

Date:	4/19/23	City, State:	Lake City, FL	SHEET:	1 OF 3
Client:	Texas Republic Signs, LLC	Overall Height:	130'-0"	Sean M. McFarland, P.E.	
Sign:	One 9 #1401	Wind Speed	120 mph	McFarland Engineering	

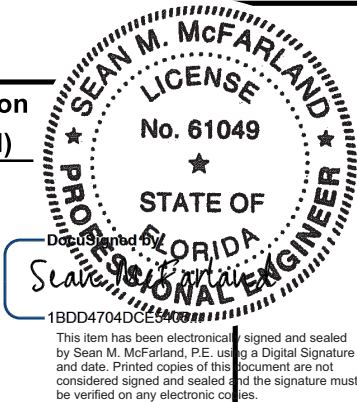
Sign Description	14170 US 441	Table of Contents
# Columns: 1		Content: Page
ME Job: 60918 A1		Design Loads. 1
	ULTIMATE LOADS	Support Design. 1-3
Height: Varies	42 KSI STEEL PIPE	
Width: Varies		

Structural Variables and Code Loading Specifications

Cabinet Type:	Miscellaneous	Code:	2020 FBC 7th Ed
Structural Section:	Steel Pipe - 42000psi	Wind Speed:	120
Number of Zones:	8	Wind Exposure:	C
Wind Loads Per ASCE 7-16			

Sign Sections:

Zone	Cabinet Wt. Per Sq. Ft.	Weight	Transition (Y or N)
1	20	43.4 #/FT	y
2	0	157.5 #/FT	
3	20	157.5 #/FT	
4	35	157.5 #/FT	y
5	0	221.6 #/FT	y
6	0	317.7 #/FT	y
7	0	436.8 #/FT	y
8	0	392.7 #/FT	y



Sean M.
McFarland
2023.04.19
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2023.001.20093
State License: Florida - 61049

Geometry:

Zone	Top	* Approx. Width		Approx.		
	Elevation	Height	Width	Pressure	Force	Weight
1	130.00 FT	9.17 FT	24.00 FT *	36.19 PSF	7.96 K	4,799 #
2	120.83 FT	2.00 FT	2.50 FT *	15.56 PSF	0.08 K	315 #
3	118.83 FT	11.17 FT	25.08 FT *	34.32 PSF	9.61 K	7,362 #
4	107.66 FT	11.50 FT	42.67 FT *	32.51 PSF	15.95 K	18,986 #
5	96.16 FT	23.41 FT	3.50 FT *	14.85 PSF	1.22 K	5,188 #
6	72.75 FT	31.75 FT	5.00 FT *	14.01 PSF	2.22 K	10,088 #
7	41.00 FT	31.00 FT	5.50 FT *	12.39 PSF	2.11 K	13,540 #
8	10.00 FT	10.00 FT	6.00 FT *	10.08 PSF	0.60 K	3,927 #
Total Wind Force =					39.76 K	64,206 #



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Client:	Texas Republic Signs, LLC	Overall Height:	130'-0"	Sean M. McFarland, P.E.	
Sign:	One 9 #1401	Wind Speed	120 mph	McFarland Engineering	

14170 US 441

ME Job: 60918 A1

Moments at Transitions:

Zone	Lateral Force	8 Mom. Arm	7 Mom. Arm	6 Mom. Arm	5 Mom. Arm	4 Mom. Arm	1 Mom. Arm
1	7.96 K	125.42 FT	115.42 FT	84.42 FT	52.67 FT	29.26 FT	4.59 FT
2	0.08 K	119.83 FT	109.83 FT	78.83 FT	47.08 FT	23.67 FT	
3	9.61 K	113.25 FT	103.25 FT	72.25 FT	40.50 FT	17.09 FT	
4	15.95 K	101.91 FT	91.91 FT	60.91 FT	29.16 FT	5.75 FT	
5	1.22 K	84.46 FT	74.46 FT	43.46 FT	11.71 FT		
6	2.22 K	56.88 FT	46.88 FT	15.88 FT			
7	2.11 K	25.50 FT	15.50 FT				
8	0.60 K	5.00 FT					
		4,008.53 K-FT	3,613.91 K-FT	2,433 K-FT	1,292 K-FT	491 K-FT	37 K-FT

