Standard Drawing Report

Date: December 15, 2017

Technical Owner: Traffic - Lewis H. Wardrip, P.E.

Standard Drawing No. P-435  Calculation Book No. n/a

Drawing Title: Pavement Markings Standard Detail Blocks

Background Information, Including Reference Material:

3) PBOT Traffic Manual

Assumption Made:

Described in design narrative below.

Design Narrative:

P-435 contains transverse pavement markings and pavement marking legends that are commonly used on City of Portland streets, off-street shared use paths, sidewalks, and bike facilities.

All markings used on City of Portland streets meet the MUTCD requirements for color, section 3A.04, "Markings shall be yellow, white, red, or blue," or the FHWA "Interim Approval for Optional Use of Green Colored Pavement for Bike Lanes," dated April 15, 2011. The off-street bike markings and the bike route on sidewalk markings do not meet the criteria for use of green specified by the FHWA interim approval; however, these markings are used as guidance only for people walking and biking on off street paths, separated bikeways, and sidewalks. These markings are not installed in motor vehicle travel lanes or in-street bike lanes, and are not used to guide motor vehicles.
P-435 does not provide any information to the user of this standard drawing on the proper application of the detail blocks (how they should or can be used). The intent of P-435 is to allow the user to easily specify the details of a marking as shown on the striping plans. The information on proper application of each detail block can be found within the MUTCD, the Oregon Supplement to the MUTCD, the PBOT Traffic Manual, or the ODOT Traffic Line Manual, other standard drawings, and/or the Oregon Revised Statutes. Therefore, the user of the standard drawing must be knowledgeable of the above stated documents to ensure that the detail blocks are applied correctly.

Each detail block is discussed below in detail.

**SB**
- Classified as a speed hump marking in the MUTCD.
- Meets MUTCD 2009 Edition Section 3B.25, "If speed hump markings are used, they shall be a series of white markings placed on a speed hump to identify its location."
- The dimensions of SB match MUTCD 2009 Edition Figure 3B-29 options A and B which illustrate the use of 12-inch wide white lines with an overall legend dimension of 6 feet by 6 feet.

**CW-SC**
- Classified as transverse pavement marking in the MUTCD.
- This style of crosswalk marking meets the requirements stated in MUTCD Section 3B.17.
- This marking differs from the ODOT CW-SC marking only in the specification to use a 12-foot width for angled crosswalks. The standard marking width of 9 feet matches the ODOT detail. PBOT chose to install the crosswalk markings in 3-foot width increments for ease of installation. Preformed thermoplastic crosswalk bars come from the manufacturer in stock 3-foot lengths.
- The crosswalk bars are spaced between three and five feet apart so that they can be installed to avoid motor vehicles wheel paths and minimize wear.

**BUMP**
- Classified as a pavement word marking in the MUTCD. Used in advance of speed bump installations.
- Meets MUTCD 2009 Edition Section 3B.20, "Word, symbol, and arrow markings shall be white, except as otherwise provided in this Section." And "Letters and numerals should be 6 feet or more in height."

**BSRS, BSLS**
- Classified as a pavement marking symbol in the MUTCD. Used to designate bicycle only lanes.
- Meets MUTCD 2009 Edition Section 3B.20, "Word, symbol, and arrow markings shall be white, except as otherwise provided in this Section."
- The bicycle rider symbol meets the proportions shown in the MUTCD 2004 Standard Highway Signs. The arrows have been modified to provide directional guidance to people biking.

**BSD**
- Classified as a pavement marking symbol in the MUTCD. Used within a cycle track at a driveway crossing location to alert motor vehicles to the presence of people biking.
• Meets MUTCD 2009 Edition Section 3B.20, "Word, symbol, and arrow markings shall be white, except as otherwise provided in this Section."

**PED-LG, BIKE-LG**
- The Off-Street Pedestrian-Large, and Off-Street Bike-Large markings are used on separated shared use paths or sidewalk-level bicycle facilities only. These markings are not used on in-street bicycle facilities.
- The markings are intended to provide guidance to people biking and walking of the typical place that each mode is expected to be in a shared or side-by-side environment.
- The PED-LG marking was first used in the City of Portland on the Hawthorne Bridge shared pedestrian and bicycle facilities. The BIKE-LG marking was also first used on the Hawthorne Bridge but it was a slightly different version with a yellow circle around the bike symbol. The current version of the BIKE-LG marking with a green circle around the bike symbol was first used on the Portland to Milwaukie Light rail project (aka Trimet Orange Line) on the pedestrian and bike facilities leading to and across the Tilikum Crossing.

