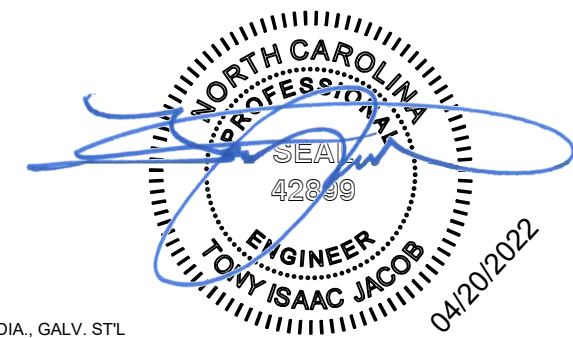


(P1) Pole Design		X-STRONG ST'L PIPE	
Sec. Mod. Req'd.	USE	A53 GR. B	
S = 3.07	4" DIA., t = 0.337"	S = 4.05	(OK)
Base Plate		ST'L. PLATE	
Thickness Req'd.	USE	A36	
t = 0.68	PL 11 1/2" x 11 1/2" x 1"	t = 1.00	(OK)
Anchor Design		GALV. ST'L ANCHOR BOLT	
Tension Req'd.	USE	F 1554 GR. 36	
T = 7172	1" DIA., x 24" LONG	T = 17070	
Shear Req'd.		V = 9110	
V = 413		Unity = (7172 / 17070) + (413 / 9110) = 0.47	< 1 (OK)
Torsion Beam Design		ST'L. SQ. HSS	
Sec. Mod. Req'd.	USE	A500 GR. B	
S = 5.93	HSS 6" x 6" x 3/8"	Fy = 46000 PSI	
Torsion Shear	Torsion = 10758 LB-FT	t = 0.35 IN	
τ = 5792		b = 6.00 IN	
Shear Stress		A = 7.58 IN ²	
V = 387.1		allow fv = 18400	
Unity = (5.93 / 13.20) + (6179 / 18400) = 0.78			< 1 (OK)
Match Plate		ST'L. PLATE	
Thickness Req'd.	USE	A36	
t = 0.27	PL 8" x 8" x 1/2"	t = 0.50	(OK)
Bolt Design		GALV. ST'L THRU-BOLT	
Tension Req'd.	USE	A307	
T = 815	1/2" DIA.,	T = 4410	
Shear Req'd.		V = 2350	
V = 413		Unity = (815 / 4410) + (413 / 2350) = 0.36	< 1 (OK)
(P2) Pole Design		X-STRONG ST'L PIPE	
Sec. Mod. Req'd.	USE	A53 GR. B	
S = 0.47	3 1/2" DIA., t = 0.318"	S = 2.97	(OK)

Sign Design Based On 2018 NCBC w/2015 Amendments	
Job #	JTS_62222
Project	Starbucks Coffee #59763 - Monument
Job Location	2778 NC-24 Cameron, NC
INPUT DATA	
Exposure category (B, C or D)	= C
Risk Category	= II
Ultimate Design Windspeed	V _{ULT} = 120 MPH
Topographic factor	K _{zt} = 1 Flat
Height of the sign	h = 15.00 FT
Average Vertical dimension (for wall, s = h)	s = 13.95 FT
Horizontal dimension	B = 4.17 FT
Dimension of return corner	L _r = 1.00 FT
ANALYSIS	
Velocity pressure	q _z = 0.00256 K _t K _z K _d V ² = 26.63 PSF
where:	q _h = velocity pressure at height h. (Eq. 29.3-1, page 249)
	K _h = velocity pressure exposure coefficient = 0.85
	evaluated at height above gRnd. level, h (Tab. 29.3-1, page 251)
	K _d = wind directionality factor. (Tab. 26.6-1, page 194) = 0.85
Wind Force Case A: resultant force through geometric center	
Max horizontal wind pressure = p = q _h G C _f	= 37 PSF
where:	G = gust effect factor. (Sec. 26.9, page 198) = 0.85
	C _f = net force coefficient. (Fig. 29.4-1, page 252) = 1.65
	A _s = B s = the gross area = 58.10 FT ²
	Estimated sign cabinet weight = 350 LBS.
DESIGN SUMMARY	
Allowable Stress Design Wind Factor =	0.60
Design Wind Pressure =	0.6 x p = 22.44 PSF
Design Windforce, F =	22.44 x A _s = 1.30 KIPS
Moment Arm =	8.25 FT
Design Moment =	F x Moment Arm = 10.76 KIP-FT
Footing Design (Nonconstrained)	
Diameter =	2.00 FT
Soil Pressure =	150.00 PSF/FT
S ₁ =	613.39 PSF
A =	2.49 FT
EMBED. =	6.13 FT
24" DIA. DEPTH = 6' - 2"	