Section Properties:	1735.29 IN^3	1564.46 IN^3	1053.12 IN^3	559.21 IN^3	212.47 IN^3	15.81 IN^3
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Structural Sections to be used:

Zone	Pipe (42 KSI)						
	Option	Dim.	Wall t.	Weight	Sxx	d/t	Sxx Req'd
8	Pipe (42 KSI)	72.00 IN	0.500 IN	392.7 #/FT	1,993.70 IN^3	144.00	1,735.29 IN^3
7	Pipe (42 KSI)	66.00 IN	0.625 IN	436.8 #/FT	1,954.08 IN^3	105.60	1,564.46 IN^3
6	Pipe (42 KSI)	60.00 IN	0.500 IN	317.7 #/FT	1,296.56 IN^3	120.00	1,053.12 IN^3
5	Pipe (42 KSI)	42.00 IN	0.500 IN	221.6 #/FT	628.43 IN^3	84.00	559.21 IN^3
4	Pipe (42 KSI)	30.00 IN	0.500 IN	157.5 #/FT	316.06 IN^3	60.00	212.47 IN^3
1	Pipe (42 KSI)	8.63 IN	0.500 IN	43.4 #/FT	23.04 IN^3	17.25	15.81 IN^3

Structure Required

# Req'd	Size	Wall Thickness
1	72.00 IN	0.500 IN
1	66.00 IN	0.625 IN
1	60.00 IN	0.500 IN
1	42.00 IN	0.500 IN
1	30.00 IN	0.500 IN
1	8.63 IN	0.500 IN

Date: 4/19/23	City, State: Lake City, FL	SHEET: 3 OF 3
Client: Texas Republic Signs, LLC	Overall Height: 130'-0"	Sean M. McFarland, P.E.
Sign: One 9 #1401	Wind Speed 120 mph	McFarland Engineering

14170 US 441

ME Job: 60918 A1

One Pier Footing

Pier Footing Design:

Select the footing and soil type:

$$d = A / 2 * (1 + (1 + (4.36 * h) / A)^{1/2})$$

$$\text{where } A = (2.34 * P) / (S1 * b)$$

Footing: Round ▼

Vert. Soil Bearing (psf): 1500 ▼

Lat. Soil Bearing (psf): 150 ▼

Mmax = 4,008,526 #-FT

Pmax (Lateral) = 39,764 #

LSBP = 150 PCF

S1 = 1,200 PCF X d

d = 9.000 FT

A = 8.62 FT^2

h = 100.807 FT

d = 35.376 FT

USE: 9.00 FT. RND. X 35.50 FT DEEP PIER w/ 12" SLAB w/ #5's @ 12" O.C.

Soil Bearing Check:

8" ABOVE GRADE.

DLmax = 64,206 LBS

TWO MATS (TOP AND BOTTOM)

Area of Footing = 63.62 FT^2

Actual SBP = 1,009 PSF

Allowable SBP = 1,725 PSF (Includes code allowed 20% increase for every foot of footing below 12" into natural grade.)

1,009 PSF < 1,725 PSF THEREFORE OK

General Notes

- Contractor shall verify all dimensions and conditions on job site
- Structural steel pipe shall conform to ASTM A53 grade B type E or S, Fy=35 ksi min.
- Structural steel tube shall conform to ASTM A500 grade B, Fy=46 ksi min.
- Structural steel shapes and plates shall conform to ASTM A36.
- Welding shall conform to AISC specs or local codes and performed by certified welder using arc process E70XX electrodes.
- Isolate Aluminum from Steel
- All bolt holes to be drilled or punched.
- 2500 psi (min) 28-day Concrete Compressive Strength
- All electrical work to conform to the requirements of UL48 and section 600 of NEC.
- UL and Data labels required
- Sign to be a minimum of 6-ft horizontal & 12-ft vertical from high voltage wires.
- If there is no stub pipe to be used in the top cabinet, the supporting member immediately below the stub pipe shown can be extended to the top of the uppermost cabinet.
- All Pipe sizes shown are minimum sizes. Pipe with a larger diameter and/or greater Sxx may be substituted
- All structural lengths required are approximations only. Actual length may vary slightly depending on sign cabinet conditions.

