this memorandum is to share an update with all designers of bridge rails on Arizona Department of Transportation projects, and to provide the final dimensions for the Test Level 4 (TL-4) and Test Level 5 (TL-5) bridge rails to be used on ADOT projects starting on 1/1/2020.

### Implementation

All permanent bridge rails and transitions included on ADOT projects constructed after January 1<sup>st</sup>, 2020 must be Manual for Assessing Safety Hardware (MASH) compliant. ADOT's standard drawings for MASH compliant bridge rails will be available for view after January 1<sup>st</sup>, 2020 to comply with FHWA mandate, but as projects go through the design stages; the designers will need to know the dimensions in order to submit cost estimates reflecting the new shape, height, reinforcement, and length of transition of the new bridge rails. Below is a summary of the changes to ADOT's bridge rail currently shown on SD 1.01 and SD 1.02:

- TL-4 Bridge Rail:
  1. Single slope face instead of F-Shape
  2. Width remains the same: 1'-5
  3. Height will be 38"
  4. Transition length will remain 14'-0

- TL-5 Bridge Rail:
  1. Single slope face instead of F-Shape
  2. Width remains the same: 1'-7
  3. Height will be 42"
  4. Transition length will remain 14'-0

**Design Loads:**

Dynamic Load (For barrier Design) = 80 kips for TL-4

Dynamic Load (For barrier Design) = 160 kips for TL-5

Equivalent Static Load (For footing design) = 28 kips

Barrier Type	$M_b$	$R_w$	$M_c$	$M_w$	Top rail $M_p$	Bottom rail $M_p$	Post $M_p$
38" Single Slope Barrier	0	97.38 kips	11.29 <sup>a</sup>	35.18	--	--	--
42" Single Slope Barrier	0	205.6 kips	18.65 <sup>b</sup>	78.13	--	--	--

- a.  $M_c = 18.10$  at open joints
- b.  $M_c = 19.17$  at open joints

For a draft copy of the new Bridge Rail Standard Drawings; please go to:

<https://azdot.gov/business/engineering-and-construction/bridge/bulletins>