



The Road Ahead

What Changes Are Coming Our Way?



September 19, 2024



Working Drawings



September 19, 2024

Elevation and Design Criteria Working Drawings


Work in progress


- Several new working drawings are in the works to serve as a guide for detailing sign elevation sheets.
- The sheets will provide a basis for Districts and Consultants to maintain **UNIFORMITY** and **CONSISTENCY**.
- The sheets include a standardized table for typical structure types to reduce missing information and errors which often cause delays in submittal reviews.




Elevation and Design Criteria Working Drawings


Work in progress


 Texas Department of Transportation		Traffic Safety Division	
CANTILEVERED OVERHEAD SIGN SUPPORT ELEVATION & DESIGN CRITERIA STA ###+##.## <i>(Not to be used as a standard)</i>			
FILE: WD-COSS(EL).dgn ©TxDOT July 2024 REVISIONS	DWE: _____ CK: _____ DW: _____ CC: _____	CONT: _____ SECT: _____ JOB: _____ HIGHWAY: _____	COUNTY: _____ SHEET NO.: _____

 Texas Department of Transportation		Traffic Safety Division	
CANTILEVERED OVERHEAD TWO SPAN SIGN SUPPORT ELEVATION & DESIGN CRITERIA STA ###+##.## <i>(Not to be used as a standard)</i>			
FILE: WD-COSS(EL).dgn ©TxDOT July 2024 REVISIONS	DWE: _____ CK: _____ DW: _____ CC: _____	CONT: _____ SECT: _____ JOB: _____ HIGHWAY: _____	COUNTY: _____ SHEET NO.: _____


 Texas Department of Transportation		Traffic Safety Division	
OVERHEAD SIGN BRIDGE SUPPORT ELEVATION & DESIGN CRITERIA STA ###+##.## <i>(Not to be used as a standard)</i>			
FILE: WD-OSB(EL).dgn ©TxDOT March 2024 REVISIONS	DWE: _____ CK: _____ DW: _____ CC: _____	CONT: _____ SECT: _____ JOB: _____ HIGHWAY: _____	COUNTY: _____ SHEET NO.: _____

 Texas Department of Transportation		Traffic Safety Division	
OVERHEAD SIGN BRIDGE WITH CANT. SUPPORT ELEVATION & DESIGN CRITERIA STA ###+##.## <i>(Not to be used as a standard)</i>			
FILE: WD-OSB(EL).dgn ©TxDOT March 2024 REVISIONS	DWE: _____ CK: _____ DW: _____ CC: _____	CONT: _____ SECT: _____ JOB: _____ HIGHWAY: _____	COUNTY: _____ SHEET NO.: _____

 Texas Department of Transportation		Traffic Safety Division	
CANTILEVERED OVERHEAD DMS SIGN SUPPORT ELEVATION & DESIGN CRITERIA STA ###+##.## <i>(Not to be used as a standard)</i>			
FILE: WD-COSS(EL).dgn ©TxDOT July 2024 REVISIONS	DWE: _____ CK: _____ DW: _____ CC: _____	CONT: _____ SECT: _____ JOB: _____ HIGHWAY: _____	COUNTY: _____ SHEET NO.: _____

 Texas Department of Transportation		Traffic Safety Division	
CANTILEVERED OVERHEAD TWO SPAN DMS SUPPORT ELEVATION & DESIGN CRITERIA STA ###+##.## <i>(Not to be used as a standard)</i>			
FILE: WD-COSS(EL).dgn ©TxDOT July 2024 REVISIONS	DWE: _____ CK: _____ DW: _____ CC: _____	CONT: _____ SECT: _____ JOB: _____ HIGHWAY: _____	COUNTY: _____ SHEET NO.: _____

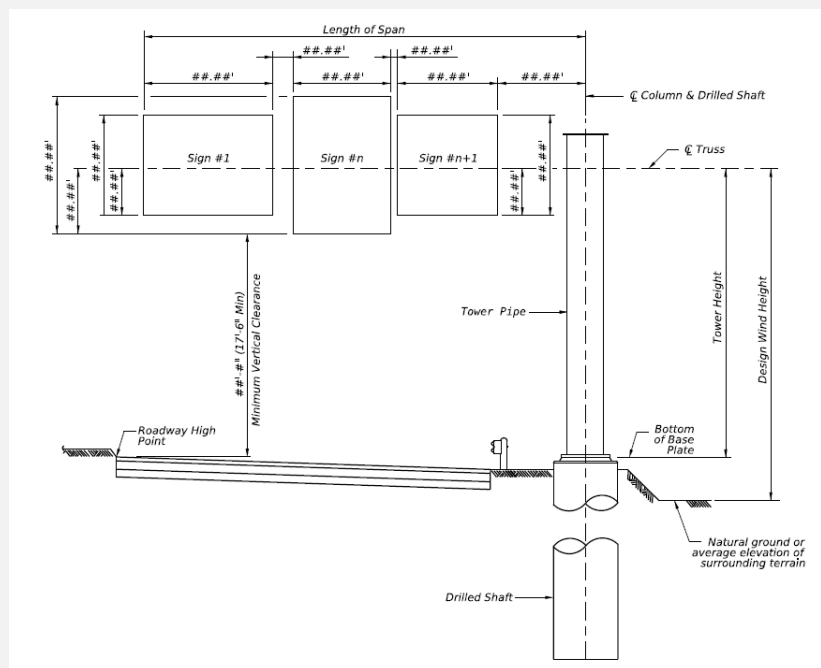
 Texas Department of Transportation		Traffic Safety Division	
OVERHEAD SIGN BRIDGE DMS SUPPORT ELEVATION & DESIGN CRITERIA STA ###+##.## <i>(Not to be used as a standard)</i>			
FILE: WD-OSB(EL).dgn ©TxDOT March 2024 REVISIONS	DWE: _____ CK: _____ DW: _____ CC: _____	CONT: _____ SECT: _____ JOB: _____ HIGHWAY: _____	COUNTY: _____ SHEET NO.: _____

 Texas Department of Transportation		Traffic Safety Division	
OVERHEAD SIGN BRIDGE WITH CANT. DMS SUPPORT ELEVATION & DESIGN CRITERIA STA ###+##.## <i>(Not to be used as a standard)</i>			
FILE: WD-OSB(EL).dgn ©TxDOT March 2024 REVISIONS	DWE: _____ CK: _____ DW: _____ CC: _____	CONT: _____ SECT: _____ JOB: _____ HIGHWAY: _____	COUNTY: _____ SHEET NO.: _____

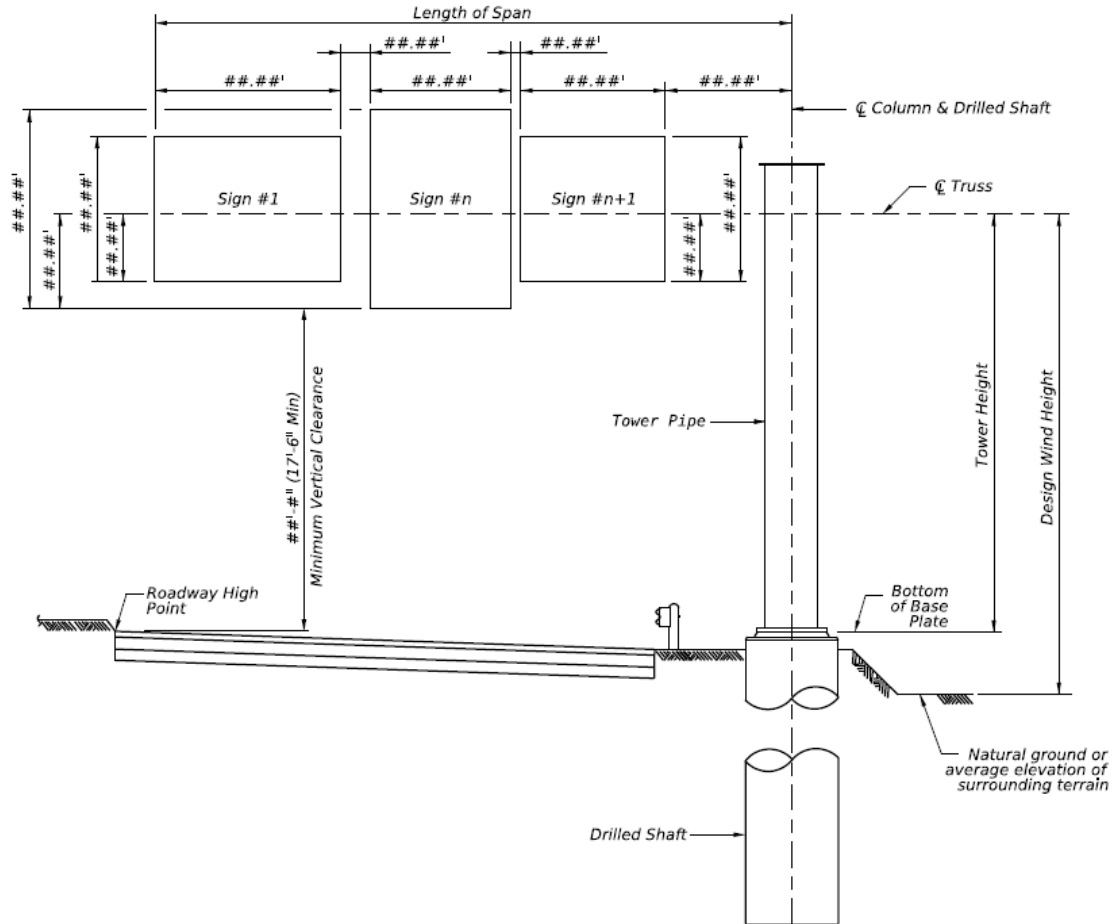
Elevation and Design Criteria Working Drawings

