STATE ROAD NO. 93 /
I – 275 RESURFACING FROM S OF US 19 TO N OF US 19
Manatee County (13175)
FPID No. 453561-1-52-01

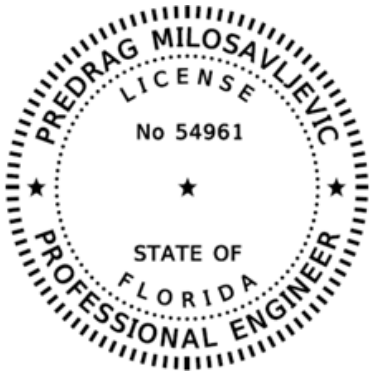
STRUCTURAL CALCULATIONS REPORT
Multi-Column Ground Sign

Prepared For:

Florida Department of Transportation
District One

June 2025

Prepared by:
Scalar Consulting Group, LLC.
5713 Corporate Way, Suite 200
West Palm Beach, FL 33407
Phone: (561) 429-5065
Predrag Z. Milosavljevic, PE No. 54961
Vendor No. 451909667



This item has been digitally signed and sealed by Predrag Z. Milosavlievic on the date adjacent to the seal. Signature must be verified on any electronic copies.

Predrag Z. Milosavlievic, State of Florida,
Professional Engineer, License No. 54961
Scalar Consulting Group, LLC.
Engineer of Record

The above named professional engineer shall be responsible for the contents of this report in accordance with Rule 61G15-23.004, F.A.C.

Table of Contents

DESIGN SUMMARY

Design Methodology

The multi-post sign cross section was used to develop a summary of the input data for panel size, slope, and clear height. This data has been used as input in the Multi-Post Sign-LRFD program, to calculate the required post sections for both steel and aluminum supports. The standard foundation design in Standard Plans Index 700-020 was assumed for all locations. Geotechnical parameters used in the design of this multi-post sign are corresponding to the parameters shown in SPI for Index 700-020 Multi-Column Ground Sign:

Classification = Cohesionless (Fine Sand)

Friction Angle = 30 degrees

Unit Weight = 50 pcf (assumed submerged)

Design Specifications & Criteria

- FDOT Structures Manual (2025)
- FDOT 2025-26 Standard Plans Index 700-020
- Volume 3 FDOT Modifications to LRFDLTS-1
- Design Wind Speed = 110 mph (for Roadside sign structures, a 10 year Extreme Event Limit State is to be used, FDOT Modifications to LRFDLTS-1, 3.8.2)
- Phi for overturning resistance = 0.8 (FDOT Modifications to LRFDLTS-1, 13.6.1.1)

Analysis Program

- FDOT Multi-Post Sign-LRFD v1.3.Mathcad

MULTI-COLUMN SIGN INPUT DATA

Sign #	Dimension	Station	Approx. Left Fdn EL	Approx. Right Fdn EL	Post Spacing	Run/Rise	Minimum Height Clearance	Edge of Travel EL.	Approx. Bottom of Sign EL	Required Post Size (Aluminum)	Required Post Size (Steel)	Req. Shaft Dia.	Req. Shaft Depth	FDOT Index 700-020 Steel Req Depth	Standard Foundation Check *
SIGN GS-02	13.5' X 12.5'	363+79.57	22.20	20.24	7.83	3.99	7.83	23.03	30.03	I 12 X 14.3 (2)	W 10 X 33 (2)	2'-4"	9'-0"	10'-3"	OK

OK * Use foundation size per FDOT standard

Index 700-020 Foundation Data		
Section	Diameter	Length
S3X5.7	2'-0"	4'-0"
W6X12	2'-0"	6'-0"
W8X18	2'-4"	7'-6"
W8X24	2'-4"	8'-6"
W10X33	2'-4"	10'-3"
W12X45	2'-8"	11'-3"

SIGN GS-02

Multi- Column Ground Sign Post Design v1.3

SUBJECT STA. 363+79.57
PROJECT # 453561-1-52-01
DESIGNED BY SC DATE 06/20/2025
CHECKED BY PZM DATE 06/20/2025

GENERAL INFORMATION:

References:

1. AASHTO LRFD Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, 1st Edition. [LRFD LTS-1]
2. FDOT Structures Manual Volume 3
3.FDOT Standard Plans for Road and Bridge Construction, Index 700-020.

Reference:P:\FL24102.03 I-275 from S of US 19 to N of US 19\DOCS\Structures\02 Multi Post Signs\Backup\MultiColumnV1.3-Mcad15\LRFD Equation M

DESIGN REQUIREMENTS:

Main Panel Dimensions

$L_{panel} := 13.5 \cdot ft$ $D_{panel} := 12.5 \cdot ft$

Top Panel Dimensions and Location

$L_{top.panel} := 9.0 \cdot ft$ $D_{top.panel} := 2.5 \cdot ft$

TopJustification := Left / Center / Right

Bottom Panel Dimensions and Location

$L_{bot.panel} := 0 \cdot ft$ $D_{bot.panel} := 0 \cdot ft$

BottomJustification := Left / Center / Right

Ground Slope and Sign Height

$Run_{Rise} := 3.99 \cdot \frac{ft}{ft}$ *ground slope*

$H_{clear.min.sign} := 7.83 \cdot ft$ *Clearance from the ground to the bottom of the sign*

LRFD Extreme Event I Wind Speed

$V_{wind} := 110 \cdot mph$ *FDOT Structures Manual, Vol. 3 For Ground Signs, Use 110 mph for the entire state*

$z_{panel} := 0 ft$ *Height of Main Sign Panel for Wind Load Calculation; Input 0 to use height from the ground line.*

Roadside Design Guide 4.3.2:

