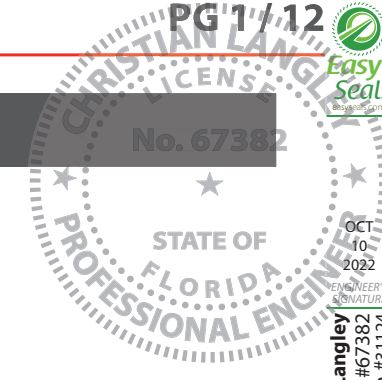
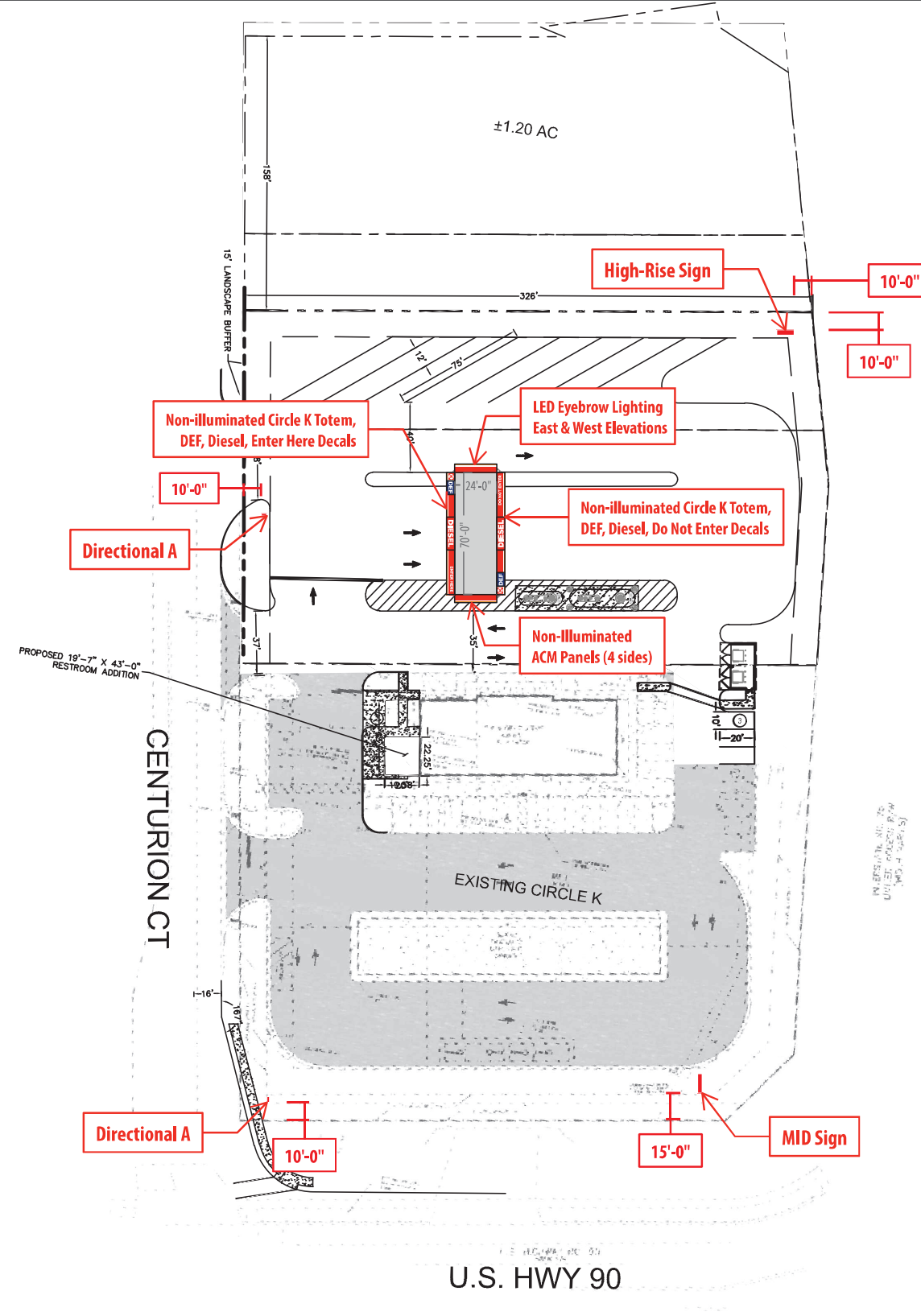




US HWY 90 & CENTURION CT



**CORPORATE
IDENTIFICATION
SOLUTIONS**

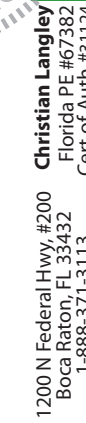
CUSTOMER
CIRCLE K
SITE NUMBER
9831

LOCATION
LAKE CITY, FL
ACCOUNT REP
BEN DEHAYES

DRAWN BY
KL
DATE
10/07/22
REVISION
03
SCALE
NTS

CORPORATE ID SOLUTIONS
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SIGNATURE _____ DATE _____

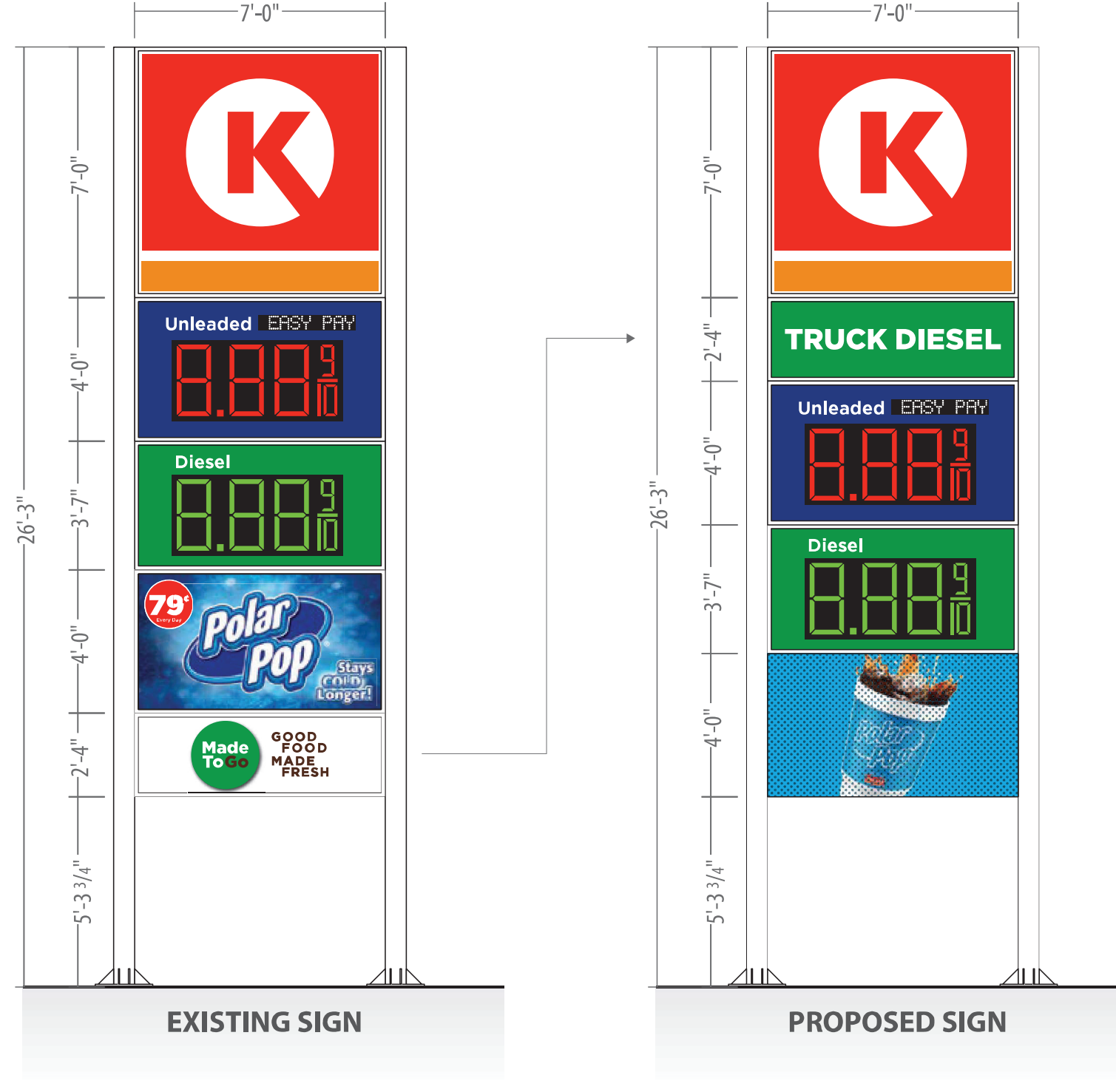


SCOPE OF WORK

- Re-use existing cabinets
- Move existing Made To Go cabinet underneath Circle K
- New Truck Diesel faces faces
- New Electronic Message Center

FIELD VERIFY PRIOR TO MANUFACTURE

EXISTING FOOTING(S) & SUPPORT STRUCTURE MAY REMAIN. REPLACEMENT
FACE(S) SHALL BE INSTALLED USING EXISTING CLIPS OR RETAINER SYSTEM.



CORPORATE IDENTIFICATION SOLUTIONS

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SIGNATURE _____ **DATE** _____

the electrical contractor. No electrical review has been performed and no certification of such is intended. • Structural design meets requirements of ACI 318-14, AISI 360-16, and

ASCE 7-16

WIND LOADS:

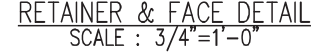
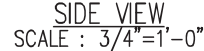
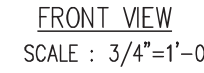
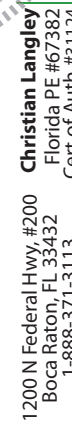
- $V = 120$ mph
- Exposure 'C'

• Risk Category 1 Structure

• ASD Load Coeff = 0.6

- Sign Height = 30 ft max
- Solid freestanding sign above grade: ± 29.0 psf
- Cf= 1.85 (w/h ratio = 0.2 to 10, any clearance ratio s/h)
- Kzt= 1.0, Xd=0.85, G=0.85

General • Design is in accordance with the requirements of the **Fla Bldg Code 7th Ed (2020)** for use within & outside the High Velocity Hurricane Zone (HVHZ). • This engineering certifies only the structural integrity of those systems, components, and/or other construction explicitly specified herein. • Electrical notes, details, & specifications are provided by and are the sole responsibility of the electrical contractor. No electrical review has been performed and no certification of such is intended. • Structural design meets requirements of ACI 318-14, AISC 360-16, ADM1-15, & NDS-12 as applicable. • Steel components shall be coated, painted, or otherwise protected against corrosion per EBC Sec 2203.2/2272.6. • Aluminum components in contact with steel or embedded in concrete shall be painted or protected as prescribed in ADM1-15(1a) or plastic/neoprene spacers provided. • All exposed fasteners shall be SS or have a protective coating for corrosion protection. • All welding shall comply with AWS requirements. • Steel welds: E70xx electrodes. • Aluminum welds: 4043 filler alloy. • Aluminum extrusions: 6063-T6 or stronger. 11 N



PARTS LIST					QTY
NO	PART #	DESCRIPTION			
1	OEXT009F10	10" ALUM. EXTRUS. FRAME SECTIONS			4
2	OMF03F	CORNER ANGLE KEY FOR 10" EXTRUSION			8
3	OMF016	1 7/8"x3 1/2"x.090" LIFT PLATE			2
4	OEXT009R20	2.0" STRAIGHT RETAINER EXTRUSION			8
5	OHINO00202	2-3/8" X 4" X .063" ALUMINUM HINGE			4
6	OMF29R	2" X 2" X 0.30"			8
7	OEXT00420	1" X 1.5" X .1875" ALUM ANGLE @ 38"			4
8	OEXT0BLTRK	MOUNTING TRACK FOR OSRAM BOXED DS @ 110 15/16"			8
9	OLED5YLVB65	OSRAM-SYLVANIA BX-DS-PL-865			72
10	OLED5YL96PS	SYLVANIA 24V-96W LED POWER SUPPLY			6
11	OMF022	ALUMINUM TEEPEES FOR BALLAST			12
12	OSW000002	RUBBER BOOTED TOGGLE SWITCH BLK			1
13	3CKS0908RF	CKS 108 7/8" X 90 1/2" RAW FORMED FACE			2
14	OMF109	GALVANIZED STEEL HAT CHANNEL RACE			A/6
15	OEXT000007	1.5" X 1.5" X .125" ALUM ANGLE @ 74 5/16"			2
16	OASH004878	1.125" ALUMINUM GUSSET			8
17	OEXT000420	1" X 1.5" X .1875" ALUM ANGLE @ 95 13/16"			1
Voltage	Circuits	Current	Drawn By	Date	
120 AC	[1]	ONE	CR	08/11/17	
Description					Checked By
ILLUM DOUBLE FACE					~
BETWEEN TWO POLE SIGN					
Sign Size	Design Load	Client	Page		
37.0 SQ. FT.	30 PSF	CIRCKLE K			
Part Number	Drawing No.				Rev.
CKSZ0142-LED	CKSZ0142-LED				A



CORPORATE IDENTIFICATION SOLUTIONS

CUSTOMER
CIRCLE K

SITE NUMBER
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LOCATION
LAKE CITY, FL

ACCOUNT REP
BEN DEHAYES

DRAWN BY
KL

DATE
10/07/22

REVISION
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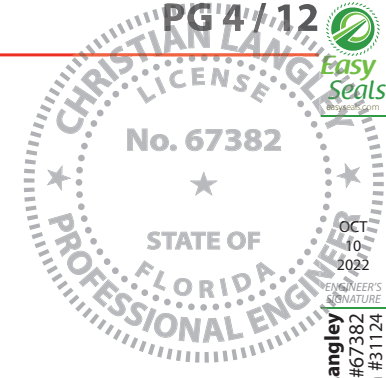
SIGNATURE **DATE**

Signature _____ Date _____

The electrical contractor. No electrical review has been performed and no certification of such is intended. Structural design meets requirements of ACI 318, 14, AISC 360, 16, ADM 1, 14.