Work in progress

Cantilevered Overhead Sign Support



Sign Structure Design Details	
Structure Type	COSS
Roadway	CL Alignment
Station	##+##.##
Design Data	
Applicable Standard	HCOSSZ1, COSS Z1 THRU Z4
Span Length	## ft
Sign Area	##.## sq ft
Standard Sign Area	##.## sq ft
Design Wind Height	## ft
Tower Height	## ft
Tower Diameter	## ft
Tower Wall Thickness	## ft
Foundation Design	
Shear	##.## kips
Torsion	###.## kip-ft
Moment	###.## kip-ft
Foundation Top Elev	###.## ft
Foundation Tip Elev	###.## ft
Drilled Shaft Diameter	## in
Soil	Sand or Clay
Penetrometer Value	N

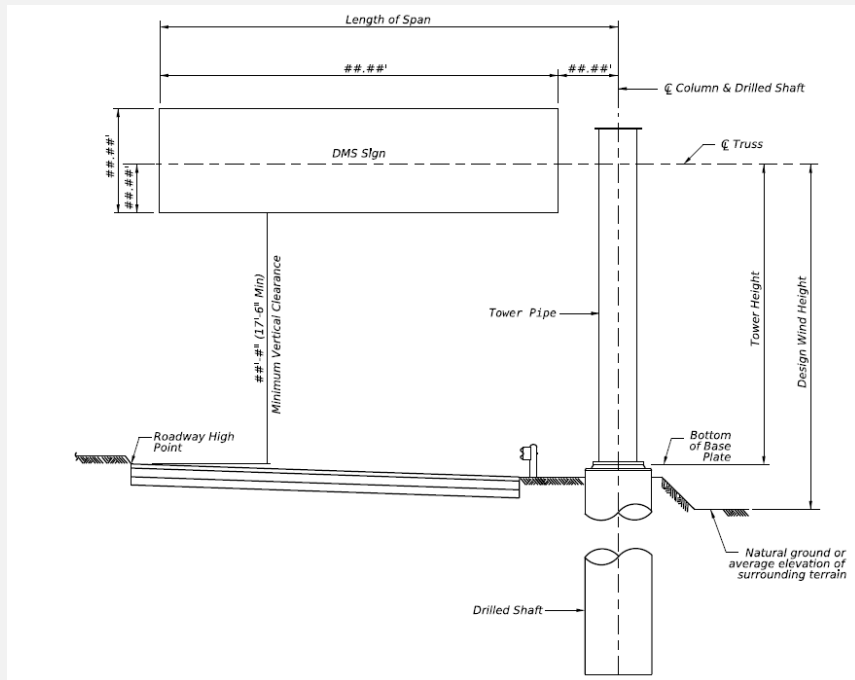


<i>Sign Structure Design Details</i>	
<i>Structure Type</i>	<i>COSS</i>
<i>Roadway</i>	<i>CL Alignment</i>
<i>Station</i>	<i>##+##.##</i>
<i>Design Data</i>	
<i>Applicable Standard</i>	<i>HCOSSZ1, COSS Z1 THRU Z4</i>
<i>Span Length</i>	<i>## ft</i>
<i>Sign Area</i>	<i>##.## sq ft</i>
<i>Standard Sign Area</i>	<i>##.## sq ft</i>
<i>Design Wind Height</i>	<i>## ft</i>
<i>Tower Height</i>	<i>## ft</i>
<i>Tower Diameter</i>	<i>## ft</i>
<i>Tower Wall Thickness</i>	<i>## ft</i>
<i>Foundation Design</i>	
<i>Shear</i>	<i>##.## kips</i>
<i>Torsion</i>	<i>###.## kip-ft</i>
<i>Moment</i>	<i>###.## kip-ft</i>
<i>Foundation Top Elev</i>	<i>###.## ft</i>
<i>Foundation Tip Elev</i>	<i>###.## ft</i>
<i>Drilled Shaft Diameter</i>	<i>## in</i>
<i>Soil</i>	<i>Sand or Clay</i>
<i>Penetrometer Value</i>	<i>N</i>

Elevation and Design Criteria Working Drawings

Work in progress

Cantilevered Overhead DMS Sign Support



Sign Structure Design Details		
Structure Type	COSS or DMS	
Roadway Station	CL Alignment	
Station	##+###.##	
Design Data		
Applicable Standard	SZ	
Span Length	## ft	
Sign Area	##.## sq ft	
Design Wind Height	## ft	
Truss Details		
W x D = Width x Depth	# ft x # ft	
Length of Truss Panel	End = # ft, Other = # ft	
HS Bolt Diameter	#/# in	
Total # of HS Bolts in Tower Connection	#	
Chord	Member	L # x # x #/#
	HS Bolts Req'd	#
Dead Load Diagonal	Member	L # x # x #/#
	HS Bolts Req'd	#
Wind Load Diagonal	Member	L # x # x #/#
	HS Bolts Req'd	#
Dead Load Vertical	Member	L # x # x #/#
	HS Bolts Req'd	#
Wind Load Strut	Member	L # x # x #/#
	HS Bolts Req'd	#
Truss Dead Load	# # lb/ft	
Truss Deflection	#. # in	
Tower Details		
Tower Height	## ft	
Tower Diameter	## in	
Tower Wall Thickness	## in	
Tower Δh at Truss CL	## in	
Base Plate	Diameter	## in
	Thickness	## in
Anchor Bolt	Circle Diameter	## in
	Number of Bolt	#
	Bolt Diameter	## in
Foundation Design		
Shear	##.## kips	
Torsion	###.## kip-ft	
Moment	###.## kip-ft	
Foundation Top Elev	###.## ft	
Foundation Tip Elev	##.## ft	
Drilled Shaft Diameter	## in	
Soil	Sand or Clay	
Penetrometer Value	N	
Main Shaft Steel	XX (#XX Bar)	
Shaft Spiral Reinforcing	#X Spiral @ X in Pitch	

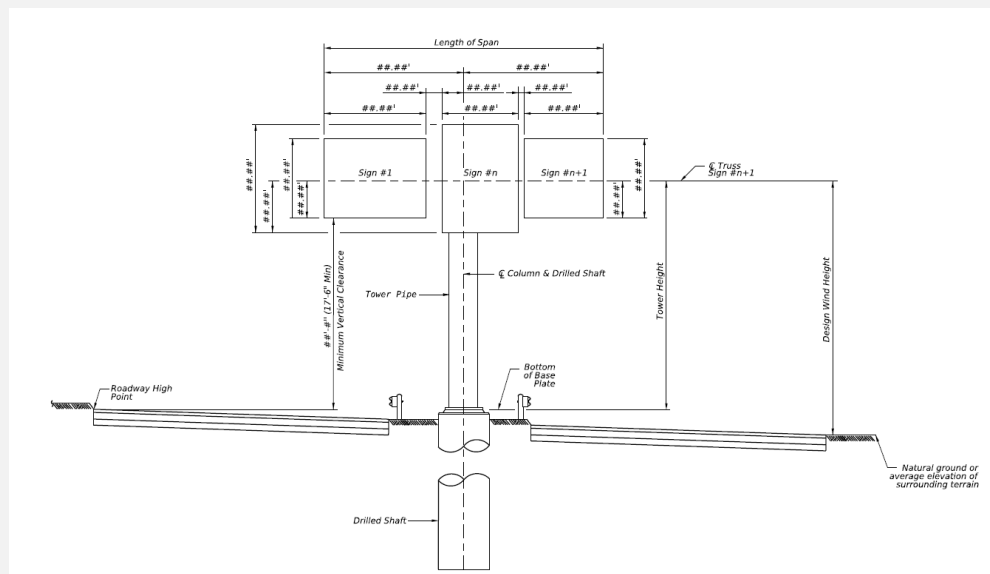
Sign Structure Design Details		
Structure Type	COSS or DMS	
Roadway	CL Alignment	
Station	##+###.##	
Design Data		
Applicable Standard	SZ	
Span Length	## ft	
Sign Area	##.## sq ft	
Design Wind Height	## ft	
Truss Details		
W x D = Width x Depth	# ft x # ft	
Length of Truss Panel	End = # ft, Other = # ft	
HS Bolt Diameter	#/# in	
Total # of HS Bolts in Tower Connection		
Chord	Member	L # x # x #/#
	HS Bolts Req'd	#
Dead Load Diagonal	Member	L # x # x #/#
	HS Bolts Req'd	#
Wind Load Diagonal	Member	L # x # x #/#
	HS Bolts Req'd	#
Dead Load Vertical	Member	L # x # x #/#
	HS Bolts Req'd	#
Wind Load Strut	Member	L # x # x #/#
	HS Bolts Req'd	#
Truss Dead Load		## lb/ft
Truss Deflection		#. # in

Tower Details		
Tower Height		## ft
Tower Diameter		## in
Tower Wall Thickness		## in
Tower Δh at Truss CL		## in
Base Plate	Diameter	## in
	Thickness	## in
Anchor Bolt	Circle Diameter	## in
	Number of Bolt	#
	Bolt Diameter	## in
Foundation Design		
Shear		##.## kips
Torsion		###.## kip-ft
Moment		###.## kip-ft
Foundation Top Elev		###.## ft
Foundation Tip Elev		###.## ft
Drilled Shaft Diameter		## in
Soil		Sand or Clay
Penetrometer Value		N
Main Shaft Steel		XX (#XX Bar)
Shaft Spiral Reinforcing		#X Spiral @ X in Pitch

