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SIGNS FOR SAFE LOCAL BRIDGES

by Benjamin Wigton, EIT, CBSI, Pennoni

Signs, an integral component of a safe, efficient, and reliable roadway system, provide critical safety and regulatory information to roadway users. Bridges on the roadway system require specific signing to give roadway users important safety information. For instance, signs communicate legal load limits as well as prohibited pedestrian activities. They can also warn bridge users of width and height restrictions or potentially dangerous bridge surface conditions.

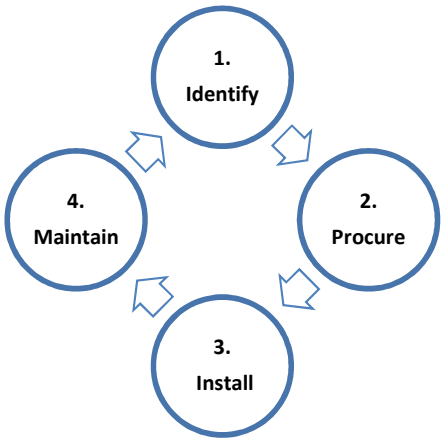
Because each bridge site is unique, the type, size, and location of bridge signs may vary from bridge to bridge. However, the functionality of those devices should be similar at every bridge. This technical sheet will help to establish the responsibilities of local bridge owners for the proper procurement, installation, and maintenance of bridge signs.

Regulations and Guidelines

The authority for municipalities to install and maintain traffic-control devices is granted in Title 75 of Pennsylvania's Consolidated Statutes – the Vehicle Code. That authority is granted along with a requirement to follow national and PennDOT regulations (Title 75, Section 6121). The national regulations that outline standards, guidance, and options for signs (as well as other traffic-control devices) are contained in the 2009 Edition of the Manual on Uniform Traffic Control Devices (MUTCD).

PennDOT Publication 212, *Official Traffic Control Devices*, outlines the regulations for proper design, location, and operation of bridge signs for Pennsylvania. Official traffic signs and standards are found in PennDOT Publication 236M, *Handbook of Approved Signs*, and Publication 111M, *Signing Standards TC-8700 Series,* which show the shape, color, dimensions, legends, application, placement, and construction procedures of official signs.

The best method for learning to use these references is to consider a real-world example. The following is an example of how the manuals can be used by following the "Four Steps to the Bridge Sign Process."



The Four Steps to the Bridge Sign Process

EXAMPLE:

"The latest bridge safety inspection of my local bridge identified a damaged weight-limit posting sign, which must be replaced within seven days."

pennsylvania
DEPARTMENT OF TRANSPORTATION
PennDOT Local Technical Assistance Program

400 North Street, 6th Floor
Harrisburg, PA 17120
1-800-FOR-LTAP • FAX (717) 783-9152
www.ltap.state.pa.us

Step 1: Identify Signs for Installation or Replacement

Bridge signs are inspected, along with the structure, during the biennial or annual National Bridge Inspection Standards (NBIS) bridge inspection. The absence of a required sign or the presence of a visually obstructed, damaged, or incorrectly installed sign will result in a "critical deficiency" letter outlining the deficiency and the need for improvement.

Damaged, missing, or incorrectly located vertical clearance and weight-limit posting signs are the highest priority. Additional warning signs, such as clearance markers or "one-lane bridge" signs, are also important, but the timeframe for their replacement can be determined on a case-by-case basis. Clearance markers are commonly installed incorrectly.

In the example in which a damaged weight-limit posting sign must be replaced, the damage to the regulatory sign has compromised its functionality, and this poses a threat to public safety. The sign must be replaced within seven days of the inspection.

The hazardous clearance object markers on this bridge are properly installed. Note the striping pointing down toward the travel lane.

Step 2: Procure Correct Sign

After deciding to replace the sign and reviewing the appropriate sections of the MUTCD and Publication 212, your next step is to refer to Publication 236M, *Handbook of Approved Signs*. If you have an approved sign shop, you can use these standards to make a new sign. Otherwise, you can order the sign from a Bulletin 15 approved manufacturer.