General Notes:

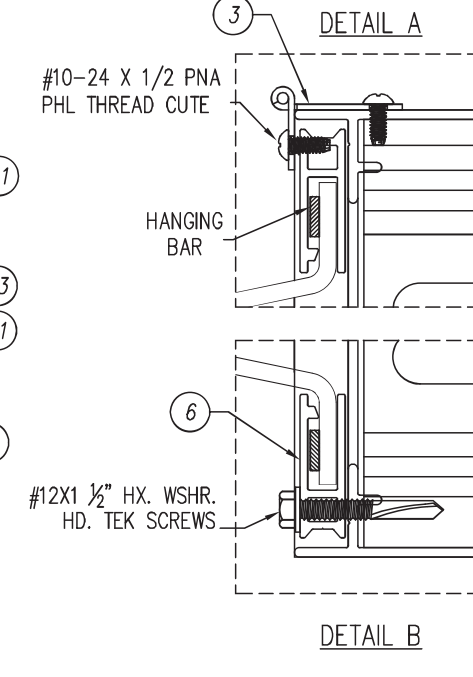
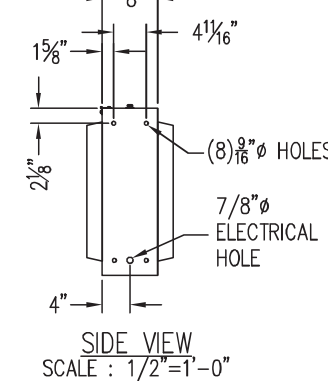
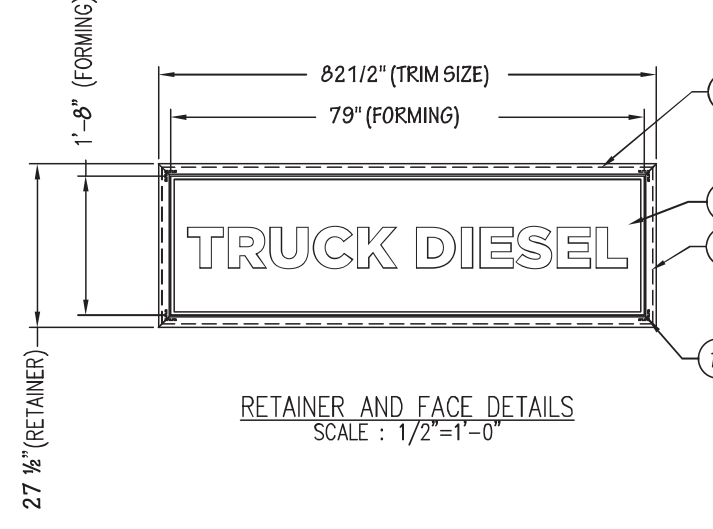
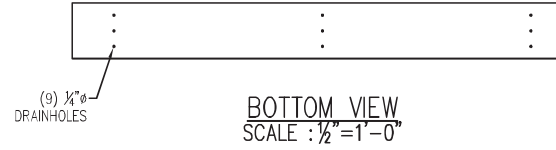
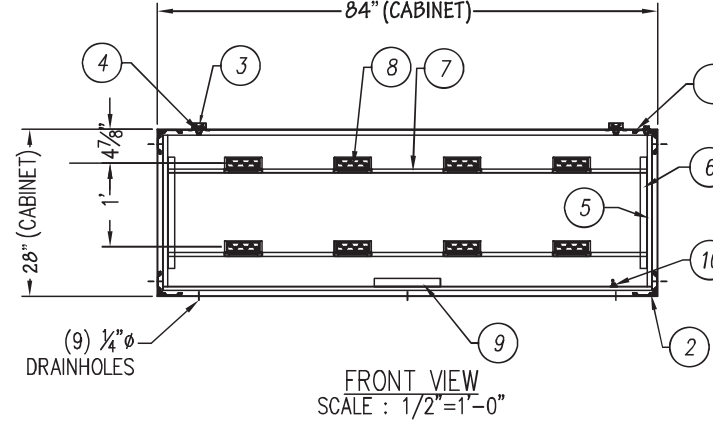
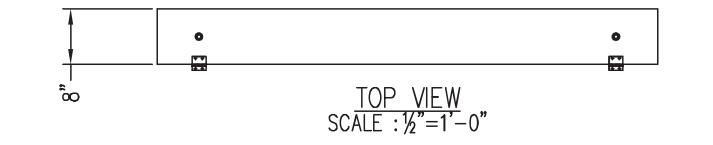
- Design is in accordance with the requirements of the **Fia Bing Code 7th Ed (2020)** for use within & outside the high velocity hurricane zone (HVHZ). • This engineering certificate only sets the structural integrity of those systems, components, and/or other construction explicitly specified herein. • Electrical notes, details, & specifications are provided by and are the sole responsibility of the electrical contractor. No electrical review has been performed and no certification of such is intended.
- As applicable, • Steel components shall be coated, painted, or otherwise protected per FBC Sec 2203.2/2222.6. • Aluminum components in contact with steel or embedded in concrete shall be painted or protected as prescribed in ADM1-15(A), or plastic/neoprene spacers provided. • All exposed fasteners shall be S.S. or have a protective coating for corrosion protection. • All welding shall comply with AWS requirements. • Steel welds: E70xx electrodes. • Aluminum welds: 4043 filler alloy. • AWS sections: 6063-T6 or stronger, UNAS-108, UNS-108.
- Structural design meets requirements of ACI 318-14, AISI S360-10, ADM1-15, & NDS-10.



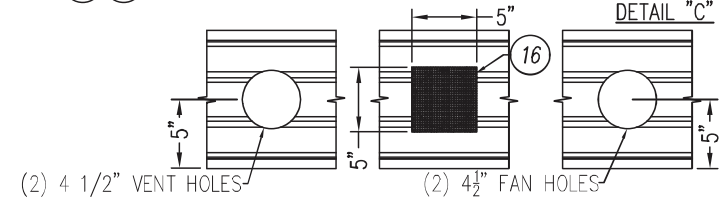
Christian Langley
Florida PE #67382
Cert of Auth #31124

1200 N Federal Hwy, #200
Boca Raton, FL 33432
1-888-371-3113

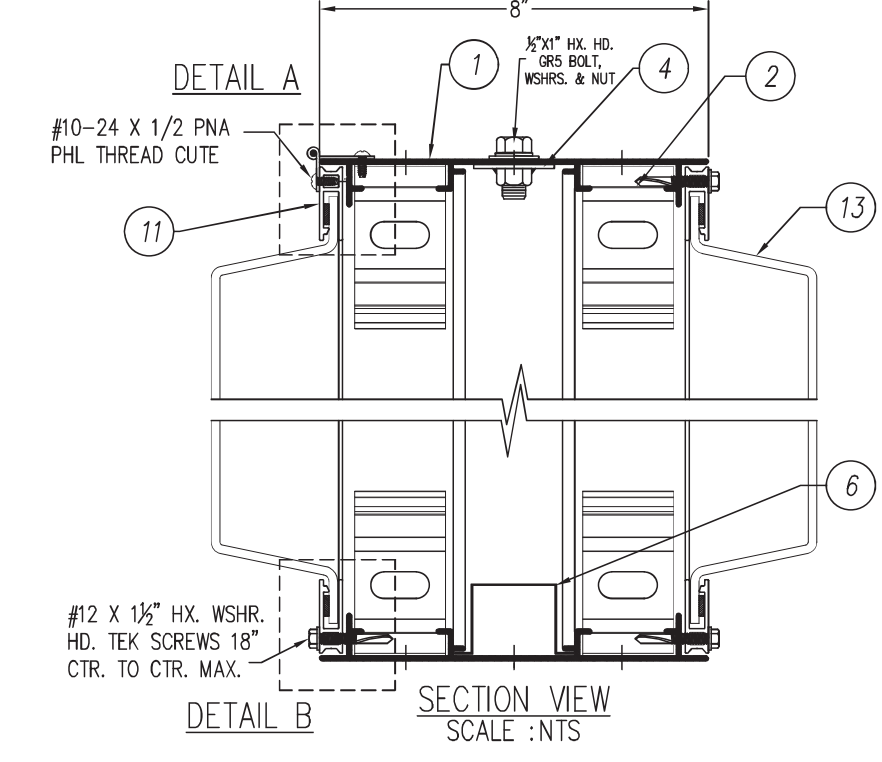
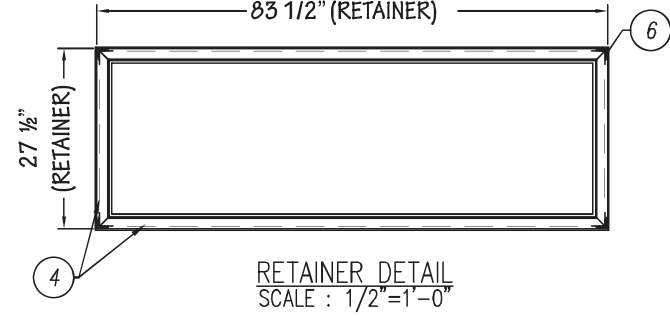
ASCE 7-16
WIND LOADS:
• V=120 mph
• Exposure 'C'
• Risk Category 1 Structure
• Sign Height = 30 ft max
• Kzt=1.0, Kd=0.85, G=0.85
• Solid freestanding sign above grade: ± 29.0 psf
• CF=1.85 (w/h ratio = 0.2 to 10, any clearance ratio s/h)



16 INTERNALLY FAN & VENT HOLES



NOTE: 1 INCH CLEARANCE MINIMUM FOR FANS AND VENTS BETWEEN OUTER CABINET AND SIGN POLES AND ADDITIONAL CABINETS.



PARTS LIST			
NO	PART #	DESCRIPTION	QTY
1	OEXT009F08	8" ALUM. EXTRUS. FRAME SECTIONS	4
2	OMF02F	8" EXTRUSION FRAME CORNER KEY	8
3	OHIN000202	2" X 2" X .060" PIANO HINGE	2
4	OMF016	1 7/8"x3 1/2"-1/2" LIFT PLATE	2
5	OMF109	GALVANIZED STEEL HAT CHANNEL RACE WAY	A/R
6	OEXT000407	1" X 1" X .0625" ALUM ANGLE	2
7	OEXT00BLTRK	MOUNTING TRACK FOR OSRAM BOXLED DS	2
8	OLED SylV865	OSRAM-SYLVANIA BX-DS-PL-865	8
9	OLED SylV96PS	OSRAM-SYLVANIA 0796W/24V/UNV POWER SUPPLY	1
10	OSW0000002	RUBBER BOOTED TOGGLE SWITCH BLK	1
11	OEXT009R15	1.500" RETAINER ALUM	8
12	OMF29R	RETAINER CORNER KEY	8
13	OLEX150100	150" X 100" CLEAR POLYCARB. FACE	2

