

**HONEYCUTT ENGINEERING**

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

Job: Fellowship Baptist Church -- Harnett County

Sheet: 1 of 2

Calculated By: Jason M. Honeycutt

Date: 3/27/20

**Sign Foundation Design For:**

Location =	Harnett County	Height of Sign Face, ft =	4
Design Wind Velocity (V), mph =	120	Width of Sign Face, ft =	8
Height of Structure (Z), ft =	5	Height of Flashing Face, ft =	1
Kz =	0.37	Width of Flashing Face, ft =	7.5
Exposure =	B	Length of Pole, ft =	0
Structural Classification =	I	Width of Pole, ft =	0
Importance Factor (I) =	1	Area of Sign Face, ft <sup>2</sup> =	32
Gust Response Factor (Gh & Gz) =	1.65	Area of Flashing Face, ft <sup>2</sup> =	7.5
Geometry Force Coefficient (Cf) =		Area of Pole, ft <sup>2</sup> =	0
Round = 0.75, Square/Rect = 1.2	1.2	Moment Arm of Sign Face, ft =	3
Max Allow. Stress, ksi =	23	Moment Arm of Flashing Face, ft =	0.5
Number of Poles =	1	Moment Arm of Pole, ft =	0

**Determine Velocity Pressure:**

$$Q_z = 0.00256 * K_z * (I * V)^2 \quad Q_z = 13.6$$

**Determine Wind Force:**

$$F = Q_z * (G_h + G_z) * C_f * A$$

<b>Sign:</b>	<b>Fs =</b>	0.86
<b>Flashing:</b>	<b>Ff =</b>	0.20
<b>Pole:</b>	<b>Fp =</b>	0.00
	<b>Ftotal (kips) =</b>	1.07

**Moment Calculations:**

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

<b>Sign:</b>	<b>Ms =</b>	2.59
<b>Flashing:</b>	<b>Mf =</b>	0.10
<b>Pole:</b>	<b>Mp =</b>	0.00
	<b>Mtotal (kips-ft)</b>	2.69

**Section Requirement Calculation:**

$$S_{req} = M_{total} / \text{max allowable stress} \quad S_{req} (\text{in}^3) = 1.406$$

**Embedment Depth Required:**

USE: 4" x 4" x 3/16" Steel Tubing

Force on Pole (P), lbs =	1067
Height Above Ground the Load Is Applied (H), ft =	2.53
Diameter of Foundation or Pole (B), ft =	1.5
Passive Soil Allowable Pressure (p), psi =	
Ranges from 100 - 400	400
Assumed depth (d), ft =	4.5
Soil pressure, (psi)	2000
Steel Specification:	A500 Grade B, 50 ksi
Concrete pressure, (psi)	3000

$$S_i = p * d / 3 \quad S_i = 600.00$$

$$A = 2.34 * P / (S_i * B) \quad A = 2.77$$

$$d = (A / 2) * (1 + (1 + (4.36 * H / A)))^{0.5} \quad d = 4.48$$



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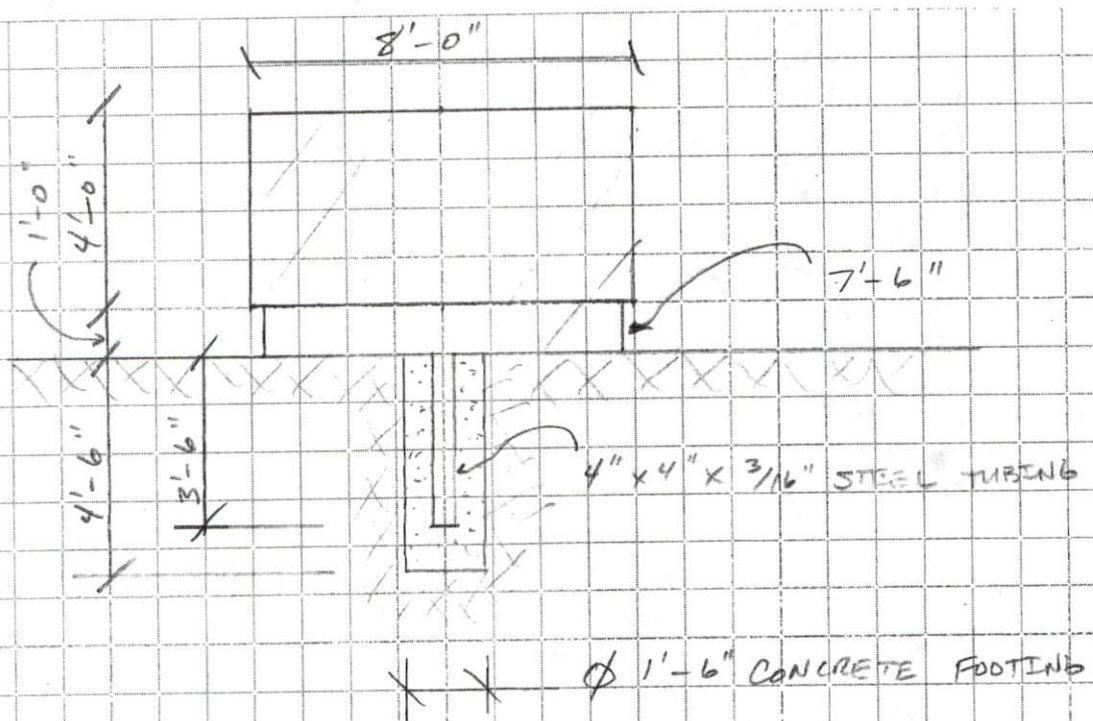
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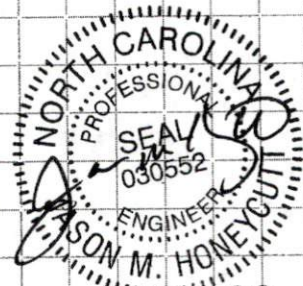
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POLE & FOOTING DETAILS  
SCALE: 1/4" → 1'-0"  
SIGN BY OTHERS



3-27-20