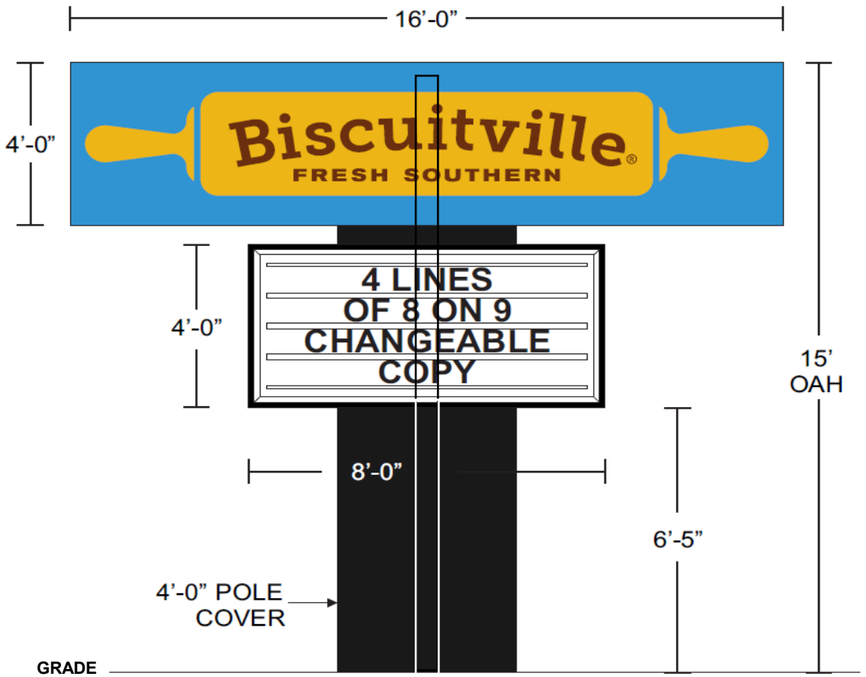
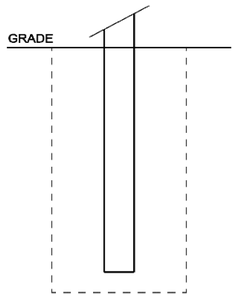
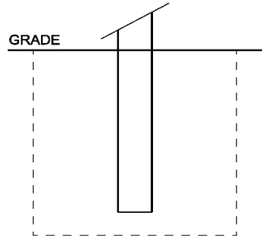


8" x 8" x 0.25" wall, A500 46ksi HSS Steel Column, S=17.7 m40.71
8" Sch80 8.625" Dia, 0.5" wall, A53 Steel Pipe Column, S=24 m42
10" Sch40 10.75" Dia, 0.365" wall, A53 Steel Pipe Column, S=29 m50.75

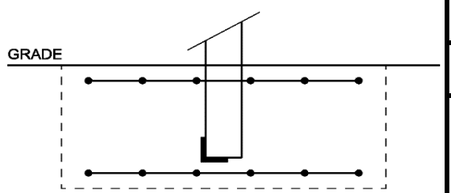
Sign Support Column



Drilled Shaft Foundation
or 3' dia x 7.7' deep
or 2.5' dia x 8.2' deep
or 2' dia x 9' deep



Cube Foundation
5.4' cube, L=W=D



Spread Foundation (Long is perpendicular to face)
9'long x 4.5'wide x 2.3'deep
#5, 12"OC each way, 2 mats, 3" from top and bot, gentle bend around column
Weld 3' long 4x4x3/8 angle to bottom and side of column with 3/8 fillet weld all around

All foundations: Embed column to 6" from bottom in 2500psi concrete.

2018 NORTH CAROLINA BUILDING CODE

2015 IBC with NC Amendments, ASCE 7-10

129 **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

100 Wind Speed, Vasd, mph — 1.60 Force Coefficient, Cf

A	B	C	D	E	F	Sign Segment ID	OAH
15.0	**11.0**	**10.4**	**6.4**			Segment Top Above Grade, Top, ft	15.0
16.0	**4.0**	**8.0**	**4.0**			Segment Width, W, ft	8.3
4.0	**0.6**	**4.0**	**6.4**			Segment Height, H, ft	15.0
64	2.32	32	25.64			Segment Area, ft2	
0.85	0.85	0.85	0.85			Velocity Pressure Exposure Coeff; Kz	
18.4	18.4	18.4	18.4			Velocity Pressure, Qhasd, psf	
25.1	25.1	25.1	25.1			Wind Pressure, Pasd, psf	
1.6	0.1	0.8	**0.6**			Segment Force, Fseg, kips	
		3.1 kip				Total Shear at Grade, V = Sum (Fseg)	
9.746236		**30.3** 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					
5.4	**3.0**	**2.5**	**2.0**	Diameter, b, ft	(or length and width of cube)	7.6
5.4	7.6	8.2	8.9	Depth, D, ft	D= .5*A{1+[1+(4.36*Hcent/A)]^.5}	
1.8	3.2	3.6	4.1	A	A = 2.34*F/(S1*b)	
535	762	817	892	S1	S1 = 2*Ssand*D/3	

Spread Foundation

9.0	Length, L, ft	
4.5	Width, W, ft	
2.3	Depth, D, ft	
2031	Soil Bearing at Bottom of Fdn, Qbot, psf, Qbot = 1.3*(Q+100pcf*(D-1))	
13.7	Total Weight, Wt, kips, Wt = L * W * D * .15 kips/ft3	
3.0	Toe Length, Toe, ft, Toe = Wt / (W * Qbot)	
3.5	Bearing Eccentricity, e, ft, e = L / 2 - Toe / 3	
31.9	Overturning Capacity Calc, OT, kip.ft, OT = Wt / e / 1.5safety	30.3

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386-754-5419

NCPE26032

1/30/2019

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#190116

PYLON SIGN
1 Column, Centered, Embedded in Foundation

Biscuitville
1608 NC-24 & NC-87
Cameron, NC

Valid for one sign at this location.