

**Freeway Ramp**

**Digital Speed Feedback Sign**

**Guidelines**

**PREPARED BY**

**Statewide TSMO**

**Transportation Systems Management Operations (TSMO) Division**

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*“Providing the highest quality transportation services for economic benefit and improved quality of life.”*

1. Purpose:

To establish Guidelines for the design, placement, and maintenance of speed feedback signs at freeway ramps.

1. General Criteria:

Speed feedback signs provide system users an increased understanding of their current speed, which holds the potential for enhanced safety and operational benefits. Providing criteria for design, placement, and maintenance for speed feedback signs will allow for their continued benefits.

The use of digital speed feedback signs (DSFS) is not a shall condition or should condition. The decision to utilize this type of sign is a may condition. DSFS may be considered if there is a specific need identified at a location, and the long-term operations and maintenance of the device are considered when making the decision to place the device. These costs need to be accepted and approved by the responsible electrical maintenance resources in that area before the device is erected.

Currently, the application of flashing beacons or integrated LEDs with signs may be considered on a case-by-case basis for specific regulatory or warning signs.

1. Site Selection:
   1. Evidence of frequent lane-departure crashes
   2. Posted ramp advisory speed (or ramp design speed) does not exceed 35 mph.
   3. Average speed at the point of curvature is more than 10 mph over the ramp advisory (or design) speed.
   4. Ramp AADT of 1,000 or higher
   5. Roadside adjacent to the ramp curve can accommodate installation of the sign.
   6. Clear visibility of the roadside within 20 ft of the traveled way for 600 ft in advance of the ramp curve
2. Installation Location:
   1. *DSFS lateral position:* Install the DSFS on the right-side of the ramp (preferred). If obstructions or terrain issues persist that restrict the traditional right-side mount, the DSFS may be installed within the gore area of the ramp between the green Exit gore sign and the initial chevron. Exercise caution when positioning the sign in the gore area, due to the increased likelihood that an errant vehicle may collide with the sign in this position.
   2. *DSFS position with respect to the curve*: Install the DSFS as close to the point of curvature as practical, but not more than 250 ft upstream of the curve.
3. Sign Design:
   1. *Display panel:* The DSFS should include a full matrix amber LED feedback display capable of displaying characters that are a minimum of 15 inches in height.
   2. *Sign border:* Include a prominent border that includes micro-prismatic reflective yellow sheeting with black “YOUR SPEED” text. A supplemental advisory speed plaque, fabricated of ASTM type XI material, is optional.
   3. *Sign activation range:* Ensure that the feedback panel activates for approaching vehicles a minimum of 250 ft in advance of the point of curvature.
4. Sign Operation and Message Display:
   1. For speeds at or below the advisory speed + 10 mph, display the speed number.
   2. For speeds exceeding the advisory speed + 10 mph, display the measured speed alternating with a “SLOW DOWN” message. The message frames should be alternated at 0.5 to 1.0 second intervals.
   3. Other messaging considerations:
      1. It is not necessary to include a maximum speed cap.
      2. A minimum speed threshold of 15 mph is recommended for activation of the feedback panel to prevent activation from rain and small objects.
      3. Do not flash the display or utilize the strobe beacon, as the MUTCD specifically prohibits the use of flashing displays on changeable message signs.

*All Signing should be placed in accordance with the MDOT Trunkline Signing Guidelines and the MDOT Traffic Sign Design, Placement, and Application Guidelines.*

* 1. [*MDOT Trunkline Signing Guidelines*](https://mdotjboss.state.mi.us/TSSD/getTSDocument.htm?docGuid=73e44000-f742-425f-927b-d9b3aa2cf33a&fileName=Signing%20Trunkline%20Guide.pdf)
  2. [*MDOT TSDPAG*](https://mdotjboss.state.mi.us/TSSD/getTSDocument.htm?docGuid=b6544036-b4a5-428b-b5ca-2a444b5a72c4&fileName=Traffic%20Sign%20Design%20Guidelines.pdf)

1. Maintenance:
   1. These devices must be monitored and maintained in reasonable working condition after installation.
   2. If these cannot be maintained, then the sign should be removed.
   3. Example Maintenance Plan (Appendix A): [Device Maintenance Plan](#RIWS_Device_Mainenace)
2. Funding:

Speed feedback signing may be funded through several different templates. However, once installed it becomes the full responsibility of the region in which it resides, unless documented in writing elsewhere.

**Appendix A – Device Maintenance Plan**