ZONE 1 100 M. P. H. WIND

10' SPAN

TOWER HGT. FT.	TOWER PIPE O.D. IN.	TOWER PIPE WALL THICK. IN.	TOWER PIPE DEFL. ΔH IN.	ANCHOR BOLTS SIZE	ANCHOR BOLTS NO.	ANCHOR BOLTS BOLT CIRCLE DIA.	BASE PLATE SIZE IN.	TRUSS DEFL. ΔV IN.	DESIGN LOADS SHEAR V KIPS	DESIGN LOADS TORSION T K-FT	DESIGN LOADS MOMENT M K-FT
14'	16	0.250	0.108	1¼"ø	8	20½"	24X1¼"	0.2	5.61	25.29	77.33
15'			0.124				24X1¼"		5.64		82.92
16'			0.141				24X1¼"		5.66		88.55
17'			0.159				24X1¼"		5.69		94.20
18'			0.178				24X1⅜"		5.71		99.88
19'			0.198				24X1⅜"		5.74		105.58
20'			0.220	1¼"ø		20½"	24X1½"		5.77		111.32
21'		0.250	0.242	1⅜"ø		20¾"	24½X1½"		5.79		117.09
22'		0.281	0.238				24½X1½"		5.82		122.88
23'		0.281	0.260				24½X1⅝"		5.85		128.70
24'		0.281	0.283				24½X1⅝"		5.87		134.55
25'		0.312	0.279	1⅜"ø		20¾"	24½X1⅝"		5.90		140.42
26'		0.312	0.302	1½"ø		21"	25X1¾"		5.93		146.33
27'		0.312	0.325				25X1¾"		5.95		152.26
28'		0.344	0.320				25X1¾"		5.98		158.22
29'		0.344	0.343				25X1⅞"		6.01		164.20
30'		0.344	0.367	1½"ø		21"	25X1⅞"		6.03		170.21
31'		0.375	0.362	1¾"ø		21½"	26X1⅞"		6.06		176.25
32'	16	0.375	0.385	1¾"ø	8	21½"	26X1⅞"	0.2	6.09	25.29	182.32

15' SPAN

TOWER HGT. FT.	TOWER PIPE O.D. IN.	TOWER PIPE WALL THICK. IN.	TOWER PIPE DEFL. ΔH IN.	ANCHOR BOLTS SIZE	ANCHOR BOLTS NO.	ANCHOR BOLTS BOLT CIRCLE DIA.	BASE PLATE SIZE IN.	TRUSS DEFL. ΔV IN.	DESIGN LOADS SHEAR V KIPS	DESIGN LOADS TORSION T K-FT	DESIGN LOADS MOMENT M K-FT
14'	16	0.344	0.180	1½"ø	8	21"	25X1¾"	0.5	8.43	58.69	118.08
15'		0.344	0.206						8.46		126.44
16'		0.344	0.235						8.48		134.84
17'		0.344	0.265						8.51		143.27
18'		0.375	0.274						8.54		151.73
19'		0.375	0.306	1½"ø		21"	25X1¾"		8.56		160.23
20'		0.406	0.315	1¾"ø		21½"	26X1⅞"		8.59		168.76
21'		0.406	0.347				26X1⅞"		8.62		177.32
22'		0.438	0.354				26X2"		8.64		185.91
23'		0.438	0.387				26X2"		8.67		194.53
24'		0.469	0.395				26X2"		8.69		203.18
25'		0.469	0.429				26X2⅛"		8.72		211.85
26'		0.500	0.440				26X2⅛"		8.75		220.56
27'		0.500	0.474				26X2⅛"		8.77		229.30
28'		0.531	0.482	1¾"ø		21½"	26X2¼"		8.80		238.06
29'		0.531	0.517	2"ø		22"	27X2¼"		8.83		246.85
30'		0.656	0.459	2"ø		22"	27X2⅜"		8.85		255.67
31'		0.656	0.490	2"ø		22"	27X2⅜"		8.88		264.52
32'	16	0.656	0.523	2"ø	8	22"	27X2⅜"	0.5	8.91	58.69	273.39

20' SPAN

TOWER HGT. FT.	TOWER PIPE O.D. IN.	TOWER PIPE WALL THICK. IN.	TOWER PIPE DEFL. ΔH IN.	ANCHOR BOLTS SIZE	ANCHOR BOLTS NO.	ANCHOR BOLTS BOLT CIRCLE DIA.	BASE PLATE SIZE IN.	TRUSS DEFL. ΔV IN.	DESIGN LOADS SHEAR V KIPS	DESIGN LOADS TORSION T K-FT	DESIGN LOADS MOMENT M K-FT
14'	20	0.310	0.177	1¾"ø	8	25⅜"	29¾X1¾"	0.6	11.53	107.50	162.73
15'		0.310	0.203					0.6	11.56		174.09
16'		0.310	0.231					0.7	11.59		185.51
17'		0.344	0.240						11.62		197.01
18'		0.344	0.269						11.66		208.52
19'		0.344	0.300				29¾X1¾"		11.69		220.08
20'		0.375	0.306				29¾X1⅞"		11.72		231.68
21'		0.375	0.337				29¾X1⅞"		11.76		243.33
22'		0.406	0.341				29¾X1⅞"		11.79		255.00
23'		0.406	0.373	1¾"ø		25⅜"	29¾X2"	0.7	11.82		266.73
24'		0.406	0.406	2"		25¾"	30½X2"	0.8	11.86		278.50
25'		0.438	0.410				30½X2⅛"		11.89		290.30
26'		0.438	0.443				30½X2⅛"		11.92		302.15
27'		0.469	0.449				30½X2⅛"		11.96		314.03
28'		0.469	0.483				30½X2¼"		11.99		325.95
29'		0.500	0.488				30½X2¼"		12.02		337.91
30'		0.500	0.523				30½X2¼"		12.05		349.90
31'		0.531	0.528				30½X2¼"		12.09		361.93
32'	20	0.531	0.563	2"	8	25¾"	30½X2⅜"	0.8	12.12	107.50	374.00