ME #: 60918

SIGN TYPE A1 QUANTITY: 1

SCOPE OF WORK: HI-RISE
PROVIDE AND INSTALL NEW HI-RISE
WITH NEW STEEL STRUCTURE.

SPECIFICATIONS: ONE 9 SIGN
• CABINET FILLER AND 5" RETAINERS
PAINTED, P1
• WHITE FLEX FACES WITH APPLIED
V1 VINYL

SPECIFICATIONS: LED PRICER
• TWO (2) PRODUCT PRICER PROVIDED
BY CLIENT AND INSTALLED BY TRS

SPECIFICATIONS: STEEL PIPE
• PROVIDE NEW STEEL PIPE
STRUCTURE; PAINT BLACK; P1

SPECIFICATIONS: WENDY'S/SUN STOP
• CABINET FILLER AND 5" RETAINERS
PAINTED, P1
• WHITE FLEX FACES WITH APPLIED
VINYL

COLOR LEGEND

PAINT COLORS

1: BLACK

VINYL COLORS TO MATCH

ONE 9

V1: TO MATCH LOGO COLORS

1: PANTONE 137 C

CMYK: 0/41/100/0

2: PANTONE BLACK 3C

CMYK: RICH BLACK 60/40/40/100

3: WHITE

CMYK: 0/0/0/0

Wendy's

V2: TO MATCH LOGO COLORS

1: RED (PMS 186C)

2: WHITE

Sun Stop

DIGITAL GRAPHIC VINYL

The diagram illustrates the structural design of a vertical sign structure. The elevation view shows a 130'-0" overall height structure. At the top is a 30'-0" wide sign cabinet containing a ONE 9 sign (24'-0" wide), a Wendy's/Sun Stop sign (24' wide), and a LED pricer (42'-8" wide) displaying fuel prices for UNLEADED and #2 DIESEL. The structure is composed of steel support pipes of various diameters (8.625", 30", 42", 60", 66", 72") and transitions, with overall above-ground heights (OAH) ranging from 10'-0" to 120'-10". The side view shows the structure's profile and the final grade.

ASCE 7-16, 120 mph Wind, Exposure C
This design Complies with the High Velocity
Hurricane Zone Code and with the 2020 FBC 7th Ed.

183 Edgewater Ct
Mocksville, NC 27028

Structural Sign Design
&
Engineering Services

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ONE 9 #1401

Address: 14170 US 441

City/State: LAKE CITY, FL

Client: TEXAS REPUBLIC SIGNS, LLC

ENGINEERING OF
VERTICAL SUPPORT AND
FOUNDATION ONLY.
NO CABINET ENGINEERING
PROVIDED OR IMPLIED.

Initial Drawing: (60918) DS

NC Firm Registration: F-1136
Florida License Number: 61049
Florida License Expires: Feb. 28, 2025

The electronic seal appearing on this document was
authorized by Sean M. McFarland, PE on April 19, 2023.

Documented by:
Sean M. McFarland

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This item has been electronically signed and sealed
by Sean M. McFarland, P.E. using a Digital Signature
and date. Printed copies of this document are not
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be verified on any electronic copies.

Sean M.
McFarland
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Date: 4-19-2023
Sheet #: 1 of 2

