Light Duty Steel Poles

Cecil Energy Structures is backed by a team with over 100 years of steel pole manufacturing experience and global. Our standard, pre-engineered steel distribution and transmission pole designs feature round and 12-sided poles equivalent to ANSI 05.1 Wood Pole Classes 5 through H10. And, our manufacturing capabilities allow us to provide alternative pole shapes, grades of material, material thickness, tapers, and lengths — all with domestically sourced steel.

A Smart Alternative

- Increased durability
- Reduced weight, translating to lower transportation and install costs
- Increased service life — up to 80 years versus 20-30 years for wood poles
- Economically designed
- Aesthetically pleasing

Safe and Durable

- Consistent dimensional properties and material strength, maximizing strength and stiffness for loads applied in any direction
- Zero strength degredation — unlike wood poles, steel poles do not lose strength over time
- Quality tested and assured

Efficiencies in Install and Maintenance

- Improved labor savings due to customer-specified pre-drilled patterns
- Reduced handling and installation costs
- Zero pole-material shrinkage avoids hardware retightening maintenance
- Eliminates disposal problems associated with wood poles

Rock Stars in the Natural Environment

- Corrosion resistant
- Resistant to pole rot, insects, and woodpecker damage
- Fire resistant, allowing for line and equipment support even after a disastrous wildfire

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Features & Options

Standard Features

- Buy America / BABA certified
- Hot-dipped galvanized finish
- Direct-embedded construction
- Grounding provision(s)
- NESC Grade B Construction or RUS designs
- Ground-line and below-grade protective coating
- Grounding plate meeting NESC grounding requirement (2 sqft for distribution poles or bearing plate for transmission poles)
- Welded steel pole cap
- ID tag to customer specifications

Available Options

- Factory-drilled holes for attachments and steps
- Base plate construction
- Ground sleeve
- Dull- and oil-galvanized finish
- Pole steps
- NESC Grade C construction
- Weathering steel
- Factory-installed rivnuts
- Removable pole top
- Bearing plate in lieu of grounding plate for distribution class poles

Understanding Wood-Pole Equivalence

Wood poles are organized into different classes based on a required ultimate moment capacity at the ground line of the pole. Each class has a required tip load applied to the pole designated by the American National Standards Institute, ANSI 05.1. Steel poles follow the same classification system as wood poles but are equated to wood by applying a tip load that is multiplied by the appropriate equivalency factor for wood to steel.

To further explain wood-pole equivalents (wpe), below is a series of questions and answers. Refer to Appendix B and C for design examples.

How Is Steel Equivalent To Wood?

The term “wood-pole equivalent” refers to a steel pole that is designed to meet the required ultimate moment capacity at ground line for a given ANSI 05.1 class. However, because of variances in sectional properties and material between wood and steel, it is not enough to simply equate ultimate moment capacities at ground line. Further analysis is performed to ensure that steel poles are not susceptible to buckling issues, excessive deflections, or are overstressed from secondary moments.

What Is A Secondary Moment?

A secondary moment often referred to as the p-delta effect is the increase in bending moment due to a structure’s displacement under loading.

What Is Ultimate Moment Capacity?

Ultimate moment capacity is the moment that occurs when the material starts to yield.

Where Is The Ground Line Located?

Unless specified, ground line is located, from the butt of the pole, a distance of ten percent of the pole length plus two feet.

What Is The Tip Load?

A tip load is a horizontal point load applied two feet from the pole top. For NESC designs, the tip load is derived from the ANSI 05.1 wood pole classification system and is then multiplied by an equivalency factor for wood to steel. For RUS designs, the tip load is per Bulletin 1724E-214, Section 5, Table 1.

What Is An Equivalency Factor?

An equivalency factor is the wood to steel ratio of NESC overload factors under a given loading condition. For NESC Grade B construction under wind loading conditions, the wood pole overload factor is 4.0 and the steel pole overload factor is 2.5. Therefore, the equivalency factor for wood to steel becomes 2.5/4.0 equal to 0.625.

General Specifications

Material

Tubes are manufactured with ASTM A572 or A595 material having 55 ksi minimum yield strength. Pole tops, bearing plates, and grounding plates are manufactured with ASTM A36 material or better having 36 ksi minimum yield strength. All material receives a galvanized structural finish in accordance with ASTM A123.

Embedment Depth

Standard embedment depth is calculated as ten percent of the pole length plus two feet. However, soil capacity analysis is the responsibility of the customer and should be performed by a local professional geotechnical engineer.

Steel Design

Structural analysis is performed in accordance with ASCE Manual 48-19 “Design Of Steel Transmission Pole Structures.” Ultimate strength methods are used to compute stresses resulting from factored design loads being applied to the structures.

Joint Construction

The standard method of joint construction for multi-piece wood pole equivalents is a telescoping slip joint. Telescoping slip joints are designed with a nominal lap length that will develop the sufficient strength needed for the connecting sections. Telescoping slip joints are not only cost effective but allow for easier field assembly and installation.

Another method used is a bolted flange plate connection. Bolted flange plate connections are more expensive and reserved for designs where telescoping slip joints are considered not to be good engineering practice as a result of loading conditions or design requirements. Examples of such designs that might warrant bolted flange plate connections are guyed and framed structures.