25' SPAN

TOWER HGT. FT.	TOWER PIPE O.D. IN.	TOWER PIPE WALL THICK. IN.	TOWER PIPE DEFL. ΔH IN.	ANCHOR BOLTS SIZE	ANCHOR BOLTS NO.	ANCHOR BOLTS BOLT CIRCLE DIA.	BASE PLATE SIZE IN.	TRUSS DEFL. ΔV IN.	DESIGN LOADS SHEAR V KIPS	DESIGN LOADS TORSION T K-FT	DESIGN LOADS MOMENT M K-FT
14'	24	0.310	0.165	1¾"ø	8	29⅜"	33¾X1½"	0.8	14.40	168.25	205.58
15'		0.310	0.189				33¾X1½"		14.44		219.64
16'		0.310	0.215				33¾X1⅝"		14.48		233.79
17'		0.344	0.221				33¾X1⅝"		14.52		248.01
18'		0.344	0.248				33¾X1⅝"	0.8	14.56		262.29
19'		0.344	0.276	1¾"ø		29⅜"	33¾X1¾"	0.9	14.60		276.65
20'		0.344	0.306	2"ø		29¾"	34½X1¾"		14.64		291.07
21'		0.375	0.311				34½X1⅞"		14.68		305.54
22'		0.375	0.341				34½X1⅞"		14.72		320.07
23'		0.375	0.373				34½X2"		14.76		334.66
24'		0.406	0.376				34½X2"	0.9	14.80		349.29
25'		0.406	0.408				34½X2"	1.0	14.84		363.98
26'		0.406	0.442				34½X2"		14.88		378.72
27'		0.406	0.476				34½X2⅛"		14.92		393.51
28'		0.438	0.477	2"ø		29¾"	34½X2⅛"		14.96		408.34
29'		0.438	0.512	2¼"ø		30"	35X2¼"		15.00		423.22
30'		0.469	0.513				35X2¼"		15.04		438.15
31'		0.469	0.548				35X2¼"	1.0	15.08		453.12
32'	24	0.469	0.584	2¼"ø	8	30"	35X2¼"	1.1	15.12	168.25	468.13

30' SPAN

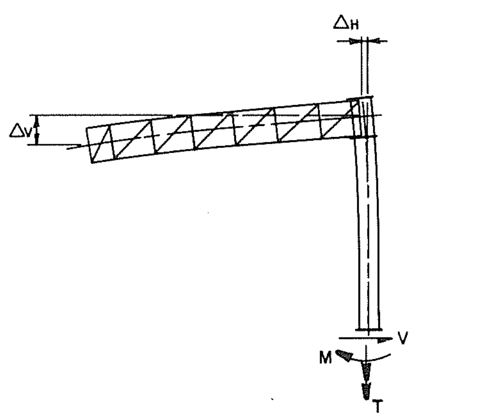
TOWER HGT. FT.	TOWER PIPE O.D. IN.	TOWER PIPE WALL THICK. IN.	TOWER PIPE DEFL. ΔH IN.	ANCHOR BOLTS SIZE	ANCHOR BOLTS NO.	ANCHOR BOLTS BOLT CIRCLE DIA.	BASE PLATE SIZE IN.	TRUSS DEFL. ΔV IN.	DESIGN LOADS SHEAR V KIPS	DESIGN LOADS TORSION T K-FT	DESIGN LOADS MOMENT M K-FT
14'	24.	0.375	0.199	2"ø	8	29¾"	34½X1¾"	1.1	17.16	242.54	249.26
15'		0.375	0.238				34½X1¾"	1.2	17.20		265.80
16'		0.406	0.251				34½X1⅞"		17.24		282.45
17'		0.406	0.283				34½X1⅞"		17.28		299.21
18'		0.438	0.296				34½X1⅞"	1.2	17.32		316.06
19'		0.438	0.329				34½X2"	1.3	17.36		332.99
20'		0.438	0.355				34½X2"	1.3	17.40		350.00
21'		0.467	0.377	2"ø		29¾"	34½X2"	1.3	17.44		367.09
22'		0.467	0.414	2¼"ø		30"	35X2⅛"	1.4	17.48		384.25
23'		0.467	0.452				35X2⅛"		17.52		401.47
24'		0.500	0.463				35X2⅛"		17.56		418.75
25'		0.530	0.475				35X2¼"		17.60		436.09
26'		0.530	0.514				35X2¼"	1.4	17.64		453.50
27'		0.530	0.554				35X2¼"	1.5	17.68		470.95
28'		0.530	0.596				35X2⅜"	1.5	17.72		488.46
29'		0.562	0.607				35X2⅜"	1.5	17.76		506.03
30'		0.562	0.649	2¼"ø		30"	35X2⅜"	1.6	17.80		523.64
31'		0.594	0.659	2½"ø		30½"	36X2½"	1.6	17.84		541.31
32'	24	0.594	0.702	2½"ø	8	30½"	36X2½"	1.6	17.88	242.54	559.02

