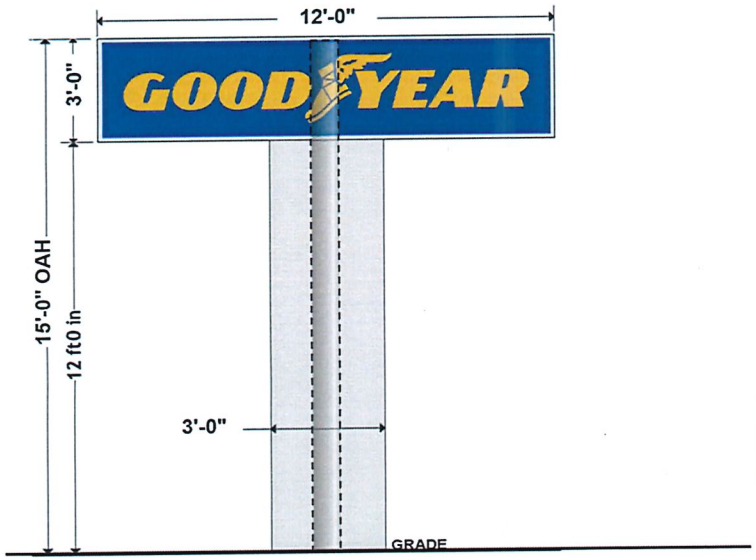
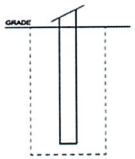
8" Sch 40, 8.625" Dia, 0.322" wall, A53 35 ksi Steel Column, S=15.46 M=27.1
7" Dia, 0.375" wall, A500 42 ksi HSS Steel Column, S=11.6 M=24.4
6.625" Dia, 0.375" wall, A500 42 ksi HSS Steel Column, S=10.3 M=21.6

NOT TO SCALE | Acceptable Sign Support Columns

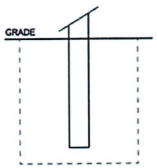
direct_embed type foundation

Grade offset (ft)

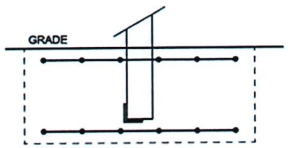




Drilled Shaft Foundation
3' dia x 6.1' deep
or 2.5' dia x 6.5' deep
or 2' dia x 7.1' deep



Cube Foundation
4.6' cube, L=W=D



Spread Foundation (Long is perpendicular to face)
6.5' long x 6.5' wide x 2' deep

#5, 12" OC each way, 2 mats, 3" from top and bottom, gentle bend around column

Weld 3' long 2" x 2" x 3/8" angle to bottom and side of column with 3/8" fillet weld all around

UNO, in 2500 psi or higher concrete, embed support columns, anchor bolts, and/or vertical rebar to 6" from bottom in drilled shaft and cube foundations, and to 3" from bottom in spread foundations.

North_Carolina, 2018 NORTH CAROLINA BUILDING CODE

2015 IBC with NC Amendments, Appendix H, ASCE 7-10

120 **Wind Speed, Vult,** mph, from ASCE 7-10, Figure 26.5
II **Risk Category;** I, Low; II, Normal; III, Substantial Hazard; IV, Essential/Critical
C **Wind Exposure;** C, House size obstructions for > 600 ft; D, no obstructions > 5000 ft

Sand, silty sand, clayey sand, silty gravel, clayey gravel ← **Presumptive soil type**

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

Terrain K_{zt}=1, no hill, ridge, or escarpment >15' high; Directionality K_d=0.85; Gust G=0.85 rigid structure;
K_z=2.01*(H/900)^(2/9.5)ExpC, (700&11.5)ExpD; $q_{h,ult}$=0.00256*K_z*K_{zt}*K_d*V^2_{ult}; load = 0.6W+D, D ≤ 15 psf