Weld Penetration

The longitudinal seam weld of the tube receives, as a minimum, sixty percent penetration weld. The slip joint area of the female section receives one hundred percent full-penetration weld for the nominal joint length plus an additional six inches. The pole cap is joined to the pole top with a 3/16” minimum staggered intermittent fillet weld. The bearing plate is joined to the pole butt with a 1/4” fillet weld. For base plate applications and other circumferential welds, a one hundred percent full-penetration weld is used.

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Light Duty Steel Catalog Summary

Round Series Catalog Designs

Pre-Engineered Standard Catalog Designs	30 - 80 ft pole lengths for Class 5 - Class 1
	30 - 80 ft pole lengths for Class H1
	30 - 80 ft pole lengths for Class H2
	30 - 80 ft pole lengths for Class H3
	30 - 75 ft pole lengths for Class H4
Cross Section	Round
Taper Rate	0.14 in/ft
Maximum Section Length	42 ft
Wall Thickness	Ranges from 0.119 in - 0.313 in
Shipping Sections	1-piece section for pole lengths up to 40 ft
	2-piece section for pole lengths 45 ft and above
Diameter Range	3.5 in minimum
	18.56 in maximum

Multi-Sided Series Catalog Designs

Pre-Engineered Standard Catalog Designs	40 - 130 ft pole lengths for Class 1 - Class H10 NESC Grade B Construction
	40 - 130 ft pole length for Class 1 - Class H6 RUS Designs
Cross Section	12 Sides
Taper Rate	Ranges from 0.12 - 0.20 in/ft
Maximum Section Length	53.5 ft
Wall Thickness	Ranges from 0.188 in - 0.3125 in
Shipping Sections	1-piece construction for pole lengths up to 50 ft
	2-piece construction for pole lengths 55-100 ft
	3-piece construction for pole length 105-130 ft
Diameter Range	8.0 in minimum across flats
	36.35 in maximum across flats

Steel Pole Designs Grade B - Round Series

Wood-Pole Equivalent Class 5

Taper Rate = 0.14 in/ft

Catalog Number	Length (ft)	Embedment Depth (ft)	Top Diameter (in)	Butt Diameter (in)	Wall Thickness (in)	Ultimate Moment Capacity at GL (ft-kips)	Galvanized Weight (lbs)
30CL5-R	30	5.0	4.80	9.00	0.12	28.44	263
35CL5-R	35	5.5	5.00	9.90	0.12	34.54	331
40CL5-R	40	6.0	3.40	9.00	0.179	40.08	462
45CL5-R	45	6.5	3.70	9.60	0.179	45.63	557
50CL5-R	50	7.0	3.60	10.20	0.179	51.54	641
55CL5-R	55	7.5	3.40	10.70	0.179	56.60	718
60CL5-R	60	8.0	3.20	11.20	0.179	61.90	797
65CL5-R	60	8.5	3.20	11.90	0.179	70.08	904
70CL5-R	65	9.0	3.20	12.60	0.179	78.78	1017
75CL5-R	75	9.5	3.20	13.30	0.179	87.98	1137
80CL5-R	80	10.0	3.20	14.00	0.179	97.69	1264

Wood-Pole Equivalent Class 4

Taper Rate = 0.14 in/ft

Catalog Number	Length (ft)	Embedment Depth (ft)	Top Diameter (in)	Butt Diameter (in)	Wall Thickness (in)	Ultimate Moment Capacity at GL (ft-kips)	Galvanized Weight (lbs)
30CL4-R	30	5.0	5.90	10.10	0.12	36.66	308
35CL4-R	35	5.5	4.40	9.30	0.179	43.93	452
40CL4-R	40	6.0	5.00	10.60	0.179	57.96	590
45CL4-R	45	6.5	4.70	10.60	0.179	57.10	647
50CL4-R	50	7.0	4.70	11.30	0.179	64.97	751
55CL4-R	55	7.5	4.60	11.90	0.179	71.99	849
60CL4-R	60	8.0	4.50	12.50	0.179	79.36	953
65CL4-R	60	8.5	4.30	13.00	0.179	85.61	1047
70CL4-R	65	9.0	4.10	13.50	0.179	92.09	1143
75CL4-R	75	9.5	4.00	14.10	0.179	100.41	1257
80CL4-R	80	10.0	5.10	15.90	0.179	130.06	1568

Steel Pole Designs Grade B - Round Series, Continued

Wood-Pole Equivalent Class 3

Taper Rate = 0.14 in/ft

Catalog Number	Length (ft)	Embedment Depth (ft)	Top Diameter (in)	Butt Diameter (in)	Wall Thickness (in)	Ultimate Moment Capacity at GL (ft-kips)	Galvanized Weight (lbs)
30CL3-R	30	5.0	5.20	9.4	0.179	45.75	417
35CL3-R	35	5.5	5.30	10.20	0.179	54.01	515
40CL3-R	40	6.0	5.40	11.00	0.179	62.94	622
45CL3-R	45	6.5	5.80	11.70	0.179	71.19	746
50CL3-R	50	7.0	5.80	12.40	0.179	79.95	861
55CL3-R	55	7.5	5.80	13.10	0.179	89.22	981
60CL3-R	60	8.0	5.80	13.80	0.179	99.00	1108
65CL3-R	60	8.5	5.70	14.40	0.179	107.61	1229
70CL3-R	65	9.0	5.60	15.00	0.179	116.58	1353
75CL3-R	75	9.5	5.40	15.50	0.179	124.12	1467
80CL3-R	80	10.0	5.30	16.10	0.179	133.74	1600

