Standard Drawing Report

Date: May 1, 2026

Technical Owner: Traffic – Jennifer Ruth Tower, P.E.

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

Drawing Title: Pavement Markings Standard Detail Blocks: Traffic Calming and Transit

Original Report Date: December 15, 2017 (Michelle Dellinger)

Background Information, Including Reference Material:

1) Manual on Uniform Traffic Control Devices, 2009 Edition (MUTCD), Chapter 3
2) Standard Highway Signs, 2004 Edition (SHS)
3) PBOT Traffic Design Manual

Assumption Made:

Described in design narrative below.

Design Narrative:

P-435 contains speed bump and transit pavement marking legends that are commonly used on City of Portland streets. P-435 also includes curb extension markings and median curb marking details and dimensions that are commonly used on City of Portland streets.

All detail blocks meet the MUTCD 2009 Edition requirements for color, section 3A.04, “Markings shall be yellow, white, red, or blue.” The MUTCD dimension requirements are discussed for each detail block below. Where dimensions and/or color have not been explicitly stated in the MUTCD, the detail blocks conform to visual representations as shown in the figures of the MUTCD. The four curb extension and median island marking detail blocks contain details that are not stated or shown graphically in the MUTCD. Each detail block is discussed below in detail.

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 Design 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.

RED

- This detail is used for the installation of solid red colored lane markings as approved for use in the FHWA “Interim Approval for the Optional Use of Red-Colored Pavement for Transit Lanes (IA-22)”, dated December 4, 2019.

SRBL

- This detail meets the requirements for use of red colored lane markings listed in the FHWA “Interim Approval for the Optional Use of Red-Colored Pavement for Transit Lanes (IA-22)”, dated December 4, 2019. It also identifies PBOT placement guidance for the BUS, bike symbol, and ONLY word markings within a 50’ long red lane segment.

D-RED

- This detail meets the requirements for use of red colored lane markings listed in the FHWA “Interim Approval for the Optional Use of Red-Colored Pavement for Transit Lanes (IA-22)”, dated December 4, 2019.

ISL/R-2: Typical Traffic Island Pavement Markings

- Meets MUTCD 2009 Edition Section 3I.04, “Islands outlined by curbs or pavement markings should be marked with retro-reflective white or yellow material as determined by the direction or directions of travel they separate...”
- Meets MUTCD 2009 Edition Section 3I.05, “Delineators installed on island shall be the same color as the related edge lines except that, when facing wrong-way traffic, they shall be red…”

CE-CNR/R-2: Curb Extension Detail

- Typically used to delineate and/or indicate no-parking areas along pedestrian or storm water facility curb extensions. The Portland Bureau of Transportation uses yellow curb paint for high conspicuity of the curb during daylight hours and uses white reflectors on top of the curb for nighttime visibility. Only

the yellow paint on the leading edge of the curb extension is typically visible to approaching motor vehicle traffic and typically there is only one curb extension per block on City streets. There are no known issues with using yellow in these limited locations to provide higher conspicuity instead of white markings.

TWL-ISL/R-2: Two Way Left Turn Lane Pavement Markings at Island

- Meets MUTCD 2009 Edition Section 3I.04, “Islands outlined by curbs or pavement markings should be marked with retro-reflective white or yellow material as determined by the direction or directions of travel they separate...”
- Meets MUTCD 2009 Edition Section 3I.05, “Delineators installed on island shall be the same color as the related edge lines except that, when facing wrong-way traffic, they shall be red…”
- Meets MUTCD 2009 Edition Section 3B.24, “When crosshatch markings are used in paved areas that separate opposing directions of traffic, they shall be yellow diagonal markings that slant away from traffic in the adjacent travel lanes…”

CE-MB/R-2: Midblock Curb Extension Pavement Markings

- Typically used to delineate and/or indicate no-parking areas along pedestrian or storm water facility curb extensions. The Portland Bureau of Transportation uses yellow curb paint for high conspicuity of the curb during daylight hours and uses white reflectors on top of the curb for nighttime visibility. Only the yellow paint on the leading edge of the curb extension is typically visible to approaching motor vehicle traffic and typically there is only one curb extension per block on City streets. There are no known issues with using yellow in these limited locations to provide higher conspicuity instead of white markings.

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.

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.

For the September 2022 update, the following revisions were made:

NOTE: The 2022 update to P-435 included a reorganization of standard detail blocks across P-434, P-435, and P-436 with the following goals: 1) to group together similar types of details on the same standard drawing, 2) to eliminate details that are covered by updated ODOT standard drawings 3) to eliminate or add City specific details.

1) Removed details **BSRS** and **BSLS**; ODOT details **BRS** and **BLS** on ODOT standard drawing TM503 should be referenced instead.
2) Removed detail **BSD**; it is obsolete and has been replaced by detail **BLE-G** in practice.
3) Detail **CW-SC** was removed in a previous update, but not accompanied by a corresponding report update. ODOT detail **CW-SC** on ODOT standard drawing TM503 should be referenced instead.
4) Relocated details **A-SWALK**, **PED-LG**, **BIKE-LG**, **PED**, **BIKE**, **B-SWALK**, and **BS-CON** to standard drawing P-436.
5) Included details **ISL/R-2**, **CE-CNR/R-2**, **TWL-ISL/R-2**, and **CE-MB/R-2** which were relocated from standard drawing P-434.
6) Replaced rectangular symbols with circular symbols to more accurately represent tubular markers on detail **ISL/R-2**.
7) Added unique descriptor language "Traffic Calming and Transit" to the title to identify the types of details represented.
8) Changed "Reference Markers" to "Details" in the legend.
9) Updated dimensioning styles on the details for consistency.

For the May 2026 update, the following revisions were made:

1) Removed BUMP detail. It is no longer used.
2) Added RED, SRBL and D-RED details.
3) Edited note typo in ISL/R-2 to specify paint on top and face of curb.
4) Edited terminology referencing raised pavement markers in CE-CNR/R-2, CE-MB/R-2, and in the legend to conform with COP Standard Construction Specifications as “Mono-directional Type I Marker”.
5) Included chevrons in note 1.