



12396 WORLD TRADE DRIVE, SUITE 312
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PROJECT: DRAGON WHEEL, 16404 OLD HWY. 99, SE. TENINO, WA
PROJECT #: 57018
CLIENT: LED SIGN CITY

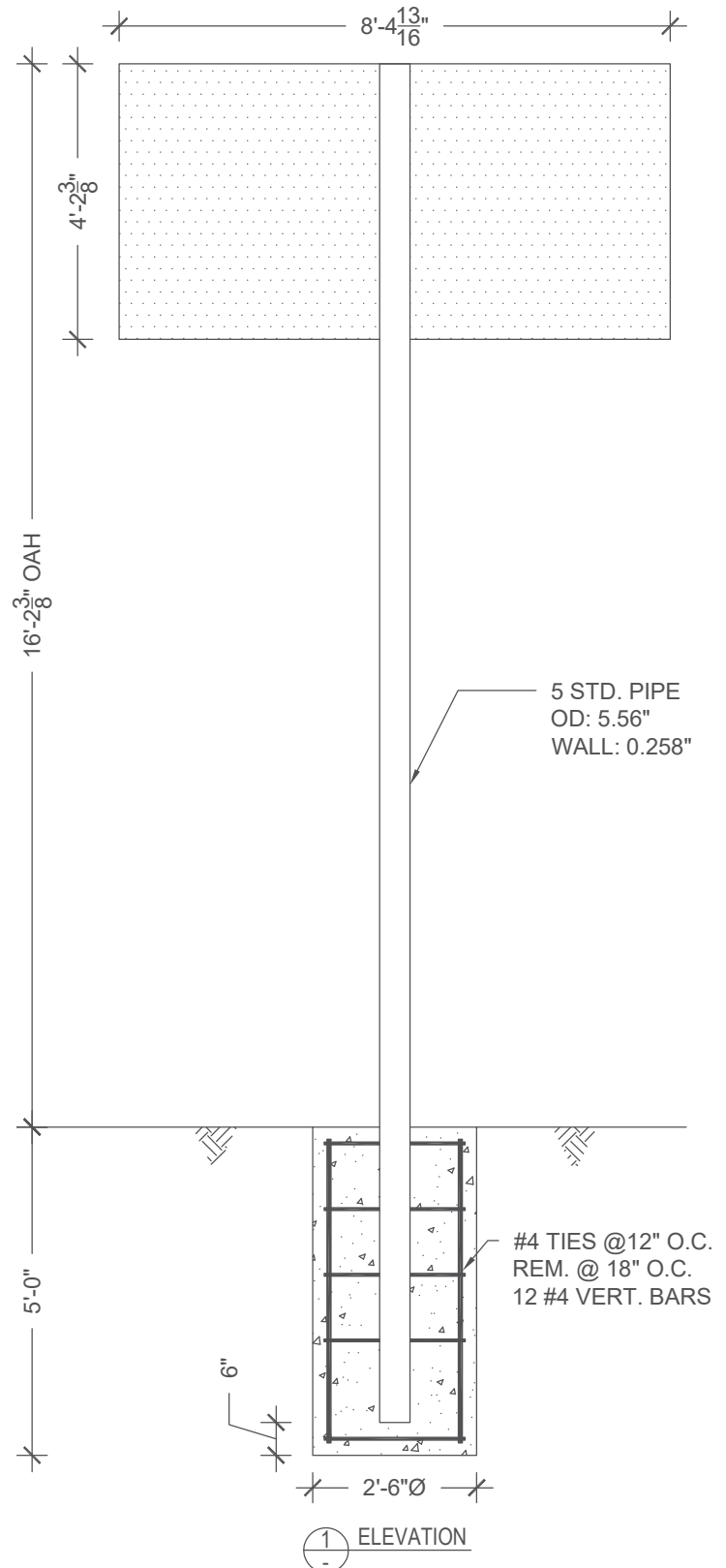
DATE: 05/27/2026
ENGINEER: IH
LAST REVISED:



05-28-2026

GENERAL NOTES

1. DESIGN CODE: IBC 2021, WASHINGTON SBCC 2021
2. DESIGN LOADS: ASCE 7-16
3. WIND VELOCITY 100 MPH EXPOSURE C
4. CONCRETE 2500 PSI MINIMUM
5. PIPE STEEL ASTM A53 GR. B, $F_y = 35$ KSI MIN.
6. STEEL REINFORCEMENT IN CONCRETE ASTM A615 GR 60
7. PROVIDE MIN. 3" CLEAR COVER ON ALL STEEL EMBEDDED IN CONCRETE WHEN CAST AGAINST SOIL
8. LATERAL SOIL BEARING PER IBC CLASS 4 (150 PSF/FT)
9. PROVIDE PROTECTION AGAINST DISSIMILAR METALS
10. ALL DIMENSIONS TO BE VERIFIED PRIOR TO FABRICATION





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V5.8

units; pounds, feet unless noted otherwise

Applied Wind Loads; from ASCE 7-16 (LRFD):

$$F = q_z * G * C_f * A_f \quad \text{with } q_z = 0.00256 K_z K_{zt} K_d V^2 \quad (29.3.2 \text{ \& } 29.4)$$

$C_f = 1.800$ (Fig. 29.3-1) 1.00 0 max. height = 16.20
 $K_{zt} = 1.0$ (26.8.2) (=1.0 unless unusual landscape)
 $K_z =$ from table 28.3-1 Exposure = c
 $K_d = 0.85$ for signs (table 26.6-1)
 $V = 100$ mph
 $G = 0.85$ (26.9) weight = 0.71 kips
 $s/h = 0.26$ $M_{DL} = 0.00$ k-ft
 $B/s = 2.00$

Pole Loads	structure component	height at section c.g.	K_z	q_z	pressure $q_z * G * C_f$	A_f	shear	Wind Moment M_w
	1	6.00	0.850	18.5	28.30	5.56	157	944
	2	13.50	0.850	18.5	28.30	25.20	713	9628
	3	15.60	0.856	18.6	28.50	10.06	287	4474
sums:						40.83	1157	15.05 (M_w) k-ft arm = 13.0
			$P_u = 0.85$ kip					
			$M_u = \sqrt{(1.2M_{DL}^2 + 1.0M_w^2)} = 15.05$ k-ft	$M = 15.05$ k-ft	$M = \sqrt{(M_{DL}^2 + M_w^2)}$			

Pole Design**section; pipe**

$M_u \leq \phi M_n$ with $M_n = f_y Z$		$f_y = 35$ ksi	$\phi = 0.9$					
H	M_u (k-ft)	Z req'd. (in)	Size(in)	t (in)	Z	USE		
at grade	15.05	5.73	5	0.258	6.8	5 Std. Pipe, $\phi M_n = 17.9$ k-ft		

Footing Design**footprint: round**

$\omega = 1.33$ IBC 1605.3.2 IBC Table 1806.2, sections 1806.3.4, 1807.3.2 $S = (1.33 \times 2 \times 150 \text{ psf/ft})$
 $P = 0.93$ kip $S1 = S \times d / 3$ $A = 2.34 \times P / (S1 \times b)$ $S = 400$
 $S1 = 666$ $d = 0.5 \times A (1 + (1 + 4.36 \times h/A)^{.5})$ IBC 1807.3.2.1
 $A = 1.30$

footing: 2' - 6" dia.

5' - 0" deep



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Check Pipe 5SCH40 for torsion and combined forces (LRFD): (AISC 14 H3)

Wind Load = WL = 1.157 k (See Page #2)

arm = 20.16 in (0.2*(8'-4 13/16"))

Tr = 23.328 k-in (WL*arm)

Tr = 1.944 k-ft

Fcr = 119.32 ksi (eq'n. H3-2a)

or

Fcr = 157.02 ksi (eq'n. H3-2b)

but not greater than:

0.6 Fy = 21 ksi

Fy = 35 ksi

D = 5.56 in

t = 0.241 in

E = 29000 ksi

L = 194.375 in

C = 10.71 in³

φ = 0.9

φTn = φ Fcr C = 202 k-in **OK**

Mu/φMn + (Tr/Tc)² = 0.85 < 1 **OK** (eq'n. H3-6)

(See Page#2 for Mu)

(See AISC Manual for φMn)