Wood-Pole Equivalent Class 2

Taper Rate = 0.14 in/ft

Catalog Number	Length (ft)	Embedment Depth (ft)	Top Diameter (in)	Butt Diameter (in)	Wall Thickness (in)	Ultimate Moment Capacity at GL (ft-kips)	Galvanized Weight (lbs)
30CL2-R	30	5.0	6.10	10.3	0.179	56.03	471
35CL2-R	35	5.5	6.30	11.20	0.179	66.42	585
40CL2-R	40	6.0	6.50	12.10	0.179	77.70	710
45CL2-R	45	6.5	7.00	12.90	0.179	88.34	854
50CL2-R	50	7.0	7.10	13.70	0.179	99.66	991
55CL2-R	55	7.5	7.10	14.40	0.179	109.97	1124
60CL2-R	60	8.0	7.10	15.10	0.179	120.80	1264
65CL2-R	65	8.5	7.10	15.80	0.179	132.12	1411
70CL2-R	70	9.0	7.00	16.40	0.179	142.04	1549
75CL2-R	75	9.5	7.60	17.70	0.179	166.45	1797
80CL2-R	80	10.0	5.44	16.10	0.25	184.09	2250

Steel Pole Designs Grade B - Round Series, Continued

Wood-Pole Equivalent Class 1

Taper Rate = 0.14 in/ft

Catalog Number	Length (ft)	Embedment Depth (ft)	Top Diameter (in)	Butt Diameter (in)	Wall Thickness (in)	Ultimate Moment Capacity at GL (ft-kips)	Galvanized Weight (lbs)
30CL1-R	30	5.0	7.00	11.2	0.179	67.34	525
35CL1-R	35	5.5	7.40	12.30	0.179	81.57	662
40CL1-R	40	6.0	7.60	13.20	0.179	94.01	798
45CL1-R	45	6.5	8.20	14.10	0.179	107.33	962
50CL1-R	50	7.0	8.40	15.00	0.179	121.53	1121
55CL1-R	55	7.5	8.50	15.80	0.179	134.75	1278
60CL1-R	60	8.0	8.50	16.50	0.179	146.70	1432
65CL1-R	65	8.5	8.60	17.30	0.179	161.18	1606
70CL1-R	70	9.0	8.60	18.00	0.179	174.21	1773
75CL1-R	75	9.5	6.14	16.10	0.25	185.90	2190
80CL1-R	80	10.0	7.64	18.30	0.25	244.89	2741

Wood-Pole Equivalent Class H1

Taper Rate = 0.14 in/ft

Catalog Number	Length (ft)	Embedment Depth (ft)	Top Diameter (in)	Butt Diameter (in)	Wall Thickness (in)	Ultimate Moment Capacity at GL (ft-kips)	Galvanized Weight (lbs)
30CLH1-R	30	5.0	8.00	12.2	0.179	81.13	585
35CLH1-R	35	5.5	8.40	13.30	0.179	96.68	732
40CLH1-R	40	6.0	10.20	15.80	0.179	138.76	1006
45CLH1-R	45	6.5	9.40	15.30	0.179	128.17	1070
50CLH1-R	50	7.0	9.70	16.30	0.179	145.57	1251
55CLH1-R	55	7.5	9.80	17.10	0.179	160.00	1421
60CLH1-R	60	8.0	10.00	18.00	0.179	177.24	1612
65CLH1-R	65	8.5	7.64	16.20	0.25	192.19	2056
70CLH1-R	70	9.0	7.74	17.00	0.25	211.79	2295
75CLH1-R	75	9.5	7.74	17.70	0.25	229.47	2525
80CLH1-R	80	10.0	7.64	18.30	0.25	244.87	2741

Steel Pole Designs Grade B - Round Series, Continued

Wood-Pole Equivalent Class H2

Taper Rate = 0.14 in/ft

Catalog Number	Length (ft)	Embedment Depth (ft)	Top Diameter (in)	Butt Diameter (in)	Wall Thickness (in)	Ultimate Moment Capacity at GL (ft-kips)	Galvanized Weight (lbs)
30CLH2-R	30	5.0	9.00	13.2	0.179	96.20	645
35CLH2-R	35	5.5	10.20	15.10	0.179	127.12	858
40CLH2-R	40	6.0	10.20	15.80	0.179	138.74	1006
45CLH2-R	45	6.5	10.70	16.60	0.179	152.83	1187
50CLH2-R	50	7.0	11.00	17.60	0.179	171.78	1381
55CLH2-R	55	7.5	11.20	18.50	0.179	189.62	1575
60CLH2-R	60	8.0	8.94	16.80	0.25	210.20	2063
65CLH2-R	65	8.5	8.94	17.50	0.25	227.81	2292
70CLH2-R	70	9.0	8.94	18.20	0.25	246.12	2530
75CLH2-R	75	9.5	10.34	20.30	0.25	310.04	3070
80CLH2-R	80	10.0	10.34	21.00	0.25	331.33	3345