**PED, BIKE**
- The PED and BIKE markings only differ from the PED-LG and BIKE-LG markings in that they are 18" diameter instead of a 30" diameter.
- The PED and BIKE markings were first used in the City of Portland on the Tilikum Way (aka Clinton to the River) shared use path between SE 7th Avenue and SE 11th Avenue that parallels the Trimet Orange Line tracks.

**ON-LR**
- Classified as a pavement word marking in the MUTCD. Used in combination with either the LRT or BUS-LR markings to designate a transit only lane to keep other vehicles from entering these lanes.
- Meets MUTCD 2009 Edition Section 3B.20, "Word, symbol, and arrow markings shall be white, except as otherwise provided in this Section."
- The subject marking does not meet MUTCD 2009 Edition Section 3B.20 “…Letters and numerals should be 6 feet or more in height.” The subject marking is 5’6” in height. The marking was designed to fit between light rail transit tracks. The height of the marking was reduced in proportion to the reduced width of the marking per the proportions for letters shown in the MUTCD 2004 Standard Highway Signs.

**LRT**
- Classified as a pavement word marking in the MUTCD. Used to designate a light rail transit only lane to keep other vehicles from entering these lanes.
- Meets MUTCD 2009 Edition Section 3B.20, "Word, symbol, and arrow markings shall be white, except as otherwise provided in this Section."
- The subject marking does not meet MUTCD 2009 Edition Section 3B.20 “…Letters and numerals should be 6 feet or more in height.” The subject marking is 5’6” in height. The marking was designed to fit between light rail transit tracks. The height of the marking was reduced in proportion to the reduced
width of the marking per the proportions for letters shown in the MUTCD 2004 Standard Highway Signs.

**BUS-LR**

- Classified as a pavement word marking in the MUTCD. Used in combination with the LRT marking to designate a transit only lane to keep other vehicles from entering these lanes.
- Meets MUTCD 2009 Edition Section 3B.20, "Word, symbol, and arrow markings shall be white, except as otherwise provided in this Section."
- The subject marking does not meet MUTCD 2009 Edition Section 3B.20 "...Letters and numerals should be 6 feet or more in height." The subject marking is 5'6" in height. The marking was designed to fit between light rail transit tracks. The height of the marking was reduced in proportion to the reduced width of the marking per the proportions for letters shown in the MUTCD 2004 Standard Highway Signs.

**B-SWALK**

- The B-SWALK markings are used on sidewalks where people biking have to route on a sidewalk for a short segment and there is not enough width for separate facilities for people walking and biking. These markings are not used on in-street bicycle facilities.
- The markings are intended to provide guidance to people biking and walking of the typical place that people biking are expected to be in a shared sidewalk environment.
- The B-SWALK making symbol was first used in the City of Portland to designate the local street network of Neighborhood Greenway (formerly known as bicycle boulevards). In 2009 the City of Portland switched to using shared lane markings as the standard to designate Neighborhood Greenways instead of the B-SWALK marking.

**BS-CON**

- THE BS-CON marking includes the addition of black contrast material to supplement the standard bike lane symbol. The only difference is the addition of black contrast material to provided added conspicuity to the white marking for installation on standard light-colored concrete bike lanes.
- Classified as a pavement marking symbol in the MUTCD. Used to designate bicycle only lanes.
- Meets MUTCD 2009 Edition Section 3B.20, "Word, symbol, and arrow markings shall be white, except as otherwise provided in this Section."
- The bicycle rider symbol meets the proportions shown in the MUTCD 2004 Standard Highway Signs.

**ON-LR-CON, LRT-CON, BUS-LR-CON**

The three details listed above include the addition of black contrast material to supplement the ON-LR, LRT, and BUS-LR markings previously described. The only difference is the addition of black contrast material to provide added conspicuity to the white markings when installed on a standard light-colored concrete track slab.