35' SPAN

TOWER HGT. FT.	TOWER PIPE O.D. IN.	TOWER PIPE WALL THICK. IN.	TOWER PIPE DEFL. ΔH IN.	ANCHOR BOLTS SIZE	ANCHOR BOLTS NO.	ANCHOR BOLTS BOLT CIRCLE DIA.	BASE PLATE SIZE IN.	TRUSS DEFL. ΔV IN.	DESIGN LOADS SHEAR V KIPS	DESIGN LOADS TORSION T K-FT	DESIGN LOADS MOMENT M K-FT
14'	30	0.310	0.178	2"ø	8	35¾"	40½X1⅝"	1.3	20.11	330.60	296.99
15'		0.310	0.205				40½X1⅝"	1.4	20.16		316.04
16'		0.310	0.233				40½X1⅝"		20.21		335.27
17'		0.344	0.239				40½X1¾"		20.26		354.65
18'		0.344	0.268				40½X1¾"	1.4	20.31		374.16
19'		0.344	0.299				40½X1¾"	1.5	20.36		393.81
20'		0.344	0.331	2"ø		35¾"	40½X1¾"	1.5	20.41		413.56
21'		0.375	0.336	2¼"ø		36"	41X1⅞"	1.5	20.46		433.43
22'		0.375	0.369				41X1⅞"	1.6	20.51		453.39
23'		0.375	0.403				41X2"	1.6	20.56		473.44
24'		0.375	0.439				41X2"	1.7	20.61		493.59
25'		0.406	0.442				41X2"		20.66		513.81
26'		0.406	0.478				41X2"		20.70		534.12
27'		0.406	0.512				41X2"		20.75		554.50
28'		0.438	0.514				41X2⅛"		20.80		574.96
29'		0.438	0.552				41X2¼"	1.7	20.85		595.49
30'		0.438	0.591	2¼"ø		36"	41X2¼"	1.8	20.90		616.08
31'		0.469	0.591	2½"ø		36½"	42X2¼"	1.8	20.95		636.75
32'	30	0.469	0.630	2½"ø	8	36½"	42X2¼"	1.8	21.00	330.60	657.48

40' SPAN

TOWER HGT. FT.	TOWER PIPE O.D. IN.	TOWER PIPE WALL THICK. IN.	TOWER PIPE DEFL. ΔH IN.	ANCHOR BOLTS SIZE	ANCHOR BOLTS NO.	ANCHOR BOLTS BOLT CIRCLE DIA.	BASE PLATE SIZE IN.	TRUSS DEFL. ΔV IN.	DESIGN LOADS SHEAR V KIPS	DESIGN LOADS TORSION T K-FT	DESIGN LOADS MOMENT M K-FT
14'	30	0.375	0.206	2¼"ø	8	36"	41X1⅞"	1.8	22.89	432.38	347.21
15'		0.410	0.219					1.8	22.94		368.40
16'		0.410	0.249					1.8	22.99		389.82
17'		0.410	0.282					1.9	23.04		411.46
18'		0.410	0.316				41X1⅞"	2.0	23.09		433.29
19'		0.440	0.327				41X2"	2.0	23.14		455.29
20'		0.440	0.362					2.0	23.19		477.44
21'		0.440	0.399					2.1	23.24		499.74
22'		0.440	0.438				41X2"	2.2	23.29		522.16
23'		0.470	0.531	2¼"ø		36"	41X2⅛"	2.2	23.34		544.69
24'		0.470	0.489	2½"ø		36½"	42X2⅛"	2.2	23.39		567.34
25'		0.470	0.531				42X2¼"	2.3	23.44		590.10
26'		0.500	0.540				42X2¼"		23.49		612.95
27'		0.500	0.582				42X2¼"		23.54		635.89
28'		0.500	0.626				42X2⅜"		23.59		658.93
29'		0.531	0.647				42X2⅜"	2.3	23.64		682.04
30'		0.531	0.692				42X2⅜"	2.4	23.69		705.24
31'		0.562	0.687				42X2⅜"	2.4	23.73		728.52
32'	30	0.562	0.732	2½"ø	8	36½"	42X2½"	2.4	23.78	432.38	751.87



ELEVATION
(SHOWING DESIGN LOADS AND DEAD LOAD DEFLECTIONS)

TRUSS DETAILS

SPAN	10', 15' & 20'	25'	30'	35'	40'
W×D = WIDTH × DEPTH	4.5 X 4.5	4.5 X 4.5	4.5 X 4.5	4.5 X 4.5	4.5 X 4.5
CHORD	3 X 3 X 3/16 (3)	3 X 3 X ¼ (4)	3½X3½X¼(HS50) (7)	3½X3½X5/16(HS50) (9)	3½X3½X⅜(HS50) (8)
DEAD LOAD DIAGONAL	2½ X 1½ X 3/16 (2)	2½ X 1½ X 3/16 (2)	2½ X 1½ X 3/16 (2)	2½ X 1½ X 3/16 (2)	3 X 2 X 3/16 (2)
WIND LOAD DIAGONAL	3 X 3 X 3/16 (2)	3 X 3 X 3/16 (2)	3 X 2½ X ¼ (3)	3 X 3 X ¼ (3)	3 X 3 X ¼ (3)
DEAD LOAD VERTICAL	2½X1½X 3/16 (2)	2½X1½X 3/16 (2)	2½X1½X 3/16 (2)	2½X1½X 3/16 (2)	3 X 2 X 3/16 (2)
WIND LOAD STRUT	2 X 2 X 3/16 (1)	2 X 2 X 3/16 (1)	2 X 2 X 3/16 (1)	2 X 2 X 3/16 (1)	2½X2½X 3/16 (1)
TRUSS DEAD LOAD	42 #/ft.	47 #/ft.	53 #/ft.	60 #/ft.	70 #/ft.
SIZE H.S. BOLTS IN CONN.	⅝"ø	⅝"ø	⅝"ø	⅝"ø	¾"ø
NO. & SIZE OF H.S. BOLTS IN CHORD ANGLE TO TOWER CONNECTION PLATE	3 ~ ⅝"ø ea.	5 ~ ⅝"ø or 3 ~ ¾"ø ea.	7 ~ ⅝"ø or 5 ~ ¾"ø ea.	9 ~ ⅝"ø or 7 ~ ¾"ø ea.	8 ~ ¾"ø ea.

All truss members are angles.

Number of High Strength bolts required in truss connection or splice are indicated thus (3) after the member size.

Deflections shown include the design loads for Truss, Sign Panel, Lights and Walkways.

GENERAL NOTES:

Steel for tower pipe shall conform to ASTM A53 Grade B or to ASTM A501. Tower pipe wall thickness shown is the minimum allowable. Fabricator may use the wall thickness shown or pipe of the same diameter with greater wall thickness.