Wood-Pole Equivalent Class H3

Taper Rate = 0.14 in/ft

Catalog Number	Length (ft)	Embedment Depth (ft)	Top Diameter (in)	Butt Diameter (in)	Wall Thickness (in)	Ultimate Moment Capacity at GL (ft-kips)	Galvanized Weight (lbs)
30CLH3-R	30	5.0	10.00	14.2	0.179	112.56	705
35CLH3-R	35	5.5	10.60	15.50	0.179	134.43	886
40CLH3-R	40	6.0	11.10	16.70	0.179	156.23	1078
45CLH3-R	45	6.5	12.00	17.90	0.179	179.66	1304
50CLH3-R	50	7.0	9.84	16.30	0.25	200.49	1757
55CLH3-R	55	7.5	10.04	17.20	0.25	223.32	2011
60CLH3-R	60	8.0	10.14	18.00	0.25	244.41	2264
65CLH3-R	65	8.5	10.24	18.80	0.25	266.45	2528
70CLH3-R	70	9.0	10.34	19.60	0.25	289.43	2803
75CLH3-R	75	9.5	10.34	20.30	0.25	310.02	3070
80CLH3-R	80	10.0	10.44	21.10	0.25	334.77	3367

Steel Pole Designs Grade B - Round Series, Continued

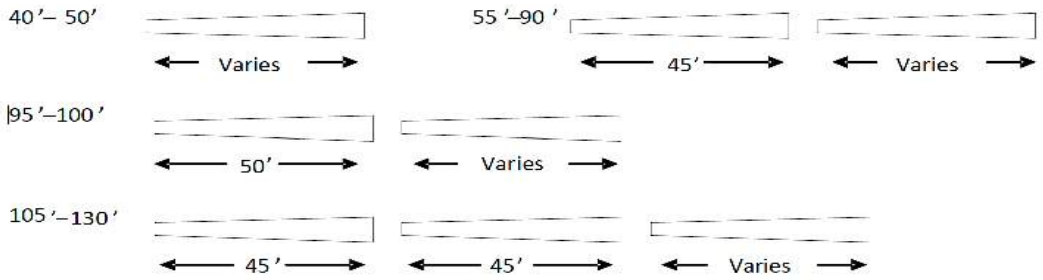
Wood-Pole Equivalent Class H4

Taper Rate = 0.14 in/ft

Catalog Number	Length (ft)	Embedment Depth (ft)	Top Diameter (in)	Butt Diameter (in)	Wall Thickness (in)	Ultimate Moment Capacity at GL (ft-kips)	Galvanized Weight (lbs)
30CLH4-R	30	5.0	11.00	15.2	0.179	130.19	765
35CLH4-R	35	5.5	12.20	17.10	0.179	165.80	998
40CLH4-R	40	6.0	12.30	17.90	0.179	181.18	1174
45CLH4-R	45	6.5	10.74	16.50	0.25	207.82	1655
50CLH4-R	50	7.0	11.04	17.50	0.25	233.94	1924
55CLH4-R	55	7.5	11.24	18.40	0.25	258.55	2196
60CLH4-R	60	8.0	11.44	19.30	0.25	284.39	2482
65CLH4-R	65	8.5	11.64	20.20	0.25	311.45	2782
70CLH4-R	70	9.0	11.84	21.10	0.25	339.73	3097
75CLH4-R	75	9.5	10.47	20.30	0.313	384.28	3860

Steel Pole Designs Grade B - Multi-Sided Series

Multi-Sided Section Lengths



Wood-Pole Equivalent Class 1

Taper Rate = 0.120 in/ft

Catalog Number	Length (ft)	Embedment Depth (ft)	Top Diameter (in)	Butt Diameter (in)	Wall Thickness (in)	Ultimate Moment Capacity at GL (ft-kips)	Galvanized Weight (lbs)
40CL1-MS	40	6	8.50	13.30	0.1875	121.15	927
45CL1-MS	45	6.5	8.50	13.90	0.1875	132.06	1,064
50CL1-MS	50	7	8.50	14.50	0.1875	143.43	1,207
55CL1-MS	55	7.5	8.50	14.60	0.1875	144.29	1,372
60CL1-MS	60	8	8.50	15.20	0.1875	156.17	1,524
65CL1-MS	65	8.5	8.50	15.80	0.1875	168.53	1,682
70CL1-MS	70	9	8.50	16.40	0.1875	181.35	1,846
75CL1-MS	75	9.5	8.50	17.00	0.1875	194.64	2,015
80CL1-MS	80	10	8.50	17.60	0.1875	208.40	2,191
85CL1-MS	85	10.5	8.50	18.20	0.1875	222.63	2,371
90CL1-MS	90	11	8.50	18.80	0.1875	237.33	2,558
95CL1-MS	95	11.5	8.50	19.40	0.1875	252.50	2,750
100CL1-MS	100	12	8.50	20.00	0.1875	268.14	2,947
105CL1-MS	105	12.5	8.50	20.10	0.1875	269.32	3,150
110CL1-MS	110	13	8.50	20.70	0.1875	285.46	3,358
115CL1-MS	115	13.5	8.50	21.30	0.1875	302.08	3,571
120CL1-MS	120	14	8.50	21.90	0.1875	319.16	3,790
125CL1-MS	125	14.5	8.50	22.50	0.1875	336.72	4,014
130CL1-MS	130	15	8.50	23.10	0.1875	354.74	4,244