Elevation and Design Criteria Working Drawings

Work in progress

Cantilevered Overhead Two Span Sign Support

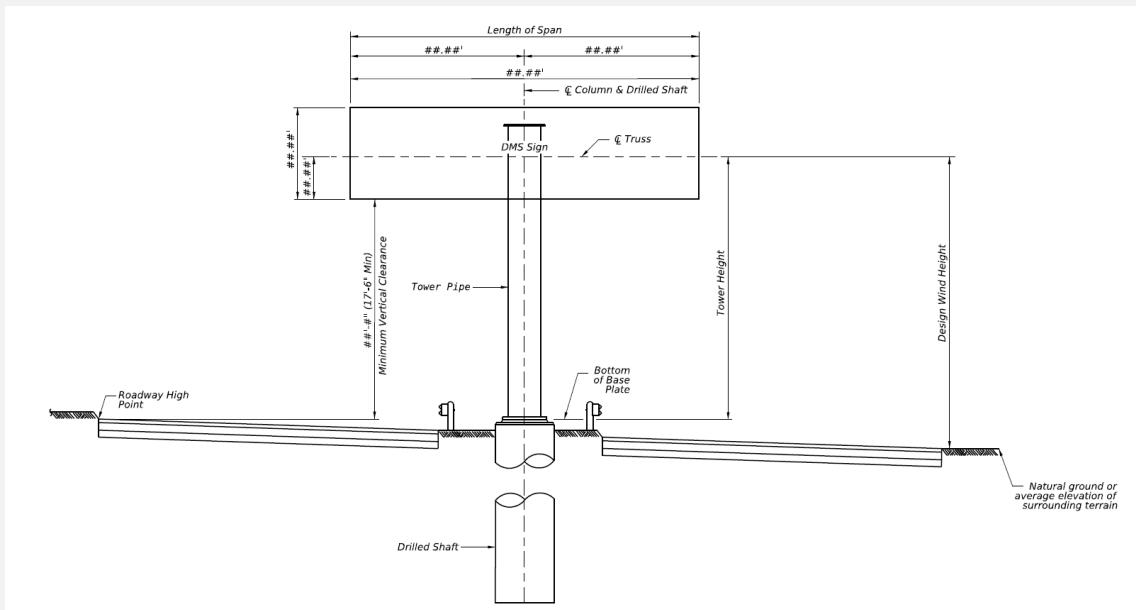


Sign Structure Design Details	
Structure Type	Double COSS
Roadway	CL Alignment
Station	## + ##.##
Design Data	
Applicable Standard	HCOSSZ1, COSS Z1 THRU Z4
Total Span Length	## ft
Span A Length	## ft
Span B Length	## ft
Sign Area	##.## sq ft
Standard Sign Area	##.## sq ft
Design Wind Height	## ft
Tower Height	## ft
Tower Diameter	## ft
Tower Wall Thickness	## ft
Foundation Design	
Shear	##.## kips
Torsion	###.## kip-ft
Moment	###.## kip-ft
Foundation Top Elev	###.## ft
Foundation Tip Elev	###.## ft
Drilled Shaft Diameter	## in
Soil	Sand or Clay
Penetrometer Value	N

Elevation and Design Criteria Working Drawings

Work in progress

Cantilevered Overhead Two Span DMS Sign Support

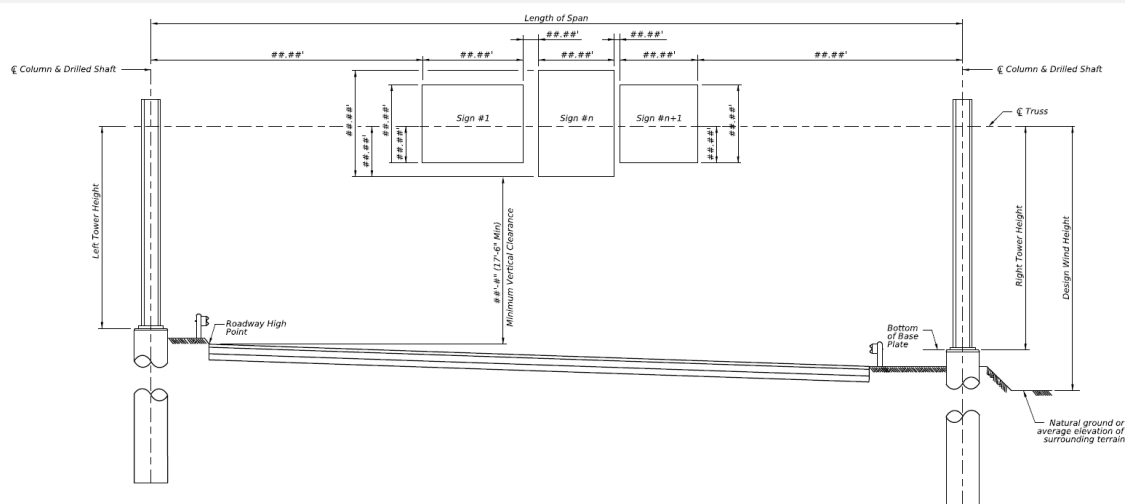


Sign Structure Design Details		
Structure Type	Double COSS DMS	
Roadway	CL Alignment	
Station	##+##.##	
Design Data		
Applicable Standard	SZ	
Span Length	## ft	
Span A Length	## ft	
Span B Length	## ft	
Sign Area	##.## sq ft	
Design Wind Height	## ft	
Truss Details		
W x D = Width x Depth	## ft x ## ft	
Length of Truss Panel	End = ## ft, Other = ## ft	
HS Bolt Diameter	##/## in	
Total # of HS Bolts in Tower Connection	#	
Chord	Member	L # x # x #/#
	HS Bolts Req'd	#
Dead Load Diagonal	Member	L # x # x #/#
	HS Bolts Req'd	#
Wind Load Diagonal	Member	L # x # x #/#
	HS Bolts Req'd	#
Dead Load Vertical	Member	L # x # x #/#
	HS Bolts Req'd	#
Wind Load Strut	Member	L # x # x #/#
	HS Bolts Req'd	#
Truss Dead Load	## lb/ft	
Truss Deflection	## in	
Tower Details		
Tower Height	## ft	
Tower Diameter	## in	
Tower Wall Thickness	## in	
Tower Δh at Truss CL	## in	
Base Plate	Diameter	## in
	Thickness	## in
Anchor Bolt	Circle Diameter	## in
	Number of Bolt	#
	Bolt Diameter	## in
Foundation Design		
Shear	##.## kips	
Torsion	###.## kip-ft	
Moment	###.## kip-ft	
Foundation Top Elev	##.## ft	
Foundation Tip Elev	##.## ft	
Drilled Shaft Diameter	## in	
Soil	Sand or Clay	
Penetrometer Value	N	
Main Shaft Steel	XX (#XX Bar)	
Shaft Spiral Reinforcing	#X Spiral @ X in Pitch	

Elevation and Design Criteria Working Drawings

Work in progress

Overhead Sign Bridge Support

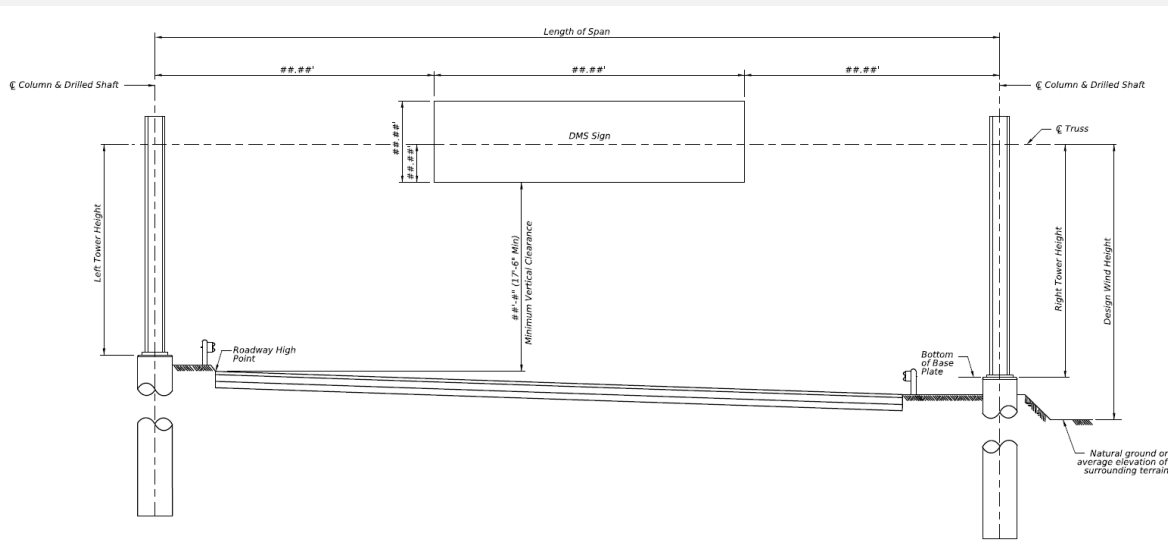


Sign Structure Design Details	
Structure Type	OSB
Roadway	CL Alignment
Station	##+##.##
Design Data	
Applicable Standard	OSB Z1 thru Z4, HOSB Z1 thru Z4
Span Length	## ft
Sign Area	##.## ft'
Standard Sign Area	##.## ft'
Design Wind Height	## ft
Tower Type	Truss, Pipe or Concrete
Left Tower Height	## ft
Right Tower Height	## ft
Average Tower Height	## ft
Foundation Design	
Foundation Uplift	###.## kips
Left Foundation Top Elev	###.## ft
Left Foundation Tip Elev	###.## ft
Right Foundation Top Elev	###.## ft
Right Foundation Tip Elev	###.## ft
Number of Drilled Shafts	#
Drilled Shaft Diameter	## in
Soil	Sand or Clay
Penetrometer Value	#