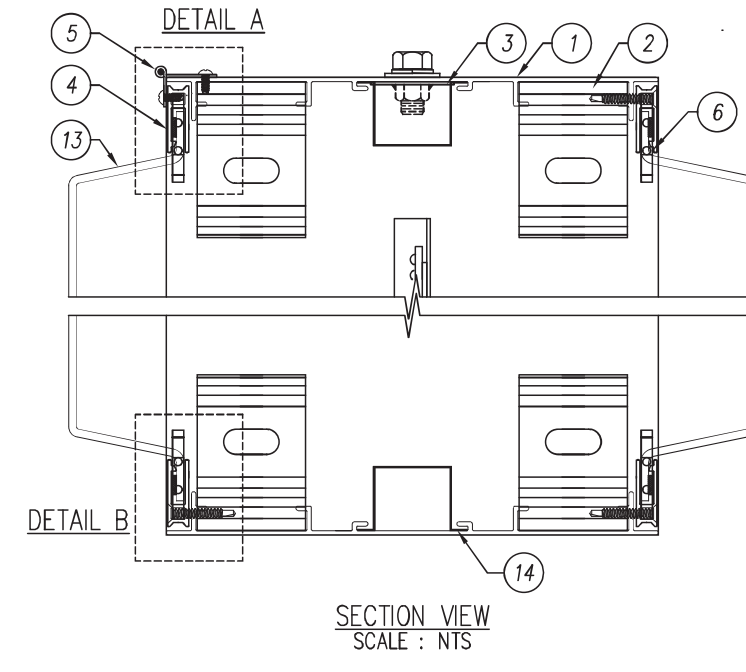
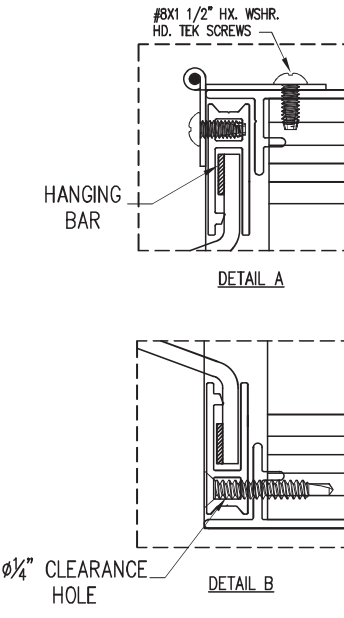
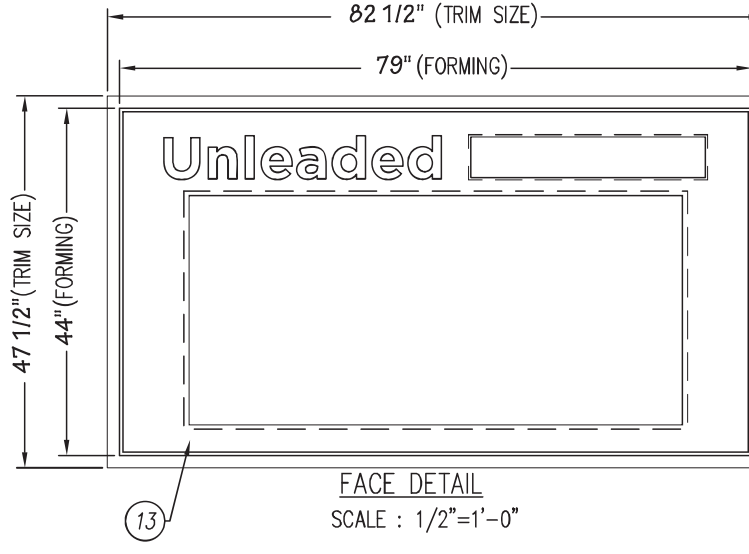
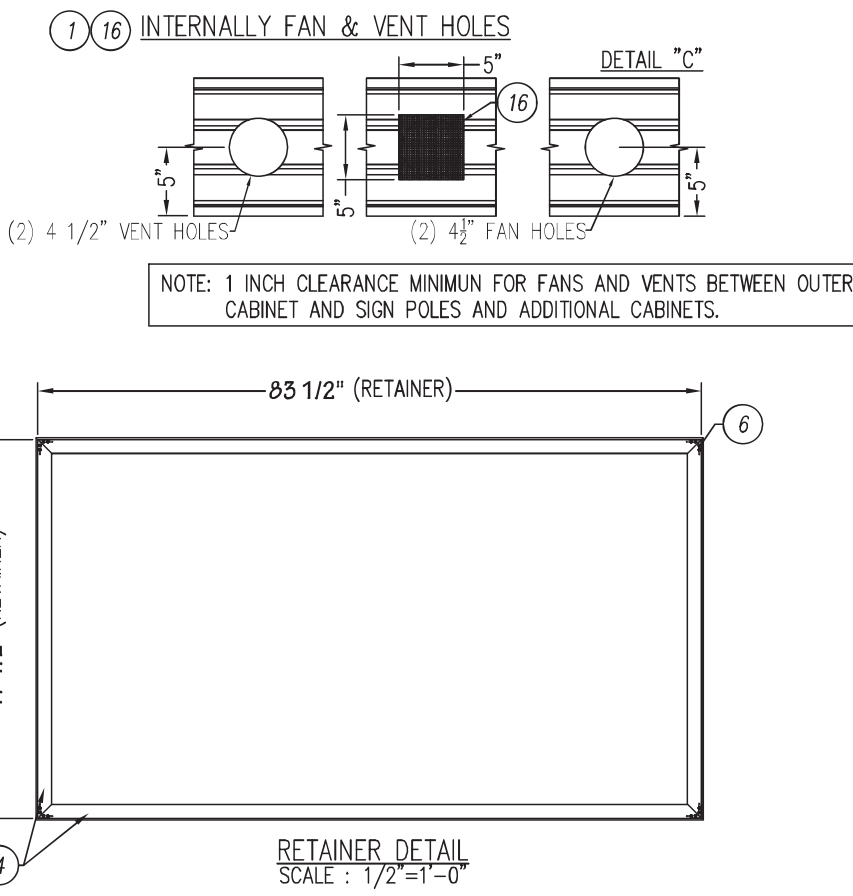
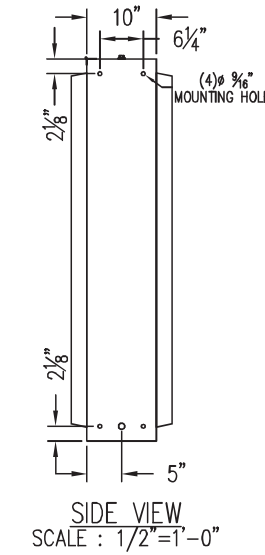
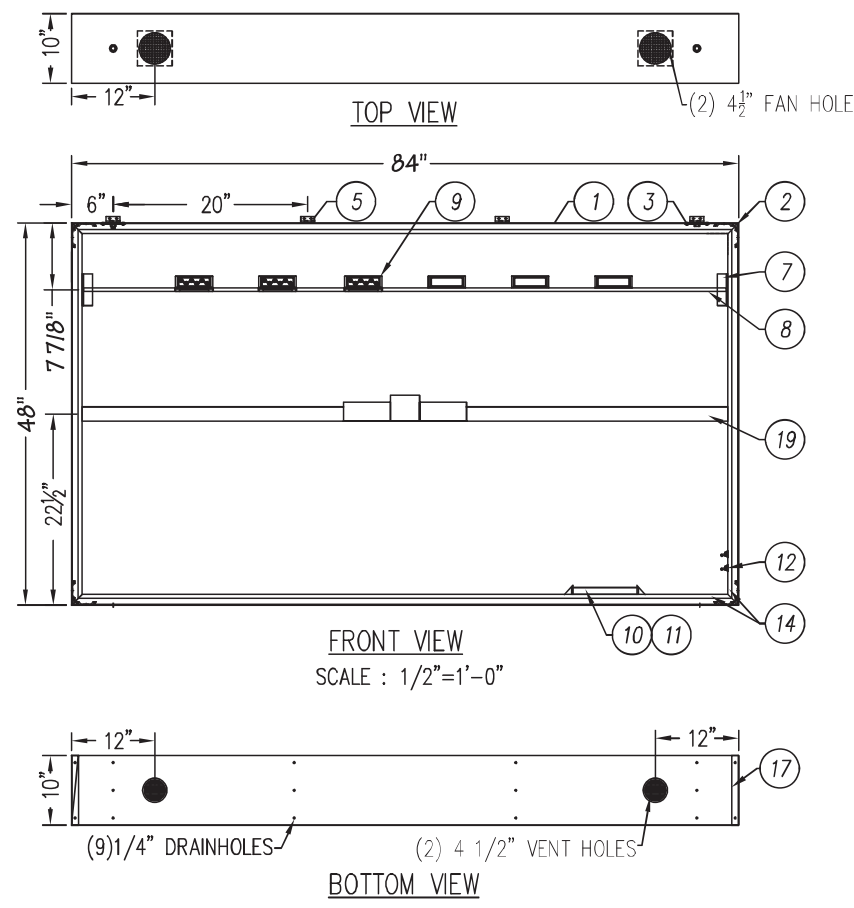
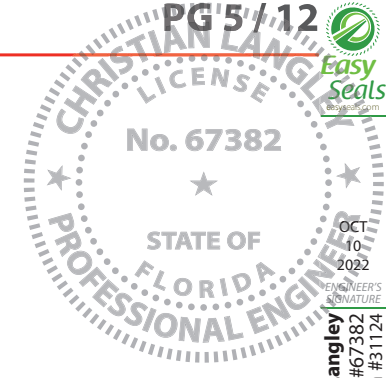
Volts: 120 AC
Circuits: [1] ONE
Current: 0.91 AMPS
Drawn By: C. ITO
Date: 11/15/16

Description: 2'-0" X 6'-0" BETWEEN TWO POLE SIGN
Checked By: ~

Sign Size: 12.0 SQ. FT
Design Load: 140 MPH
Client: CIRCLE K
Page: 1 OF 2

Part Number: 1CKS02061XC-CW
Drawing No.: CKSZLED0014-LED
Rev.: B

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PARTS LIST			
NO	PART #	DESCRIPTION	QTY
1	OEXT009F10	10" ALUM. EXTRUS. FRAME SECTIONS	4
2	OMF03F	CORNER ANGLE KEY FOR 10" EXTRUSION	8
3	OMF016	1 7/8"x3 1/2"x.090" LIFT PLATE	2
4	OEXT009R20	2.0" STRAIGHT RETAINER EXTRUSION	8
5	OHIN000202	2-3/8" X 4" X .063" ALUMINUM HINGE	8
6	OMF29R	2" X 2" X 0.30"	8
7	OEXT000420	1" X 1.5" X .1875" ALUM. ANGLE @ 3"	2
8	OEXT0BLTRK	MOUNTING TRACK FOR OSRAM BOXLED DS @ 92 9/16"	1
9	OLED5YL5865	SYLVANIA BOXLED PLUS SS 6500K	6
10	OLED5YL75PS	SYLVANIA 24V-75W LED POWER SUPPLY	1
11	OMF022	ALUMINUM TEEPEES FOR BALLAST	2
12	OSW000002	RUBBER BOOTED TOGGLE SWITCH BLK	1
13	3SRFF50X91X-177	FORM: 50" X 91" X 2 1/4" FORMED FACE	2
14	OMF109	GALVANIZED STEEL HAT CHANNEL RACE	A/R
16	OASH000205	.063 X 48 X 120 ALUM SHEET PERF 1/8	4
17	OEXT000412	1" X 1" X .125" ALUM ANGLE @ 10"	2
18	OASH000026	ALUMINUM FAN COVER (SEE PAGE 3)	1
19	OEXT000406	2" X 2" X .125" ALUM ANGLE @ 95 13/16	1
Voltage		Circuits	Current
120 AC		[1] ONE	4.57 AMPS
Description		Drawn By	Date
ILLUM DOUBLE FACE		CR	08/11/17
BETWEEN TWO POLE SIGN		Checked By	~
Sign Size	Design Load	Client	Page
22.5 SQ FT	30 PSF	CIRCLE K	1 OF 2
Part Number	Drawing No.	Rev.	
CKSZLED0110-LED	CKSZLED0110-LED	A	