All other structural steel shall conform to ASTM A36 except where noted HS 50 which shall be ASTM A441, ASTM A572 or ASTM A588.

All connection bolts shall conform to ASTM A325 or ASTM A449.

All structural steel, connection bolts, nuts and washers shall be galvanized in accordance with the Specifications.

Compensate for truss deflection at free end by offsetting upper and lower bolt holes at truss-to-tower connection.

For truss details see sheet 2 of 3.

For base and foundation details see sheet 3 of 3.

For cantilever truss lengths falling between those shown use sizes called for in the next longer span.

Towers for cantilever sign supports are designed for the equivalent area of a 10 foot deep sign panel over 100% of the span length. Design includes 3 lb./□' for sign panel and 20 lb./lin. ft. for lights and 50 lb./lin. ft. for walkways all placed as specified for the design sign panel.

Details called for hereon are applicable for Design Wind Heights up to 30' inclusive.

STATE DEPARTMENT OF HIGHWAYS AND PUBLIC TRANSPORTATION

CANTILEVER OVERHEAD SIGN SUPPORTS

COSS-Z1

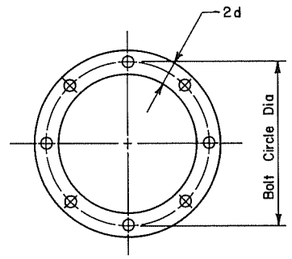
ORIGINAL DRAWING DATE: 7-83	REVISIONS	STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT	SHEET
DN.:-CWC			6		
CK.:-LEH		COUNTY	CONTROL	SECTION	JOB / HIGHWAY
DW.:-EDS					
CK.:-LEH					

ANCHOR BOLT SIZE	PIPE OUTSIDE DIAMETER 16" BOLT CIRCLE DIA.	16" DR. SHAFT SIZE	16" DR. SHAFT REINF.	20" BOLT CIRCLE DIA.	20" DR. SHAFT SIZE	20" DR. SHAFT REINF.	24" BOLT CIRCLE DIA.	24" DR. SHAFT SIZE	24" DR. SHAFT REINF.	30" BOLT CIRCLE DIA.	30" DR. SHAFT SIZE	30" DR. SHAFT REINF.
1 ¼"ø X 2'-11"	20 ½"	36"ø	14-#8(A)	24 ½"	36"ø	14-#8(A)						
1 ⅜"ø X 3'-1"	20 ¾"	36"ø	12-#9(A)	24 ¾"	36"ø	12-#9(A)						
1 ½"ø X 3'-4"	21"	36"ø	12-#9(A)	25"	42"ø	14-#9(A)	29"	42"ø	14-#9(C)			
1 ¾"ø X 3'-10"	21 ½"	36"ø	10-#10(A)	25 ⅜"	42"ø	12-#10(B)	29 ⅜"	42"ø	12-#10(C)	35 ⅜"	48"ø	16-#10(C)
2"ø X 4'-3"	22"	36"ø	12-#10(A)	25 ¾"	42"ø	12-#10(B)	29 ¾"	48"ø	16-#10(C)	35 ¾"	54"ø	18-#10(C)
2 ¼"ø X 4'-9"	22 ½"	36"ø	10-#11(A)	26"	42"ø	10-#11(B)	30"	48"ø	14-#11(C)	36"	54"ø	14-#11(D)
2 ½"ø X 5'-2"				26 ½"	42"ø	12-#11(B)	30 ½"	48"ø	16-#11(C)	36 ½"	54"ø	16-#11(D)
2 ¾"ø X 5'-8"							31 ½"	48"ø	18-#11(D)	37"	54"ø	20-#11(D)
3"ø X 6'-1"										37 ½"	54"ø	24-#11(D)

A = #3 Plain Spiral at 6" pitch (Grade 40)
B = #4 Plain Spiral at 6" pitch (Grade 40)
C = #4 Plain Spiral at 6" pitch (Grade 60)
D = #4 Plain Spiral at 3 ½"pitch (Grade 60)

Washers shall conform to ASTM F436-76b.

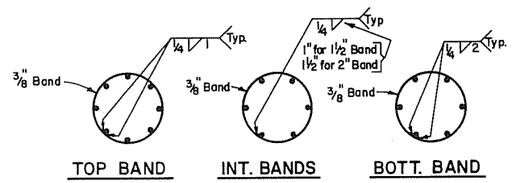
ANCHOR BOLT DIA. d	WASHER DIMENSIONS OUTSIDE DIAMETER	HOLE DIAMETER	THICKNESS MIN.	THICKNESS MAX.	HOLE IN BASE PLATE
1½" or less	2d	d+ ⅛"	0.136"	0.177"	d+ ¼"
1¾"	2d - ⅛"	d+ ⅛"	0.178"	0.280"	d+ 5/16"
2"	2d - ¼"	d+ ⅛"	0.178"	0.280"	d+ 5/16"
Over 2"	2d - ½"	d+ ⅛"	0.240"	0.340"	d+ 5/16"

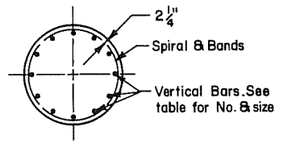


TOP VIEW OF TOP & BOTTOM TEMPLATES

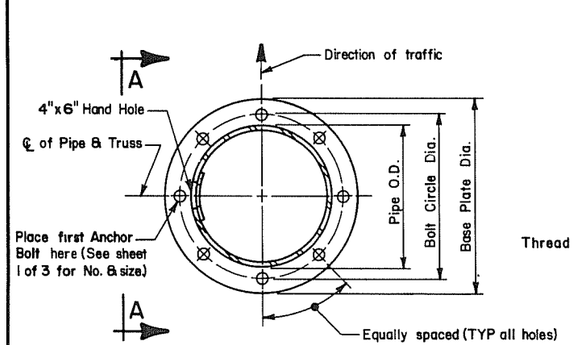
ANCHOR BOLT SIZE DIA.	LENGTH *	PROJ. & THREAD
1¼"ø	2'-11"	5"
1⅜"ø	3'- 1"	5½"
1½"ø	3'- 4"	6"
1¾"ø	3'-10"	7"
2"ø	4'- 3"	8"
2¼"ø	4'- 9"	9"
2½"ø	5'- 2"	10"
2¾"ø	5'- 8"	11"
3"ø	6'- 1"	12"

* Minimum dimensions are given.