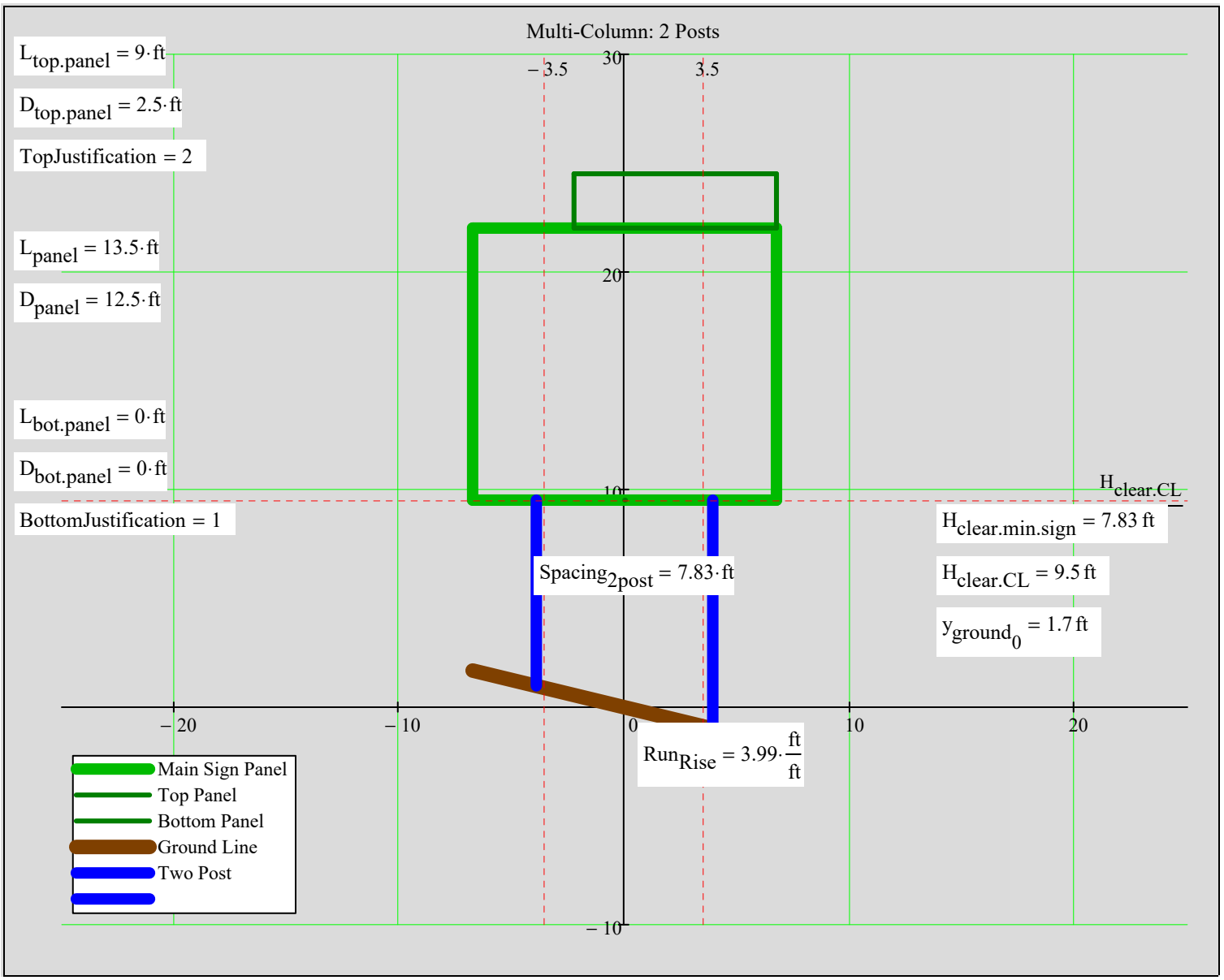
- *The hinge should be at least 7 ft, above the ground so that no portion of the sign or upper section of the support is likely to penetrate the windshield of an impacting vehicle.*
- *No supplementary signs should be attached below the hinges if such placement is likely to interfere with the breakaway action of the support post or if the supplemental sign is likely to strike the windshield of an impacting vehicle.*

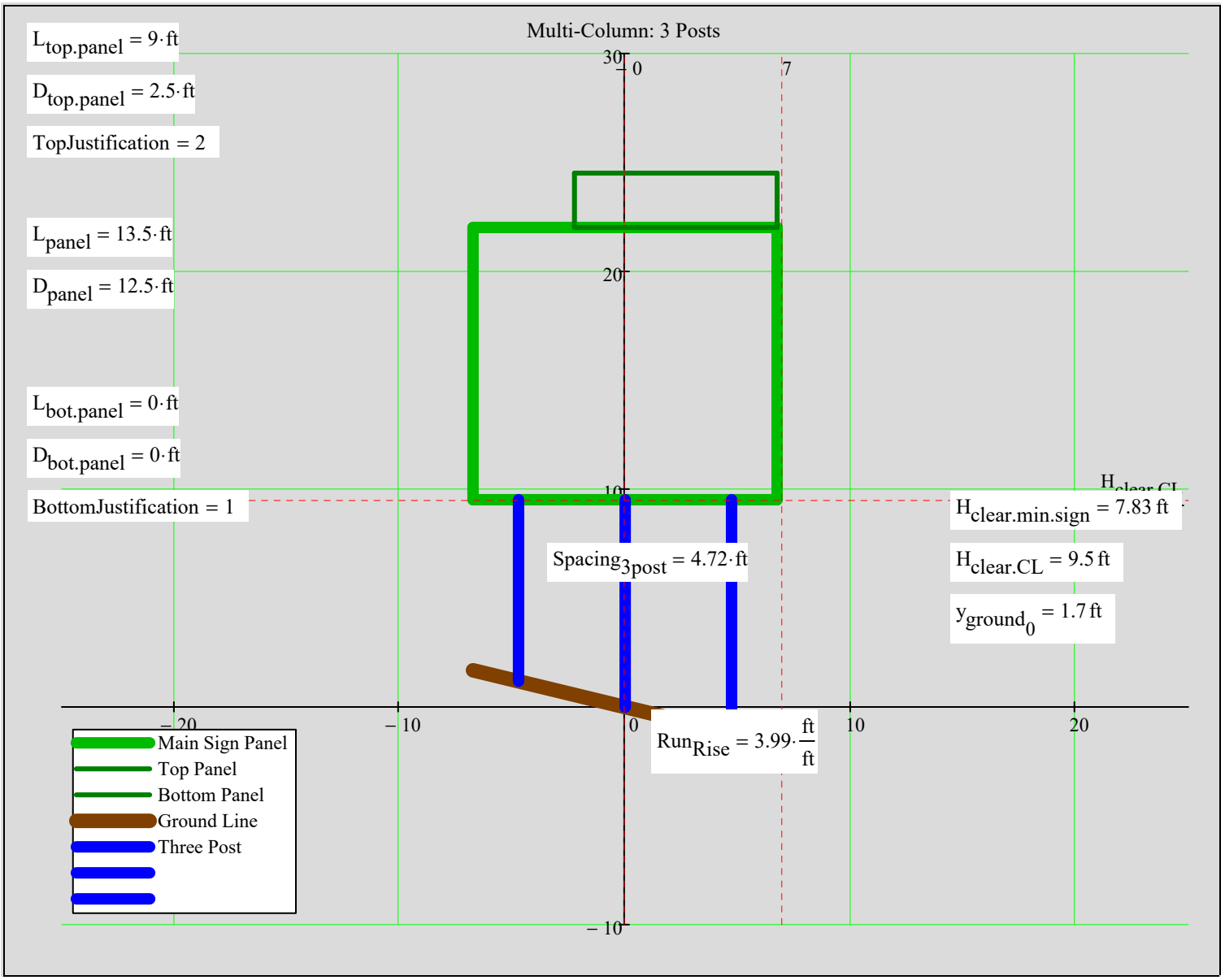
MUTCD 2A.18:

- *Directional signs on freeways and expressways shall be installed with a minimum height of 7 feet,measured vertically from the bottom of the sign to the elevation of the near edge of the pavement.*
- *Where large signs having an area exceeding 50 square feet are installed on multiple breakaway posts, the clearance from the ground to the bottom of the sign shall be at least 7 feet.*

