


PBOT

PORTLAND BUREAU OF TRANSPORTATION

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CITY TRAFFIC ENGINEER DIRECTIVE

Number	Supersedes	Effective Date	Cancellation Date
WC 003		November 21, 2023	
Subject		Issuer	
Interim Guidance for Installing Alternative Sign Posts and Support During Supply Chain Shortages		 Wendy Cawley, P.E. City Traffic Engineer	

PURPOSE:

Provide interim guidance when supply chain shortages for sign post and support materials are in effect, as determined by the City Traffic Engineer, to supply and install sign posts and supports that meet PBOT standards. This Directive is applicable on all PBOT Maintenance installations and may apply to PBOT capital projects with Traffic Engineer approval.

This Directive provides:

1. Interim Guidelines for Alternative Sign Posts
2. Interim Guidelines for Sign Supports
3. Guidance for Using Alternate Materials and Methods for Sign Post Installations
4. Mitigation for Alternate Materials and Methods

DIRECTIVE:

1. Interim Guidelines for Alternate Sign Posts

Contractors have been reporting a shortage of Schedule 40 pipe posts that meet City standards (Std Dwg P-400.) An alternative product, SS-40 developed by Allied Tube & Conduit, is very similar to Schedule 40 and uses higher yield strength and thinner wall thickness to demonstrate its bending strength. SS-40 posts will be allowed as a substitute for PBOT Maintenance work when Schedule 40 pipe is not available. SS-40 will be considered on capital projects with Traffic Engineer approval when Schedule 40 pipe is not available. Any alternate sign post product must meet or exceed the requirements below for 2" pipe post:

SS-40 Pipe Sizes

Fence Industry	Decimal O.D. Equivalent		Pipe Wall Thickness		Weight		Section Modulus	Min. Yield Strength	Max Bending Moment	Calculated Load (lbs.)		
	inches	(mm)	inches	(mm)	lb./ft.	(kg/m)				inches ³	psi	lb. in.
O.D.											4'	6'
1-3/8"	1.315	33.40	.104	2.64	1.35	2.01	.1111	x 50,000	= 5555	185	116	77
1-5/8"	1.660	42.16	.111	2.82	1.84	2.74	.1961	x 50,000	= 9805	327	204	136
2"	1.900	48.26	.120	3.05	2.28	3.39	.2810	x 50,000	= 14050	468	293	195
2-1/2"	2.375	60.33	.130	3.30	3.12	4.64	.4881	x 50,000	= 24405	814	508	339
3"	2.875	73.03	.160	4.06	4.64	6.90	.8778	x 50,000	= 43890	1463	914	610
3-1/2"	3.500	88.90	.160	4.06	5.71	8.50	1.3408	x 50,000	= 67040	2235	1397	931
4"	4.000	101.60	.160	4.06	6.56	9.76	1.7819	x 50,000	= 89095	2970	1856	1237



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2. Interim Guidelines for Sign Supports

Contractors and PBOT Maintenance crews have been reporting a shortage of breakaway sign supports. Alternate methods of installation are acceptable while supply chain issues impact availability of PBOT standard sign supports. Acceptable methods of pipe post installation include:

- Installing with breakaway sign support per Standard Drawings P-405 and P-406.
- Installing pipe posts in the earth to a minimum diameter of 8 inches and depth of 24 inches and securing with Commercial Grade Concrete.
- Coring concrete to a minimum diameter of 8 inches and depth of 24 inches and securing with Commercial Grade Concrete.
- Installing sign posts on base plates bolted to concrete per Exhibit A.

3. Guidance for Using Alternate Materials and Methods for Sign Post Installations

A. Guidance for Work Orders and Plan Sets:

- Consider need for new signs. If sign is redundant or optional, leave it out. This will assist with asset management while there are supply chain issues and will reduce PBOT asset liability in the future. It will also reduce sign clutter and simplify the driving environment.
- Reuse existing sign posts and breakaway sign supports when feasible. Breakaway domes and sign posts can typically be reused if they are not damaged.
- Look for opportunities to locate new signs on existing sign posts, light poles or utility poles. While PBOT makes every effort to limit signs on utility poles, this is an acceptable interim measure while sign posts and sign supports are unavailable.
- Continue to call out sign posts and breakaway supports on work orders and plan sets, which allows for their use when materials are available.

B. PBOT Maintenance Installation

PBOT Maintenance crews will be responsible for noting alternate installation methods and materials on the work order when standard sign posts and supports are not available. This Directive may be referenced when noting alternate installations.

C. Guidance for Approving Alternate Materials on CIP Projects

- Requests to utilize alternate materials or installation methods for sign installation require approval from a PBOT Traffic Engineer.
- PBOT Traffic Engineers will ensure that alternate materials or installation methods meet the guidance above before providing approval.
- Projects that include federal funding and are on National Highway System (NHS) require breakaway sign supports. If alternate materials are requested on a federally funded project, the following alternatives should be considered:
 - a. Requesting a design exception from ODOT to allow non-breakaway bases. The AASHTO Roadside Design Guide provides a basis for this in Chapter 4, which states *“As a general rule, breakaway supports should be used unless an engineering study indicates otherwise. However, concern for pedestrian involvement has led to the use of fixed supports in some urban areas...Examples of sites where breakaway supports may be imprudent are those adjacent to bus shelters or that have extensive pedestrian concentrations.”*
 - b. Allowing temporary sign installation methods until breakaway supports become available to the contractor; this would require the contractor to replace temporary sign supports with breakaway supports prior to project close-out.
 - c. Alternate breakaway bases, such as square tube perf pipe, should only be allowed only as a last resort and should be noted in GIS so PBOT Maintenance can track where these non-standard installations are occurring.

4. Mitigation for Alternate Materials and Methods

The above alternatives are considered temporary in nature; as such, PBOT is not planning to modify standard drawings or project specifications to allow their use on a permanent basis. However, once sign posts are installed with alternate methods or materials they will not need to be upgraded to PBOT standards until routine maintenance is required or the sign post and/or sign support is damaged.

There may be opportunities to utilize SS-40 sign posts on an ongoing basis. PBOT will assess their performance for a period of time before determining if this as an acceptable alternative for permanent installation.

Exhibit A – Surface Mount Base Plate Specification, attached herewith.