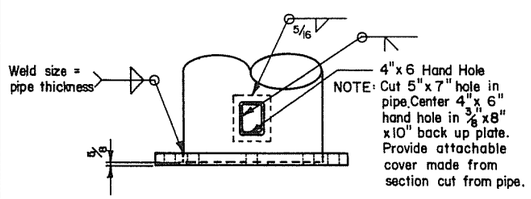




SECTION

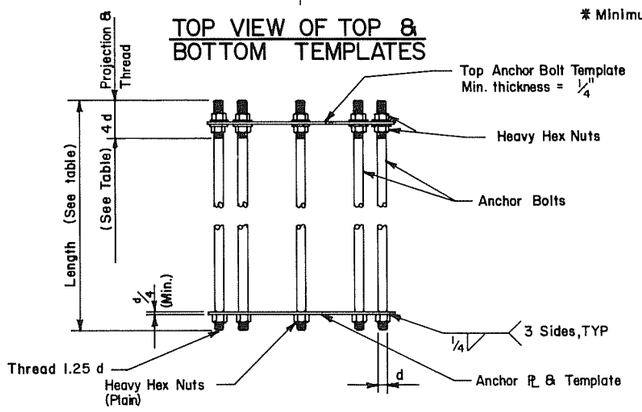


PLAN

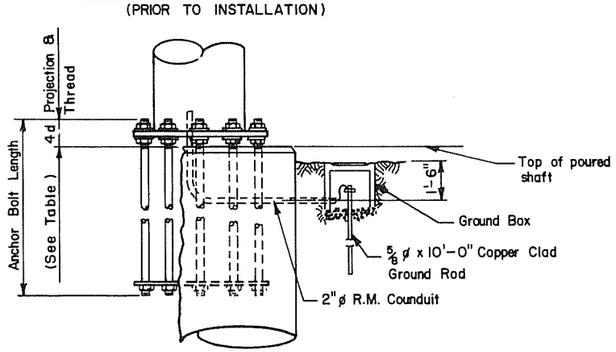


VIEW A-A

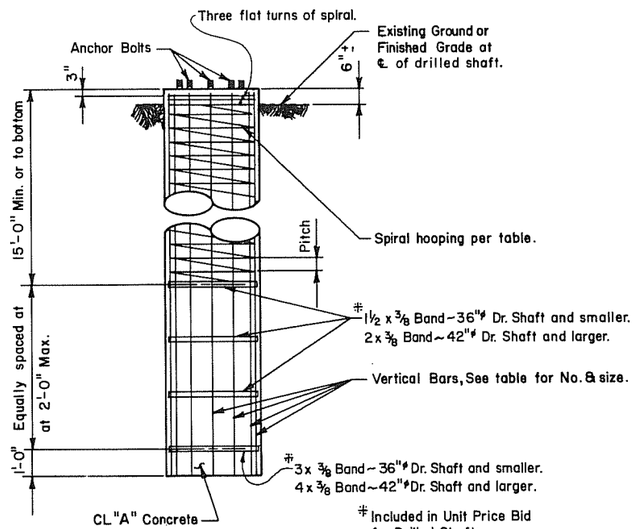
BASE PLATE & HANDHOLE DETAILS
(SEE SHEET 1 OF 3 FOR DIAMETER & THICKNESS OF BASE PLATE)



ANCHOR BOLT ASSEMBLY
(PRIOR TO INSTALLATION)



BEARING SEAT ELEVATION



FOUNDATION DETAIL

GENERAL NOTES:

Concrete shall be Class "A".
Reinforcing shall conform to item 440.
Anchor bolts shall conform to ASTM A193-B7. Nuts for anchor bolts shall be heavy hex and shall conform to ASTM A194-2H. Thread for anchor bolts and nuts shall be 8 UN. Unless noted otherwise, anchor bolt top end projection plus 6" shall be galvanized. Nuts and washers at the base plate shall be galvanized. Nuts shall be tapped or chased after galvanizing. Bolts and nuts shall have Class 2A and 2B fit tolerances.

Anchor bolts shall be rigidly held in position during concrete placement using steel templates at the top and bottom. The top templates shall be removed after the concrete has set.

After the structure has been aligned in its final position, tack weld anchor bolt nuts to washer, and tack weld washers to base plate. Galvanizing in welded area shall be reparied in accordance with the Specification.

Unless shown otherwise welded steel bands may be replaced with spiral as noted on the foundation detail.

All vertical reinforcing shall be carried to the bottom of the Dr. Shaft.