Elevation and Design Criteria Working Drawings

Work in progress

Overhead Sign Bridge DMS Support

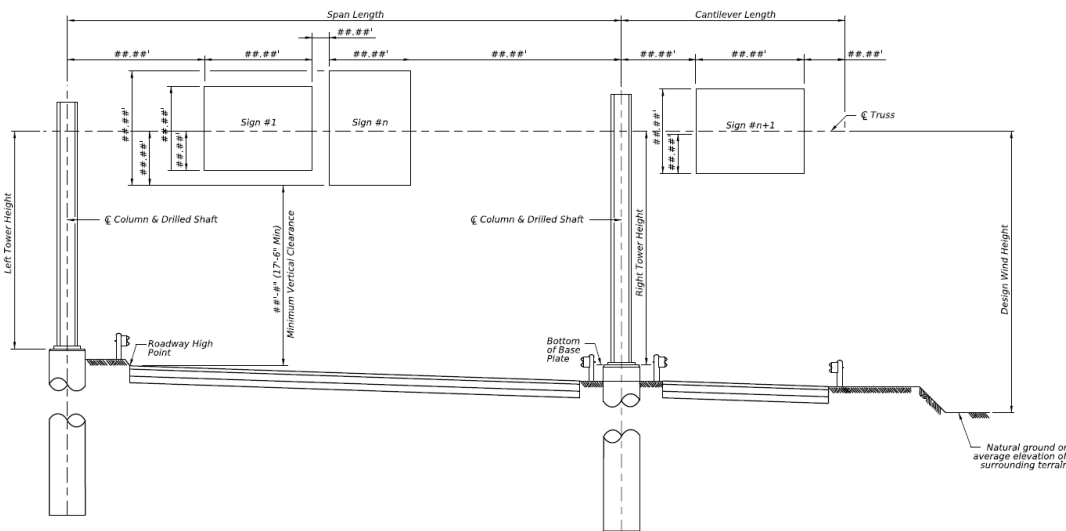


Sign Structure Design Details		
Structure Type	OSB DMS	
Roadway	CL Alignment	
Station	##+##.##	
Design Data		
Applicable Standard	SZ	
Span Length	## ft	
Sign Area	##.## sq ft	
Design Wind Height	## ft	
Truss Details		
W x D = Width x Depth	# ft x # ft	
Length of Truss Panel	End = # ft, Other = # ft	
HS Bolt Diameter	#/ # in	
Total # of HS Bolts in Tower Connection	#	
Chord	Member	L # x # x #/#
	HS Bolts Req'd	#
Dead Load Diagonal	Member	L # x # x #/#
	HS Bolts Req'd	#
Wind Load Diagonal	Member	L # x # x #/#
	HS Bolts Req'd	#
Dead Load Vertical	Member	L # x # x #/#
	HS Bolts Req'd	#
Wind Load Strut	Member	L # x # x #/#
	HS Bolts Req'd	#
Truss Dead Load	## lb/ft	
Truss Deflection	# # in	
Tower Details		
Tower Type	Truss or Pipe	
Left Tower Height	## ft	
Right Tower Height	## ft	
Average Tower Height	## ft	
Column Spacing	# ft	
Column Size	W ## x ##	
Tower Diagonals	2LS # x # x #/#	
Tower Struts	2LS # x # x #/#	
Maximum Bracing Spacing, "5"	# ft	
Anchor Bolts	Diameter	#.## in
	Length	# ft - ## in
Base Plate	# in x # in x #/# in	
Foundation Design	Left Tower	Right Tower
Foundation Uplift	XXX.XX kips	XXX.XX kips
Left Foundation Top Elev	XXX.XX ft	XXX.XX ft
Left Foundation Tip Elev	XXX.XX ft	XXX.XX ft
Right Foundation Top Elev	XXX.XX ft	XXX.XX ft
Right Foundation Tip Elev	XXX.XX ft	XXX.XX ft
Number of Drilled Shafts	XX	XX
Drilled Shaft Diameter	XX in	XX in
Soil	Sand or Clay	Sand or Clay
Penetrometer Value, "N"	#	#
Main Shaft Steel	XX (#XX Bar)	XX (#XX Bar)
Shaft Spiral Reinforcing	#X Spiral @ X in Pitch	#X Spiral @ X in Pitch

Elevation and Design Criteria Working Drawings

Work in progress

Overhead Sign Bridge with Cantilever Support

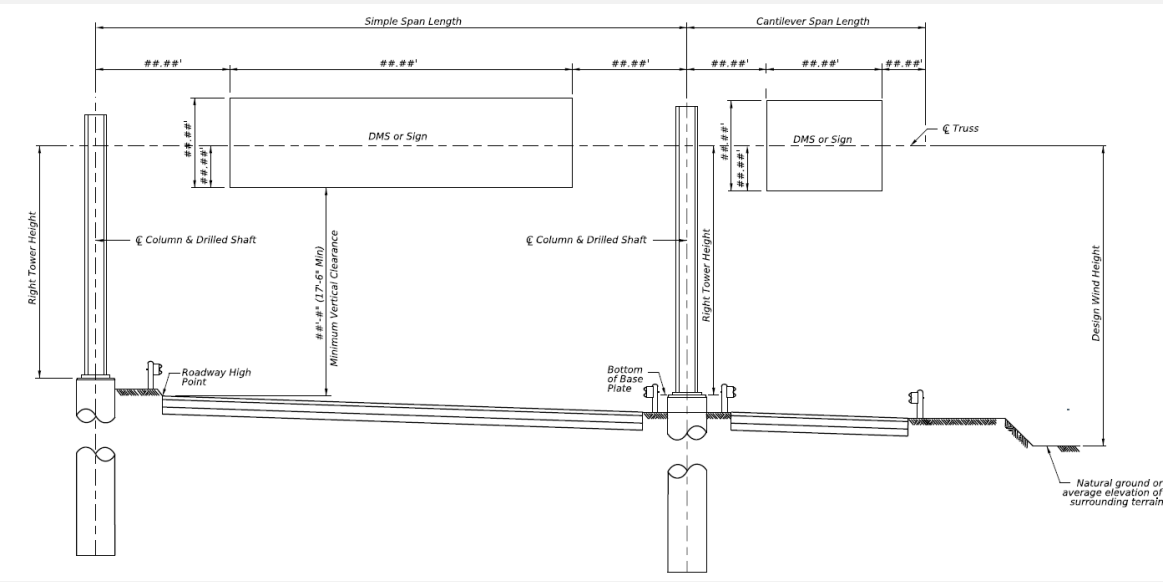


Sign Structure Design Details	
Structure Type	OSB with Cantilever
Roadway	CL Alignment
Station	###+##.##
Design Data	
Applicable Standard	OSB Z1 thru Z4, HOSB Z1 thru Z4
Total Span Length	## ft
Span Length	## ft
Cantilever Span Length	## ft
Span Sign Area	##.## sq ft
Span Standard Sign Area	##.## sq ft
Cantilever Sign Area	##.## sq ft
Cantilever Standard Sign Area	##.## sq ft
Design Wind Height	## ft
Left Tower Height	## ft
Right Tower Height	## ft
Average Tower Height	## ft
Foundation Design	
Foundation Uplift	###.## kips
Left Foundation Top Elev	###.## ft
Left Foundation Tip Elev	###.## ft
Right Foundation Top Elev	###.## ft
Right Foundation Tip Elev	###.## ft
Number of Drilled Shafts	#
Drilled Shaft Diameter	## in
Soil	Sand or Clay
Penetrometer Value	#

Elevation and Design Criteria Working Drawings

Work in progress

Overhead Sign Bridge with Cantilever DMS Support



Sign Structure Design Details		
Structure Type	OSB DMS with Cantilever	
Roadway	CL Alignment	
Station	##+##.##	
Design Data		
Applicable Standard	SZ	
Total Span Length	## ft	
Simple Span Length	## ft	
Cantilever Span Length	## ft	
Sign Area	##.## sq ft	
Design Wind Height	## ft	
Truss Details		
W x D = Width x Depth	# ft x # ft	
Length of Truss Panel	End = # ft, Other = # ft	
HS Bolt Diameter	## in	
Total # of HS Bolts in Tower Connector	#	
Applicable Truss		
	Simple Span	Cantilever Span
Chord	Member L # x # x #/#	L # x # x #/#
	HS Bolts Req'd #	#
Dead Load Diagonal	Member L # x # x #/#	L # x # x #/#
	HS Bolts Req'd #	#
Wind Load Diagonal	Member L # x # x #/#	L # x # x #/#
	HS Bolts Req'd #	#
Dead Load Vertical	Member L # x # x #/#	L # x # x #/#
	HS Bolts Req'd #	#
Wind Load Strut	Member L # x # x #/#	L # x # x #/#
	HS Bolts Req'd #	#
	Truss Dead Load ## lb/ft	## lb/ft
	Truss Deflection #. # in	#. # in
Tower Details		
Tower Type	Truss or Pipe	
Left Tower Height	## ft	
Right Tower Height	## ft	
Average Tower Height	## ft	
Column Spacing	# ft	
Column Size	W ## x ##	
Tower Diagonals	2LS # x # x #/#	
Tower Struts	2LS # x # x #/#	
Maximum Bracing Spacing, "S"	# ft	
Anchor Bolts	Diameter	#. ## in
	Length	# ft - ## in
Base Plate	# in x # in x # #/# in	
Foundation Design	Left Tower	Right Tower
Foundation Uplift	XXX.XX kips	XXX.XX kips
Left Foundation Top Elev	XXX.XX ft	XXX.XX ft
Left Foundation Tip Elev	XXX.XX ft	XXX.XX ft
Right Foundation Top Elev	XXX.XX ft	XXX.XX ft
Right Foundation Tip Elev	XXX.XX ft	XXX.XX ft
Number of Drilled Shafts	XX	XX
Drilled Shaft Diameter	XX in	XX in
Soil	Sand or Clay	Sand or Clay
Penetrometer Value, "N"	#	#
Main Shaft Steel	XX (#XX Bar)	XX (#XX Bar)
Shaft Spiral Reinforcing	#X Spiral @ X in Pitch	#X Spiral @ X in Pitch