Design Notes

- All pole shafts manufactured from ASTM A572 Grade 65 steel
- All poles are designed for flat-to-flat orientation
- No deflection limitations
- Loads per ANSI 05.1

Steel Pole Designs Grade B - Multi-Sided Series, Continued

Wood-Pole Equivalent Class H1

Taper Rate = 0.127 in/ft

Catalog Number	Length (ft)	Embedment Depth (ft)	Top Diameter (in)	Butt Diameter (in)	Wall Thickness (in)	Ultimate Moment Capacity at GL (ft-kips)	Galvanized Weight (lbs)
40CLH1-MS	40	6	9.50	14.58	0.1875	146.68	1,026
45CLH1-MS	45	6.5	9.50	15.22	0.1875	159.48	1,176
50CLH1-MS	50	7	9.50	15.85	0.1875	172.58	1,332
55CLH1-MS	55	7.5	9.50	15.99	0.1875	174.39	1,516
60CLH1-MS	60	8	9.50	16.62	0.1875	188.08	1,683
65CLH1-MS	65	8.5	9.50	17.26	0.1875	202.55	1,856
70CLH1-MS	70	9	9.50	17.89	0.1875	217.28	2,034
75CLH1-MS	75	9.5	9.50	18.53	0.1875	232.80	2,219
80CLH1-MS	80	10	9.50	19.16	0.1875	248.58	2,410
85CLH1-MS	85	10.5	9.50	19.80	0.1875	265.17	2,607
90CLH1-MS	90	11	9.50	20.43	0.1875	281.99	2,809
95CLH1-MS	95	11.5	9.50	21.07	0.1875	299.64	3,018
100CLH1-MS	100	12	9.50	21.70	0.1875	317.50	3,232
105CLH1-MS	105	12.5	9.50	21.84	0.1875	319.96	3,459
110CLH1-MS	110	13	9.50	22.47	0.1875	338.41	3,683
115CLH1-MS	115	13.5	9.50	23.11	0.1875	357.72	3,915
120CLH1-MS	120	14	9.50	23.74	0.1875	377.21	4,152
125CLH1-MS	125	14.5	9.50	24.38	0.1875	397.12	4,396
130CLH1-MS	130	15	9.50	25.01	0.1875	412.51	4,644

Design Notes

- All pole shafts manufactured from ASTM A572 Grade 65 steel
- All poles are designed for flat-to-flat orientation
- No deflection limitations
- Loads as per ANSI 05.1

Steel Pole Designs Grade B - Multi-Sided Series, Continued

Wood-Pole Equivalent Class H2

Taper Rate = 0.147 in/ft

Catalog Number	Length (ft)	Embedment Depth (ft)	Top Diameter (in)	Butt Diameter (in)	Wall Thickness (in)	Ultimate Moment Capacity at GL (ft-kips)	Galvanized Weight (lbs)
40CLH2-MS	40	6	9.50	15.38	0.1875	161.63	1,056
45CLH2-MS	45	6.5	9.50	16.12	0.1875	177.20	1,214
50CLH2-MS	50	7	9.50	16.85	0.1875	193.24	1,379
55CLH2-MS	55	7.5	9.50	17.09	0.1875	197.42	1,575
60CLH2-MS	60	8	9.50	17.82	0.1875	214.33	1,752
65CLH2-MS	65	8.5	9.50	18.56	0.1875	232.21	1,937
70CLH2-MS	70	9	9.50	19.29	0.1875	250.52	2,129
75CLH1-MS	75	9.5	9.50	20.03	0.1875	269.81	2,328
80CLH2-MS	80	10	9.50	20.76	0.1875	289.52	2,533
85CLH2-MS	85	10.5	9.50	21.50	0.1875	310.24	2,746
90CLH2-MS	90	11	9.50	22.23	0.1875	331.35	2,965
95CLH2-MS	95	11.5	9.50	22.97	0.1875	353.49	3,191
100CLH2-MS	100	12	9.50	23.70	0.1875	376.00	3,424
105CLH2-MS	105	12.5	9.50	23.94	0.1875	381.82	3,674
110CLH2-MS	110	13	9.50	24.67	0.1875	402.79	3,919
115CLH2-MS	115	13.5	9.50	25.41	0.1875	420.89	4,172
120CLH2-MS	120	14	9.50	26.14	0.1875	438.69	4,431
125CLH2-MS	125	14.5	9.50	26.88	0.1875	456.73	4,699
130CLH2-MS	130	15	9.50	27.61	0.1875	474.42	4,972

Design Notes

- All pole shafts manufactured from ASTM A572 Grade 65 steel
- All poles are designed for flat-to-flat orientation
- No deflection limitations
- Loads as per ANSI 05.1