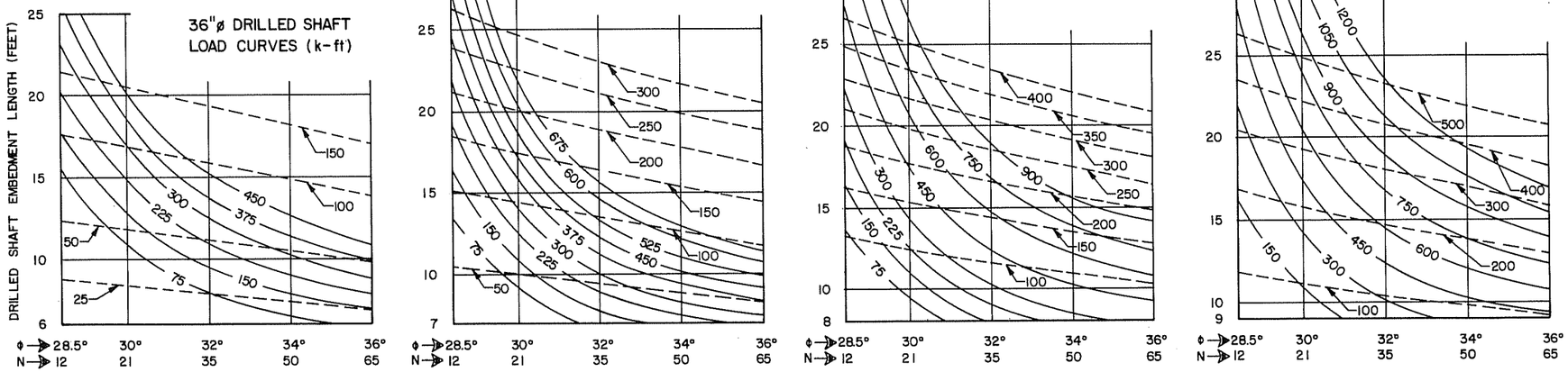
STATE DEPARTMENT OF HIGHWAYS AND PUBLIC TRANSPORTATION

CANTILEVER OVERHEAD SIGN SUPPORT FOUNDATION

COSSF

SHEET 3 OF 3

ORIGINAL DRAWING DATE: 7-83	STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT #	SHEET
DR.:-LEH		6		
CK.:-THD	REVISIONS			
DW.:-JWK		COUNTY	CONTROL SECTION JOB	HIGHWAY
CK.:-LEH				

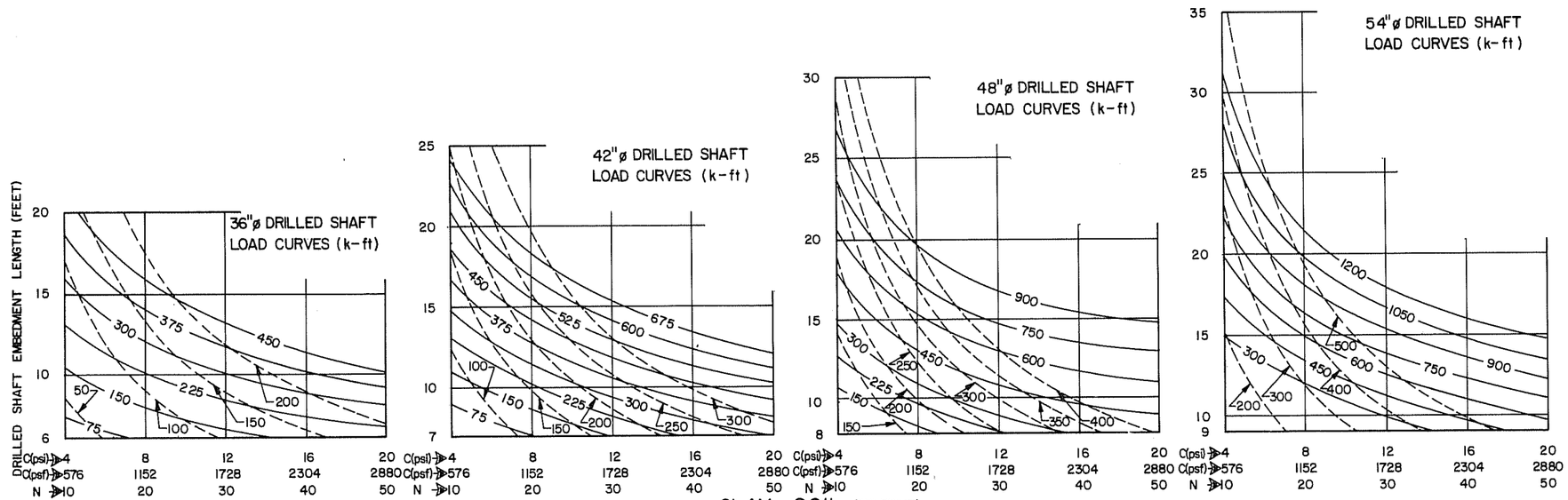


SUBMERGED SAND SOIL (COHESIONLESS) *

MOMENT ——————

TORSION – – – – – – – –

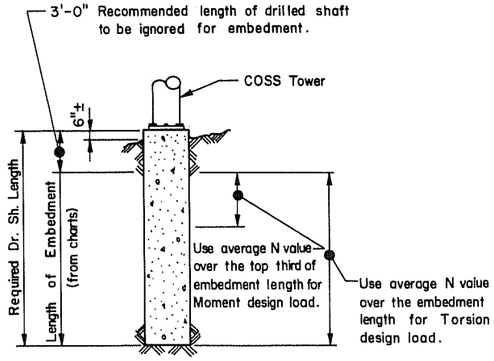
*NOTE:
For unsubmerged sands and clayey sands the charts for clay soil will give a conservative foundation design.



CLAY SOIL (COHESIVE)

MOMENT ——————

TORSION – – – – – – – –



PROCEDURE:

1. Determine design moment and torsion, and the required drilled shaft diameter as outlined in the selection example sheet COSS-SE.
2. Make an initail estimate of the required embedment length.
3. From soil exploration data determine type of soil and average N value or soil property along the upper third of the drilled shaft.
4. Enter chart (for the correct shaft diameter and soil type) from the bottom at the average N value or soil property determined in Step 3.
5. Proceed vertically into chart and locate intersection with design moment. Interpolate between moment curves (solid lines) as needed.
6. From intersection point turn 90° to left and read embedment length along vertical scale.
7. If embedment length differs significantly from estimated value return to Step 3 with the embedment length determined in Step 6.
8. From soil exploration data determine average N value or soil property over the entire length of the embedment.
9. Enter chart (for correct shaft diameter and soil type) from the bottom at the average N value or soil property determined in Step 8.
10. Proceed vertically into chart and locate intersection with design torsion. Interpolate between torsion curves (dashed lines) as needed.
11. From intersection point turn 90° to left and read embedment length along vertical scale.
12. Compute the required length of drilled shaft by adding 3'-0" to longer embedment length required for moment or torsion.