Work Drawings

COSS & OSB-SZ-21



COSS STRUCTURES

SECTION NO. AND ELEVATION	SECTION NO. AND ELEVATION	SECTION NO. AND ELEVATION	SECTION NO. AND ELEVATION	SECTION NO. AND ELEVATION
SECTION NO. AND ELEVATION	SECTION NO. AND ELEVATION	SECTION NO. AND ELEVATION	SECTION NO. AND ELEVATION	SECTION NO. AND ELEVATION
SECTION NO. AND ELEVATION	SECTION NO. AND ELEVATION	SECTION NO. AND ELEVATION	SECTION NO. AND ELEVATION	SECTION NO. AND ELEVATION

OSB STRUCTURES

SECTION NO. AND ELEVATION	SECTION NO. AND ELEVATION	SECTION NO. AND ELEVATION	SECTION NO. AND ELEVATION	SECTION NO. AND ELEVATION
SECTION NO. AND ELEVATION	SECTION NO. AND ELEVATION	SECTION NO. AND ELEVATION	SECTION NO. AND ELEVATION	SECTION NO. AND ELEVATION
SECTION NO. AND ELEVATION	SECTION NO. AND ELEVATION	SECTION NO. AND ELEVATION	SECTION NO. AND ELEVATION	SECTION NO. AND ELEVATION

NOTES ON USAGE

- This sheet shall only be included in the P&E package when the COSS and/or OSB packages are not sufficient to define the COSS or OSB design and details.
- Dimensions and connections should be referenced, using member size or combination of members shown on this sheet.
- Number of high strength bolts required in truss connection or splice are indicated in members. Also, LTR (Listed) member sizes.
- If included in the complete system this sheet must comply with other the designation and may be used by a Texas P.E.

OVERHEAD SIGN BRIDGE DETAILS

COSS & OSB-SZ-21

DATE	BY	CHK	APP

COSS STRUCTURES

SECTION NO. AND ELEVATION	SECTION NO. AND ELEVATION	SECTION NO. AND ELEVATION	SECTION NO. AND ELEVATION	SECTION NO. AND ELEVATION
SECTION NO. AND ELEVATION	SECTION NO. AND ELEVATION	SECTION NO. AND ELEVATION	SECTION NO. AND ELEVATION	SECTION NO. AND ELEVATION
SECTION NO. AND ELEVATION	SECTION NO. AND ELEVATION	SECTION NO. AND ELEVATION	SECTION NO. AND ELEVATION	SECTION NO. AND ELEVATION

OSB STRUCTURES

SECTION NO. AND ELEVATION	SECTION NO. AND ELEVATION	SECTION NO. AND ELEVATION	SECTION NO. AND ELEVATION	SECTION NO. AND ELEVATION
SECTION NO. AND ELEVATION	SECTION NO. AND ELEVATION	SECTION NO. AND ELEVATION	SECTION NO. AND ELEVATION	SECTION NO. AND ELEVATION
SECTION NO. AND ELEVATION	SECTION NO. AND ELEVATION	SECTION NO. AND ELEVATION	SECTION NO. AND ELEVATION	SECTION NO. AND ELEVATION

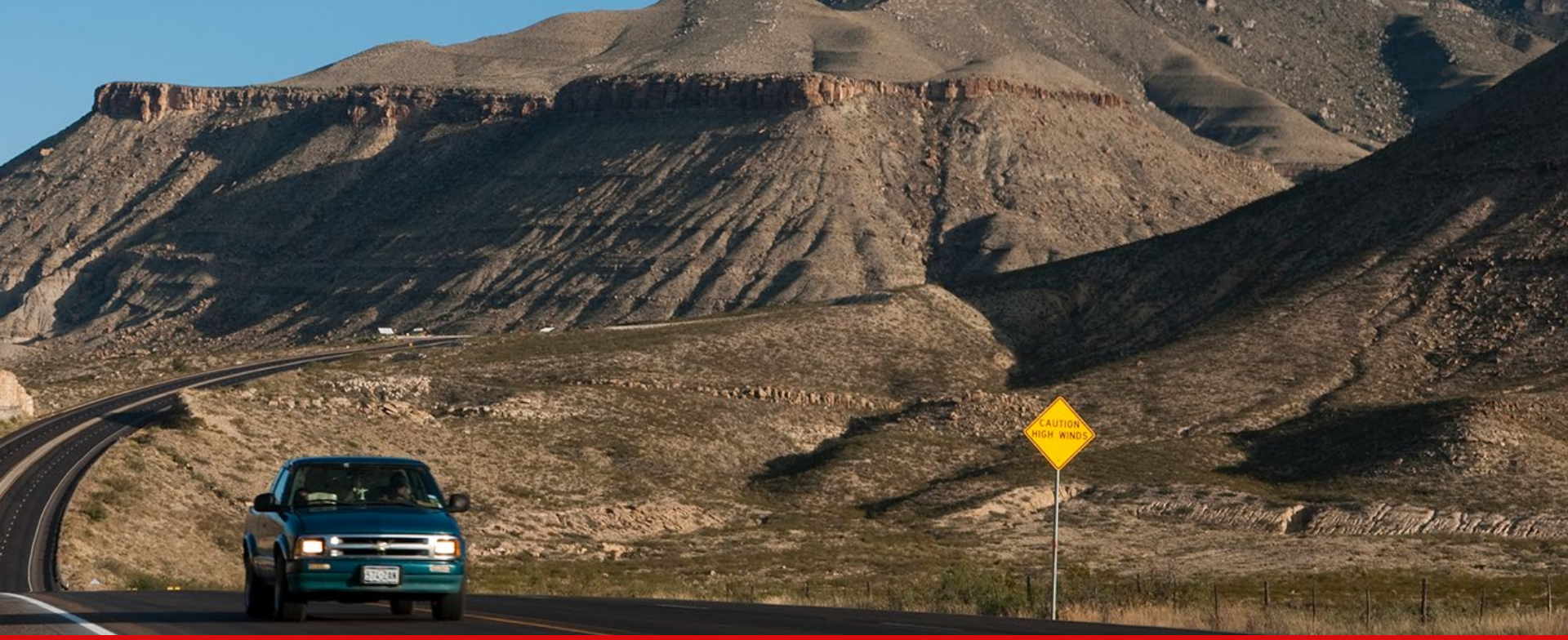
NOTES ON USAGE

- This sheet shall only be included in the P&E package when the COSS and/or OSB packages are not sufficient to define the COSS or OSB design and details.
- Dimensions and connections should be referenced, using member size or combination of members shown on this sheet.
- Number of high strength bolts required in truss connection or splice are indicated in members. Also, LTR (Listed) member sizes.
- If included in the complete system this sheet must comply with other the designation and may be used by a Texas P.E.

OVERHEAD SIGN BRIDGE DETAILS

COSS & OSB-SZ-21

DATE	BY	CHK	APP



Spreadsheet Tool



September 19, 2024

Digital Tool – Spreadsheet

Work in progress

The tool will assist users in assembling plan sheets for cantilever overhead sign structures and overhead sign bridges through the following features:

Performing multiple design sufficiency checks

Filtering the required standards based on inputs

Creating tables for the new work drawings

Sign Structure Tool

District: Please select...
 County: Please select...
 Wind Zone: Please select...
 Structure Type: Please select...
 Sign: Please select...
 Standard: Please select...

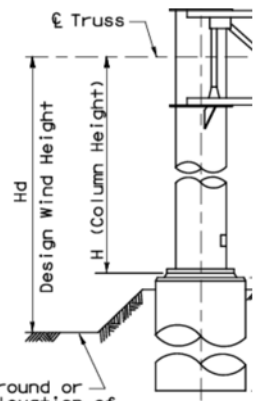
Design Wind Height: Enter numerical value here... ft
 Column Height: Enter numerical value here... ft
 Span Length: Enter numerical value here... ft

Roadway: Enter Roadway here...
 Station: Enter Station here...

Foundation Top Elevation: Enter numerical value here... ft
 Foundation Tip Elevation: Enter numerical value here... ft
 Soil Type: Enter numerical value here...
 Soil Penetrometer: Enter numerical value here... blows per ft

Reset Export Table

Run



Sign Structure Details	
Structure Type	BAL-TEE
Roadway	Enter Roadway here...
Station	Enter Station here...
Design Data	
Applicable Standard	0
Span Length	Enter numerical value here...
Sign Area	0 ft ²
Standard Sign Area	#VALUE!
Design Wind Height	Enter numerical value here...
Tower Type	Pipe
Tower Height	Enter numerical value here...
Tower Diameter	ERROR in
Tower Wall Thickness	ERROR in
Foundation Design	
Shear	ERROR kips
Torsion	ERROR kip-ft
Moment	ERROR kip-ft
Foundation Top Elev.	Enter numerical value here...
Foundation Tip Elev.	Enter numerical value here...
Drilled Shaft Diameter	#N/A
Soil Penetrometer	Enter numerical value here...

Sign Inputs

	Type	Width (ft)	Depth (ft)	Ex (ft)	Ey (ft)
Area 1					
Area 2					
Area 3					
Area 4					
Area 5					
Area 6					
Area 7					
Area 8					
Area 9					
Area 10					

Natural ground or average elevation of surrounding terrain.

