



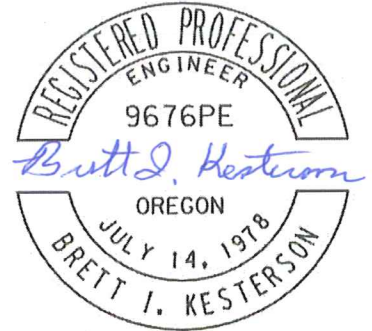
Standard Drawing Report

Date: October 4, 2017

Technical Owner: Civil – Brett I. Kesterson, P.E.

Standard Drawing No. P-579 **Calculation Book No.**

Drawing Title: Precast Concrete Bollard



Expires 06/30/2019

Background Information, Including Reference Material:

This drawing is the result of bollard installation in Tom McCall Waterfront Park sometime in the late 1960's or early 1970's. The Parks Bureau had a precast firm located somewhere in the Gresham/Troutdale area develop the design. The bollards were placed within the public right-of-way and a standard drawing was created to retain details of the design for future use. The bollard design was used around the mid 1990's in the Rivergate Industrial Area for an abandon road that was turned into a bike path along the Smith and Bybee lakes. The bollard was removed a few years later when a metal post gate was installed which made maintenance vehicle access easier.

Assumption Made:

No major assumptions were made.

Design Narrative:

The standard drawing is based on shop drawings submitted by a precast concrete firm over 40 years ago. There have been no problems with the design, though it has only been used a couple of times. The weight of the concrete bollard of around 250 pounds limits its use. The bollard needs to be located outside of the vehicle clear zone. Removal of the bollard requires the use of a backhoe, a small crane attached to a pickup or similar equipment.

The 12-inch thickened sidewalk around the bollard provides more than enough strength to support a 250-pound bollard. A pavement design for 12 inches of concrete would allow more than 7 million 18 kip loads over a 20-year period.

The Structures Section gave the drawing a cursory review and found no reason to update due to current design standards.