GENERAL NOTES:

These charts are for use with Cantilever Overhead Sign Supports with one shaft per tower.

Solid curves are base moment in k-ft.

Dash curves are base torsion in k-ft.

C = Cohesive shear strength of soil (psf or psi)

ϕ = Angle of internal friction of soil (degrees)

N = Texas Cone Pentrometer value (blows per ft)

Minimum embedment of drilled shaft is two diameters.

Add 3'-0" to the required embedment length to determine the required length of drilled shaft.

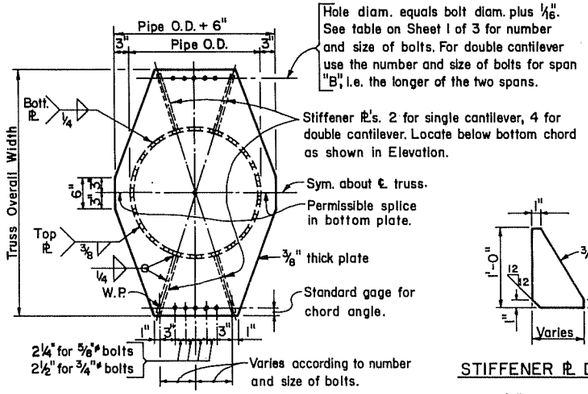
STATE DEPARTMENT OF HIGHWAYS AND PUBLIC TRANSPORTATION

FOUNDATION EMBEDMENT SELECTION CHARTS

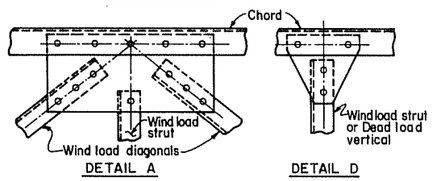
COSS-FD

ORIGINAL DRAWING DATE: 7-83	STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT #		SHEET
DR.:-CWC REVISIONS					
CK.:-LEH	COUNTY		CONTROL	SECTION	JOB	HIGHWAY
DW.:-JWK						
CK.:-LEH						

Hole diam. equals bolt diam. plus 1/16". See table on Sheet 1 of 3 for number and size of bolts. For double cantilever use the number and size of bolts for span "B", i.e. the longer of the two spans.

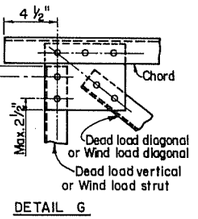


CONNECTION PLATE DETAIL



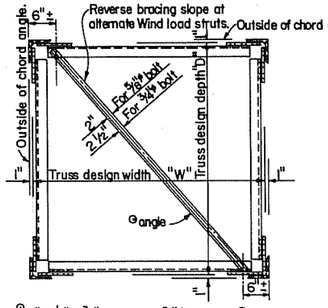
DETAIL A

DETAIL D



DETAIL G

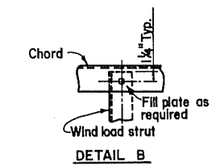
STIFFENER ℙ DETAIL



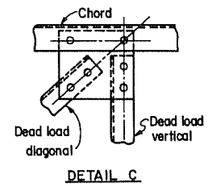
⊙ 2"x1½"x 3/16" angle for 5/8"ø bolts. ①
2½"x1½"x 3/16" angle for 3/4"ø bolts. ①

TRUSS SECTION
(DIAGONALS NOT SHOWN)

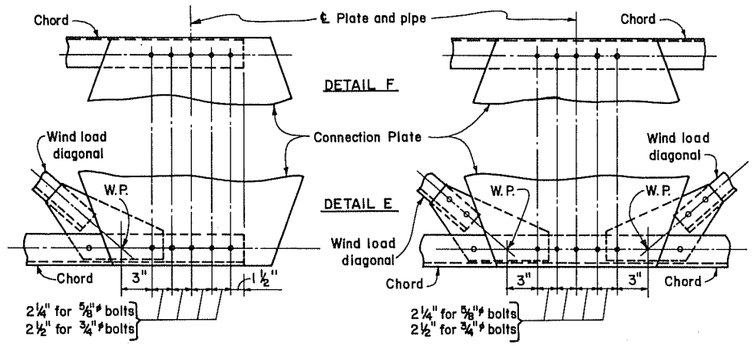
NUMBER OF BOLTS ℙ TO CHORD CONNECTION	
TOTAL NO. OF BOLTS IN DIAGS. IN JOINT	
0	2
2	2
3	3
4	3
5	4
6	4
8	5
10	6