NOTES:			
GENERAL: · SIGN DESIGN IS BASED ON ADEQUATE EXISTING SUPPORT ELEMENTS. · PROVIDE ISOLATION OF DISSIMILAR MATERIALS. · COAT ALUMINUM IN CONTACT WITH CONCRETE WITH ZINC RICH PAINT. · THERE IS NO PROTECTION ZONE AS DEFINED IN AISC 341-10. · PROVIDE FULLY WELDED END CAPS AT EXPOSED OPEN ENDS OF STEEL / ALUM. TUBES, MATCH THICKNESS LIKE FOR LIKE. · SLOPE TOP OF EXPOSED FOOTING AWAY FROM DIRECT BURIAL POSTS · ALL EXPOSED STEEL TO BE PRIMED & PAINTED (POWDER COAT AS AN OPTION) OR ALTERNATIVELY USE GALVANIZED STEEL. ANCHORS: · BRAND NAME APPROVED POST INSTALLED ANCHORS SPECIFIED ON PLANS MAY BE SUBSTITUTED BY APPROVED EQUAL.	STEEL: DESIGN AND FABRICATION ACCORDING TO 2018 NCBC W/2015 AMENDMENTS · PLATE, ANGLE, CHANNEL TEE: ASTM A36 · WIDE FLANGE: ASTM A992 · ROUND PIPE: ASTM A53 GRADE B OR EQUIVALENT. · HSS ROUND, SQUARE, AND RECTANGULAR TUBE: ASTM A500 GRADE B OR EQUIVALENT. · ALL ANCHORS BOLTS SHOULD BE: ASTM F1554 · ALL STEEL MACHINED BOLTS SHOULD BE: ASTM A307 OR ASTM A449 · ALL STAINLESS STEEL MACHINED BOLTS SHOULD BE: ASTM A276 · ALL BOLTS TO BE ZINC COATED: ASTM B633 · DEFORMED REINFORCING REBAR: ASTM A615 GRADE 60. ALUMINUM: DESIGN AND FABRICATION ACCORDING TO 2015 ALUM. DESIGN MANUAL PLATES, ANGLES, CHANNELS, TEE, AND SQUARE TUBING: ALUMINUM · ALLOY 6061 - T6 WITH 0.098 LBS PER CUBIC INCH.	WELDING: STEEL DESIGN AND FABRICATION ACCORDING TO AWS D1.1 / D1.3 · AWS CERTIFICATION REQUIRED FOR ALL STRUCTURAL WELDERS. · E70 XX ELECTRODE FOR SMAW PROCESS. · E70S XX ELECTRODE FOR GMAW PROCESS. · ER7 XX ELECTRODE FOR GTAW PROCESS. · E70T XX ELECTRODE FOR FCAW PROCESS. ALL WELDS SHALL BE MADE WITH A FILLER METAL THAT CAN PRODUCE WELDS THAT HAVE A MINIMUM CHARPY V-NOTCH TOUGHNESS OF 20FT-LB AT ZERO 0° AS DETERMINED BY THE APPROPRIATE AWS A5 CLASSIFICATION TEST METHOD OR MFG'S. CERTIFICATION. ALUMINUM DESIGN AND FABRICATION ACCORDING TO AWS D1.2. ALL WELDING IN ACCORDANCE WITH THE LATEST EDITION OF THE AWS A.5.10. FILLER ALLOYS PER TABLES M.9.1 & M.9.2 OF 2015 ALUMINUM DESIGN MANUAL.	CONCRETE: DESIGN AND CONSTRUCTION ACCORDING TO ACI 318-14 · COMPRESSIVE STRENGTH AT 28 DAYS, f'c= 2500 PSI MINIMUM. · CEMENT TYPE II OR IV. W/C RATIO 0.45 BY WEIGHT FOR PIER AND CAISSON · FOOTINGS CONCRETE MUST BE POURED AGAINST UNDISTURBED EARTH. · MAINTAIN A MINIMUM 3" CONCRETE COVER OVER ALL EMBEDDED STEEL. SOIL: LATERAL SOIL BEARING PER IBC CLASS 4 TABLE 1806.2 (150 PSF/FT). MODIFIED PER SECTION 1806.3.4.