Post and Panel Geometry

Post and Panel Geometry





CheckPanelDims = "OK"

CheckTopPanelDims = "OK"

CheckBotPanelDims = "OK"

CheckMaxPanelWidth2Post = "OK"

CheckMaxClearHeight = "OK "

CheckMinClearHeight = "OK "

Post and Panel Loads

Post and Panel Loads

Post Design: Steel W-Beam

Post Material and Section Properties

$F_{y.stbeam} := 36 \cdot ksi$ $E_{steel} := 29000 \cdot ksi$

Steel I Beam Designations *S3x5.7* *W6x12* *W8x18* *W8x24* *W10x33* *W12x45*

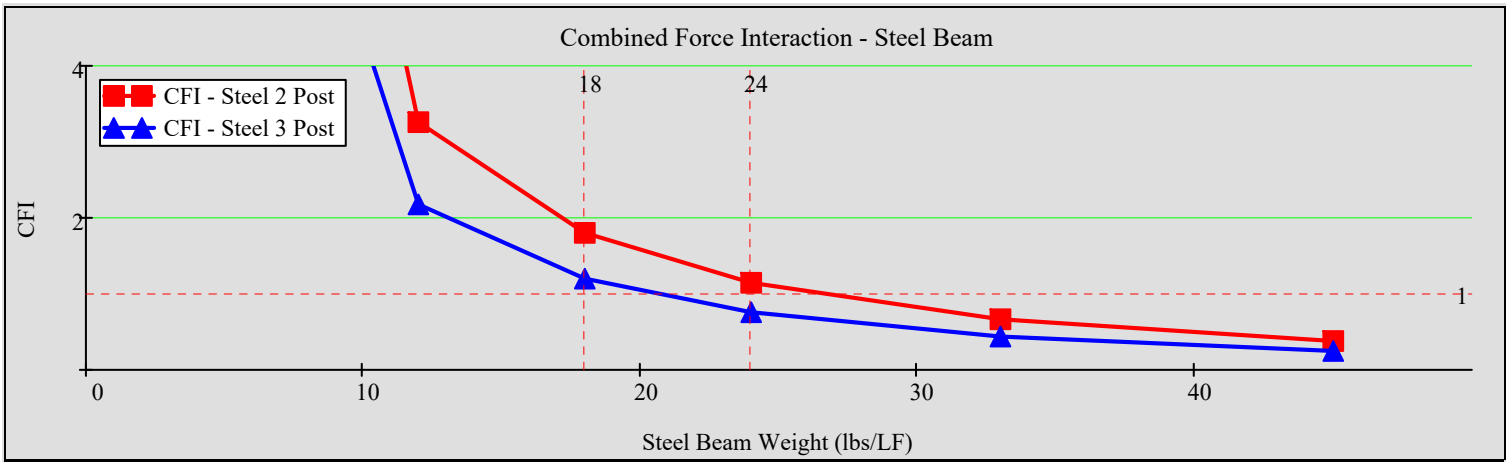
$Prop_{stbeam} :=$

5.7	12.0	18.0	24.0	33.0	45.0	Wt per Length (lbf/ft)
2.33	4.0	5.25	6.5	7.96	8.0	Flange Width (in)
0.26	0.28	0.33	0.40	0.435	0.575	Flange Thickness (in)
3.0	6.03	8.14	7.93	9.73	12.1	d (in)
0.17	0.23	0.23	0.245	0.29	0.335	Web Thickness (in)
1.66	3.55	5.26	7.08	9.71	13.1	A (in3)
1.67	7.31	15.2	20.9	35.0	57.7	S (in3)
1.94	8.30	17.0	23.1	38.8	64.2	Z (in3)
2.5	22.1	61.9	82.7	171.0	348	I (in4)
0.447	2.99	7.97	18.3	36.6	50.0	Iy (in4)
0.0433	0.0903	0.172	0.346	0.583	1.26	J (in4)
0.838	24.7	122	259	791	1650	Cw(in6)

The order of Steel Beams need to be in ascending order of the Section Strength

A single post, spaced with a clear distance of 7 feet or more from another post, shall have a mass no greater than 45 lb/ft.

Steel Beam Post Design



$WtPerFt_{stbeam} = \begin{pmatrix} 5.7 \\ 12 \\ 18 \\ 24 \\ 33 \\ 45 \end{pmatrix} \cdot \frac{lbf}{ft}$ $CFI_{2Post.stbeam} = \begin{pmatrix} 13.91 \\ 3.26 \\ 1.81 \\ 1.15 \\ 0.67 \\ 0.38 \end{pmatrix}$

Smallest 2 Post Steel Beam that Satisfies Strength Requirements

SteelBeam2Post = "W 10 x 33"

CheckMaxPanelWidth2Post = "OK"

CheckCFI2PostStBeam = "OK"

CheckBreakaway2PostStBeam = "OK"

$$WtPerFt_{stbeam} = \begin{pmatrix} 5.7 \\ 12 \\ 18 \\ 24 \\ 33 \\ 45 \end{pmatrix} \cdot \frac{lbf}{ft} \qquad CFI_{3Post.stbeam} = \begin{pmatrix} 9.24 \\ 2.18 \\ 1.20 \\ 0.76 \\ 0.44 \\ 0.25 \end{pmatrix}$$

Smallest 3 Post Steel Beam that Satisfies Strength Requirements

SteelBeam3Post = "W 8 x 24"

CheckCFI3PostStBeam = "OK"

CheckBreakaway3PostStBeam = "NG, Spacing < 7 ft & Post Wt. > 18 plf"

