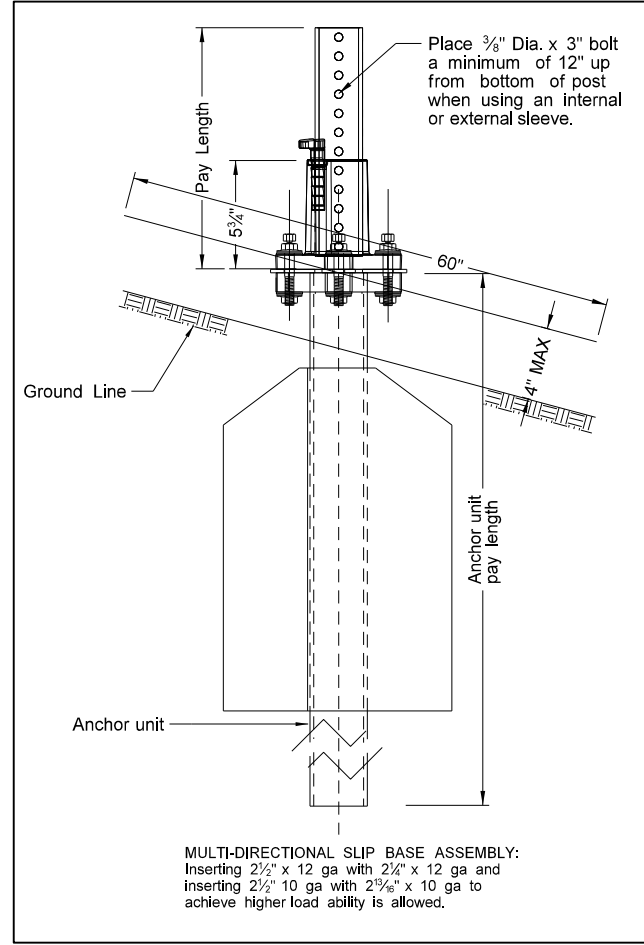
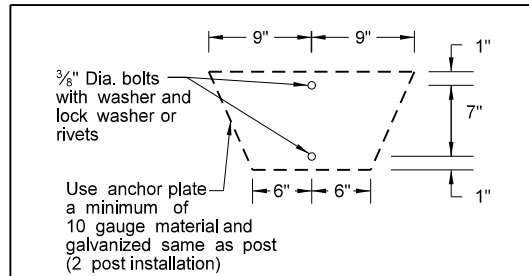


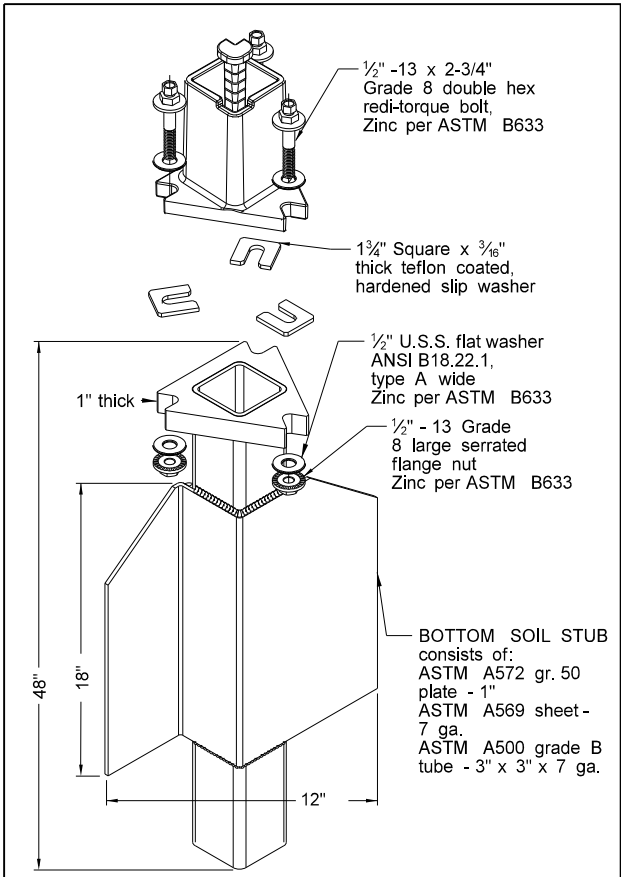
Telescoping Perforated Tube							
Number of Posts	Post Size In.	Wall Thickness Gauge	Sleeve Size In.	Wall Thickness Gauge	Slip Base	Anchor Size Without Slip Base In.	Anchor Wall Thickness Gauge
1	2	12			No	2 1/4	12
1	2 1/4	12			No	2 1/2	12
1	2 1/2	12			(B)	3(C)	7
1	2 1/2	10			Yes		7
1	2 1/4	12	2 1/2(D)	12	Yes		7
1	2 1/2	12	2 1/4	12	Yes		7
2	2 1/2	10			Yes		7
2	2 1/4	12	2 1/2(D)	12	Yes		7
2	2 1/2	12	2 1/4	12	Yes		7
3 & 4	2 1/2	12			Yes		7
3 & 4	2 1/2	10			Yes		7
3 & 4	2 1/2	12	2 1/4	12	Yes		7
3 & 4	2 1/2	12	2 1/2(D)	12	Yes		7
3 & 4	2 1/2	10	2 3/8	10	Yes		7

