Standard Drawing Report

Date: May 1, 2026

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

Standard Drawing No. P-436 **Calculation Book No.** n/a

Drawing Title: Pavement Markings Standard Detail Blocks: Bicycle

Expires 6/30/24

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-436 contains bicycle pavement markings that are commonly used on City of Portland streets, off-street shared use paths, sidewalks, and bike facilities. P-436 was first created in March 2013 to accommodate the increasing number of details specific to the City of Portland. It initially contained BXL, BLE-G, and BX details only. More bicycle and pedestrian pavement marking details were added in subsequent updates.

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 Bicycle Lanes,” dated April 15, 2011. The off-street bike markings, the bike route on sidewalk markings, and the bike loop marking 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 and, except for the bike loop marking, are only used on off street paths, separated bikeways, or sidewalks. These markings are not used to guide motor vehicles.

P-436 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-436 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.

GRN

- This detail is used for the installation of green pavement markings in bike facilities as approved for use in the FHWA ”Interim Approval for Optional Use of Green Colored Pavement for Bike Lanes,” dated April 15, 2011.

BRS

- Classified as a bike lane marking in the MUTCD.
- Meets MUTCD 2009 Edition Section 3B.20, “Word, symbol, and arrow markings shall be white, except as otherwise provided in this Section.”
- The Bike Rider stencil is the Bike Lane Standard detail (ODOT standard drawing TM503) without the arrow. The MUTCD identifies the arrow as optional in Figure 9C-3.

BXL, BXR

- Meets the requirements of the FHWA “Interim Approval for Optional Use of Two-Stage Bicycle Turn Boxes” dated July 13, 2017 except for the following element:
- Condition of Approval 2a in the “Interim Approval for Optional Use of Two-Stage Bicycle Turn Boxes” states, “Two-stage bicycle turn boxes shall include an appropriately-sized bicycle symbol as shown in Figure 9C-3A of the MUTCD…” The MUTCD symbol shown in 9C-3A is 6 feet in height and the Portland Bureau of Transportation found that a symbol of this size was unnecessary for viewing by people riding bikes and was too big to fit within a typically sized bike turn box (8 feet by 10 feet). Alternatively, the Portland Bureau of Transportation worked with a pavement marking manufacturer to develop a smaller 4ft by 3ft-3in bicycle with rider symbol to better fit within a typically sized box with an arrow.

BX

- Meets the requirements of the FHWA “Interim Approval for Optional Use of an Intersection Bicycle Box” dated October 12, 2016 except for the “WAIT HERE” marking that is included one foot in advance of the advance stop bar.
- The subject marking is classified as a pavement word marking in the MUTCD.
- 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.” Portland Bureau of Transportation found that lettering of this

size was unnecessary for viewing from the intended stopped or nearly stopped position. In addition, the marking is supplemental to the stop bar and so a reduced 24” letter height was used.

- The lettering is FHWA Series B font. It does not follow the elongated letter proportions shown in the MUTCD 2004 Standard Highway Signs for pavement markings. Elongated lettering is not as legible at reduced letter heights where it is intended to be read from a much closer vantage point.

BLE-G

- This marking meets the requirements for use of green markings listed in the FHWA ”Interim Approval for Optional Use of Green Colored Pavement for Bike Lanes,” dated April 15, 2011.

BS-CON

- THE BS-CON marking includes the addition of black contrast material to supplement the standard bike lane symbol. The only difference from the standard bike lane symbol is the addition of black contrast material to provide 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.

BIKE

- The Off-Street Bike markings consist of white bicycle symbols in a green circle with black contrast material for background and arrows surrounded by black contrast material.
- These markings are typically installed with the Off-Street Pedestrian markings (see standard drawing P-438) on separated shared use paths or sidewalk-level bicycle facilities only and not on in-street facilities. The black contrast material is added to provide conspicuity to the white marking for installation on standard light-colored concrete sidewalk facilities.
- A larger 30” version of this marking was first used in the City of Portland on the Hawthorne Bridge shared pedestrian and bicycle facilities, but it was a slightly different with a yellow circle around the bike symbol. The yellow circle was replaced with a green circle around the bike symbol 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.
- The current 18” version of this marking was 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.

B-SWALK

- The B-SWALK markings consist of a white bicycle symbol on a circular green background with separated triangular shaped “arrow”. These markings are used on sidewalks only and not in-street bicycle facilities.
- 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.