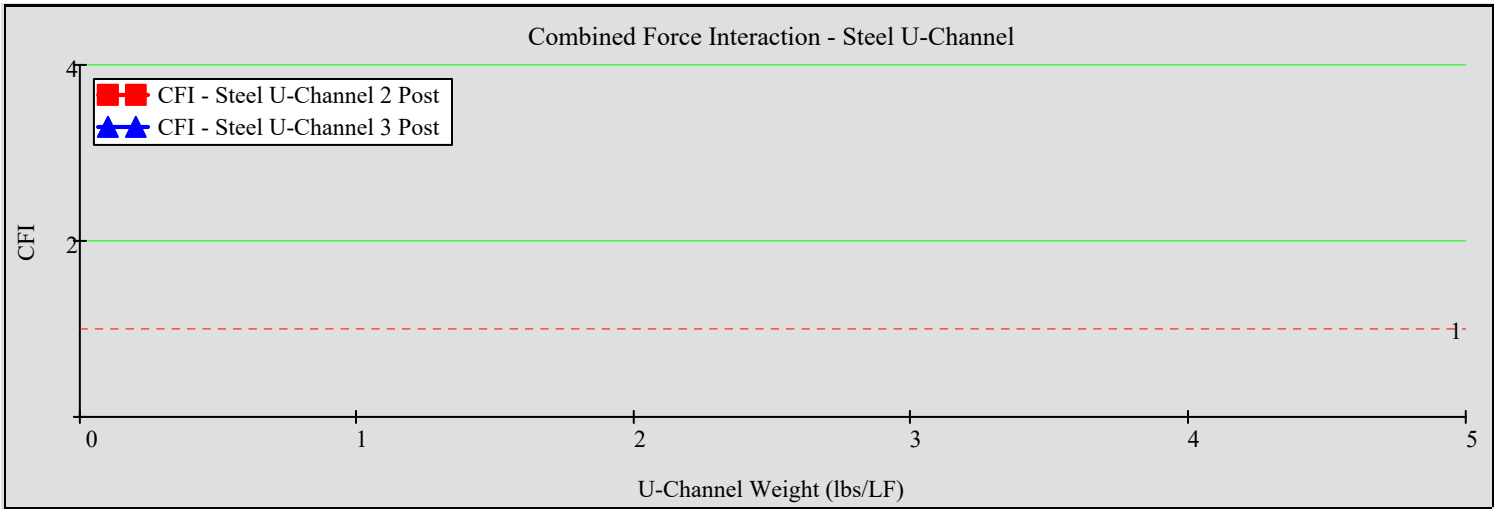
Post Design: Steel U-Channel

$F_{y.steel.uchan} := 60 \cdot ksi$

$$Prop_{uchan} := \begin{pmatrix} 2 & 2.5 & 3 & 4 \\ 3.125 & 3.125 & 3.5 & 3.5 \\ 1.25 & 1.25 & 1.625 & 1.671 \\ 0.11 & 0.13 & 0.14 & 0.19 \\ 0.59 & 0.74 & 0.92 & 1.24 \\ 0.23 & 0.31 & 0.43 & 0.56 \\ 0.26 & 0.35 & 0.48 & 0.62 \\ 0.18 & 0.24 & 0.40 & 0.50 \end{pmatrix} \quad \begin{pmatrix} \text{Wt per Length (lbf/ft)} \\ \text{Overall Width (in)} \\ \text{Flange Width (in)} \\ \text{Flange Thickness (in)} \\ \text{A (in3)} \\ \text{S (in3)} \\ \text{Z (in3)} \\ \text{Iy (in4)} \end{pmatrix}$$

The order of Steel U-Channels need to be in ascending order of the Section Strength

Steel U-Channel Post Design



Smallest 2 Post U-Channel that Satisfies Strength Requirements

$$WtPerFt_{uchan} = \begin{pmatrix} 2 \\ 2.5 \\ 3 \\ 4 \end{pmatrix} \cdot \frac{lbf}{ft} \qquad CFI_{2Post.uchan} = \begin{pmatrix} 49.13 \\ 34.70 \\ 26.72 \\ 19.13 \end{pmatrix}$$

SteelUChannel2Post = "Max U-Channel Capacity Exceeded"

CheckMaxPanelWidth2Post = "OK"

CheckCFI2PostUchan = "NG"

CheckBreakaway2PostUchan = "OK"

Smallest 3 Post U-Channel that Satisfies Strength Requirements

$$WtPerFt_{uchan} = \begin{pmatrix} 2 \\ 2.5 \\ 3 \\ 4 \end{pmatrix} \cdot \frac{lbf}{ft} \qquad CFI_{3Post.uchan} = \begin{pmatrix} 32.16 \\ 22.72 \\ 17.51 \\ 12.54 \end{pmatrix}$$

SteelUChannel3Post = "Max U-Channel Capacity Exceeded"

CheckCFI3PostUchan = "NG"

CheckBreakaway3PostUchan = "OK"

Post Design: Aluminum Beam (6061-T6 Alloy)

Post Material and Section Properties

$F_{cy} := 35 \cdot ksi$ $F_{ty} := 35 \cdot ksi$ $C_t := 141$ $F_{tu} := 38 \cdot ksi$ $k_t := 1.0$ $E_{aluminum} := 10100 \cdot ksi$

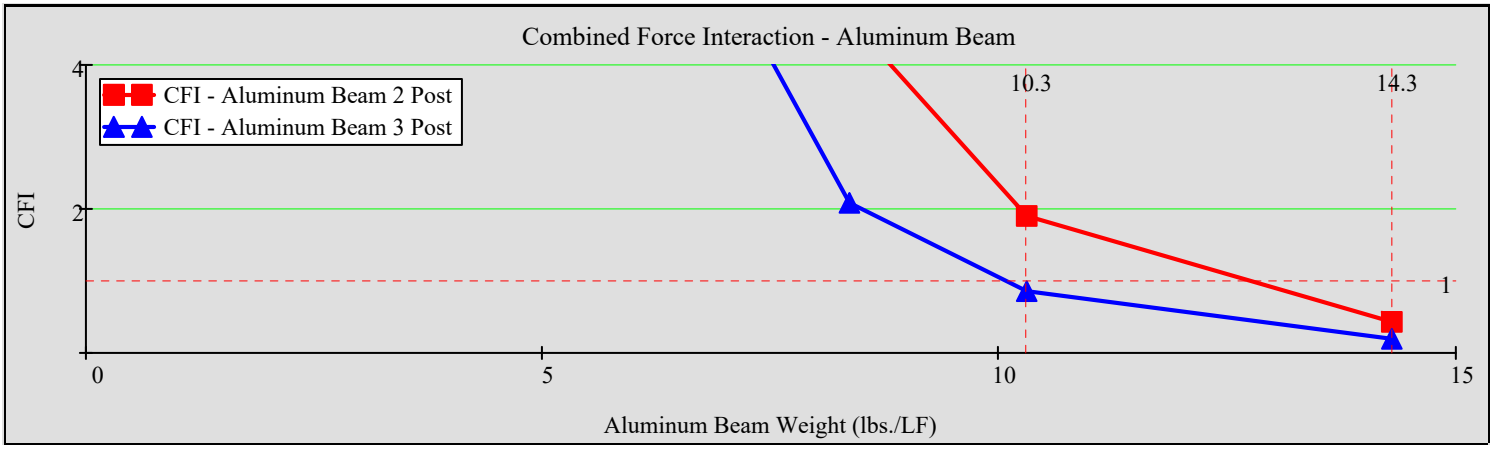
Aluminum I-Beam Designations *4x2.79* *8x6.18* *10x10.3* *3x2.03* *6x4.03* *9x8.36* *12x14.3*

$Prop_{albeam} :=$

2.03	2.79	4.03	6.18	8.36	10.3	14.3	Wt per Length (lbf/ft)
2.5	3	4	5	5.5	6	7	Flange Width (in)
0.26	0.29	0.29	0.35	0.44	0.5	0.62	Flange Thickness (in)
3	4	6	8	9	10	12	d (in)
0.15	0.17	0.19	0.23	0.27	0.29	0.31	Web Thickness (in)
1.73	2.38	3.43	5.26	7.11	8.75	12.1	A (in3)
1.81	3.36	7.33	14.9	22.7	31.2	52.9	S (in3)
1.25	1.68	2.53	3.37	3.79	4.22	5.11	r (in)
2.71	6.71	22.0	59.7	102	156	317	I (in4)
0.679	1.31	3.10	7.30	12.2	18.0	35.5	Iy (in4)
0.0374	0.0608	0.0888	0.188	0.386	0.620	1.26	J (in4)
1.27	4.5	25.3	107	224	407	1149	Cw (in6)