(B) - Provide a shim as specified by the manufacturer when placing 2 1/2", 12 gauge posts in standard soils without breakaway bases. Provide breakaway base when placing the support in weak soils. The Engineer will determine if the soils are weak. Weak soils are classified as boggy, wet, or loose soil areas.
 (C) - 3" anchor unit
 (D) - 2 1/2" x 12 ga. x 18" minimum length external sleeve required.

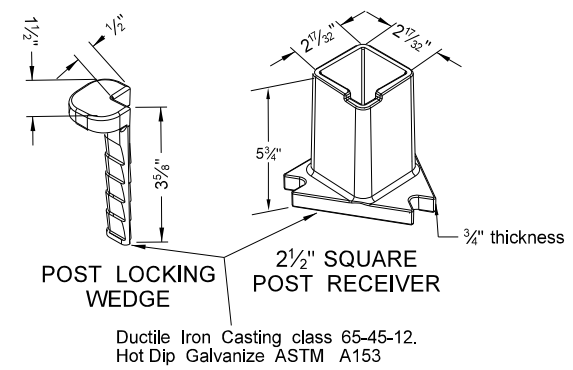


MULTI-DIRECTIONAL SLIP BASE ASSEMBLY:
 Inserting 2 1/2" x 12 ga with 2 1/4" x 12 ga and inserting 2 1/2" 10 ga with 2 3/8" x 10 ga to achieve higher load ability is allowed.