A	B	C	D	E	F	Sign Segment ID	OAH&D
15.0	12.0					Segment Top Above Grade, Top, ft	15.0
12.0	3.0					Segment Width, W, ft	4.6
3.0	12.0					Segment Height, H, ft	15.0
36.00	36.00					Segment Area, ft², adjusted for grade offset	
0.849	0.849					Velocity Pressure Exposure Coeff; K_z	
26.6	26.6					Velocity Pressure, $q_{h,ult}$, psf (per segment)	
1.80	1.62					Force Coefficient, C_f (per segment)	1.67
40.7	36.6					Wind Pressure, P_{ult}, psf = $q_{h,ult}$*G*C_f	
24.4	21.9					Wind Pressure, P_{asd}, psf = P_{ult} * 0.6	
0.9	0.8					Wind Force, F_{seg}, kips = P_{asd}*$Area_{seg}$	
11.9	4.7					Wind Moment M_{seg} kip*ft = F_{seg}*(Top_{seg}-H_{seg}/2)	

"grade" = 0 ft — **1.67** kip — Total Shear at Grade, V = Sum (F_{seg})
9.95122 — **16.6** kip.ft — Total Moment at Grade, M = Sum(M_{seg})

- 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 steel tubing: A-500, Grade B, Round Fy=42ksi; Rectangular Fy=46ksi.
  - Structural aluminum tubing: 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 (steel) or AWS D1.2 (aluminum).
  - AWS certification required for all structural welders.
  - Use D1.1 (steel) or D1.2 (aluminum) certified weld with same bending strength as column UNO.
- Embedded column acts as vertical reinforcement for drilled and cube foundations.
- Soil bearing capacity is Section 1806.2 Presumptive Load Bearing Value. Lateral bearing is doubled for sign poles per 1806.3.4. Soil choice types per Table 1806.2. **Soil type must be applicable for entire foundation. Flat level grade and unsaturated soil matching presumptive soil type must be verified by sign installer.**

Cube L=W=D	Drilled Shaft Foundation, laterally unconstrained at grade — Code Section 1807.3.2				
4.5	3.0	2.5	2.0	Diameter, b, ft	(or length and width of cube)
4.5	6.0	6.5	7.0	Depth, D, ft	D= 0.5*A{1+[1+(4.36*Hcent/A)]^.5}
1.3	2.2	2.4	2.8	A term	A = 2.34*F/(S1*b)
454	603	646	704	S1 or S3	S1 = 2*Ssoil*D/3
			150 psf/ft	Ssoil for Sand, silty sand, clayey sand, silty gravel, clayey gravel	

Spread Foundation Q psf for Sand, silty sand, clayey sand, silty gravel, clayey gravel = 2000

- 6.5 Length, L, ft
- 6.5 Width, W, ft
- 2.0 Depth, D, ft
- 2665 Soil Bearing at Bottom of Fdn, Qbot, psf, Qbot = 1.3*(Q+100pcf*(D-1))
- 12.7 Total Weight, Wt, kips, Wt = L * W * D * .15 kips/ft3
- 1.5 Toe Length, Toe, ft, Toe = Wt / (W * Qbot)
- 2.8 Bearing Eccentricity, e, ft, e = L / 2 - Toe / 3
- 23.3 Overturning Capacity Calc, OT, kip.ft, OT = Wt / e / 1.5 safety — 16.6

Mark Disosway, Professional Engineer, North_Carolina License 26032

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NORTH CAROLINA PROFESSIONAL SEAL 26032 ENGINEER MARK D. DISOSWAY III

2025.05.12
08:11:20
-04'00'

This seal for structural engineering (Support Column & Foundation 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 sign owner, manufacturer, and installer accept responsibility to: Design, build, and install sign cabinet, face, attachment, electrical, etc according to building, appendix h, sign, fire, UL, zoning codes. Verify site conditions match stated wind speed, risk, exposure, topo, and soil factors or request engineering revision.

signengineering@gmail.com
Mark Disosway, PE, 163 SW Midtown Place, Ste 103, Lake City, Florida 32025 386-754-5419

JOB # 250468

PYLON SIGN: 1 Column, Centered & Embedded in Foundation

Advance Signs & Service, Inc.

Blacks Tire
4064 Hodges Chapel Rd.,
Dunn, NC 28334

Job250468,Sign1,Sht1of1,Rev0,Day250509