The order of Aluminum Beams need to be in ascending order of the Section Modulus

Aluminum Beam Post Design



$WtPerFt_{albeam} = \begin{pmatrix} 2.03 \\ 2.79 \\ 4.03 \\ 6.18 \\ 8.36 \\ 10.3 \\ 14.3 \end{pmatrix} \cdot \frac{lbf}{ft}$ $CFI_{2Post.albeam} = \begin{pmatrix} 901.94 \\ 301.65 \\ 87.67 \\ 15.88 \\ 4.64 \\ 1.91 \\ 0.43 \end{pmatrix}$

Smallest 2 Post Aluminum Beam that Satisfies Strength Requirements

AlBeam2Post = "I 12 x 14.3"

CheckMaxPanelWidth2Post = "OK"

CheckCFI2PostAlBeam = "OK"

CheckBreakaway2PostAlBeam = "OK"

$WtPerFt_{albeam} = \begin{pmatrix} 2.03 \\ 2.79 \\ 4.03 \\ 6.18 \\ 8.36 \\ 10.3 \\ 14.3 \end{pmatrix} \cdot \frac{lbf}{ft}$ $CFI_{3Post.albeam} = \begin{pmatrix} 396.97 \\ 133.05 \\ 38.98 \\ 7.13 \\ 2.09 \\ 0.86 \\ 0.20 \end{pmatrix}$

Smallest 3 Post Aluminum Beam that Satisfies Strength Requirements

AlBeam3Post = "I 10 x 10.3"

CheckCFI3PostAlBeam = "OK"

CheckBreakaway3PostAlBeam = "OK"

Post Design: Aluminum Round Tube (6061-T6 Alloy)

Due to a lack of crashing testing, do not use Aluminum Round Tube for multi-post signs.

