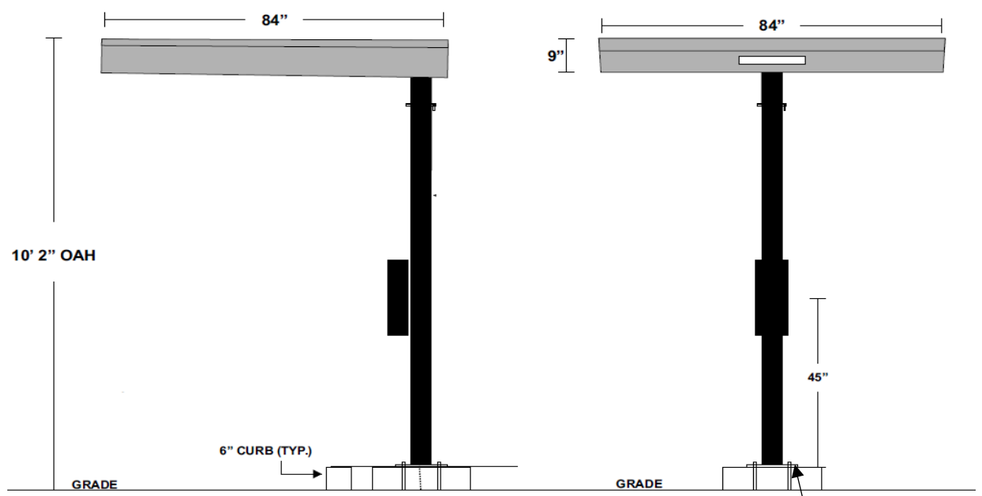
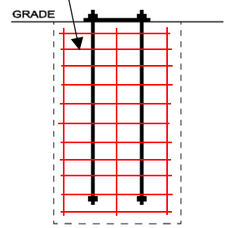
6" x 6" x 0.188" wall, A500 46ksi HSS Steel Column, S=7.42 m17.066

Sign Support Column



(7) #5 VERTICAL REBAR SPACED EVENLY
#3 STIRRUPS AT 12" OC AND 6" OC IN TOP 40"



Drilled Shaft Foundation

or 2' dia x 3.8' deep

12 1/2" x 12 1/2" x 5/8" STEEL BASE PLATE WELD COLUMN TO TOP OF BASE PLATE WITH 3/16" FILLET WELD ALL AROUND
(4) 3/4" DIA. ANCHOR BOLTS WITH HEAVY HEX NUT AT BOTTOM
ANCHORS SPACED 10" OC EACH WAY
40" EMBEDMENT DEPTH INTO FOUNDATION

All foundations: Embed anchors in 2500psi concrete.

2012 NORTH CAROLINA BUILDING CODE

2009 IBC with NC Amendments, ASCE 7-05

120 **Wind Speed, Vult,** mph, from ASCE7-10, Figure 26.5

II **Risk Category;** II, Normal; III, Substantial Hazard; IV, Essential/Critical

C **Wind Exposure;** C, House size obstructions for 1200ft; D no obstructions

WIND LOAD CALC: ASCE 7-10, Sec. 29.4.1, Solid Freestanding Signs

Terrain **Kzt**=1, no hill, ridge, or escarpment >15' high; Directionality **Kd**=.85; Gust **G**=.85 rigid structure; Wind Velocity **Vasd**=sqrt(Vult^2*.6); **Kz**=2.01*(H/900)^(2/9.5)ExpC, (700&11.5)ExpD; **Qhasd**=.00256*Kz*Kzt*Kd*Vasd^2; **Pasd**=Qhasd*G*Cf; **Fseg**=Pasd*W*H

93 Wind Speed, Vasd, mph — 2.90 Force Coefficient, Cf

A	B	C	D	E	F	Sign Segment ID	OAH
10.2	**9.4**					Segment Top Above Grade, Top, ft	10.2
7.0	**0.5**					Segment Width, W, ft	1.0
0.8	**9.4**					Segment Height, H, ft	10.2
5.25	4.705					Segment Area, ft2	
0.85	0.85					Velocity Pressure Exposure Coeff; Kz	
16.0	16.0					Velocity Pressure, Qhasd, psf	
39.3	39.3					Wind Pressure, Pasd, psf	
0.2	0.2					Segment Force, Fseg, kips	