**CORPORATE
IDENTIFICATION
SOLUTIONS**

CUSTOMER
CIRCLE K

SITE NUMBER
9831

LOCATION
LAKE CITY, FL

ACCOUNT REP
BEN DEHAYES

DRAWN BY
KL

DATE
10/07/22

REVISION
03

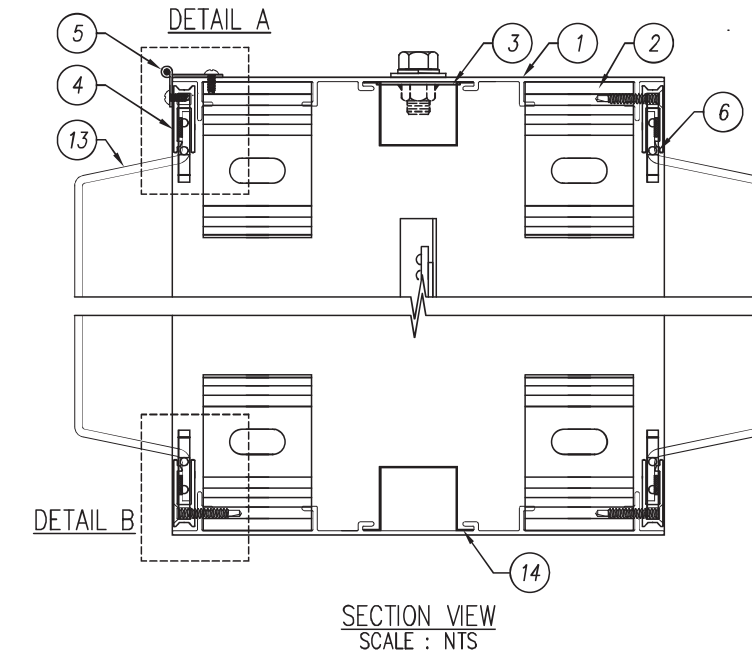
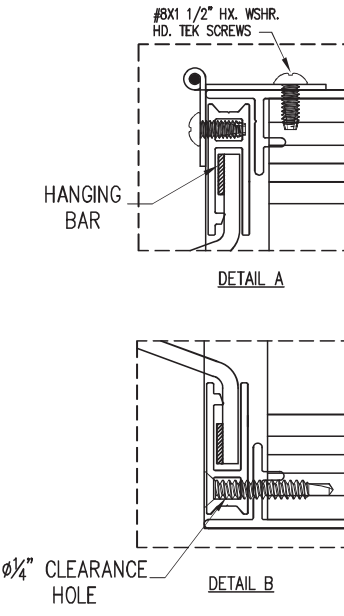
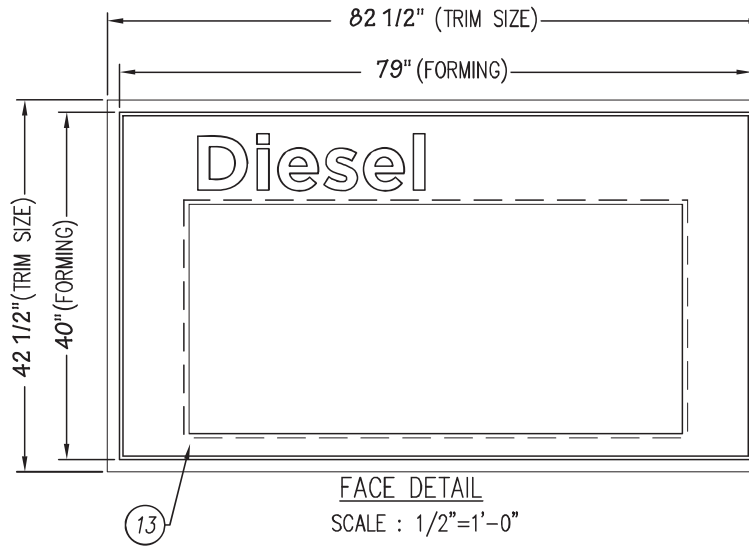
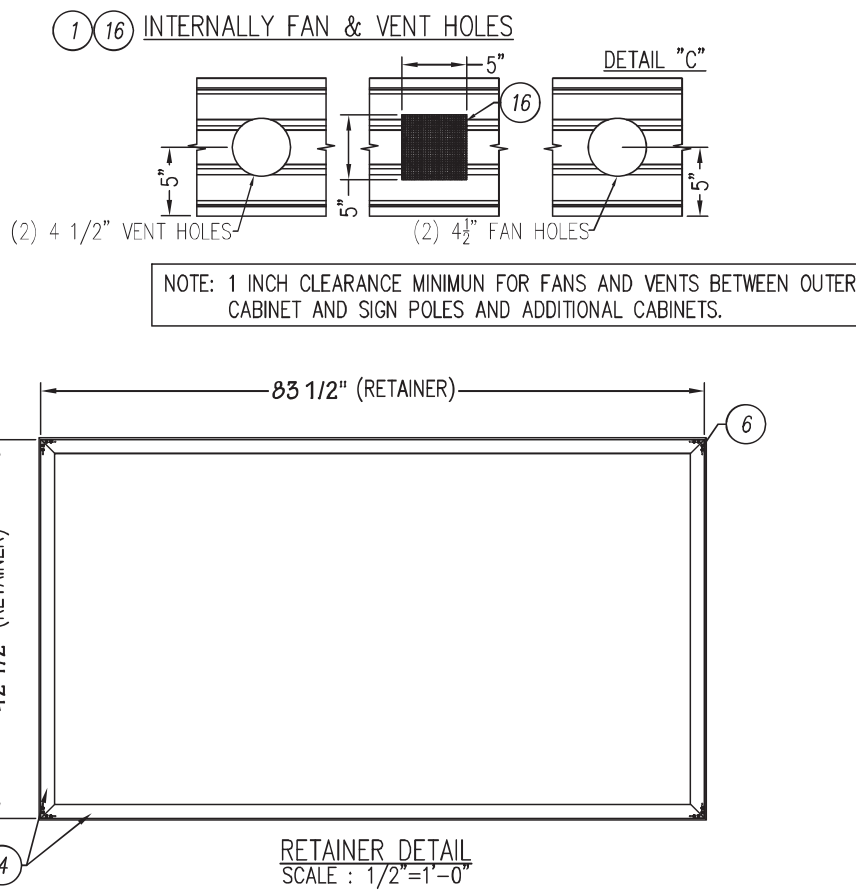
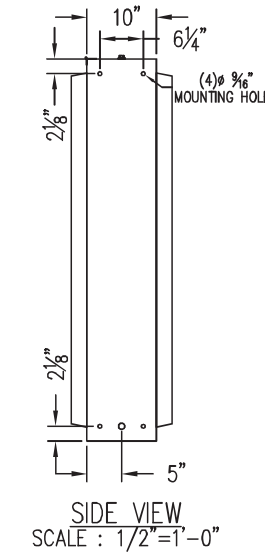
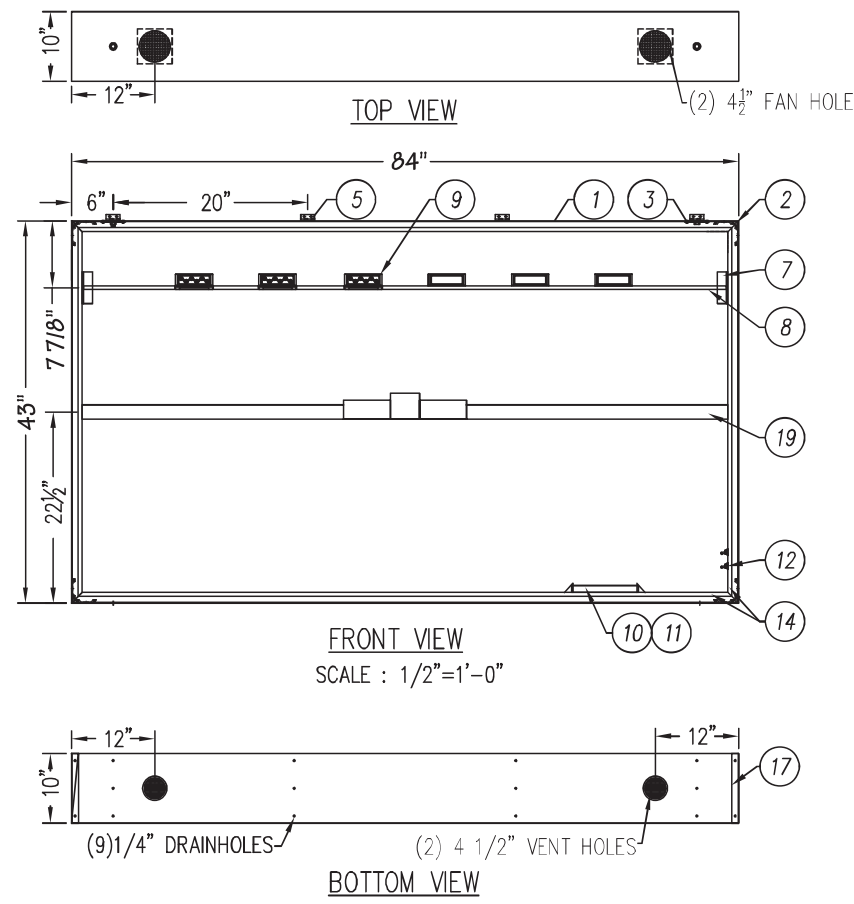
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3	OMF016	1 7/8"x3 1/2"x.090" LIFT PLATE	2
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5	OHIN000202	2-3/8" X 4" X .063" ALUMINUM HINGE	8
6	OMF29R	2" X 2" X 0.30"	8
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8	OEXT0BLTRK	MOUNTING TRACK FOR OSRAM BOXLED DS @ 92 9/16"	1
9	OLED5YL5865	SYLVANIA BOXLED PLUS SS 6500K	6
10	OLED5YL75PS	SYLVANIA 24V-75W LED POWER SUPPLY	1
11	OMF022	ALUMINUM TEEPEES FOR BALLAST	2
12	OSW000002	RUBBER BOOTED TOGGLE SWITCH BLK	1
13	3SRFF50X91X-177	FORM: 50" X 91" X 2 1/4" FORMED FACE	2
14	OMF109	GALVANIZED STEEL HAT CHANNEL RACE	A/R
16	OASH000205	.063 X 48 X 120 ALUM SHEET PERF 1/8	4
17	OEXT000412	1" X 1" X .125" ALUM ANGLE @ 10"	2
18	OASH000026	ALUMINUM FAN COVER (SEE PAGE 3)	1
19	OEXT000406	2" X 2" X .125" ALUM ANGLE @ 95 13/16	1
Voltage		Circuits	Current
120 AC		[1] ONE	4.57 AMPS
Description		Drawn By	Date
ILLUM DOUBLE FACE		CR	08/11/17
BETWEEN TWO POLE SIGN		Checked By	~
Sign Size	Design Load	Client	Page
22.5 SQ FT	30 PSF	CIRCLE K	1 OF 2
Part Number	Drawing No.	Rev.	
CKSZLED0110-LED	CKSZLED0110-LED	A	



**CORPORATE
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SOLUTIONS**

CUSTOMER
CIRCLE K

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LOCATION
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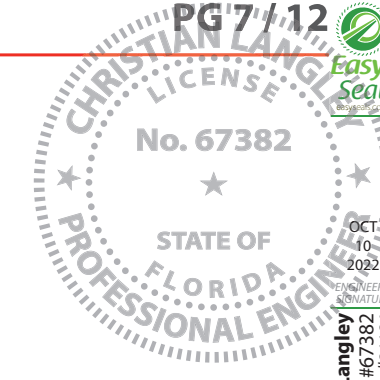
REVISION
03

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CHICAGO, IL 60630
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SIGNATURE _____ **DATE** _____



Christian Langley
Florida PE #67382
Cert of Auth #31124

1200 N Federal Hwy, #200
Boca Raton, FL 33432
1-888-371-3113

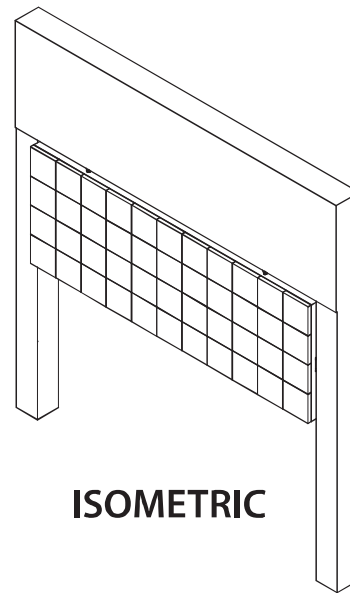
• Solid freestanding sign above grade: ± 29.0 psf
• CF= 1.85 (w/h ratio = 0.2 to 10, any clearance ratio s/h)

• Risk Category 1 Struct.
• V=120 mph
• Exposure 'C'
• ASD Load Coeff = 0.6

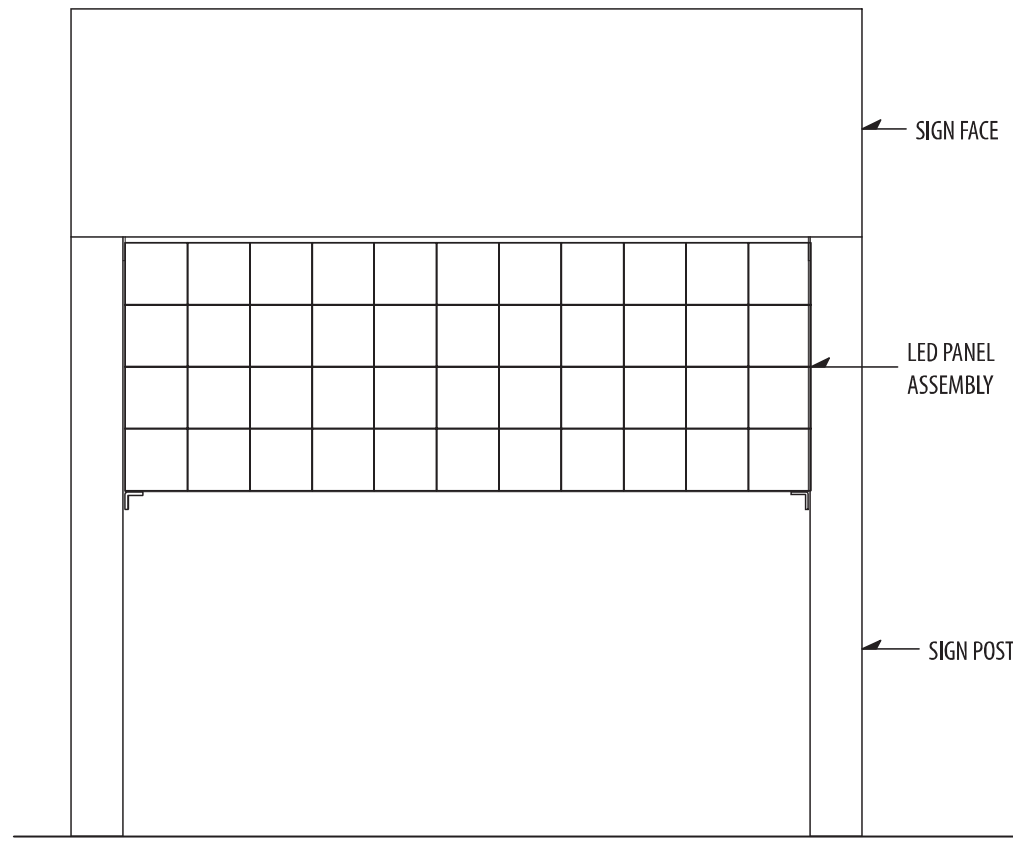
ASCE 7-16
• V=120 mph
• Exposure 'C'
• ASD Load Coeff = 0.6

WIND LOADS:

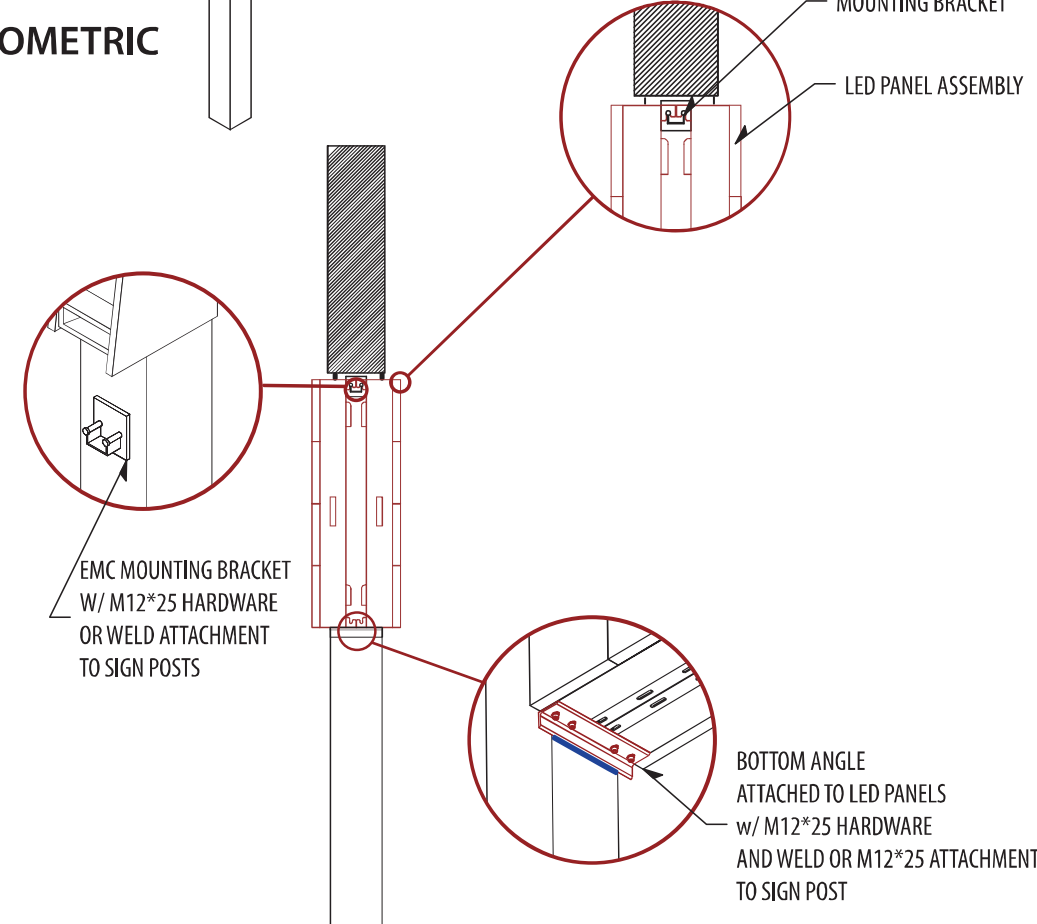
ELECTRONIC MESSAGE CENTER ATTACHMENT DETAIL



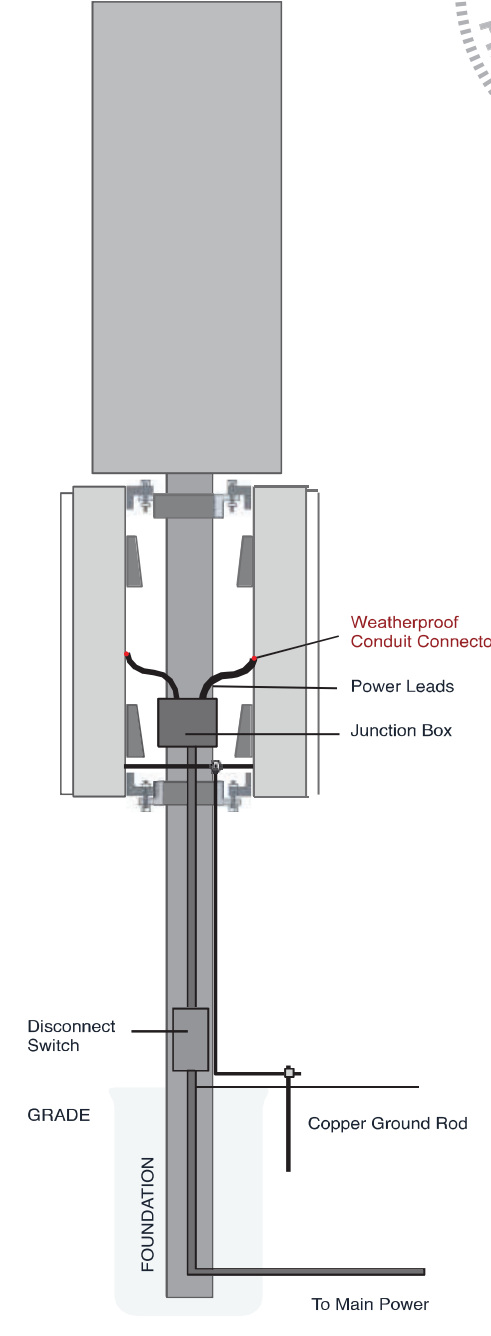
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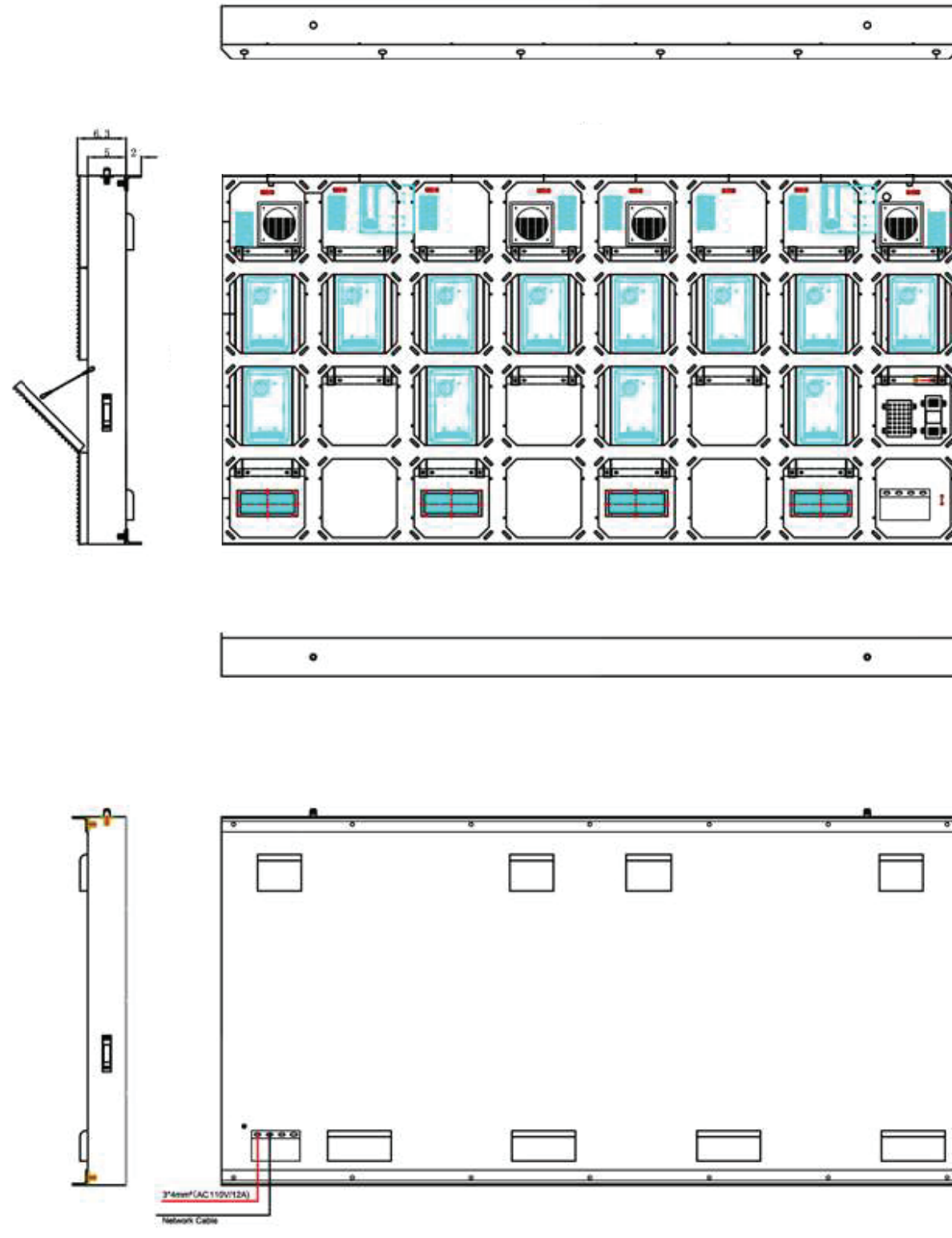
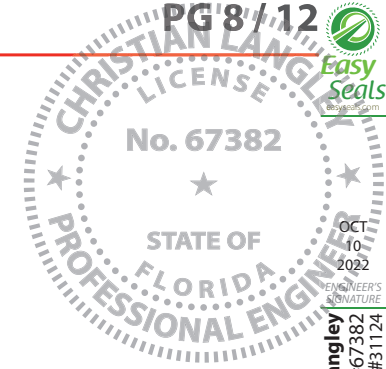
FRONT



SIDE SECTION



ELECTRICAL DETAIL



DISPLAY SPECIFICATIONS		
Pixel Pitch (Resolution)	9.5 mm	15.25 mm
LED Package Type	SMD	DIP
Pixels Per Sq. Foot (Density)	1024	400
Module Dimensions	12" x 12" (304.8mm x 304.8mm)	12" x 12" (304.8mm x 304.8mm)
Module Matrix	32 x 32	20 x 20
Module Weight	3 LB (1.4KG)	4.5 LB (2 KG)
Driving Method	1/2 constant current	Static
Refresh Rate	≥ 3840 Hz	≥ 3840 Hz
Grayscale	65536 (281 trillion colors)	65536 (281 trillion colors)
Color Depth	16 Bit	16 Bit
Contrast Ratio	3000 : 1	3000 : 1
Brightness	≥ 7000 Nits	≥ 10000 Nits
Brightness Control	256 levels	256 levels
Ideal Viewing Range	28° or greater	52° or greater
Ideal Viewing Angle	160°(H) / 120°(V)	120°(H) / 60°(V)
Max. Power Consumption	70W/Ft ² (750W/m ²) 0.59amps/Ft ² @ 120VAC	35W/Ft ² (380W/m ²) 0.29amps/Ft ² @ 120VAC
Avg. Power Consumption	23W/Ft ² (250W/m ²)	11W/Ft ² (120W/m ²)
Input Voltage	88 - 264VAC	88 - 264VAC
Ingress Protection	IP67 front / IP55 rear	IP67 front / IP55 rear
Operating Temperature	-40°F to +140°F (-40°C to +60°C)	-40°F to +140°F (-40°C to +60°C)
MTBF	≥ 5000 hours	≥ 5000 hours
LED Life Span	100,000 hours	100,000 hours
Cabinet Size	Custom	Custom
Cabinet Material	Aluminum	Aluminum
Cabinet Weight	7.78 LB/Ft ² (38 KG/m ²)	9 LB/Ft ² (45 KG/m ²)
FCC Rules Part 15 Compliant UL 48 Approved		



**CORPORATE
IDENTIFICATION
SOLUTIONS**

CUSTOMER
CIRCLE K

SITE NUMBER
9831

LOCATION
LAKE CITY, FL

ACCOUNT REP
BEN DEHAYES

DRAWN BY
KL

DATE
10/07/22

REVISION
03

SCALE
NTS

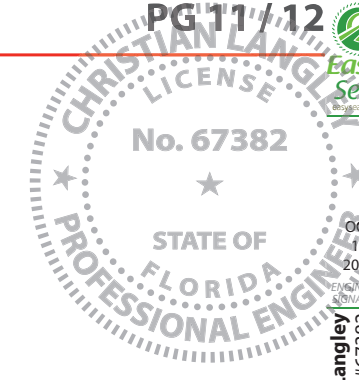
CORPORATE ID SOLUTIONS

5563 N ELSTON AVE.
CHICAGO, IL 60630
P: 773-763-9600 | F: 773-763-9606
CORPORATEIDSOLUTIONS.COM

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SIGNATURE _____ DATE _____



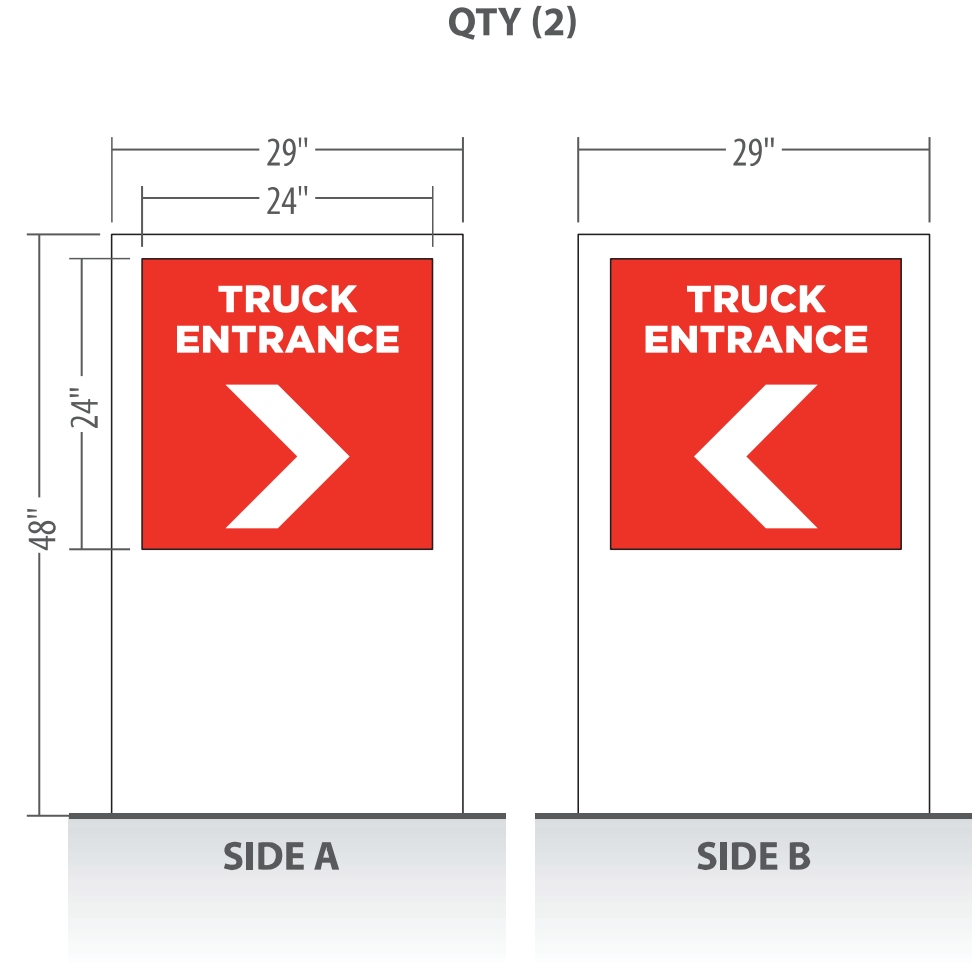
Christian Langley
Florida PE #67382
Cert of Auth #31124

1200 N Federal Hwy, #200
Boca Raton, FL 33432
1-888-371-3113

• Solid freestanding sign above grade: ± 29.0 psf
• Cf=1.85 (w/h ratio = 0.2 to 10, any clearance ratio s/h)
• Sign Height = 30 ft max
• Kzt=1.0, Kd=0.85, G=0.85

• Risk Category 1 Struct.
• ASD Load Coeff = 0.6
• Exposure 'C'