Steel Pole Designs Grade B - Multi-Sided Series, Continued

Wood-Pole Equivalent Class H3

Taper Rate = 0.173 in/ft

Catalog Number	Length (ft)	Embedment Depth (ft)	Top Diameter (in)	Butt Diameter (in)	Wall Thickness (in)	Ultimate Moment Capacity at GL (ft-kips)	Galvanized Weight (lbs)
40CLH3-MS	40	6	9.50	16.42	0.1875	182.20	1,094
45CLH3-MS	45	6.5	9.50	17.29	0.1875	201.68	1,263
50CLH3-MS	50	7	9.50	18.15	0.1875	221.89	1,440
55CLH3-MS	55	7.5	9.50	18.52	0.1875	229.54	1,651
60CLH3-MS	60	8	9.50	19.38	0.1875	251.06	1,843
65CLH3-MS	65	8.5	9.50	20.25	0.1875	273.85	2,044
70CLH3-MS	70	9	9.50	21.11	0.1875	297.31	2,252
75CLH3-MS	75	9.5	9.50	21.98	0.1875	322.06	2,469
80CLH3-MS	80	10	9.50	22.84	0.1875	347.47	2,693
85CLH3-MS	85	10.5	9.50	23.71	0.1875	374.19	2,926
90CLH3-MS	90	11	9.50	24.57	0.1875	399.95	3,167
95CLH3-MS	95	11.5	9.50	25.44	0.1875	421.20	3,416
100CLH3-MS	100	12	9.50	26.30	0.1875	442.17	3,673
105CLH3-MS	105	12.5	9.50	26.67	0.1875	449.84	3,953
110CLH3-MS	110	13	9.50	27.53	0.1875	470.69	4,225
115CLH3-MS	115	13.5	9.50	28.15	0.25	692.80	5,967
120CLH3-MS	120	14	9.50	29.01	0.25	735.65	6,350
125CLH3-MS	125	14.5	9.50	29.88	0.25	780.37	6,745
130CLH3-MS	130	15	9.50	30.74	0.25	825.81	7,149

Design Notes

- All pole shafts manufactured from ASTM A572 Grade 65 steel
- All poles are designed for flat-to-flat orientation
- No deflection limitations
- Loads as per ANSI 05.1

Steel Pole Designs Grade B - Multi-Sided Series, Continued

Wood-Pole Equivalent Class H4

Taper Rate = 0.160 in/ft

Catalog Number	Length (ft)	Embedment Depth (ft)	Top Diameter (in)	Butt Diameter (in)	Wall Thickness (in)	Ultimate Moment Capacity at GL (ft-kips)	Galvanized Weight (lbs)
40CLH4-MS	40	6	9.00	15.40	0.25	210.90	1,375
45CLH4-MS	45	6.5	9.00	16.20	0.25	233.14	1,586
50CLH4-MS	50	7	9.00	17.00	0.25	256.49	1,807
55CLH4-MS	55	7.5	9.00	17.18	0.25	259.82	2,058
60CLH4-MS	60	8	9.00	17.98	0.25	284.44	2,297
65CLH4-MS	65	8.5	9.00	18.78	0.25	310.17	2,546
70CLH4-MS	70	9	9.00	19.58	0.25	337.01	2,804
75CLH4-MS	75	9.5	9.00	20.38	0.25	364.97	3,073
80CLH4-MS	80	10	9.00	21.18	0.25	394.05	3,352
85CLH4-MS	85	10.5	9.00	21.98	0.25	424.23	3,641
90CLH4-MS	90	11	9.00	22.78	0.25	455.54	3,940
95CLH4-MS	95	11.5	9.00	23.58	0.25	487.95	4,250
100CLH4-MS	100	12	9.00	24.38	0.25	521.48	4,569
105CLH4-MS	105	12.5	9.00	24.55	0.25	525.75	4,890
110CLH4-MS	110	13	9.00	25.35	0.25	560.53	5,227
115CLH4-MS	115	13.5	9.00	26.15	0.25	596.43	5,574
120CLH4-MS	120	14	9.00	26.95	0.25	633.44	5,931
125CLH4-MS	125	14.5	9.00	27.75	0.25	671.56	6,298
130CLH4-MS	130	15	9.00	28.55	0.25	710.80	6,675

Design Notes

- All pole shafts manufactured from ASTM A572 Grade 65 steel
- All poles are designed for flat-to-flat orientation
- No deflection limitations
- Loads as per ANSI 05.1

