



Standard Drawing Report

Date: October 3, 2017

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

Standard Drawing No. P-410 **Calculation Book No.** n/a

Drawing Title: Sign Bracket, Cap Details



Expires 06/30/18

Background Information, Including Reference Material:

The draft versions of what became standard drawing P-410 were first created in 2002 to document hardware that the Portland Transportation Maintenance Operations group used for sign installations. Prior to 2002 the Portland Bureau of Transportation relied on Maintenance Operations crews to install signs for capital projects. In 2002 during the creation of the first version of this standard drawings Maintenance Operations staff Traffic Engineer Dave Hutson was asked how long they had been using this particular sign hardware. Dave Hutson replied that Maintenance Operations had been using the hardware, "...for several years... This is not a new standard."

Assumptions Made:

The sign hardware shown on P-410 is used for sheet aluminum signs, other than street name signs, that are mounted on 2-inch pipe sign supports. City Standard Specification 940.40 defines the maximum size of signs that can be manufactured with sheet aluminum, and City Standard Specification 940.42 defines how many mounting holes (ie how many brackets) are required depending on sign height.

Design Narrative:

U-Bolt Bracket: Used for 12"x18" signs only, typically parking signs but some signs for bicycle and pedestrian only facilities are also this size. Use of this bracket with any signs larger than 12"x18" could result in damage from high winds. This bracket is documented to have been used for Portland Transportation Maintenance Operations since at least several years prior to 2002 with no known issues.

Extruded Sign Bracket: Used for signs larger than 12"x18". Signs mounted on pipe posts could suffer damage from high winds if mounted directly with bolts instead of using this stabilizing bracket. This bracket is documented to have been used for Portland Transportation Maintenance Operations since at least several years prior to 2002 with no known issues.

Press On Dome Pipe Cap: Used for all Pipe Sign Supports unless a Street Name Sign Post Cap is used (Standard Drawing P-412). This dome pipe cap is documented to have been used for Portland Transportation Maintenance Operations since at least several years prior to 2002 with no known issues.

Back to Back Sign Bracket: Used for mounting signs back to back. Uses the same bracket as the U-bolt bracket. Use of this bracket with any signs larger than 12"x18" could result in damage from high winds. This bracket is documented to have been used for Portland Transportation Maintenance Operations since at least several years prior to 2002 with no known issues.