• V=120 mph
• WIND LOADS:
ASCE 7-16



DIRECTIONAL A
ILLUMINATED
4.0 SF

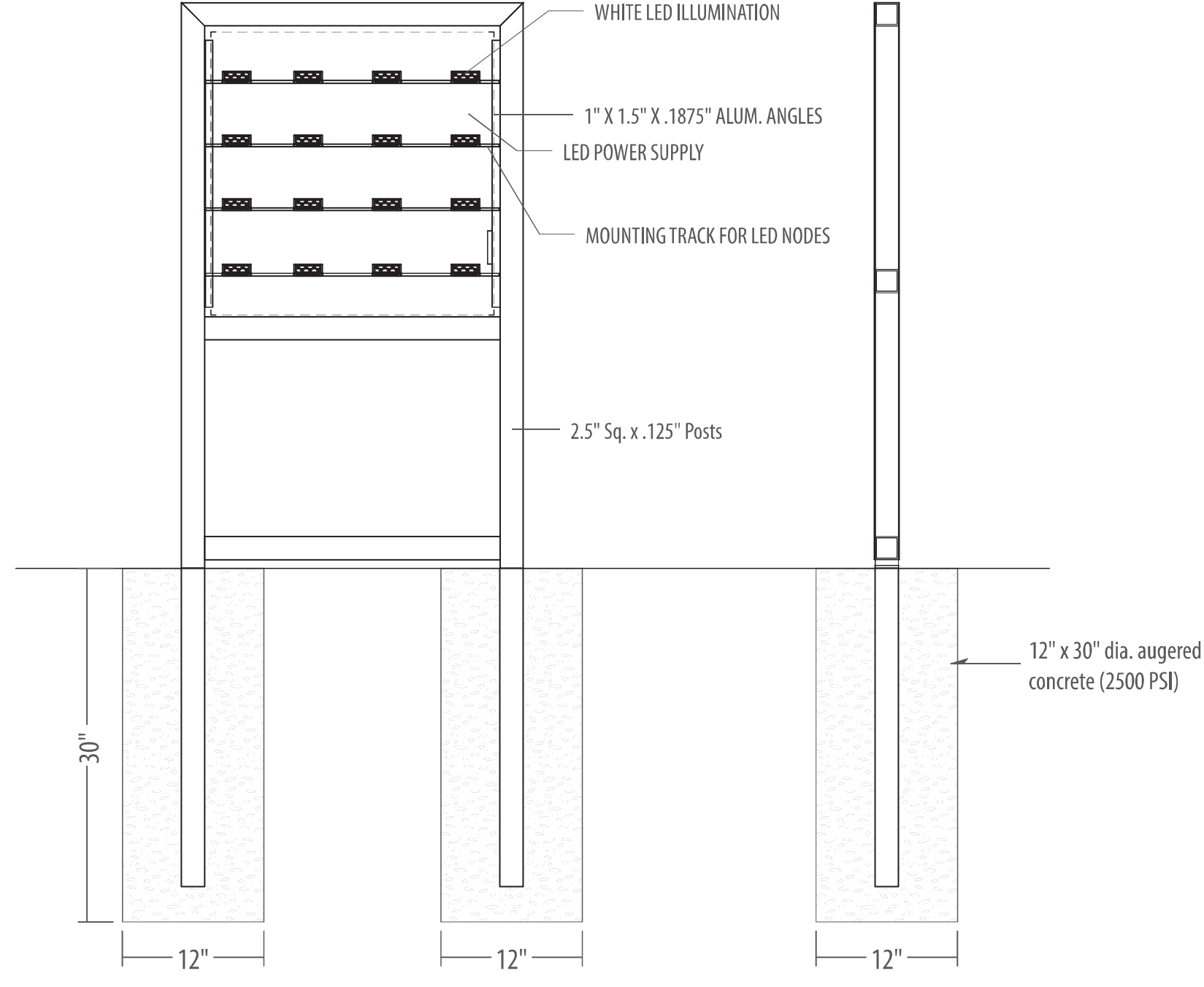
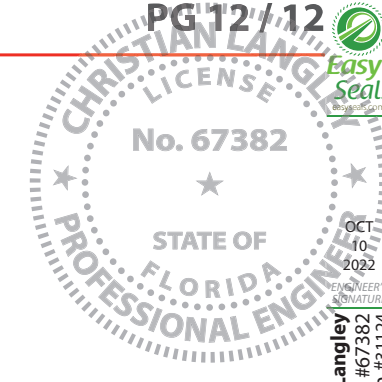


CORPORATE
IDENTIFICATION
SOLUTIONS

CUSTOMER	LOCATION	DRAWN BY	REVISION	CORPORATE ID SOLUTIONS
CIRCLE K	LAKE CITY, FL	KL	03	5563 N ELSTON AVE. CHICAGO, IL 60630 P: 773-763-9600 F: 773-763-9606 CORPORATEIDSOLUTIONS.COM
SITE NUMBER	ACCOUNT REP	DATE	SCALE	
9831	BEN DEHAYES	10/07/22	NTS	

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SIGNATURE _____ DATE _____

General • Design is in accordance with the requirements of the Fla Bldg Code 7th Ed (2020) for use within & outside the High Velocity Hurricane Zone (HVHZ). • This engineering certifies only the structural integrity of those systems, components, and/or other construction explicitly specified herein. • Electrical notes, details, & specifications are provided by and are the sole responsibility of the electrical contractor. No electrical review has been performed and no certification of such is intended. • Structural design meets requirements of ACI 318-14, AISC 360-16, ADM1-15, & NDS-18, as applicable. • Steel components shall be coated, painted, or otherwise protected against corrosion per FBC Sec 2203.2/2222.6. • Alum components in contact with steel or embedded in concrete shall be painted or protected as prescribed in ADM1-15(1a), or plastic/neoprene spacers provided. • All exposed fasteners shall be S.S. or have a protective coating for corrosion protection. • All welding shall comply with AWS requirements. • Steel welds: E70xx electrodes. • Aluminum welds: 4043 filler alloy. • Alum extrusions: 6063-T6 or stronger, U.S.C.



**CORPORATE
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SOLUTIONS**

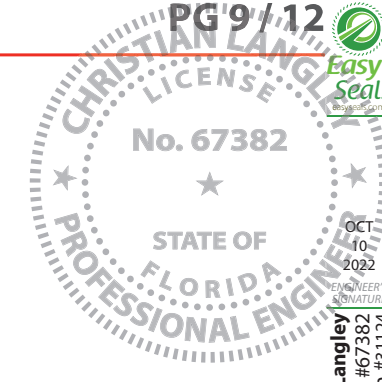
CUSTOMER
CIRCLE K
SITE NUMBER
9831

LOCATION
LAKE CITY, FL
ACCOUNT REP
BEN DEHAYES

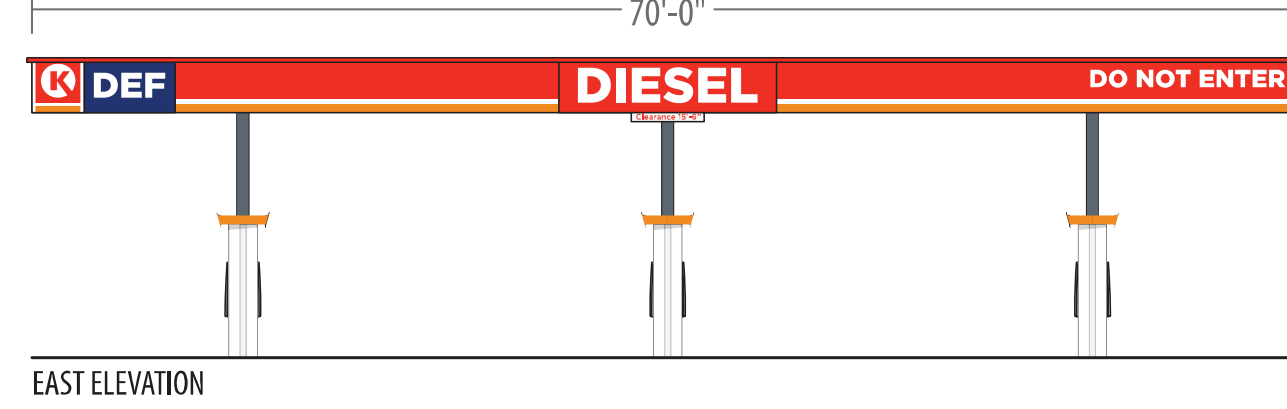
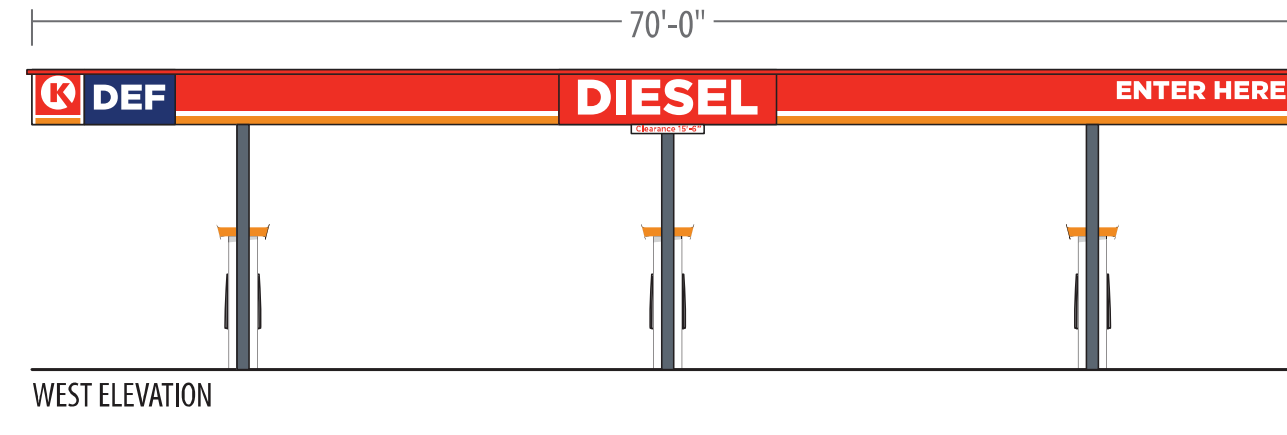
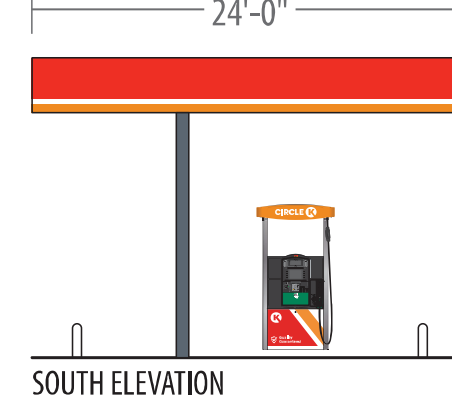
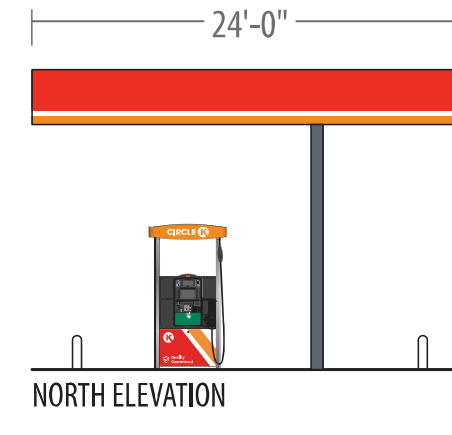
DRAWN BY
KL
DATE
10/07/22
REVISION
03
SCALE
NTS

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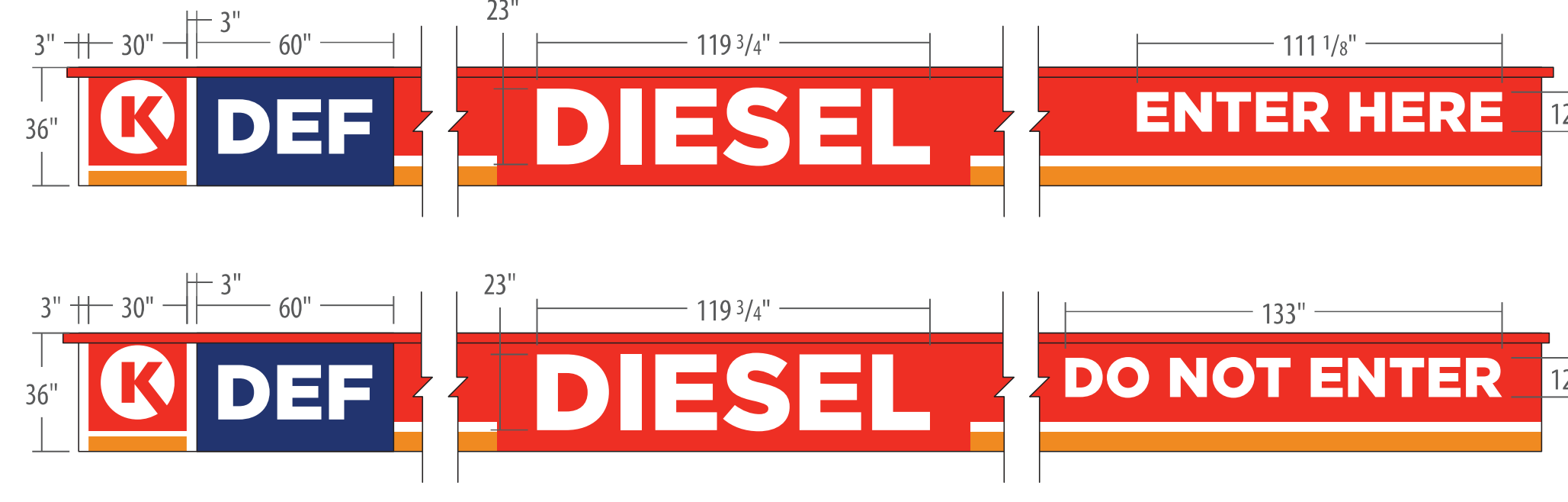


Christian Langley
Florida PE #67382
Cert of Auth #31124
1200 N Federal Hwy, #200
Boca Raton, FL 33432
1-888-371-3113



NEW CONSTRUCTION

EAST ELEVATION			
Gas Island Canopy Fascia	3'-0" x 70'-0"	210.0 SF	24.2% of available space
Non-Illum. Circle K Totem Decal	36" x 30"	7.5 SF	
Non-Illum. Diesel Letters	23" x 119.75"	19.1 SF	
Non-Illum. Enter Here Letters	12" x 111 1/8"	9.2 SF	
Non-Illum. DEF Decal	36" x 60"	15.0 SF	
WEST ELEVATION			
Gas Island Canopy Fascia	3'-0" x 70'-0"	210.0 SF	25.0% of available space
Non-Illum. Circle K Totem Decal	36" x 30"	7.5 SF	
Non-Illum. Diesel Letters	23" x 119.75"	19.1 SF	
Non-Illum. Do Not Enter Letters	12" x 133"	11.0 SF	
Non-Illum. DEF Decal	36" x 60"	15.0 SF	
NORTH ELEVATION			
Non-illuminated Red, White, and Orange ACM panels			
SOUTH ELEVATION			
Non-illuminated Red, White, and Orange ACM panels			



NON-ILLUMINATED RED, WHITE, AND ORANGE ACM PANELS
LED EYEBROW DOWNLIGHTING ON EAST & WEST ELEVATIONS

ASCE 7-16
WIND LOADS:
• V=130 mph
• Exposure 'C'
• ASD Load Coeff = 0.6
• Risk Category 2 Struct.
• Sign Height = 30 ft max
• Kzt=1.0, Kd=0.85, G=0.85
• Zone 4: ± 23.8 psf
• Zone 5: ± 30.3 psf
Wall components & cladding:



CORPORATE
IDENTIFICATION
SOLUTIONS

CUSTOMER
CIRCLE K
SITE NUMBER
9831

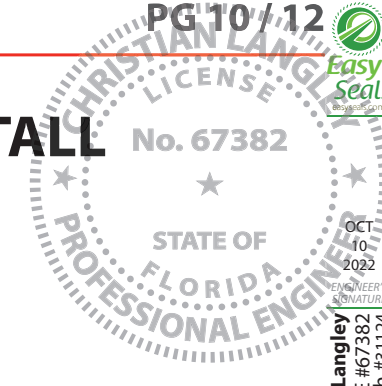
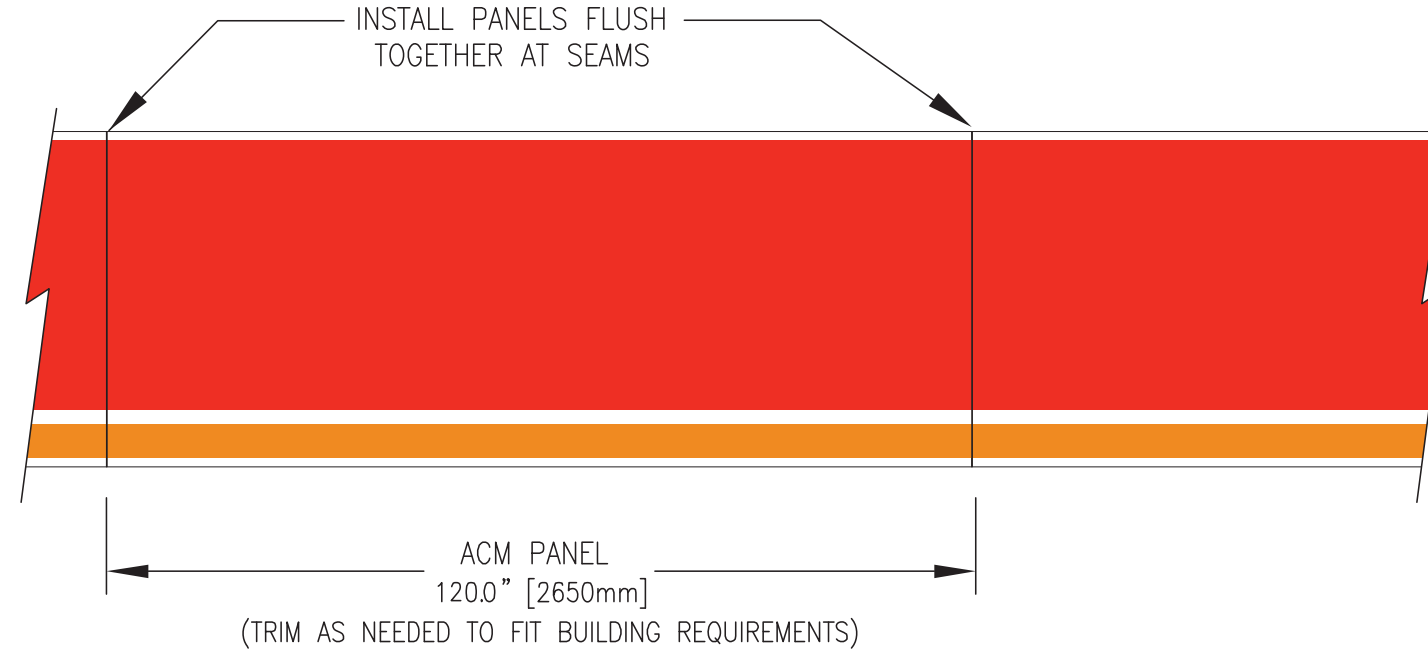
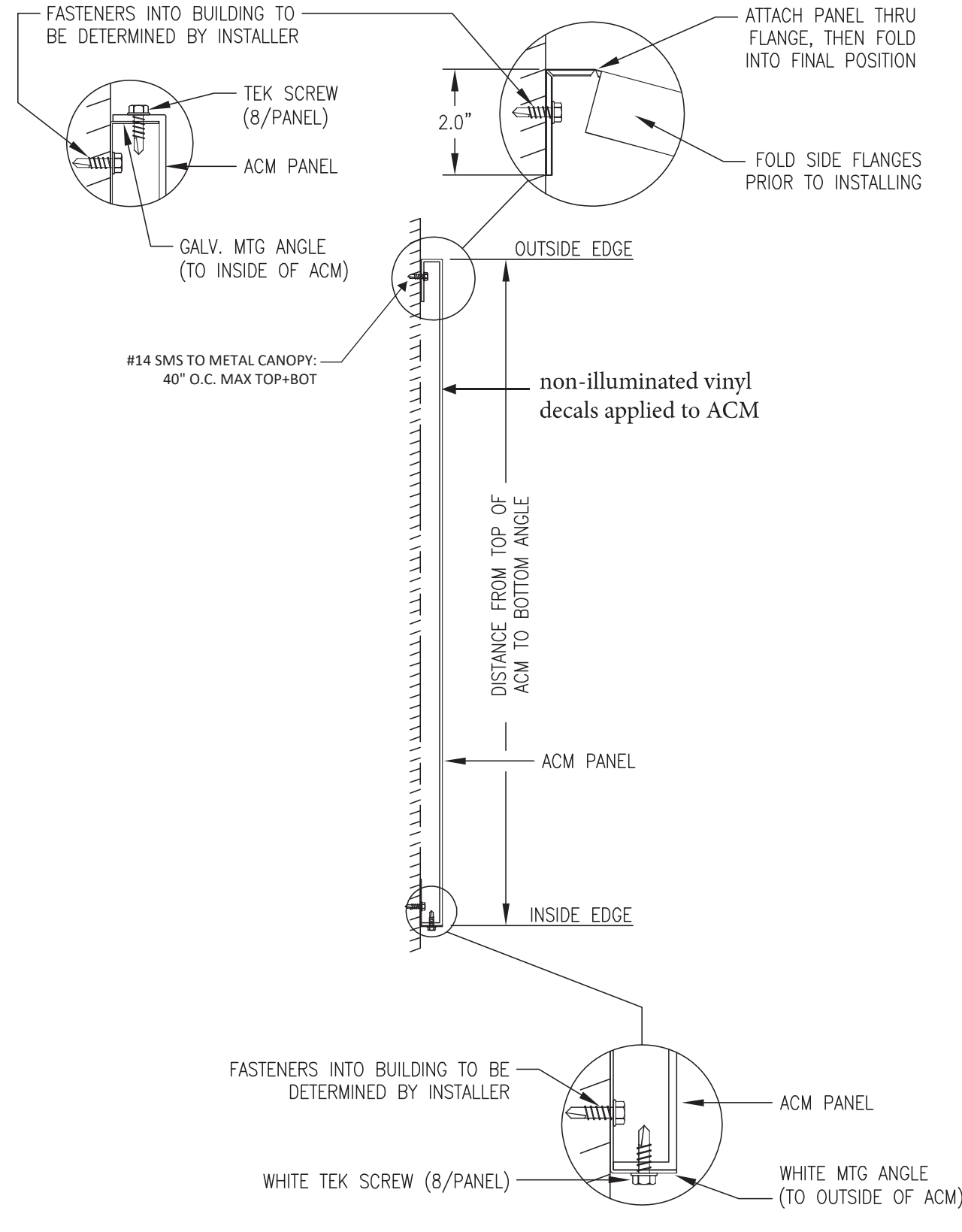
LOCATION
LAKE CITY, FL
ACCOUNT REP
BEN DEHAYES

DRAWN BY
KL
DATE
10/07/22
REVISION
03
SCALE
NTS

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SIGNATURE _____
DATE _____

TRI-COLOR ACM INSTALL



1200 N Federal Hwy, #200
Boca Raton, FL 33432
1-888-371-3113

Wall components & cladding:
• Sign Height = 30 ft max
• Kzt=1.0, Kd=0.85, G=0.85
• Zone 4: ± 23.8 psf • Zone 5: ± 30.3 psf

• Risk Category 2 Struct.
• ASD Load Coeff = 0.6

• V=130 mph
• Exposure 'C'

ASCE 7-16
WIND LOADS:



**CORPORATE
IDENTIFICATION
SOLUTIONS**

CUSTOMER
CIRCLE K
SITE NUMBER
9831

LOCATION
LAKE CITY, FL
ACCOUNT REP
BEN DEHAYES

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SIGNATURE _____
DATE _____

DESIGN CALCULATIONS

FOR

CIRCLE K #9831 **MID: REPL FACES AT PYLON** US HWY 90 & Centurion Ct – Lake City

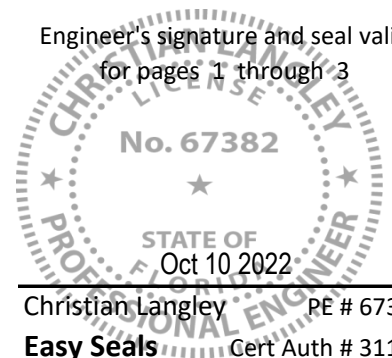
GENERAL NOTES:

1. Design is in accordance with the Florida Building Code 7th Edition (2020) for use within and outside the High Velocity Hurricane Zone (HVHZ).
2. Wind loads have been calculated per the requirements of ASCE 7-16 as shown herein, except where noted otherwise.
3. These engineering calculations pertain only to the structural integrity of those systems, components, and/or other construction explicitly specified herein and/or in accompanying engineering drawings. The existing host structure (if any) is assumed to be in good condition, capable of supporting the loaded system, subject to building department approval. No warranty, either expressed or implied, is contained herein.
4. System components shall be as noted herein. All references to named components and installation shall conform to manufacturer's or industry specifications as summarized herein.
5. Where site conditions deviate from those noted herein, revisions may be required or a separate site-specific engineering evaluation performed.
6. Aluminum components in contact with steel or embedded in concrete shall be protected as prescribed in the 2015 Aluminum Design Manual, Part 1-A. Steel components in contact with, but not encased in, concrete shall be coated, painted, or otherwise protected against corrosion.
7. Engineer seal affixed hereto validates structural design as shown only. Use of this specification by contractor, et. Al, indemnifies and saves harmless this engineer for all costs & damages including legal fees & appellate fees resulting from deviation from this design.

Index:

Pg 1	Cover
Pg 2	Wind Loads
Pg 3	Exist. Footer/Post Check

Engineer's signature and seal valid
for pages 1 through 3



Christian Langley PE # 67382
Easy Seals Cert Auth # 31124

ASCE 7-16 Design Wind Loads

FREESTANDING SOLID SIGNS (ELEVATED)

Building Specs

V = 120 mph *Basic wind speed (Vult)*
 Exposure C

Risk Category 1 Structure
 ASD Load Combo Coeff: 0.6

Calculations

$\alpha = 9.5$ *3-sec gust speed power law exponent*
 $z_g = 900'$ *Nominal ht. of atmos. boundary layer*
 $G = 0.85$

Kd = 0.85 *Directionality factor*
 Kzt = 1.0 *Topographic factor*
 Ke = 1.0 *Ground elevation factor*
 Cf = 1.85 *Force Coefficient*
...Width / Height ratio = 0.2 to 10

120 mph - Exp "C"

Elevated Signs

W/Ht Ratio = 0.2 to 2.0

SIGN HEIGHT	DESIGN WIND PRESSURES	$K_h = K_z$	q_z
15 ft	± 25.1 psf	0.85	16.0
18 ft	± 26.1 psf	0.88	16.6
20 ft	± 26.7 psf	0.90	17.0
30 ft	± 29.0 psf	0.98	18.5
35 ft	± 30.0 psf	1.01	19.1
40 ft	± 30.9 psf	1.04	19.6
45 ft	± 31.6 psf	1.07	20.1
50 ft	± 32.3 psf	1.09	20.6
55 ft	± 33.0 psf	1.12	21.0
60 ft	± 33.6 psf	1.14	21.4
70 ft	± 34.7 psf	1.17	22.1
80 ft	± 35.7 psf	1.21	22.7
90 ft	± 36.6 psf	1.24	23.3
100 ft	± 37.4 psf	1.27	23.8
110 ft	± 38.2 psf	1.29	24.3
120 ft	± 38.9 psf	1.32	24.7
130 ft	± 39.5 psf	1.34	25.1
140 ft	± 40.2 psf	1.36	25.5
150 ft	± 40.8 psf	1.38	25.9
175 ft	± 42.1 psf	1.42	26.8
200 ft	± 43.3 psf	1.46	27.5
250 ft	± 45.4 psf	1.53	28.9

Foundation Design Check (Existing Structure)

Comparison of Reactions Under Proposed Signage vs Existing Signage

Structure Dimensions & Loading

Design wind pressure:	P =	29.0	psf	
Overturning Safety Factor:	Ω =	1.5		... FBC 1807.2.3

Existing Signage

Sign area 1:	A1 =	73.2	sq ft	... tributary area 1 for each footer (e.g. sign)
Height of applied force above grade:	h1 =	15.8	ft	... height of area 1 centroid
Sign area 2:	A2 =	0.0	sq ft	... tributary area 2 for each footer (e.g. post)
Height of applied force above grade:	h2 =	0.0	ft	... height of area 2 centroid

Overturning Moment:

$$M_{ne} = P \cdot (A1 \cdot h1 + A2 \cdot h2)$$

Mne = 33.6 kip-ft

Proposed Signage

Sign area 1:	A1 =	73.2	sq ft	... tributary area 1 for each footer (e.g. sign)
Height of applied force above grade:	h1 =	15.8	ft	... height of area 1 centroid
Sign area 2:	A2 =	0.0	sq ft	... tributary area 2 for each footer (e.g. post)
Height of applied force above grade:	h2 =	0.0	ft	... height of area 2 centroid

Overturning Moment:

$$M_{np} = P \cdot (A1 \cdot h1 + A2 \cdot h2)$$

Mnp = 33.6 kip-ft

Mnp < Mne OK

DESIGN CALCULATIONS

FOR

CIRCLE K #9831 DIRECTIONALS

US HWY 90 & Centurion Ct – Lake City

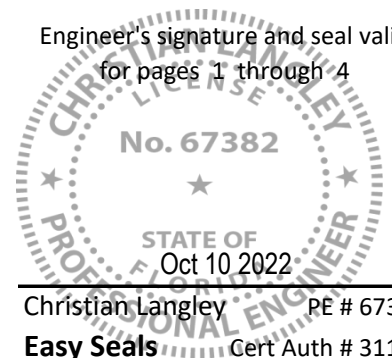
GENERAL NOTES:

1. Design is in accordance with the Florida Building Code 7th Edition (2020) for use within and outside the High Velocity Hurricane Zone (HVHZ).
2. Wind loads have been calculated per the requirements of ASCE 7-16 as shown herein, except where noted otherwise.
3. These engineering calculations pertain only to the structural integrity of those systems, components, and/or other construction explicitly specified herein and/or in accompanying engineering drawings. The existing host structure (if any) is assumed to be in good condition, capable of supporting the loaded system, subject to building department approval. No warranty, either expressed or implied, is contained herein.
4. System components shall be as noted herein. All references to named components and installation shall conform to manufacturer's or industry specifications as summarized herein.
5. Where site conditions deviate from those noted herein, revisions may be required or a separate site-specific engineering evaluation performed.
6. Aluminum components in contact with steel or embedded in concrete shall be protected as prescribed in the 2015 Aluminum Design Manual, Part 1-A. Steel components in contact with, but not encased in, concrete shall be coated, painted, or otherwise protected against corrosion.
7. Engineer seal affixed hereto validates structural design as shown only. Use of this specification by contractor, et. Al, indemnifies and saves harmless this engineer for all costs & damages including legal fees & appellate fees resulting from deviation from this design.

