

BLACK'S TIRE & AUTO

5' x 20' ID Sign

SIGN & AWNING SYSTEMS, INC.

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HONEYCUTT ENGINEERING

16127 Spiveys Corner Hwy
Dunn, NC 28334
910-237-0734

Job: Black's Tire -- Harnett County
Sheet: 1 of 2
Calculated By: Jason M. Honeycutt
Date: 11/25/18

Sign Foundation Design For:

Location =	Harnett County	Height of Sign Face, ft =	5
Design Wind Velocity (V), mph =	100	Width of Sign Face, ft =	20
Height of Structure (Z), ft =	15	Height of Sign Face(2), ft =	0
Kz =	0.37	Width of Sign Face(2), ft =	0
Exposure =	B	Length of Pole, ft =	0
Structural Classification =	I	Width of Pole, ft =	0
Importance Factor (I) =	1	Area of Sign Face, ft ² =	100
Gust Response Factor (Gh & Gz) =	1.65	Area of Sign Face(2), ft ² =	0
Geometry Force Coefficient (Cf) =		Area of Pole, ft ² =	0.0
Round = 0.75, Square/Rect = 1.2	1.2	Moment Arm of Sign Face, ft =	12.5
Max Allow. Stress, ksi =	23	Moment Arm of Sign Face(2), ft =	0
Number of Poles =	1	Moment Arm of Pole, ft =	0

Determine Velocity Pressure:

$Qz = 0.00256 * Kz * (1 * V)^2$ $Qz = 9.5$

Determine Wind Force:

$F = Qz * (Gh + Gz) * Cf * A$

Sign:	Fs =	1.88
Flashing:	Ff =	0.00
Pole:	Fp =	0.00
	Ftotal (kips) =	1.88

Moment Calculations:

$M = F * \text{Moment Arm}$

Sign:	Ms =	23.44
Flashing:	Mf =	0.00
Pole:	Mp =	0.00
	Mtotal (kips-ft)	23.44

Section Requirement Calculation:

$Sreq = Mtotal / \text{max allowable stress}$ $Sreq (in^3) = 12.231$

USE: 8" x 8" x 1/4" Steel Tubing

Embedment Depth Required:

Force on Pole (P), lbs =	1875
Height Above Ground the Load Is Applied (H), ft =	12.50
Diameter of Foundation or Pole (B), ft =	2.5
Passive Soil Allowable Pressure (p), psi =	
Ranges from 100 - 400	400
Assumed depth (d), ft =	6.4
Soil pressure, (psi)	2000
Steel Specification:	A500 Grade B, 50 ksi
Concrete pressure, (psi)	3000

$Si = p * d / 3$ $Si = 853.33$

$A = 2.34 * P / (Si * B)$ $A = 2.06$

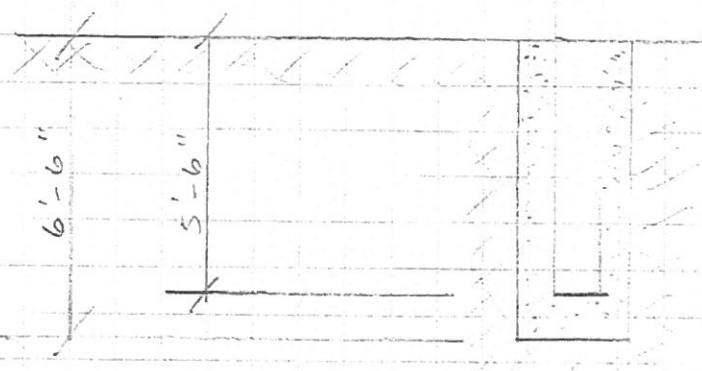
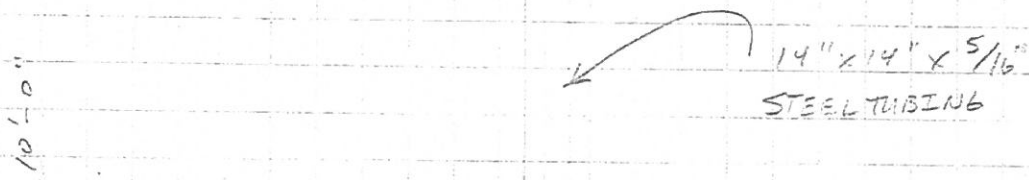
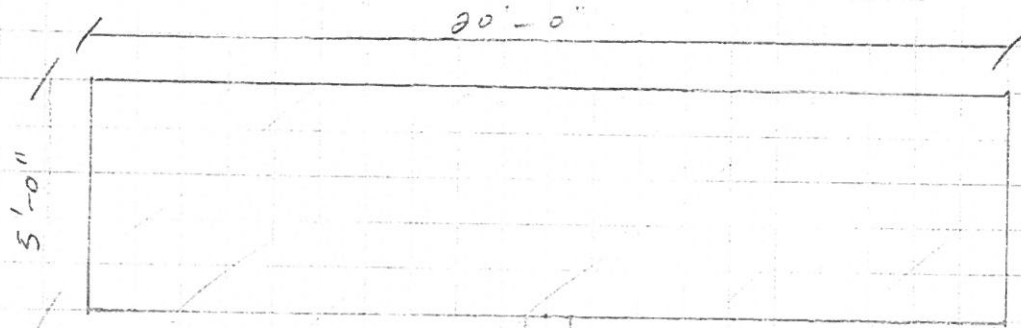
$d = (A / 2) * (1 + (1 + (4.38 * H / A))^0.5)$ $d = 6.42$



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φ 2'-6" CONCRETE FOOTING

POLE + FOOTING DETAILS
SCALE: 1/4" → 1'-0"
SIGN BY DETAILS