Steel Pole Designs Grade B - Multi-Sided Series, Continued

Wood-Pole Equivalent Class H5

Taper Rate = 0.173 in/ft

Catalog Number	Length (ft)	Embedment Depth (ft)	Top Diameter (in)	Butt Diameter (in)	Wall Thickness (in)	Ultimate Moment Capacity at GL (ft-kips)	Galvanized Weight (lbs)
40CLH5-MS	40	6	9.50	16.42	0.25	239.94	1,459
45CLH5-MS	45	6.5	9.50	17.29	0.25	265.76	1,684
50CLH5-MS	50	7	9.50	18.15	0.25	292.54	1,920
55CLH5-MS	55	7.5	9.50	18.39	0.25	298.01	2,191
60CLH5-MS	60	8	9.50	19.26	0.25	326.71	2,447
65CLH5-MS	65	8.5	9.50	20.12	0.25	356.34	2,712
70CLH5-MS	70	9	9.50	20.99	0.25	387.67	2,990
75CLH5-MS	75	9.5	9.50	21.85	0.25	419.88	3,277
80CLH5-MS	80	10	9.50	22.72	0.25	453.83	3,576
85CLH5-MS	85	10.5	9.50	23.58	0.25	488.63	3,885
90CLH5-MS	90	11	9.50	24.45	0.25	525.20	4,207
95CLH5-MS	95	11.5	9.50	25.31	0.25	562.59	4,537
100CLH5-MS	100	12	9.50	26.18	0.25	601.78	4,880
105CLH5-MS	105	12.5	9.50	26.42	0.25	609.61	5,232
110CLH5-MS	110	13	9.50	27.28	0.25	649.85	5,593
115CLH5-MS	115	13.5	9.50	28.15	0.25	691.92	5,967
120CLH5-MS	120	14	9.50	29.01	0.25	734.74	6,350
125CLH5-MS	125	14.5	9.50	29.88	0.25	779.43	6,745
130CLH5-MS	130	15	9.50	30.74	0.25	824.84	7,149

Design Notes

- All pole shafts manufactured from ASTM A572 Grade 65 steel
- All poles are designed for flat-to-flat orientation
- No deflection limitations
- Loads as per ANSI 05.1

Steel Pole Designs Grade B - Multi-Sided Series, Continued

Wood-Pole Equivalent Class H6

Taper Rate = 0.1860 in/ft

Catalog Number	Length (ft)	Embedment Depth (ft)	Top Diameter (in)	Butt Diameter (in)	Wall Thickness (in)	Ultimate Moment Capacity at GL (ft-kips)	Galvanized Weight (lbs)
40CLH6-MS	40	6	10.00	17.44	0.25	270.82	1,544
45CLH6-MS	45	6.5	10.00	18.37	0.25	300.13	1,783
50CLH6-MS	50	7	10.00	19.30	0.25	330.95	2,033
55CLH6-MS	55	7.5	10.00	19.61	0.25	339.18	2,325
60CLH6-MS	60	8	10.00	20.54	0.25	371.89	2,596
65CLH6-MS	65	8.5	10.00	21.47	0.25	406.11	2,880
70CLH6-MS	70	9	10.00	22.40	0.25	441.84	3,175
75CLH6-MS	75	9.5	10.00	23.33	0.25	479.06	3,482
80CLH6-MS	80	10	10.00	24.26	0.25	517.80	3,800
85CLH6-MS	85	10.5	10.00	25.19	0.25	558.04	4,131
90CLH6-MS	90	11	10.00	26.12	0.25	599.78	4,473
95CLH6-MS	95	11.5	10.00	27.05	0.25	643.04	4,826
100CLH6-MS	100	12	10.00	27.98	0.25	687.79	5,192
105CLH6-MS	105	12.5	10.00	28.28	0.25	699.09	5,573
110CLH6-MS	110	13	10.00	29.21	0.25	745.73	5,960
115CLH6-MS	115	13.5	10.00	30.14	0.25	793.87	6,358
120CLH6-MS	120	14	10.00	31.07	0.25	843.51	6,768
125CLH6-MS	125	14.5	10.00	32.00	0.25	894.66	7,190
130CLH6-MS	130	15	10.00	32.93	0.25	938.39	7,623

Design Notes

- All pole shafts manufactured from ASTM A572 Grade 65 steel
- All poles are designed for flat-to-flat orientation
- No deflection limitations
- Loads as per ANSI 05.1

Steel Pole Designs Grade B - Multi-Sided Series, Continued

Wood-Pole Equivalent Class H7

Taper Rate = 0.1820 in/ft

Catalog Number	Length (ft)	Embedment Depth (ft)	Top Diameter (in)	Butt Diameter (in)	Wall Thickness (in)	Ultimate Moment Capacity at GL (ft-kips)	Galvanized Weight (lbs)
40CLH7-MS	40	6	9.50	16.78	0.3125	308.45	1,847
45CLH7-MS	45	6.5	9.50	17.69	0.3125	342.69	2,134
50CLH7-MS	50	7	9.50	18.60	0.3125	378.74	2,435
55CLH7-MS	55	7.5	9.50	18.76	0.3125	381.86	2,770
60CLH7-MS	60	8	9.50	19.67	0.3125	419.85	3,096
65CLH7-MS	65	8.5	9.50	20.58	0.3125	459.65	3,436
70CLH7-MS	70	9	9.50	21.49	0.3125	501.25	3,791
75CLH7-MS	75	9.5	9.50	22.40	0.3125	544.65	4,160
80CLH7-MS	80	10	9.50	23.31	0.3125	589.86	4,544
85CLH7-MS	85	10.5	9.50	24.22	0.3125	636.86	4,942
90CLH7-MS	90	11	9.50	25.13	0.3125	685.67	5,354
95CLH7-MS	95	11.5	9.50	26.04	0.3125	736.28	5,780
100CLH7-MS	100	12	9.50	26.95	0.3125	788.69	6,220
105CLH7-MS	105	12.5	9.50	27.11	0.3125	793.18	6,652
110CLH7-MS	110	13	9.50	28.02	0.3125	847.55	7,118
115CLH7-MS	115	13.5	9.50	28.93	0.3125	903.71	7,598
120CLH7-MS	120	14	9.50	29.84	0.3125	961.68	8,092
125CLH7-MS	125	14.5	9.50	30.75	0.3125	1021.45	8,600
130CLH7-MS	130	15	9.50	31.66	0.3125	1083.02	9,123