Height Check

Overhang Check

EPA Check

Torsion Moment Check

Sufficiency Checks

NOT ENOUGH INFORMATION

NOT ENOUGH INFORMATION

NOT ENOUGH INFORMATION

NOT ENOUGH INFORMATION

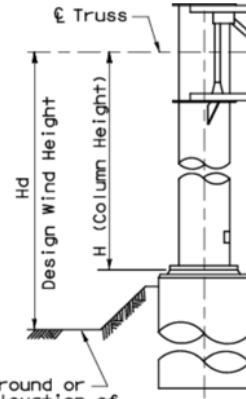
Sign Structure Tool

District: San_Angelo
 County: Tom_Green
 Wind Zone: ZONE 3 (80 MPH WIND)
 Structure Type: Single Cantilever
 Sign: Please select...
 Standard: Conventional Sign
 DMS

Design Wind Height: Enter numerical value here... ft
 Column Height: Enter numerical value here... ft
 Span Length: Enter numerical value here... ft

Roadway: Enter Roadway here...
 Station: Enter Station here...
 Foundation Top Elevation: Enter numerical value here... ft
 Foundation Tip Elevation: Enter numerical value here... ft
 Soil Type: Enter numerical value here...
 Soil Penetrometer: Enter numerical value here... blows per ft

Reset Export Table
 Run



Natural ground or average elevation of surrounding terrain.

Sign Inputs

	Type	Width (ft)	Depth (ft)	Ex (ft)	Ey (ft)
Area 1					
Area 2					
Area 3					
Area 4					
Area 5					
Area 6					
Area 7					
Area 8					
Area 9					
Area 10					

Sign Structure Details	
Structure Type	COSS
Roadway	Enter Roadway here...
Station	Enter Station here...
Design Data	
Applicable Standard	0
Span Length	Enter numerical value here...
Sign Area	0 ft ²
Standard Sign Area	#VALUE!
Design Wind Height	Enter numerical value here...
Tower Type	Pipe
Tower Height	Enter numerical value here...
Tower Diameter	ERROR in
Tower Wall Thickness	ERROR in
Foundation Design	
Shear	ERROR kips
Torsion	ERROR kip-ft
Moment	ERROR kip-ft
Foundation Top Elev.	Enter numerical value here...
Foundation Tip Elev.	Enter numerical value here...
Drilled Shaft Diameter	#N/A
Soil Penetrometer	Enter numerical value here...

Sufficiency Checks

Height Check
 Overhang Check
 EPA Check
 Torsion Moment Check

NOT ENOUGH INFORMATION
 NOT ENOUGH INFORMATION
 NOT ENOUGH INFORMATION
 NOT ENOUGH INFORMATION

Sign Structure Tool

District: San_Angelo
 County: Tom_Green
 Wind Zone: ZONE 3 (80 MPH WIND)
 Structure Type: Single Cantilever
 Sign: DMS
 Standard: Please select...

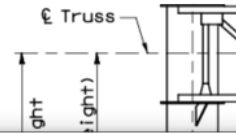
Design Wind Height: Enter numerical value here... ft
 Column Height: Enter numerical value here... ft
 Span Length: Enter numerical value here... ft

Roadway: Enter Roadway here...
 Station: Enter Station here...

Foundation Top Elevation: Enter numerical value here... ft
 Foundation Tip Elevation: Enter numerical value here... ft
 Soil Type: Enter numerical value here...
 Soil Penetrometer: Enter numerical value here... blows per ft

Reset Export Table

Run



Microsoft Excel

For DMS Structures, a higher wind zone standard must be used (e.g. Use COSS-Z2 for wind zone 3)

OK

Natural ground or average elevation of surrounding terrain.



Sign Structure Details	
Structure Type	COSS
Roadway	Enter Roadway here...
Station	Enter Station here...
Design Data	
Applicable Standard	Please select...
Span Length	Enter numerical value here...
Sign Area	0 ft2
Standard Sign Area	#VALUE!
Design Wind Height	Enter numerical value here...
Tower Type	Pipe
Tower Height	Enter numerical value here...
Tower Diameter	ERROR in
Tower Wall Thickness	ERROR in
Foundation Design	
Shear	ERROR kips
Torsion	ERROR kip-ft
Moment	ERROR kip-ft
Foundation Top Elev.	Enter numerical value here...
Foundation Tip Elev.	Enter numerical value here...
Drilled Shaft Diameter	#N/A
Soil Penetrometer	Enter numerical value here...

Sign Inputs

	Type	Width (ft)	Depth (ft)	Ex (ft)	Ey (ft)
Area 1	DMS				
Area 2					
Area 3					
Area 4					
Area 5					
Area 6					
Area 7					
Area 8					
Area 9					
Area 10					

Height Check

Overhang Check

EPA Check

Torsion Moment Check

Sufficiency Checks

NOT ENOUGH INFORMATION

NOT ENOUGH INFORMATION

NOT ENOUGH INFORMATION

NOT ENOUGH INFORMATION

Sign Structure Tool

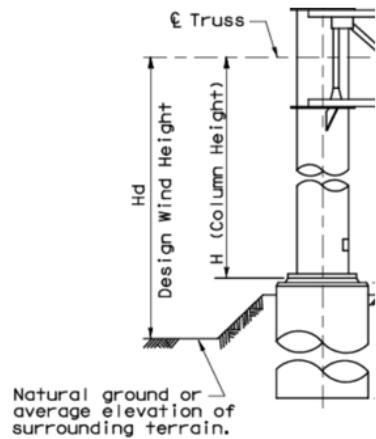
District:	San_Angelo
County:	Tom_Green
Wind Zone:	ZONE 3 (80 MPH WIND)
Structure Type:	Single Cantilever
Sign:	DMS
Standard:	COSS-Z2

Design Wind Height	30	ft
Column Height	30	ft
Span Length:	35	ft

Roadway	US183	
Station:	100+00	
Foundation Top Elevation:	100	ft
Foundation Tip Elevation:	80	ft
Soil Type	Clay	
Soil Penetrometer:	7	blows per ft

Reset Export Table

Run



Sign Inputs

	Type	Width (ft)	Depth (ft)	Ex (ft)	Ey (ft)
Area 1	DMS				
Area 2					
Area 3					
Area 4					
Area 5					
Area 6					
Area 7					
Area 8					
Area 9					
Area 10					

Sign Structure Details	
Structure Type	COSS
Roadway	US183
Station	100+00
Design Data	
Applicable Standard	COSS-Z2
Span Length	35 ft
Sign Area	0 ft2
Standard Sign Area	350 ft2
Design Wind Height	30 ft
Tower Type	Pipe
Tower Height	30 ft
Tower Diameter	30 in
Tower Wall Thickness	0.375 in
Foundation Design	
Shear	16.93 kips
Torsion	267.78 kip-ft
Moment	501.47 kip-ft
Foundation Top Elev.	100 ft
Foundation Tip Elev	80 ft
Drilled Shaft Diameter	54 in
Soil Penetrometer	7

Sufficiency Checks

Height Check PASS

Overhang Check PASS

EPA Check PASS

Torsion Moment Check PASS

Sign Structure Tool

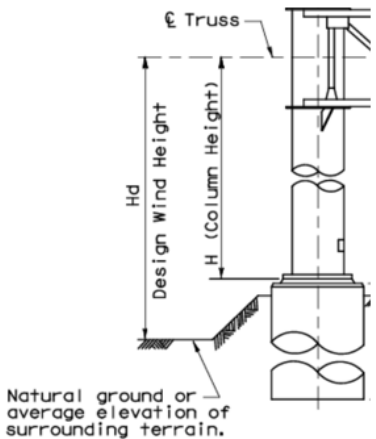
District:	San_Angelo
County:	Tom_Green
Wind Zone:	ZONE 3 (80 MPH WIND)
Structure Type:	Single Cantilever
Sign:	DMS
Standard:	COSS-Z2

Design Wind Height	30	ft
Column Height	30	ft
Span Length:	35	ft

Roadway	US183	
Station:	100+00	
Foundation Top Elevation:	100	ft
Foundation Tip Elevation:	80	ft
Soil Type	Clay	
Soil Penetrometer:	7	blows per ft

Reset Export Table

Run



Sign Inputs

	Type	Width (ft)	Depth (ft)	Ex (ft)	Ey (ft)
Area 1	DMS	30	10	15	0
Area 2					
Area 3					
Area 4					
Area 5					
Area 6					
Area 7					
Area 8					
Area 9					
Area 10					

Sign Structure Details	
Structure Type	COSS
Roadway	US183
Station	100+00
Design Data	
Applicable Standard	COSS-Z2
Span Length	35 ft
Sign Area	300 ft2
Standard Sign Area	350 ft2
Design Wind Height	30 ft
Tower Type	Pipe
Tower Height	30 ft
Tower Diameter	30 in
Tower Wall Thickness	0.375 in
Foundation Design	
Shear	16.93 kips
Torsion	267.78 kip-ft
Moment	501.47 kip-ft
Foundation Top Elev.	100 ft
Foundation Tip Elev	80 ft
Drilled Shaft Diameter	54 in
Soil Penetrometer	7