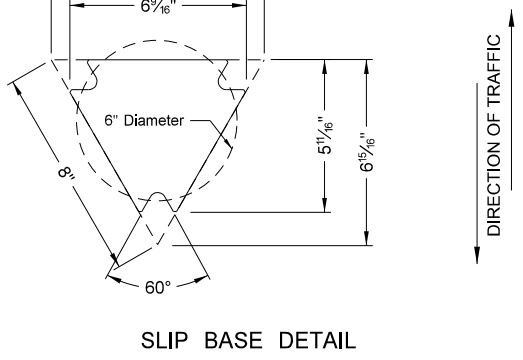
Mounting Details Perforated Tube



SLIP BASE FOR 2 1/2" POST



2 1/2" SQUARE POST RECEIVER

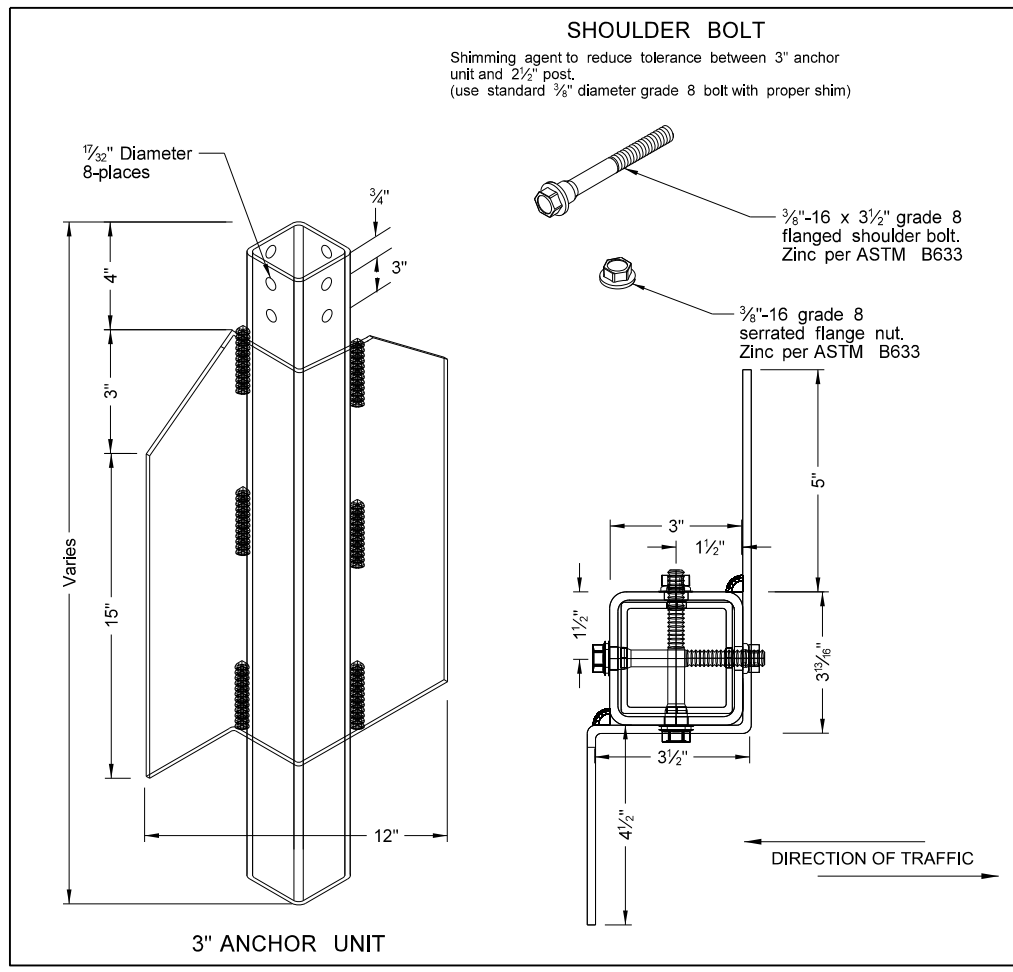


SLIP BASE DETAIL

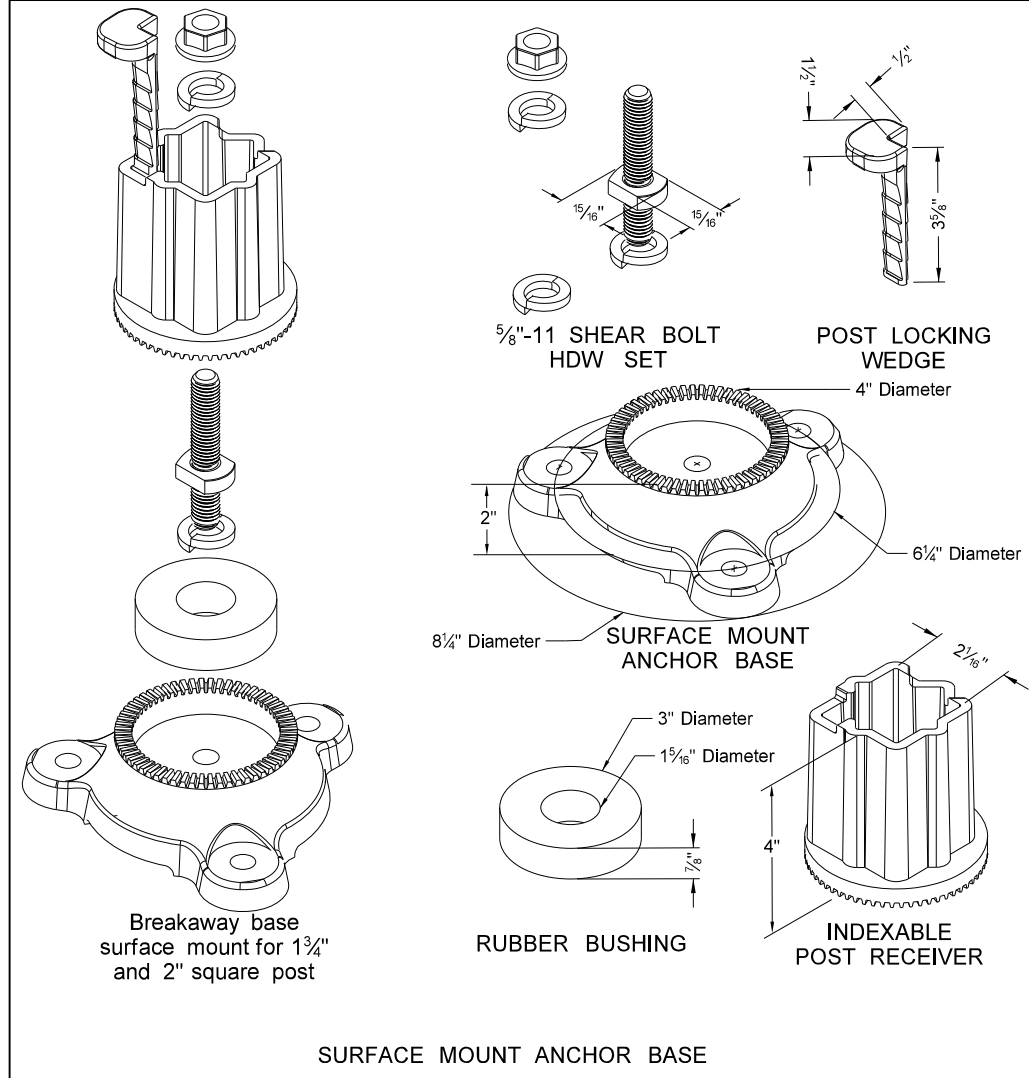
Properties of Telescoping Perforated Tubes							
Tube Size In.	Wall Thickness In.	U.S. Standard Gauge	Weight Per Foot Lbs.	Moment of Inertia In. ⁴	Cross Sect. Area In. ²	Section Modulus In. ³	
1 1/2 x 1 1/2	0.105	12	1.702	0.129	0.380	0.172	
2 x 2	0.105	12	2.416	0.372	0.590	0.372	
2 1/4 x 2 1/4	0.105	12	2.773	0.561	0.695	0.499	
2 3/8 x 2 3/8	0.135	10	3.432	0.605	0.841	0.590	
2 1/2 x 2 1/2	0.105	12	3.141	0.804	0.803	0.643	
2 1/2 x 2 1/2	0.135	10	4.006	0.979	1.010	0.783	

The 2 3/8" size 10 gauge is shown as 2.19" size on the plans;
 The 2 1/2" size is shown as 2.51" size on the plans.

- NOTE:
- 4" Vertical clearance of anchor or breakaway base. The 4" x 60" measurement is above and below post location and also back and ahead of post.
 - Provide 7 gauge HRPO commercial quality ASTM A569 and 3" x 3" x 7" gauge ASTM A500 grade B anchor material with 43.9 KSI yield strength and 59.3 KSI tensile strength. Hot dip galvanize anchor per ASTM A123/153. Tolerances on anchor unit and slip base bottom assembly are +/- 0.005" unless otherwise noted.
 - Eliminate wings when anchor is used in concrete sidewalk.
 - Provide a minimum 8" distance between the first and fourth post on four post signs.
 - Install in accordance with manufacturers recommendation.
 - Use a minimum 1/2" diameter x 4" grade 8 concrete fastener for surface mount breakaway base.



3" ANCHOR UNIT



SURFACE MOUNT ANCHOR BASE

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
8-6-09	
REVISIONS	
DATE	CHANGE
8-30-18	Updated notes to active voice & corrected max height of base.
8-29-19	New Design Engineer PE Stamp.

This document was originally issued and sealed by
 Kirk J Hoff,
 Registration Number
 PE- 4683
 on 8/29/19 and the original document is stored at the North Dakota Department of Transportation