Foundation Design

Soil Properties, Shaft Properties and Phi Factor for Overturning

$SoilType := 1$ *(0 for clay, 1 for sand)*

$\gamma_{soil} := 50 \cdot pcf$

$\phi_{soil} := 30 \cdot deg$ *(for sand)*

$c_{soil} := 1.0 \cdot ksf$ *(for clay)*

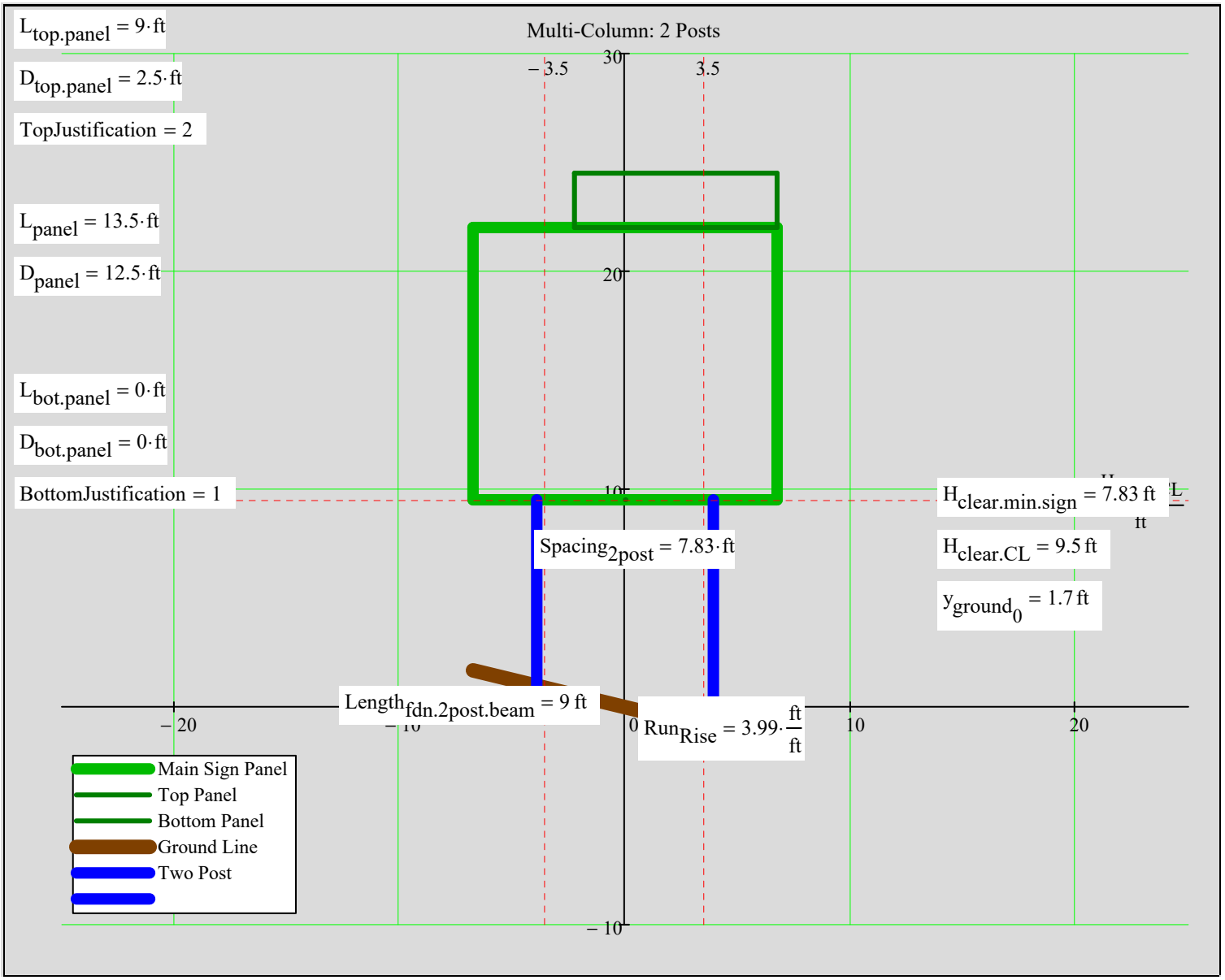
$Dia_{fdn} := 2.33 \cdot ft$

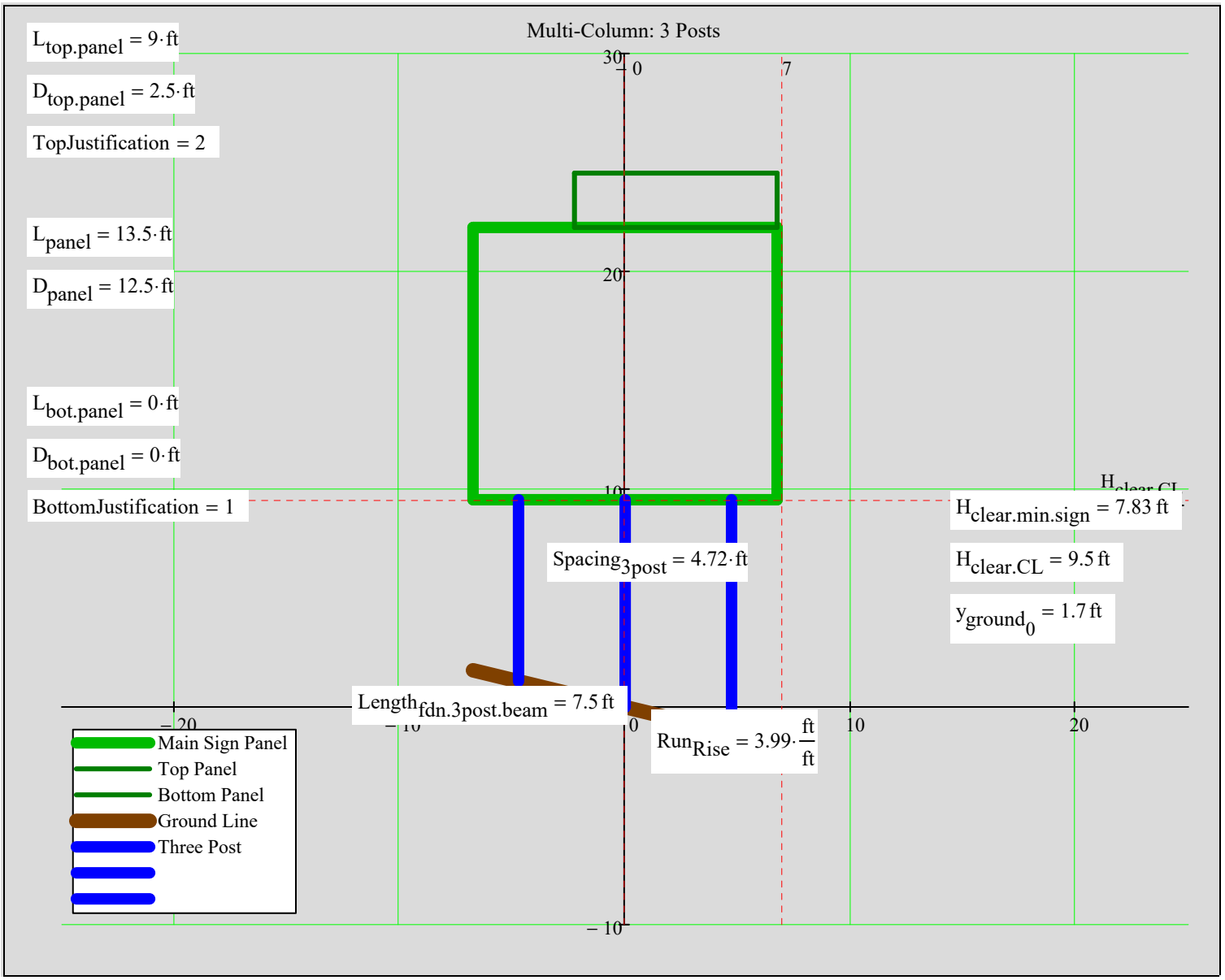
$Offset := 0 \cdot ft$

$\phi_{ot} := 0.8$

Foundation Design for Round Piles for Steel & Aluminum Beams and Direct Burial U-Channel

DESIGN SUMMARY:





Panel and Supplemental Panel Checks

CheckTopPanelDims = "OK"

CheckPanelDims = "OK"

CheckBotPanelDims = "OK"

CheckMaxPanelWidth2Post = "OK"

CheckMaxClearHeight = "OK "

CheckMinClearHeight = "OK "

Design Wind Speed and Number of Wind Beams

$V_{wind} = 110 \cdot mph$ #WindBeams = 4 Check#WindBeams = "OK"

Steel W-Beam Post Option $F_{y.stbeam} = 36 \cdot ksi$

CheckCFI2PostStBeam = "OK"

SteelBeam2Post = "W 10 x 33"

CheckBreakaway2PostStBeam = "OK"

CheckCFI3PostStBeam = "OK"

SteelBeam3Post = "W 8 x 24"

CheckBreakaway3PostStBeam = "NG, Spacing < 7 ft & Post Wt. > 18

Aluminum I-Beam Post Option (6061-T6 Alloy)

CheckCFI2PostAlBeam = "OK" = "I 12 x 14.3"

AlBeam2Post = "I 12 x 14.3"

CheckBreakaway2PostAlBeam = "OK"

CheckCFI3PostAlBeam = "OK"

AlBeam3Post = "I 10 x 10.3"

CheckBreakaway3PostAlBeam = "OK"

Round Pile Foundation Design for Steel and Aluminum Beams

SoilType = 1 *(0 for clay, 1 for sand)* $\gamma_{soil} = 50 \cdot pcf$ $\phi_{soil} = 30 \cdot deg$ $c_{soil} = 1 \cdot ksf$

$Dia_{fdn} = 2.33 \cdot ft$ Offset = $0 \cdot ft$

Shaft Length for Two Post Configuration $Length_{fdn.2post.beam} = 9 \cdot ft$

Shaft Length for Three Post Configuration $Length_{fdn.3post.beam} = 7.5 \cdot ft$

Steel U-Channel Post Option $F_{y.steel.uchan} = 60 \cdot ksi$

CheckCFI2PostUchan = "NG"

SteelUChannel2Post = "Max U-Channel Capacity Exceeded"

CheckBreakaway2PostUchan = "OK"