Sufficiency Checks

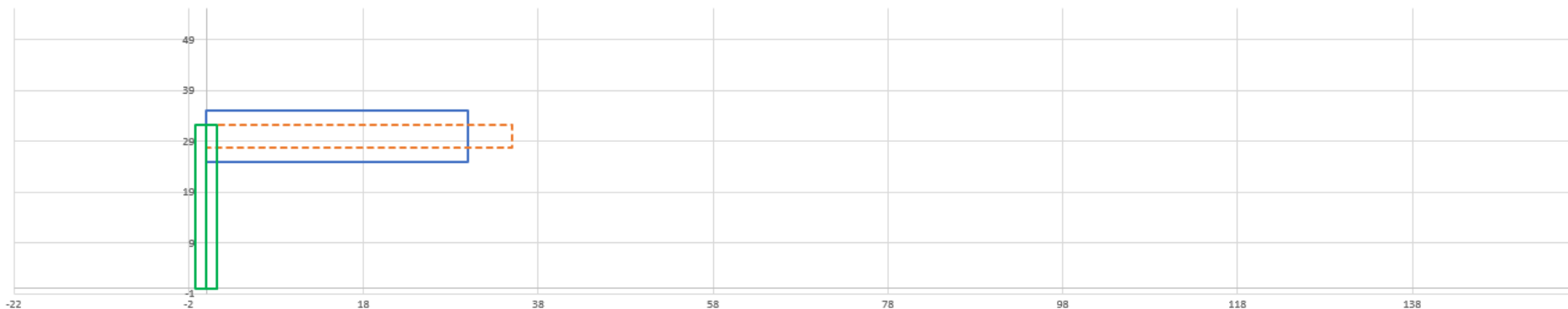
Height Check PASS

Overhang Check PASS






EPA Check PASS

Torsion Moment Check PASS




Sign Visualization



SIGN MOUNTING STANDARDS

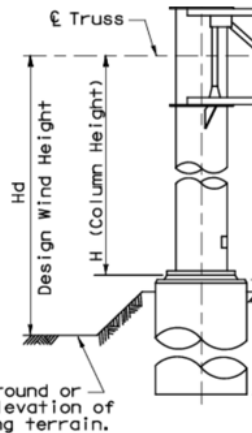
Sheet Name	Rev Date	Subject	Document
DMS(TM-1)-16	06/16	DMS-to-Truss Mounting at Overhead Sign Supports (non build-up)	
DMS(TM-2)-16	06/16	DMS-to-Truss Mounting at Overhead Sign Supports (with build-up)	
DMS(TM-3)-16	06/16	DMS-to-Truss Mounting at Overhead Sign Supports (with build-up)	
DMS(HZ-1)-21	02/21	DMS-to-Truss Mounting with Horizontal Zee Extrusions	
DMS(HZ-2)-21	02/21	DMS-to-Truss Mounting with Horizontal Zee Extrusions	

CANTILEVER OVERHEAD SIGN SUPPORT STANDARDS

Sheet Name	Rev Date	Subject	Document
COSS-Z2I-10	04/10	Cantilever Overhead Sign Supports	
COSSD	11/07	Cantilever Overhead Sign Supports Details	
COSSF-21	11/07	Cantilever Overhead Sign Supports Foundation	

Sign Structure Tool

District:	San_Angelo	
County:	Tom_Green	
Wind Zone:	ZONE 3 (80 MPH WIND)	
Structure Type:	Single Cantilever	
Sign:	DMS	
Standard:	COSS-Z2	
Design Wind Height:	30	ft
Column Height:	30	ft
Span Length:	20	ft
Roadway:	US183	
Station:	100+00	
Foundation Top Elevation:	100	ft
Foundation Tip Elevation:	80	ft
Soil Type:	Clay	
Soil Penetrometer:	7	blows per ft



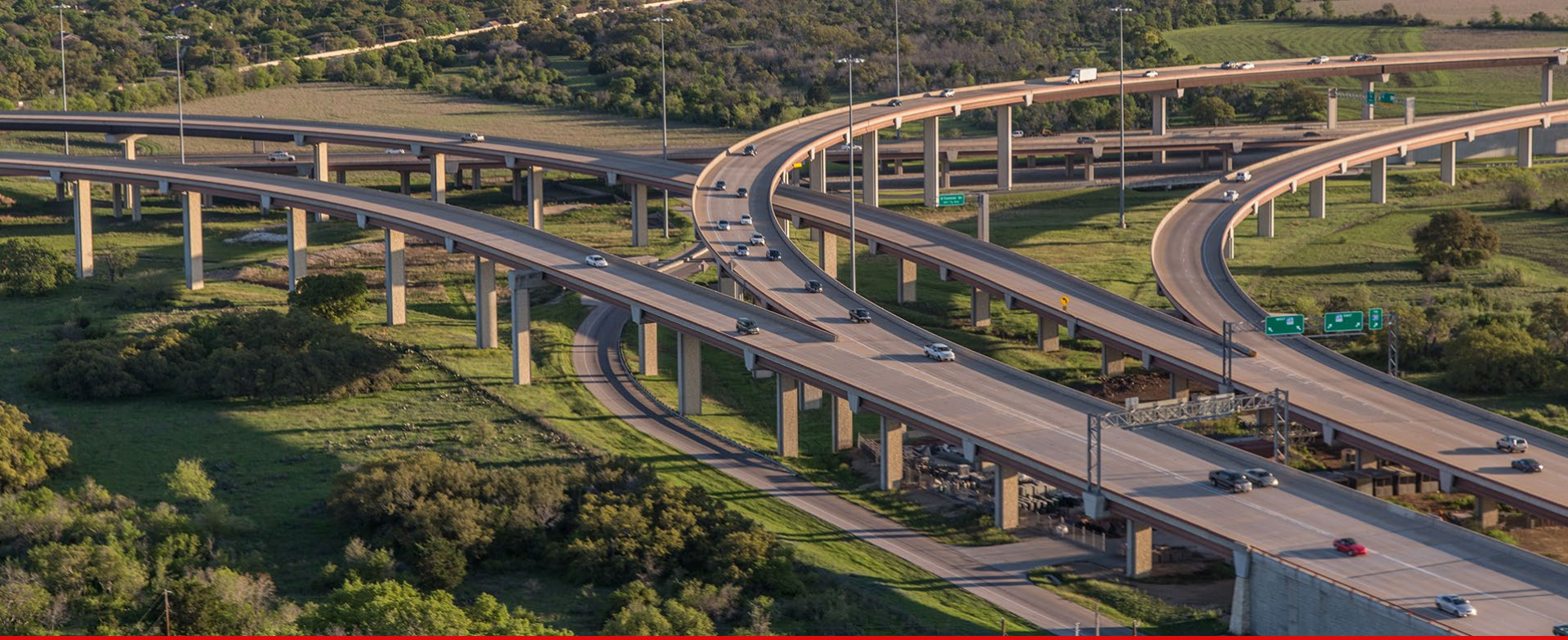
Sign Inputs

	Type	Width (ft)	Depth (ft)	Ex (ft)	Ey (ft)
Area 1	DMS	30	10	15	0
Area 2					
Area 3					
Area 4					
Area 5					
Area 6					
Area 7					
Area 8					
Area 9					
Area 10					

Sign Structure Details	
Structure Type	COSS
Roadway	US183
Station	100+00
Design Data	
Applicable Standard	COSS-Z2
Span Length	20 ft
Sign Area	300 ft ²
Standard Sign Area	200 ft ²
Design Wind Height	30 ft
Tower Type	Pipe
Tower Height	30 ft
Tower Diameter	20 in
Tower Wall Thickness	0.41 in
Foundation Design	
Shear	9.76 kips
Torsion	87.07 kip-ft
Moment	283.97 kip-ft
Foundation Top Elev.	100 ft
Foundation Tip Elev	80 ft
Drilled Shaft Diameter	0 in
Soil Penetrometer	7

Sufficiency Checks

Sign Structure Details	
Structure Type	COSS
Roadway	US183
Station	100+00
Design Data	
Applicable Standard	COSS-Z2
Span Length	35 ft
Sign Area	300 ft ²
Standard Sign Area	350 ft ²
Design Wind Height	30 ft
Tower Type	Pipe
Tower Height	30 ft
Tower Diameter	30 in
Tower Wall Thickness	0.375 in
Foundation Design	
Shear	16.93 kips
Torsion	267.78 kip-ft
Moment	501.47 kip-ft
Foundation Top Elev.	100 ft
Foundation Tip Elev	80 ft
Drilled Shaft Diameter	54 in
Soil Penetrameter	7



Ancillary Structures Guide



September 19, 2024

Ancillary Structures Guide

Roadway Illumination Poles	
Design Parameters:	<p>Code: LTS-6 (2013)</p> <p>Design Wind Speed: 110 MPH</p> <p>Luminaire EPA: 1.6 ft²</p> <p>Luminaire Weight: 60 lb</p> <p>Wind Importance Factor (Ir): 0.80</p> <p>Height above natural ground: 25 ft</p>
Notes:	<p>Alternate Designs of Roadway Illumination Poles allowed. Requirements:</p> <ul style="list-style-type: none"> • Pole must be designed to 110 MPH wind speed or greater if necessary, dependent on wind zone. • Transformer bases must be FHWA breakaway tested. • Anchor bolt assembly must be same as the standard • Alternative designs must be designed for two TxDOT 12 ft luminaire arms with luminaires based on above parameters. Proprietary luminaire arms can be used with supporting EPA calculations • Alternatives for aluminum poles must be equipped with vibration mitigation devices.
	<p>Baseplate thickness increased above design requirement based on Fatigue research funded by TxDOT</p>

Cantilever Overhead Sign Structures	
Design Parameters:	<p>Code: LTS-3 (1994)</p> <p>Sign Height: 10 ft</p> <p>Sign Length: 100% of span length for cantilever designs</p> <p>Sign Weight: 3 lb/ft²</p> <p>Truss Coefficient of drag (Cd): 2.85. for use with the Projected area in plane of wind loading</p>
Notes:	<p>Alternate Designs of pipe column are permitted. Requirements from Specification Item 650:</p> <ul style="list-style-type: none"> • Submit design calculations and a list of proposed materials, including anchor bolts, before submitting shop drawings. Computer-generated design parameters and calculations are not acceptable unless accompanied by the appropriate supporting documentation. • Determine the size of pipe to be used for the column from the appropriate Cantilever Overhead Sign Supports (COSS) or High Level Cantilever Overhead Sign Supports (HCOSS) standard plan tables for the height and span specified on the plans. • Determine the maximum design parameters from the COSS or HCOSS standard plan tables for that size of pipe. • Ensure alternate designs meet or exceed these maximum design parameters. • Provide top column dimensions compatible with the sign truss mounting details. • Ensure bottom diameter of the column is compatible with foundation details. • Limit welds to 2 longitudinal seam welds per column. • Provide full penetration longitudinal seam welds within 6 in. of circumferential welds, and 85% minimum penetration seam welds at other column locations. • Provide longitudinal seam weld and fit-up that will minimize acid entrapment during later galvanizing.
	<p>Width of truss member may be changed up to ½ in and/or thickness up to 1/16 in due to member availability, tightening clearances, or other reasons as stated in the Shop Drawings. Only applicable for standard COSS & OSB designs, changes to SZ Standard must be approved by the Engineer of Record.</p>
	<p>Baseplate thickness increased above design requirement based on Fatigue research funded by TxDOT</p>
	<p>Spans greater than 40 ft much be designed to LTS-6 or LRFD-LTS. Not included in standard designs.</p>