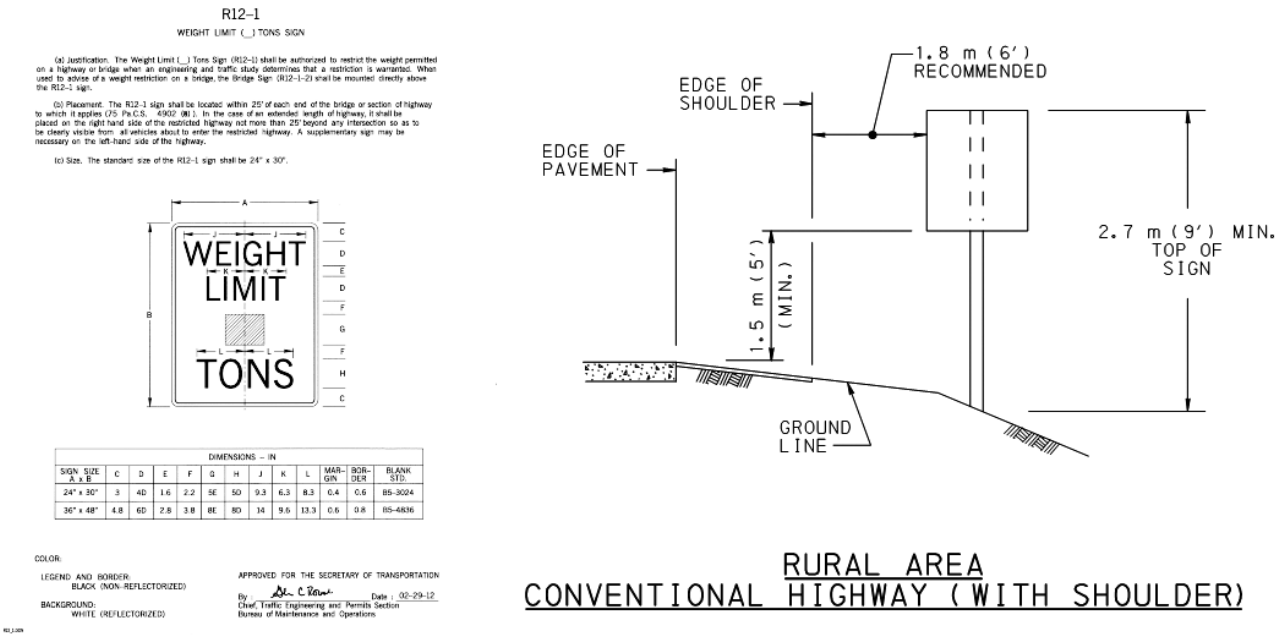
New retroreflectivity standards were enacted and subsequently revised in the latest edition of the MUTCD. Essentially, when a sign must be replaced, the replacement must meet the retroreflectivity standards outlined in the MUTCD. *(See the September 2012 issue of the LTAP* Moving Forward *newsletter for the article, "Key Traffic Sign Regulations Eliminated," about the latest retroreflectivity standards.)*

Step 3: Install Sign Correctly

The newly procured sign must be installed at the correct location, which may not necessarily be at the location of the existing sign. Determining the correct distance from the bridge, edge of roadway, and height above ground line requires reviewing the appropriate sections of the MUTCD, Publication 212, Publication 236M, and Publication 111M, *Signing Standards TC-8700 Series.*

Bridge signs for local roads are typically post-mounted signs, Type B, which is found in standard TC-8702B. Weight-limit signs must be placed within 25 feet of each end of the bridge. In addition, an advance bridge weight-limit sign must be installed no more than 25 feet beyond the advance intersection so it is clearly visible from all vehicles about to enter the restricted roadway.

If field conditions do not warrant standard placement, consult the bridge inspector or the municipal engineer, or contact LTAP for technical assistance. LTAP engineers are available by phone at 1-800-FOR-LTAP, by email at LTAP@state.pa.us, or in person to help municipalities troubleshoot specific maintenance and safety problems on their roadways.



Publication 236M (left) and Publication 111M (right) can be used together to reach a solution when troubleshooting specific maintenance and safety problems related to a sign and its installation.

Step 4: Maintain Signs Proactively

Responding to a critical deficiency letter by procuring and installing a new sign within seven days inevitably puts unwanted pressure on local bridge owners. To reduce this pressure, consider a proactive approach to bridge sign maintenance, rather than a reactionary one.