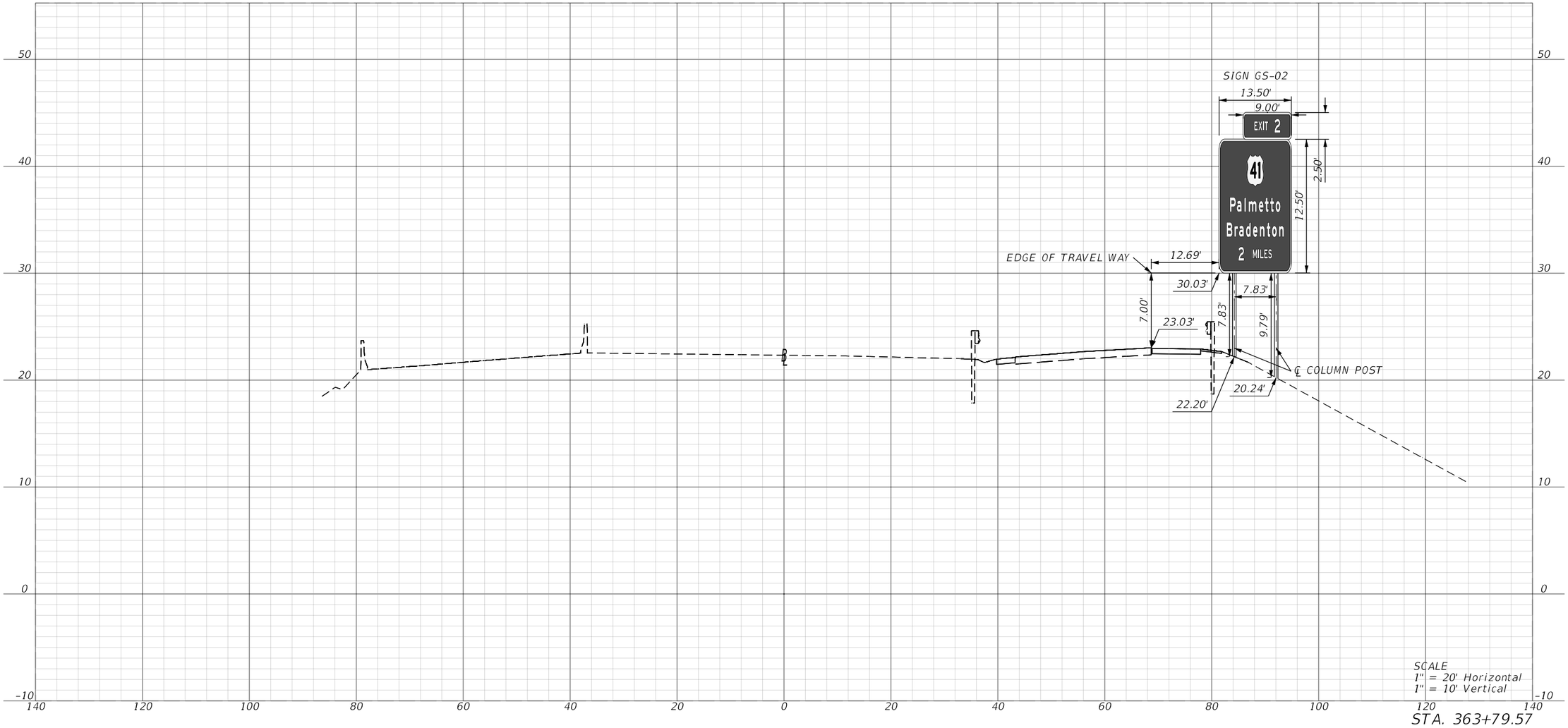
CheckCFI3PostUchan = "NG"

SteelUChannel3Post = "Max U-Channel Capacity Exceeded"

CheckBreakaway3PostUchan = "OK"

APPENDIX A –

SIGN CROSS SECTION



STA. 363+79.57

REVISIONS				ENGINEER OF RECORD	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			MULTIPOST CROSS SECTIONS	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	JAMES M. WINTER, JR., P.E. LICENSE NUMBER: 55514 SCALAR CONSULTING GROUP INC. 12620 TELECOM DRIVE TEMPLE TERRACE, FLORIDA 33637	ROAD NO.	COUNTY	FINANCIAL PROJECT ID		S-20
					SR 93	MANATEE	453561-1-52-01		

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

APPENDIX B –

SIGNING AND PAVEMENT MARKING PLANS

CONTRACT PLANS COMPONENTS

ROADWAY
SIGNING AND PAVEMENT MARKING

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

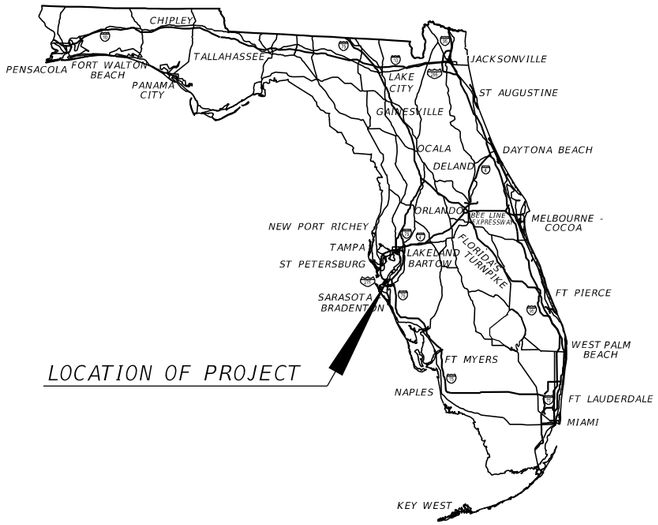
SIGNING AND PAVEMENT MARKING PLANS

FINANCIAL PROJECT ID 453561-1-52-01

MANATEE COUNTY (13175)

STATE ROAD NO. 93 / I-275

RESURFACING FROM S OF US 19 TO N OF US 19



PROJECT LOCATION URL:	https://tinyurl.com/3xwakr2z
PROJECT LIMITS:	BEGIN MP 3.553 – END MP 5.233
EXCEPTIONS:	NONE
BRIDGE LIMITS:	BRIDGE NO. 130125 MP 3.953 – MP 3.988 130126 MP 3.957 – MP 3.991 130127 MP 4.535 – MP 4.746 130128 MP 4.553 – MP 4.729 130129 MP 3.553 – MP 3.898 130130 MP 3.566 – MP 3.884
RAILROAD CROSSING:	NONE

INDEX OF SIGNING AND PAVEMENT MARKING PLANS

GOVERNING STANDARD PLANS:

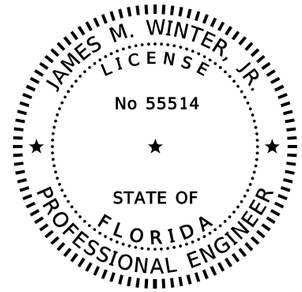
Florida Department of Transportation, FY 2025-26 Standard Plans for Road and Bridge Construction and applicable Interim Revisions (IRs).

Standard Plans for Road Construction and associated IRs are available at the following website: http://www.fdot.gov/design/standardplans

APPLICABLE IRs: IR N/A

GOVERNING STANDARD SPECIFICATIONS:

Florida Department of Transportation, 2025-26 Standard Specifications for Road and Bridge Construction at the following website: http://www.fdot.gov/programmanagement/Implemented/SpecBooks



THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY

ON THE DATE ADJACENT TO THE SEAL

PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

SIGNING AND PAVEMENT MARKING PLANS ENGINEER OF RECORD:

JAMES M. WINTER, JR., P.E.
P.E. LICENSE NUMBER 55514
SCALAR CONSULTING GROUP INC.
12620 TELECOM DRIVE
TEMPLE TERRACE, FLORIDA 33637

CONTRACT NO.: CAU72
VENDOR NO.: 451909667

FDOT PROJECT MANAGER:

PHILIP MENKE, P.E.

