



Standard Drawing Report

Date: October 3, 2017

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

Standard Drawing No. P-411 **Calculation Book No.** n/a

Drawing Title: Sign Bracket, Strong-Back Details



Expires 06/30/18

Background Information, Including Reference Material:

The draft versions of what became standard drawing P-411 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."

Assumption Made:

The sign hardware shown on P-411 is used for sheet aluminum signs, other than street name signs, that are mounted on wood or metal poles, ie. (utility, signal, or street light poles). 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:

Straight leg bracket: Used for mounting sheet aluminum signs, other than street name signs, on wood poles. The straight-leg is reserved for wood poles, as the edge digs in to the wood. This bracket must be used in combination with the strong-back channel as shown in the sign mounting assembly detail. This bracket is documented to have been used by Portland Transportation Maintenance Operations since at least several years prior to 2002 with no known issues.

Flared Leg Bracket: Used for mounting sheet aluminum signs, other than street name signs, on metal poles. The flare leg is used on metal poles as the flare allows the bracket to snug-up to the face of the pole. This bracket must be used in combination with the strong-back channel as shown in the sign mounting assembly detail. This bracket is documented to have been used by Portland Transportation Maintenance Operations since at least several years prior to 2002 with no known issues.

Strong Back Channel: Used with either the straight leg bracket or the flared leg bracket for mounting sheet aluminum signs, other than street name signs, on metal or wood poles. Signs mounted on poles could suffer damage from high winds if mounted directly with bolts instead of using this stabilizing channel. When the straight or flare leg bracket is used with the strong-back channel the channel is crimped in the center of the bracket after the bracket has been bolted into place. This deforms the channel enough that it keeps the bracket tight, otherwise it has a tendency to get loose over time. This hardware is documented to have been used by Portland Transportation Maintenance Operations since at least several years prior to 2002 with no known issues.

Sign Bracket Banding Clip: Used with either the straight leg bracket or the flared leg bracket for mounting sheet aluminum signs, other than street name signs, on metal or wood poles. Drawing based on the "Band-IT" brand "Valustrap Plus" product. Total breaking strength of assembled strap and clip is to be a minimum of 1275 lbs. This hardware is documented to have been used by Portland Transportation Maintenance Operations since at least several years prior to 2002 with no known issues.