Weight-limit posting signs, for example, are required at both the approach and the advance intersection locations. The presence of an advanced weight-limit posting sign is important because it is the last chance for a driver of an oversized load to avoid the roadway before being forced to perform a possibly unsafe or impossible turnaround immediately before the bridge.

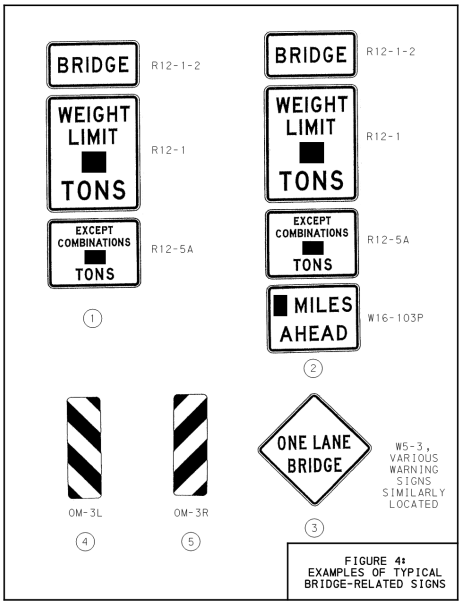


FIGURE 4: EXAMPLES OF TYPICAL BRIDGE-RELATED SIGNS

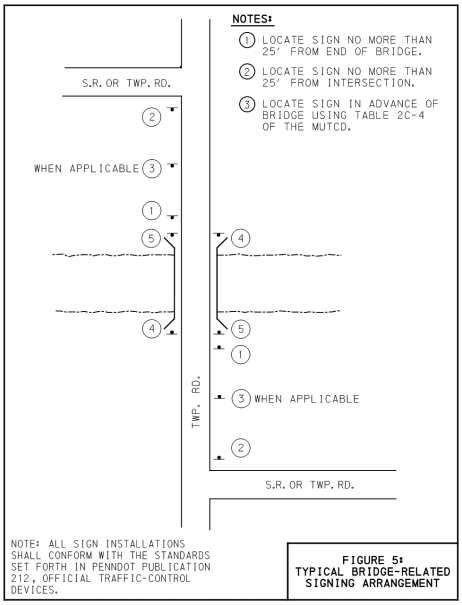


FIGURE 5: TYPICAL BRIDGE-RELATED SIGNING ARRANGEMENT

These illustrations show the basic signs used at a local bridge. Note that if the bridge does not have a weight-limit posting, weight-limit posting signs are not required. Likewise, if a bridge has correctly attached guiderail, clearance markers are not required. But if these signs are required, these illustrations show the required sign panels, their relationship to each other on the sign post, and their relationship to the bridge and its approach roadways.

A good Sign Inventory Management System (SIMS) can assist municipalities with implementing a sign assessment or management method for maintaining signs at or above minimum retroreflectivity levels for regulatory and warning signs. If you have not already done so, get started today by visiting the LTAP website, www.dot7.state.pa.us/LTAP/, and click on "News Items" to find LTAP's SIMS materials.

Public safety will be enhanced when properly procured, installed, and maintained bridge signs are consistent and correct in type, size, location, and functionality.

Bridge Sign Resources

- Pennsylvania Consolidated Statutes, The Vehicle Code (Title 75)
  www.dmv.state.pa.us/vehicle_code/index.shtml
- PennDOT Publication 111M, Signing Standards TC-8700 Series
  ftp://ftp.dot.state.pa.us/public/PubsForms/Publications/PUB%20111.pdf
- PennDOT Publication 212, Official Traffic Control Devices
  ftp://ftp.dot.state.pa.us/public/PubsForms/Publications/PUB%20212.pdf
- PennDOT Publication 236, Handbook of Approved Signs
  ftp://ftp.dot.state.pa.us/public/pubsforms/Publications/PUB%20236M/_236%20Sign%20Index.pdf
- PennDOT Publication 238, Bridge Safety Inspection Manual
  ftp://ftp.dot.state.pa.us/public/PubsForms/Publications/PUB%20238.pdf

The Manual on Uniform Traffic Control Devices can be accessed at http://mutcd.fhwa.dot.gov/. A listing of PennDOT publications is available at ftp://ftp.dot.state.pa.us/public/PubsForms/Publications/PUB%2012.pdf.

If you have any questions, you can call LTAP at 1-800-FOR-LTAP for assistance.