Ancillary Structures Guide

- Background and Uses
- Service Performance and Research
- Current State of the Standards
 - Associated Design Specifications
 - Materials and Geometry
 - Limits of Applicability
- List of Standards

Chapter 2 – Standards

Section 2 – Roadway Illumination Assemblies

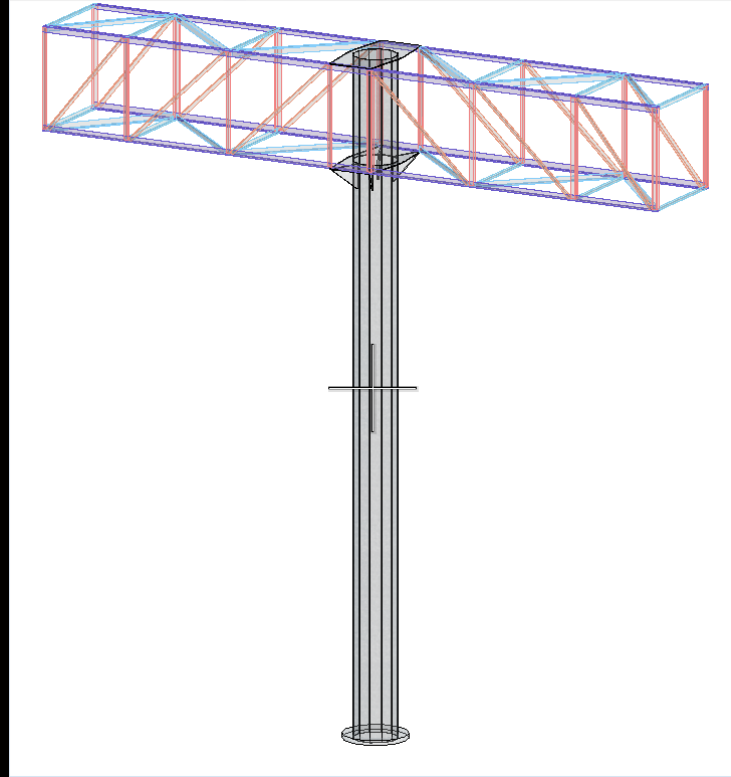
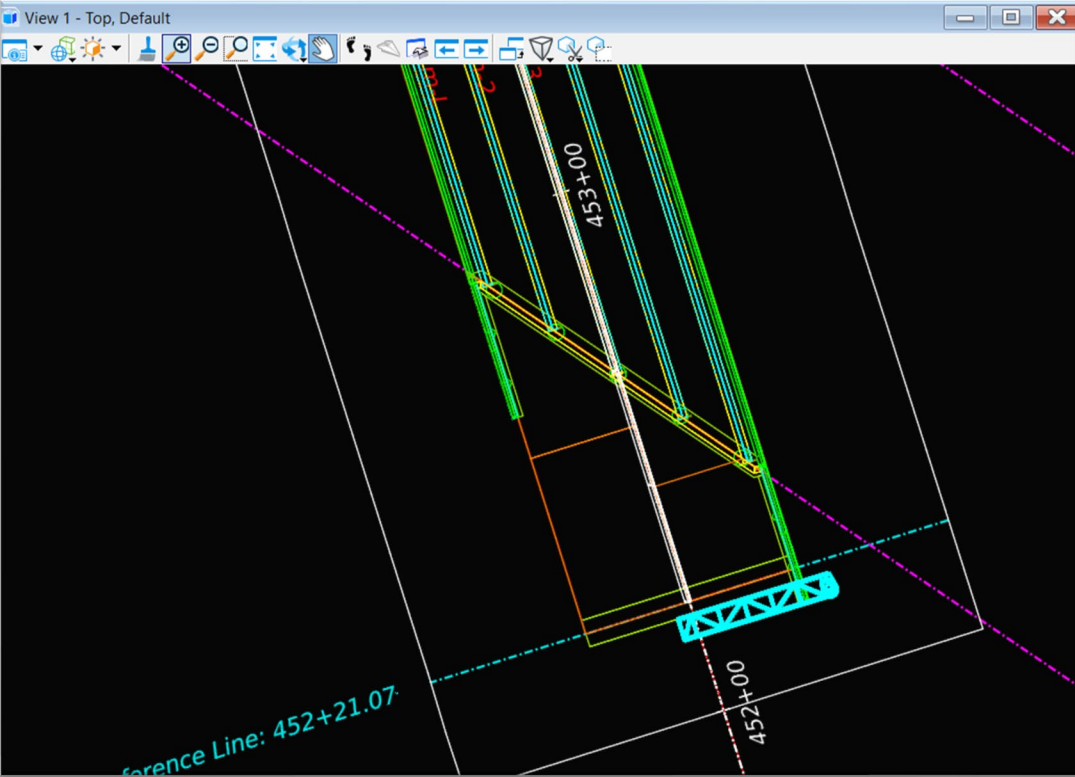
Section 2—Roadway Illumination Assemblies

Background and Uses

Roadway Illumination Assemblies (RIA) are specified by the TxDOT Standard Specifications Item 610 which includes the luminaires, poles, luminaire (or mast) arms, anchor bolt assemblies, and conductors internal to the assembly. The standards (listed at the end of this section), policies and procedures associated with the RIA are developed and maintained by the Traffic Safety Division (TRF) Electrical and Illumination Group. More information on these assemblies can be found in Chapter 5, Section 2 of the [TxDOT Highway Illumination Manual](#).

Mounting height, which is the vertical distance between the base of the pole assembly and the luminaire, varies based on roadway and illumination design requirements. The Roadway Illumination Pole (RIP-19) standard accounts for mounting heights ranging from 20' to 50'. However, the most common arrangements are:

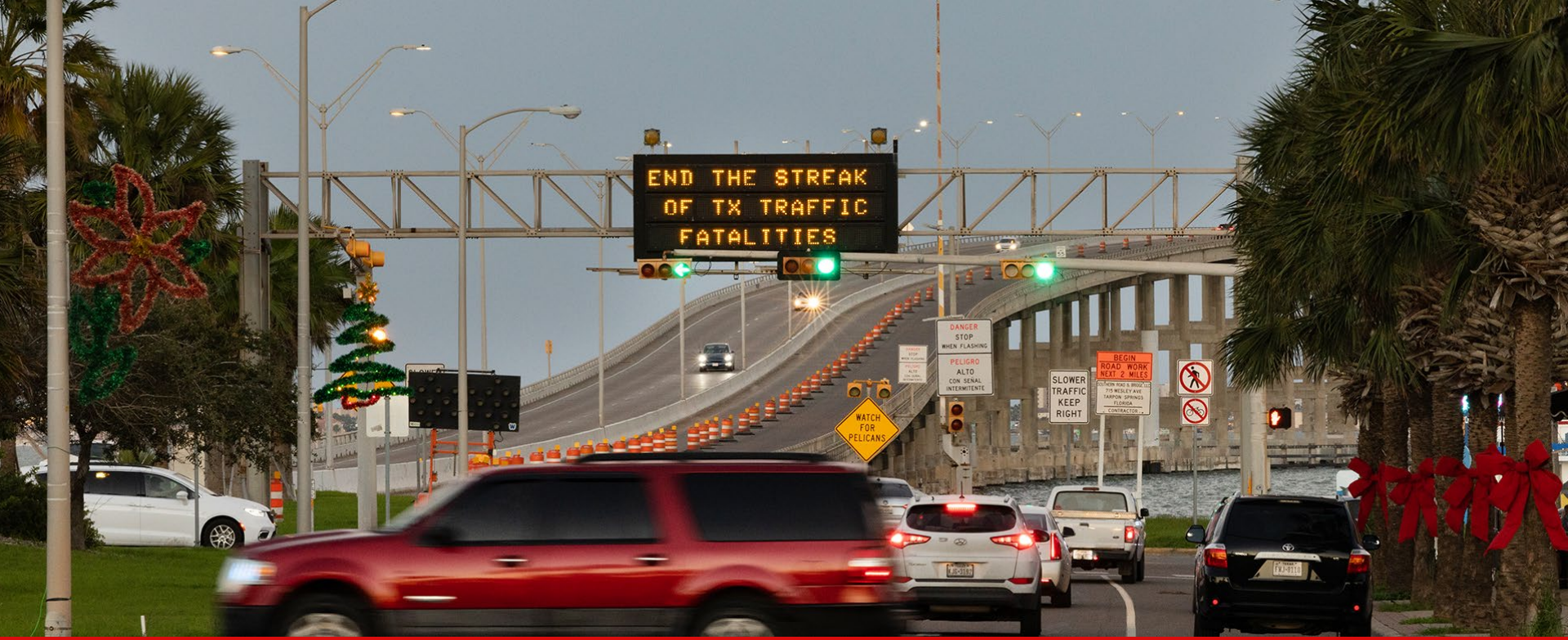
1. Continuous Lighting – 50' Mounting Height
2. Safety Lighting – 40' Mounting Height



3D Modeling



September 19, 2024



END THE STREAK
OF TX TRAFFIC
FATALITIES

DANGER
STOP
WHEN FLASHING
PELIGRO
ALTO
CON SEÑAL
INTERMITENTE

WATCH
FOR
PELICANS

SLOWER
TRAFFIC
KEEP
RIGHT

BEGIN
ROAD WORK
NEXT 2 MILES

NO PEDESTRIAN
NO BICYCLE

Thank you!



September 19, 2024