CONSTRUCTION CONTRACT NO.	FISCAL YEAR	SHEET NO.
	26	S-1

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LA R/W LINE

LA R/W LINE

1" = 40'

South
Skyway Fishing Pier
2 MILES

REST AREA
VENDING MACHINES
NIGHTTIME SECURITY

STA. 364+12
EXIST. SIGN PANEL
TO REMAIN

STA. 364+41
700-1-112 2 EA
W3-5
48"X48"

SPEED LIMIT 65

STA. 366+04
700-1-111
D10-5
18"X60"

NORTH
275
MILE
4 .5

6" WHITE PERMANENT TAPE

+86 +86

6" YELLOW PERMANENT TAPE

+86

6" WHITE (10'-30' SKIP)
W/ W/R RPMS @ 40' O.C.

SR 93 / I-275

6" WHITE

6" YELLOW

12' 12'

6" WHITE (10'-30' SKIP) & CONTRAST 6" BLACK (10'-30' SKIP)
PERMANENT TAPE W/ W/R RPMS @ 40' O.C.

363 364 365 366 367

℄ SURVEY SR 93 / I-275

6" WHITE (10'-30' SKIP) & CONTRAST 6" BLACK (10'-30' SKIP)
PERMANENT TAPE W/ W/R RPMS @ 40' O.C.

+91 +91

6" YELLOW PERMANENT TAPE

SR 93 / I-275

6" YELLOW

6" WHITE (10'-30' SKIP)
W/ W/R RPMS @ 40' O.C.

6" WHITE

12' 12'

+91

6" WHITE PERMANENT TAPE

STA. 363+80
700-2-116
GS-03
108"X30"
GS-02
162"X150"

41
Palmetto
Bradenton
2 MILES
EXIT 2

SOUTH
275
MILE
4 .5

STA. 366+32
700-1-600
EXIST. SIGN
TO BE REMOVED

SOUTH
275
MILE
4 .5

STA. 366+32
700-1-111
D10-5
18"X60"

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REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ENGINEER OF RECORD

JAMES M. WINTER, JR., P.E.
LICENSE NUMBER: 55514
SCALAR CONSULTING GROUP INC.
12620 TELECOM DRIVE
TEMPLE TERRACE, FLORIDA 33637

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 93	MANATEE	453561-1-52-01

S&PM PLAN (8)

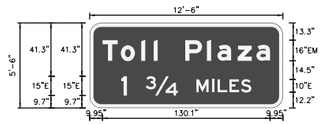
SHEET NO.
S-9

P:\FL24102.03 I-275 from S of US 19 to N of US 19\45356115201\SigningAndMarking\PLANSP01.dgn : BL275 - PLAN 8 [SHEET]
USER: karabi 6/20/2025 11:26:03 AM

SIGN NAME	GS-01	QTY	1	SIGN NUMBER	STATION(S)
PANEL		BORDER			388+83
WIDTH	12'-6"	WIDTH	3"		
HEIGHT	5'-6"	RADII	9"		
LEGEND	White	COLOR	White		
COLOR	Green				

SYMBOL(S)	ANGLE	X	Y	WID	HT

SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE		AVERAGE LENGTH



NO. OF LIGHT FIXTURES | FIXTURE SPACING | PHOTOMETRIC CURVE | WATT | VOLTAGE

COPY	T	o	l	l		P	l	a	z	a		L											
SPACE	9.96	24.2	40.04	49.64	56.04	74.28	91.08	99.24	114.92	129.48		130.08											
COPY	1	¾	M	l	L	E	S		L														
SPACE	24.46	43.46	82.94	94.94	99.34	108.54	117.44		101.07														
COPY																							
SPACE																							
COPY																							
SPACE																							
COPY																							
SPACE																							
COPY																							
SPACE																							

SIGN NAME	GS-02	QTY	1	SIGN NUMBER	STATION(S)
PANEL		BORDER			363+80
WIDTH	13'-6"	WIDTH	2"		
HEIGHT	12'-6"	RADII	12"		
LEGEND	White	COLOR	White		
COLOR	Green				

SYMBOL(S)	ANGLE	X	Y	WID	HT
M1_4	0	63	96.62	36	36

SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE		AVERAGE LENGTH

NO. OF LIGHT FIXTURES | FIXTURE SPACING | PHOTOMETRIC CURVE | WATT | VOLTAGE

COPY	P	a	l	m	e	t	t	o		L													
SPACE	24.44	39.8	56.76	66.36	88.92	102.84	114.68	126.68		113.12													
COPY	B	r	a	d	e	n	t	o	n		L												
SPACE	16.92	34.36	44.76	60.28	75.8	91.32	106.68	118.68	134.52		128.16												
COPY	2	M	l	L	E	S		L															
SPACE	43.62	75.78	87.78	92.18	101.38	110.28		74.75															
COPY																							
SPACE																							
COPY																							
SPACE																							
COPY																							
SPACE																							

SIGN NAME	GS-03	QTY	1	SIGN NUMBER	STATION(S)
PANEL		BORDER			
WIDTH	9'-0"	WIDTH	2"		
HEIGHT	2'-6"	RADII	6"		
LEGEND	White	COLOR	White		
COLOR	Green				

SYMBOL(S)	ANGLE	X	Y	WID	HT

SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE		AVERAGE LENGTH

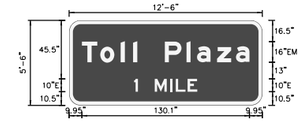
NO. OF LIGHT FIXTURES | FIXTURE SPACING | PHOTOMETRIC CURVE | WATT | VOLTAGE

COPY	E	X	I	T	2		L																
SPACE	25.13	34.03	44.73	48.23	70.73		57.75																
COPY																							
SPACE																							
COPY																							
SPACE																							
COPY																							
SPACE																							
COPY																							
SPACE																							
COPY																							
SPACE																							

SIGN NAME	GS-04	QTY	1	SIGN NUMBER	STATION(S)
PANEL		BORDER			352+63
WIDTH	12'-6"	WIDTH	3"		
HEIGHT	5'-6"	RADII	9"		
LEGEND	White	COLOR	White		
COLOR	Green				

SYMBOL(S)	ANGLE	X	Y	WID	HT

SIGN NUMBER	NUMBER OF POSTS	CLEARANCE Edge Of Lane	COLUMN SIZE		AVERAGE LENGTH



NO. OF LIGHT FIXTURES | FIXTURE SPACING | PHOTOMETRIC CURVE | WATT | VOLTAGE

COPY	T	o	l	l		P	l	a	z	a		L											
SPACE	9.96	24.2	40.04	49.64	56.04	74.28	91.08	99.24	114.92	129.48		130.08											
COPY	1	M	l	L	E		L																
SPACE	50.45	66.45	78.45	82.85	92.05		49.1																
COPY																							
SPACE																							
COPY																							
SPACE																							
COPY																							
SPACE																							

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ENGINEER OF RECORD
JAMES M. WINTER, JR., P.E.
LICENSE NUMBER: 55514
SCALAR CONSULTING GROUP INC.
12620 TELECOM DRIVE
TEMPLE TERRACE, FLORIDA 33637

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 93	MANATEE	453561-1-52-01

GUIDE SIGN WORKSHEET

SHEET NO. S-19