Index:

Pg 1	Cover
Pg 2	Wind Loads
Pg 3	Footing Design
Pg 4	Primary Support(s)

Engineer's signature and seal valid
for pages 1 through 4



Christian Langley PE # 67382
Easy Seals Cert Auth # 31124

ASCE 7-16 Design Wind Loads

FREESTANDING SOLID SIGNS (ELEVATED)

Building Specs

V = 120 mph *Basic wind speed (Vult)*
 Exposure C

Risk Category 1 Structure
 ASD Load Combo Coeff: 0.6

Calculations

$\alpha = 9.5$ *3-sec gust speed power law exponent*
 $z_g = 900'$ *Nominal ht. of atmos. boundary layer*
 $G = 0.85$

Kd = 0.85 *Directionality factor*
 Kzt = 1.0 *Topographic factor*
 Ke = 1.0 *Ground elevation factor*
 Cf = 1.85 *Force Coefficient*
...Width / Height ratio = 0.2 to 10

120 mph - Exp "C"

Elevated Signs

W/Ht Ratio = 0.2 to 2.0

SIGN HEIGHT	DESIGN WIND PRESSURES	$K_h = K_z$	q_z
15 ft	± 25.1 psf	0.85	16.0
18 ft	± 26.1 psf	0.88	16.6
20 ft	± 26.7 psf	0.90	17.0
30 ft	± 29.0 psf	0.98	18.5
35 ft	± 30.0 psf	1.01	19.1
40 ft	± 30.9 psf	1.04	19.6
45 ft	± 31.6 psf	1.07	20.1
50 ft	± 32.3 psf	1.09	20.6
55 ft	± 33.0 psf	1.12	21.0
60 ft	± 33.6 psf	1.14	21.4
70 ft	± 34.7 psf	1.17	22.1
80 ft	± 35.7 psf	1.21	22.7
90 ft	± 36.6 psf	1.24	23.3
100 ft	± 37.4 psf	1.27	23.8
110 ft	± 38.2 psf	1.29	24.3
120 ft	± 38.9 psf	1.32	24.7
130 ft	± 39.5 psf	1.34	25.1
140 ft	± 40.2 psf	1.36	25.5
150 ft	± 40.8 psf	1.38	25.9
175 ft	± 42.1 psf	1.42	26.8
200 ft	± 43.3 psf	1.46	27.5
250 ft	± 45.4 psf	1.53	28.9

Footing Design for Freestanding Signs

Structure Dimensions & Loading

Design wind pressure:	P =	29.0	psf	
Overturning Safety Factor:	Ω =	1.5		... FBC 1807.2.3
Sign area 1:	A1 =	4.8	sq ft	... tributary area 1 for each footer (e.g. sign)
Height of applied force above grade:	h1 =	2.0	ft	... height of area 1 centroid
Sign area 2:	A2 =	0.0	sq ft	... tributary area 2 for each footer (e.g. post)
Height of applied force above grade:	h2 =	0.0	ft	... height of area 2 centroid
Overturning Moment:		$M_n = P \cdot (A1 \cdot h1 + A2 \cdot h2)$		
		Mn =	0.3	kip-ft

Round	Footing Diameter:	B =	1	ft	
	Footing depth:	d =	2.5	ft	Soil cover: ds = 0 ft
	Superstructure weight:	Dr =	200	lb	
	Soil cover weight:	Ds =	0	lb	... = $100\text{pcf} \cdot \pi \cdot B^2 / 4 \cdot ds$
	Footing weight:	Df =	295	lb	... = $150\text{pcf} \cdot \pi \cdot B^2 / 4 \cdot d$
	Total weight:	D =	495	lb	... = Dr + Ds + Df

Soil Strength

...FBC Tables 1806.2, 1819.6

Soil class:	4. Sand, silty sand, silty gravel		
Lateral bearing strength:	Plat =	150	psf/ft
Vertical bearing strength:	Pbrg =	2000	psf

Check Lateral Soil Bearing Pressures

(Empirical Method) ...FBC Sect 1807.3.2.1

Unconstrained (No rigid floor or pavement at ground surface)

Allowable lateral soil bearing pressure at 1/3 depth:

$$S_1 = 2 \cdot \text{Plat} \cdot (d + ds) / 3$$

$$S_1 = 250 \text{ psf}$$

Total applied lateral load: Ptot = 0.14 kips

Equiv ht of applied load: heq = 2.00 ft

$$A_s = 2.34 \cdot \text{Ptot} / (S_1 \cdot B)$$

$$A_s = 1.3 \text{ ft}$$

$$d_{req} = A_s / 2 \cdot [1 + \sqrt{1 + 4.36 \cdot \text{heq} / A_s}]$$

$$d_{req} = 2.47 \text{ ft}$$

$d_{req} < d$ **OK**

ALUMINUM DESIGN MANUAL

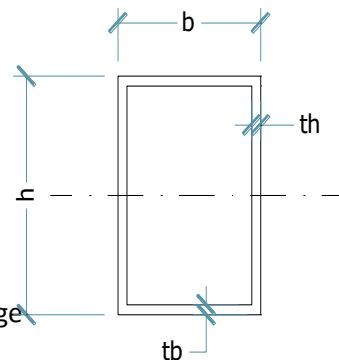
Specifications for Aluminum Structures (Buildings)

Design Check of 2.5"x2.5"x0.125"/0.125" 6063-T6 Aluminum Tube

Alloy: **6063** Temper: **T6** Welded: **Y**

SECTION PROPERTIES

b	2.500"	Flange width
tb	0.125"	Flange thickness
h	2.500"	Web height
th	0.125"	Web thickness
I_x	1.12 in ⁴	Moment of Inertia about axis parallel to flange
I_y	1.12 in ⁴	Moment of Inertia about axis parallel to web
Sc	0.90 in ³	Section modulus, compression side (about X-axis)
rx	0.97 in	Radius of gyration about centroidal axis parallel to flange
ry	0.97 in	Radius of gyration about centroidal axis parallel to web
J	1.67 in ⁴	Torsion constant
A	1.19 in ²	Cross sectional area of member



MEMBER SPANS

L	10.0 ft	Unsupported member length (between supports)
L_b	8.0 ft	Unbraced length for bending (between bracing against side-sway)
k	1.0	Effective length factor

MATERIAL PROPERTIES

F_{tu}	17 ksi	Tensile ultimate strength
F_{ty}	8 ksi	Tensile yield strength
F_{cy}	8 ksi	Compressive yield strength
F_{su}	11 ksi	Shear ultimate strength
E	10,100 ksi	Compressive Modulus of Elasticity

ALLOWABLE STRESSES

$F_b = 4.85$ ksi Allowable bending stress
 $F_{ac} = 2.79$ ksi Allowable axial stress, compression

MEMBER LOADING

Design wind pressure: $P = 29.0$ psf
 Sign area: $A_1 = 4.8$ sq ft
 Eccentricity of applied force: $e_1 = 2.0$ ft

End Supports: **Cantilever**

... trib area for each post (e.g. sign+post)
 ... dist to area centroid (weighted avg h_1, h_2)

Bending Moments

$M_z = 0.28$ kip-ft Bending moment developed in member
 $f_b = 3.76$ ksi Bending stress developed in member
 $F_b = 4.85$ ksi Allowable bending stress of member

$Ma = 0.36$ kip-ft

$f_b < F_b$ **OK**

DESIGN CALCULATIONS

FOR

CIRCLE K #9831 **PANELS AT FUEL CANOPY** US HWY 90 & Centurion Ct – Lake City

GENERAL NOTES:

1. Design is in accordance with the Florida Building Code 7th Edition (2020) for use within and outside the High Velocity Hurricane Zone (HVHZ).
2. Wind loads have been calculated per the requirements of ASCE 7-16 as shown herein.
3. These engineering calculations pertain only to the structural integrity of those systems, components, and/or other construction explicitly specified herein and/or in accompanying engineering drawings. The existing host structure (if any) is assumed to be in good condition, capable of supporting the loaded system, subject to building department approval. No warranty, either expressed or implied, is contained herein.
4. System components shall be as noted herein. All references to named components and installation shall conform to manufacturer's or industry specifications as summarized herein.
5. Where site conditions deviate from those noted herein, revisions may be required or a separate site-specific engineering evaluation performed.
6. Aluminum components in contact with steel or embedded in concrete shall be protected as prescribed in the 2015 Aluminum Design Manual, Part 1. Steel components in contact with, but not encased in, concrete shall be coated, painted, or otherwise protected against corrosion.
7. Engineer seal affixed hereto validates structural design as shown only. Use of this specification by contractor, et. Al, indemnifies and saves harmless this engineer for all costs & damages including legal fees & appellate fees resulting from deviation from this design.

Index:

Pg 1	Cover
Pg 2	Wind Loads
Pg 3	Anchor Design

Engineer's signature and seal valid
for pages 1 through 3



Christian Langley PE # 67382
Easy Seals Cert Auth # 31124

ASCE 7-16 Design Wind Loads

WALL-MOUNTED SIGNS

Building Specs

V = 130 mph *Basic wind speed (Vult)*
 Exposure C

ASD Load Combo Coeff: 0.6

Calculations

$\alpha = 9.5$ *3-sec gust speed power law exponent*
 $z_g = 900'$ *Nominal ht. of atmos. boundary layer*
 $G_{cpi} = 0$ *Internal pressure coeff*

Kd = 0.85 *Directionality factor*
 Kzt = 1.0 *Topographic factor*
 Ke = 1.0 *Ground elevation factor*
 A = 10 sq ft *Tributary area*

130 mph - Exp "C"						
WALL-MOUNTED SIGNS						
SIGN HEIGHT	ASD WIND PRESSURES		Kh = Kz	qz	GCp (4)	GCp (5)
	CENTER (Zone 4)	CORNER (Zone 5)				
15 ft	20.6 psf	26.2 psf	0.85	18.7	-1.10	-1.40
20 ft	21.9 psf	27.9 psf	0.90	19.9	-1.10	-1.40
25 ft	22.9 psf	29.2 psf	0.95	20.9	-1.10	-1.40
30 ft	23.8 psf	30.3 psf	0.98	21.7	-1.10	-1.40
35 ft	24.6 psf	31.3 psf	1.01	22.4	-1.10	-1.40
40 ft	25.3 psf	32.2 psf	1.04	23.0	-1.10	-1.40
45 ft	26.0 psf	33.0 psf	1.07	23.6	-1.10	-1.40
50 ft	26.5 psf	33.8 psf	1.09	24.1	-1.10	-1.40
55 ft	27.1 psf	34.5 psf	1.12	24.6	-1.10	-1.40
60 ft	27.6 psf	35.1 psf	1.14	25.1	-1.10	-1.40
70 ft	28.3 psf	36.6 psf	1.17	25.9	-0.90	-1.80
80 ft	29.0 psf	38.0 psf	1.21	26.6	-0.90	-1.80
90 ft	29.6 psf	39.2 psf	1.24	27.3	-0.90	-1.80
100 ft	30.1 psf	40.3 psf	1.27	27.9	-0.90	-1.80
110 ft	30.6 psf	41.3 psf	1.29	28.5	-0.90	-1.80
120 ft	31.1 psf	42.2 psf	1.32	29.0	-0.90	-1.80
130 ft	31.6 psf	43.1 psf	1.34	29.5	-0.90	-1.80
140 ft	32.0 psf	44.0 psf	1.36	30.0	-0.90	-1.80
150 ft	32.4 psf	44.7 psf	1.38	30.4	-0.90	-1.80
175 ft	33.3 psf	46.6 psf	1.42	31.4	-0.90	-1.80
200 ft	34.1 psf	48.2 psf	1.46	32.3	-0.90	-1.80
250 ft	35.5 psf	51.0 psf	1.53	33.9	-0.90	-1.80

Wall Sign Anchor Design

Structure Dimensions & Loading

Design wind pressure: **P = 30.3 psf**

Sign type: Raceway

Sign size: h = 36.0 inches (height)

Wall material: Metal Steel studs or extrusions/shapes

Anchor type/size: #14 SMS

Ref: Min 18ga studs (grd 33) or 0.090" 6063-T6

Min Embedment: Full

Min edge dist: 0.75"

Anchor tensile capacity: **Tcap = 152.0 lb** (per anchor)

Check Anchors for Pullout

Total Reaction: $R_t = 91 \text{ lb/ft}$... = $P \cdot h$ (along raceway)

Anchor spacing req'd $s = 40.1 \text{ in O.C.}$... = $(2 \cdot \text{cap}) / R_t$

Pairs of anchors at 40 inches on center (max)

3.3 feet on center

OK, use anchors at 40" O.C. max along top & bottom.