0.4 kip Total Shear at Grade, V = Sum (Fseg)

7.384056 **2.9** kip.ft Total Moment at Grade, = Sum (Fseg * (Top-H/2))

- Sign manufacturer/installer's design, detailing, fabrication, and erection shall conform to the following specifications: Building Code, ASTM specifications, ACI-318 for reinforced concrete, American Welding Society Code for Welding in Building Construction, AISC Specification for Design, Fabrication, and Erection of Structural Steel for Buildings.
- Materials of construction: (Unless noted otherwise)
  - Structural steel (angles, shapes, plates, gussets): ASTM A-36, Fy = 36 ksi.
  - HSS round steel tubing: A-500, Grade B, Fy=42ksi; Rectangular: 46ksi.
  - Structural aluminum tubing: 6053, 6061-T6, or equivalent, Fy = 18 ksi at weld.
  - Structural pipe: A-53, Grade B, Type E or S, Fy = 35 ksi.
  - Anchor bolts: ASTM F1554 Grade 36 with heavy hex at bottom, not "L or J" bolts.
  - Connection bolts: A-325, snug tight.
  - Rebar: ASTM 615, #6 or larger - Grade 60, #5 or smaller - Grade 40, 3" cover.
  - Concrete: 2500 psi, 28 days.
  - Provide coatings to prevent any possibility of corrosion.
- Welding design and fabrication according to AWS D1.1.
  - AWS certification required for all structural welders.
  - E70XX electrodes for SMAW processes. F7X-EXXX electrodes for SAW processes.
- Embedded column acts as vertical reinforcement for drilled and cube foundations.
- Soil must be verified by sign installer. This design assumes presumptive soil bearing capacity (asd) from 6thEd FBC, Table1806.2 (or IBC). Vertical = 1500 psf for Class 5 (clay/silt CL,ML,MH,CH), Lateral = 2*150 psf/ft for Class 4 (sand, silty sand, clayey sand, SW,SP,SM,SC,GM,GC), and Lateral Sliding Coeff = .25 for Class 4 soil. Lateral brg is doubled for sign poles per 1806.3.4. If there is a question about soil bearing do a soil test.

Cube L=W=D — **Drilled Shaft Foundation**

6th Ed FBC,1807.3.2.1, No lateral constraint at grade

2.0	Diameter, b, ft	(or length and width of cube)	
3.8	Depth, D, ft	D= .5*A{1+[1+(4.36*Hcent/A)]^.5}	
1.2	A	A = 2.34*F/(S1*b)	
378	S1	S1 = 2*Ssand*D/3	

Spread Foundation

	Length, L, ft	
	Width, W, ft	
	Depth, D, ft	
	Soil Bearing at Bottom of Fdn, Qbot, psf, Qbot = 1.3*(Q+100pcf*(D-1))	
	Total Weight, Wt, kips, Wt = L * W * D * .15 kips/ft3	
	Toe Length, Toe, ft, Toe = Wt / (W * Qbot)	
	Bearing Eccentricity, e, ft, e = L / 2 - Toe / 3	
	Overturning Capacity Calc, OT, kip.ft, OT = Wt / e / 1.5safety	2.9

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NCPE26032

2/22/2019

This seal for structural engineering (Foundation & Support Column ONLY)

SCOPE OF WORK: Design sign support column and foundation to meet structural requirements of building code based on stated (not verified) site factors and size & shape based on sign installer's drawing, attached.

By using this engineering the owner, manufacturer, and installer accept responsibility to: Design, build, and install sign cabinet, face, attachment, electrical, etc according to sign code, building code, and UL. Verify site conditions match stated wind speed, risk, exposure, topo, and soil factors.

Sign Clinic

JOB#190188

PYLON SIGN
1 Column, Centered, Embedded in Foundation

Biscuitville
1608 NC-24
Cameron, NC 28326

Valid for one sign at this location.