DETAIL B

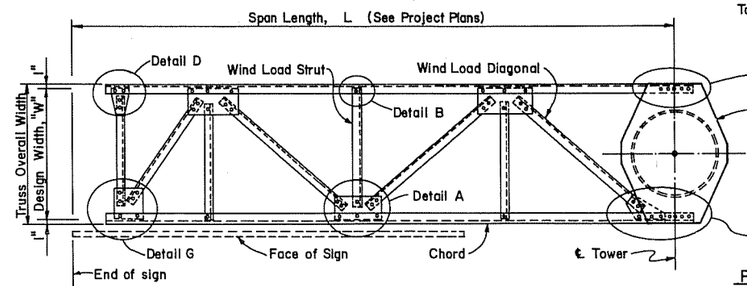


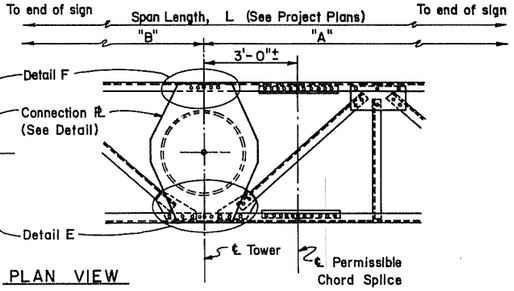
DETAIL C



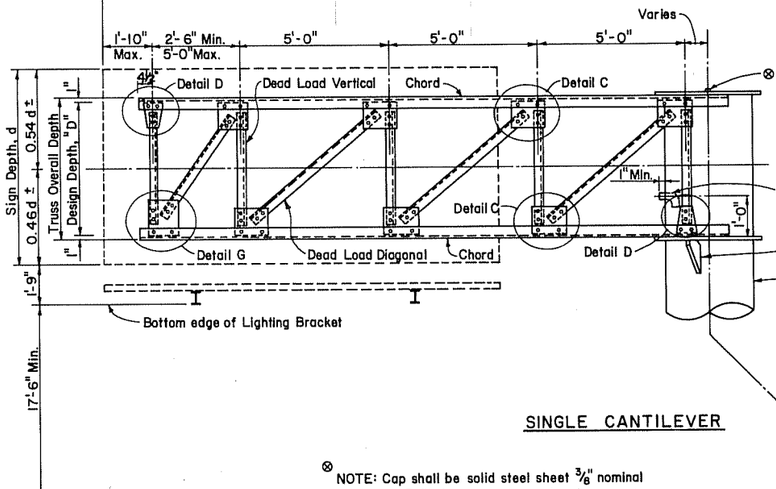
SINGLE CANTILEVER

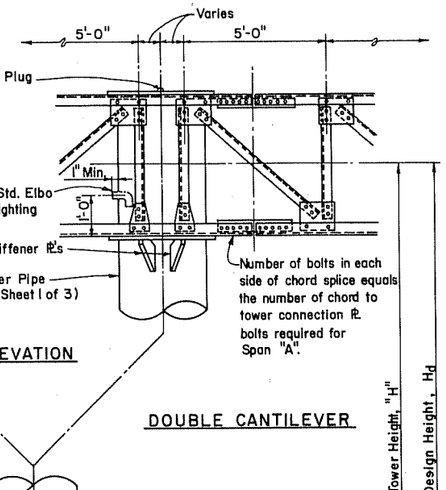
DOUBLE CANTILEVER





PLAN VIEW



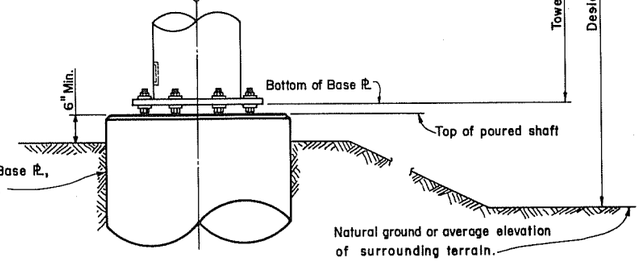


ELEVATION

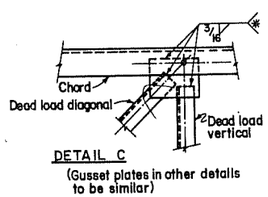
SINGLE CANTILEVER

DOUBLE CANTILEVER

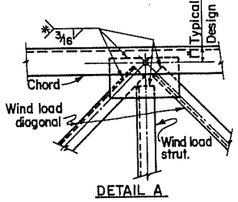
⊗ NOTE: Cap shall be solid steel sheet 3/8" nominal thickness. Drill, tap and plug galvanizing vent. Weld plate to pipe with 3/8" weld all around.



* MINIMUM LENGTH OF 3/16" FILLET WELD REQUIRED		
NUMBER OF BOLTS	TO REPLACE 5/8"ø BOLTS	TO REPLACE 3/4"ø BOLTS
1	2"	3"
2	4"	6"
3	6"	9"
4	8"	11½"
5	10"	14½"
6	12"	17½"
7	14"	20"



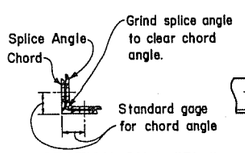
DETAIL C
(Gusset plates in other details to be similar)



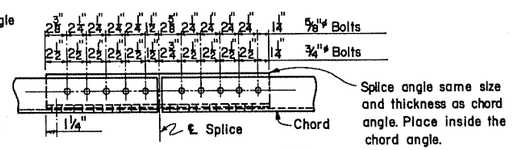
DETAIL A

ALTERNATE WELDED CONNECTION DETAILS

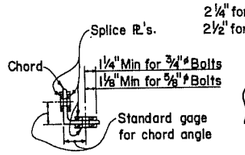
CONNECTION DETAILS



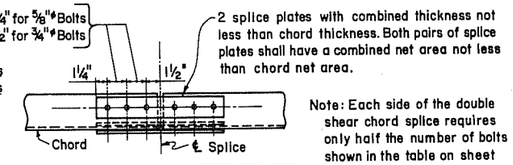
SECTION ON ℄ SPLICE



SINGLE SHEAR CHORD SPLICE



SECTION ON ℄ SPLICE



2 splice plates with combined thickness not less than chord thickness. Both pairs of splice plates shall have a combined net area not less than chord net area.

Note: Each side of the double shear chord splice requires only half the number of bolts shown in the table on sheet 1 of 3.

DOUBLE SHEAR CHORD SPLICE

SPLICE DETAILS

GENERAL NOTES:

Design conforms to 1975 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals and interim revisions thereto. Connection details are typical only. Actual size of member and number of bolts will vary. The details on this sheet are intended as a guide only. See Sheet 1 of 3 for number of bolts and size of members.

Gusset plates to be same thickness as thickest web member in connection.

STATE DEPARTMENT OF HIGHWAYS AND PUBLIC TRANSPORTATION

CANTILEVER OVERHEAD SIGN SUPPORT DETAILS

COSSD

SHEET 2 OF 3

ORIGINAL DRAWING DATE: 7-83	STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT #	SHEET
DR.:-LEH				
CK.:-THD	REVISIONS 7-86			
DW.:-EDS		COUNTY	CONTROL SECTION JOB	HIGHWAY
CK.:-LEH				

66