ME #: 60918

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ONE 9 #1401

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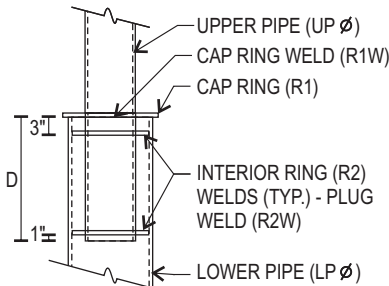
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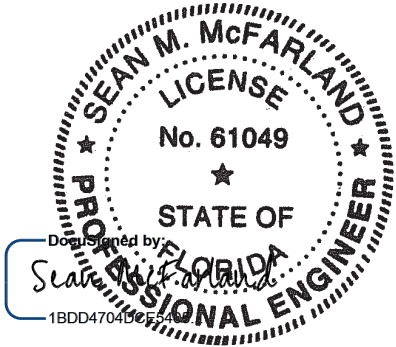
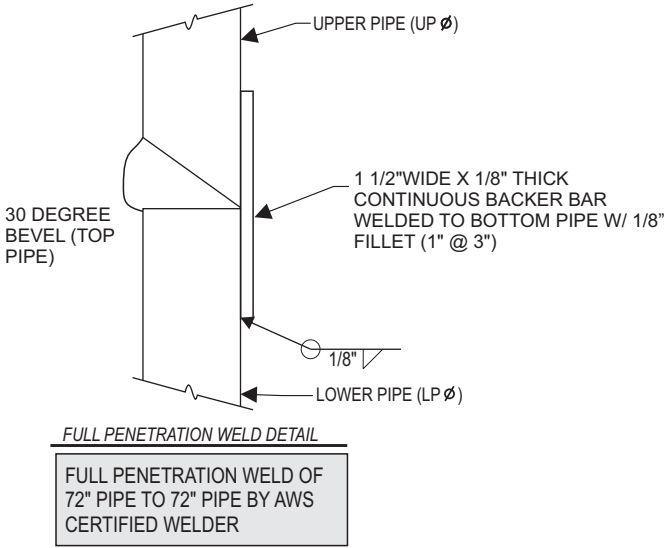
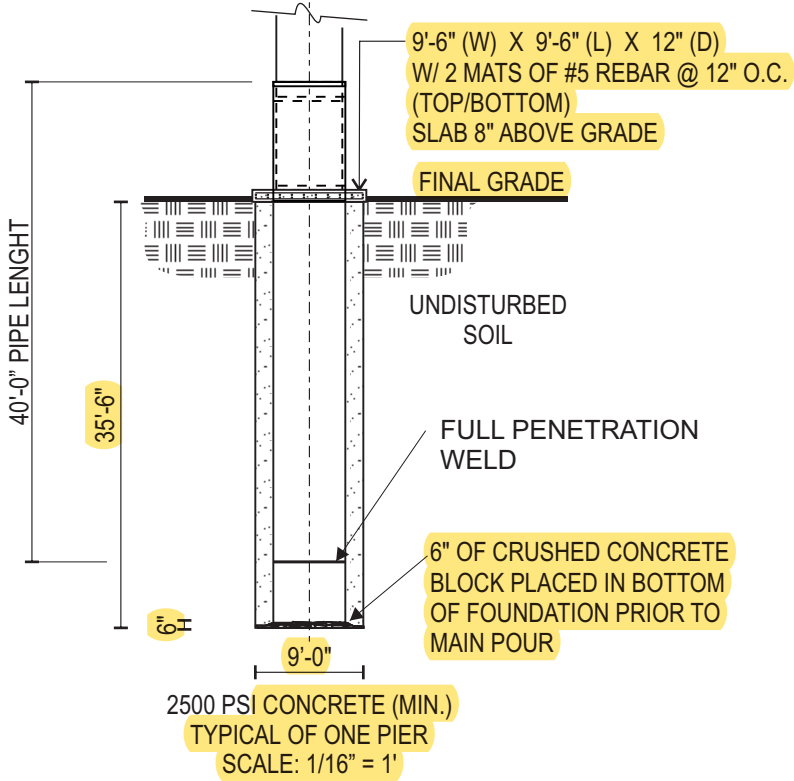


TRANSITION

- (4) 1/2" Wide x 2" Long Plug Welds (<=24" Dia.)
- (6) 1/2" Wide x 2" Long Plug Welds (24" to 48" Dia.)
- (8) 5/8" Wide x 2-1/2" Long Plug Welds (>48 Dia.)

TRANSITION TABLE

#	UP ϕ	LP ϕ	D	R1	R1(DIA.)	R2	R2(DIA.)	R1W	R2W
1	8"	30"	3.75'	1"	31"	5/8"	28.75"	3/8"	3/8"
2	30"	42"	5.25'	1"	43"	3/4"	40.75"	3/8"	3/8"
3	42"	60"	7.5'	1-1/2"	61"	1"	58.75"	3/8"	3/8"
4	60"	66"	8.25'	1-1/2"	67"	1"	64.5"	3/8"	3/8"
5	66"	72"	9.0'	1-1/2"	73"	1"	70.75"	3/8"	3/8"



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