BL-CON

- This pavement marking consists of white border at the corners, bike symbol, lettering, and circle with green ball infill, all on a black background contrast material.
- The overall dimensions of the marking are slightly larger than the Bicycle Detector marking in the MUTCD. However, the bike symbol is slightly smaller to accommodate the lettering and green ball symbol.
- The subject marking performed well in the FHWA approved Request To Experiment (RTE) "*9(09)-66E Bicycle Detector Pavement Marking Alternatives – Columbia, MO"* and is currently being installed in the City of Portland under FHWA approved RTE *"9(09)-123E Modified Bicycle Detector Marking – Portland Bureau of Transportation, OR"*. It was recommended by the National Committee on Uniform Traffic Control Devices (NCUTCD) Bicycle Technical Committee to be included in the next edition of the MUTCD. But the 11th edition of the MUTCD instead replaced the 2-foot-long helmeted bicyclist symbol with a 3.5-foot-long bike symbol and included optional "WAIT HERE FOR GREEN" word pavement markings. The combined detail is approximately 10 feet long. ODOT updated the "BL" detail on their standard drawing TM503 with a smaller version of the bike symbol, but without the word pavement markings. PBOT is retaining its current version of this detail pending further evaluation.

BPM

- The Off-street Bollard Pavement Marking is used on separated shared use paths or sidewalk-level bicycle facilities when a bollard is placed in the pathway to restrict access to non-motorized traffic only. These markings are not used on in-street bicycle facilities.
- The dimensions of BPM follow the MUTCD 11th Edition Figure 9E-17-A "Examples of Obstruction Pavement Markings – Obstruction within the path" which illustrates the use of 4" solid yellow lines in a diamond shaped marking around the obstruction. For this detail the obstruction is a 12" bollard.

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

NOTE: The 2022 update to P-436 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) Details **BL** and **BL-GREEN** were removed in a previous standard drawing update, but not accompanied by a corresponding report update. Detail **BL-CON** should be referenced instead.
2) Included details **A-SWALK**, **PED-LG**, **BIKE-LG**, **PED**, **BIKE**, **B-SWALK**, and **BS-CON** which were relocated from standard drawing P-435.
3) Detail **A-SWALK** was created in a previous update for P-435, but not accompanied by a corresponding report update. Included its description for the first time in this report.
4) Added bike rider stencil with no arrow **BR**

5) Added crosswalk detail for bike facilities **CW-B**
6) Added 4-inch white bar across the bottom of the turn bike boxes **BXL** and **BXR** to comply with MUTCD Interim Approval 20.
7) Detail **BL-CON** was modified in a previous update, but not accompanied by a corresponding report update. Included its revised description for the first time in this report.
8) Consolidated bike box detail notes to one general note
9) Added note to **BLE-G** Bike Lane Extension-Green to adjust bar spacing similar to the **CW-SC** Crosswalk-Staggered Continental.
10) Detail **BX** has been included in previous standard drawings without a report description. Included its description for the first time in this report.
11) Updated the **BX** intersection bike box detail with the following changes:
    a. Removed **BLE-G** extension into the intersection. This can be called out as such on the plans and does not need to be part of the **BX** detail.
    b. Updated depiction of crosswalks at the intersection from **CW** to **CW-SC** to reflect current practice.
    c. Added **W-2** bar across the top of the box in place of the **CW** bar that is no longer used.
    d. Narrowed down the scope of the detail to just the approach lanes and lower-right quadrant of the intersection.
    e. Added direction of traffic symbols for clarity.
12) Added unique descriptor language “Pedestrian and Bicycle” to the title to identify the types of details represented.
13) Changed “Reference Markers” to “Details” in the legend
14) Updated dimensioning styles on the details for consistency.

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

1) Removed PED-LG and BIKE-LG details. They are no longer used. The PED and BIKE versions are more appropriately scaled for a pedestrian and bicycle only environment.
2) Replaced the bicyclist symbols in details BXL, BXR, and BL-CON with the elongated bicycle symbol to conform with the 11th Edition of the MUTCD which removed the helmeted bicyclist pavement marking symbol from the options for bike facility markings. ODOT also updated its standard drawing TM503 to replace all details including the helmeted bicyclist symbol with the elongated bicycle pavement marking symbol.
3) Replaced the bicyclist symbol in detail BIKE with the non-elongated bicycle symbol in B-SWALK.
4) Removed BR detail. PBOT will now use the ODOT detail B instead of the PBOT detail BR.
5) Removed the BS-CON detail. This detail is no longer used. Contrast is now provided with GRN pavement markings when needed.
6) Moved PED, A-SWALK, and CW-B details to new standard drawing P-438 for pedestrian pavement markings.
7) Revised BLE-G to show 8” white “caps” on either side of the green bars instead of identifying line types. Added note with bar spacing and placement guidance.
8) Changed call-out for BL-CON to BL since it is PBOT’s only bike loop marking.
9) Deleted incorrect “(WHITE ON BLACK)” description for BL-CON.
10) Changed call-out for OPM to BPM to specify that this detail is only applicable to narrow bollard obstructions.
11) Deleted note 2 which is no longer needed.
12) Moved single asterisk note to detail BLE-G.
13) Updated drafting of standard drawing to current PBOT CAD standards.