Design Notes

- All pole shafts manufactured from ASTM A572 Grade 65 steel
- All poles are designed for flat-to-flat orientation
- No deflection limitations
- Loads as per ANSI 05.1

Steel Pole Designs Grade B - Multi-Sided Series, Continued

Wood-Pole Equivalent Class H8

Taper Rate = 0.1930 in/ft

Catalog Number	Length (ft)	Embedment Depth (ft)	Top Diameter (in)	Butt Diameter (in)	Wall Thickness (in)	Ultimate Moment Capacity at GL (ft-kips)	Galvanized Weight (lbs)
40CLH8-MS	40	6	10.00	17.72	0.3125	344.68	1,947
45CLH8-MS	45	6.5	10.00	18.69	0.3125	383.30	2,251
50CLH8-MS	50	7	10.00	19.65	0.3125	423.49	2,569
55CLH8-MS	55	7.5	10.00	19.87	0.3125	429.40	2,927
60CLH8-MS	60	8	10.00	20.83	0.3125	471.88	3,272
65CLH8-MS	65	8.5	10.00	21.80	0.3125	516.88	3,632
70CLH8-MS	70	9	10.00	22.76	0.3125	563.39	4,007
75CLH8-MS	75	9.5	10.00	23.73	0.3125	612.47	4,398
80CLH8-MS	80	10	10.00	24.69	0.3125	663.01	4,803
85CLH8-MS	85	10.5	10.00	25.66	0.3125	716.16	5,225
90CLH8-MS	90	11	10.00	26.62	0.3125	770.73	5,660
95CLH8-MS	95	11.5	10.00	27.59	0.3125	827.96	6,112
100CLH8-MS	100	12	10.00	28.55	0.3125	886.55	6,578
105CLH8-MS	105	12.5	10.00	28.77	0.3125	895.10	7,044
110CLH8-MS	110	13	10.00	29.73	0.3125	955.98	7,536
115CLH8-MS	115	13.5	10.00	30.70	0.3125	1019.61	8,046
120CLH8-MS	120	14	10.00	31.66	0.3125	1084.52	8,568
125CLH8-MS	125	14.5	10.00	32.63	0.3125	1152.22	9,108
130CLH8-MS	130	15	10.00	33.59	0.3125	1221.16	9,661

Design Notes

- All pole shafts manufactured from ASTM A572 Grade 65 steel
- All poles are designed for flat-to-flat orientation
- No deflection limitations
- Loads as per ANSI 05.1

Steel Pole Designs Grade B - Multi-Sided Series, Continued

Wood-Pole Equivalent Class H9

Taper Rate = 0.1970 in/ft

Catalog Number	Length (ft)	Embedment Depth (ft)	Top Diameter (in)	Butt Diameter (in)	Wall Thickness (in)	Ultimate Moment Capacity at GL (ft-kips)	Galvanized Weight (lbs)
40CLH9-MS	40	6	11.00	18.88	0.3125	394.82	2,104
45CLH9-MS	45	6.5	11.00	19.87	0.3125	436.95	2,427
50CLH9-MS	50	7	11.00	20.85	0.3125	480.71	2,766
55CLH9-MS	55	7.5	11.00	21.09	0.3125	487.93	3,153
60CLH9-MS	60	8	11.00	22.07	0.3125	534.11	3,518
65CLH9-MS	65	8.5	11.00	23.06	0.3125	582.93	3,900
70CLH9-MS	70	9	11.00	24.04	0.3125	633.31	4,297
75CLH9-MS	75	9.5	11.00	25.03	0.3125	686.38	4,710
80CLH9-MS	80	10	11.00	26.01	0.3125	740.96	5,138
85CLH9-MS	85	10.5	11.00	27.00	0.3125	798.28	5,582
90CLH9-MS	90	11	11.00	27.98	0.3125	857.05	6,040
95CLH9-MS	95	11.5	11.00	28.97	0.3125	918.61	6,516
100CLH9-MS	100	12	11.00	29.95	0.3125	981.59	7,005
105CLH9-MS	105	12.5	11.00	30.19	0.3125	991.89	7,503
110CLH9-MS	110	13	11.00	31.17	0.3125	1057.28	8,020
115CLH9-MS	115	13.5	11.00	32.16	0.3125	1125.54	8,554
120CLH9-MS	120	14	11.00	33.14	0.3125	1195.13	9,101
125CLH9-MS	125	14.5	11.00	34.13	0.3125	1267.64	9,666
130CLH9-MS	130	15	11.00	35.11	0.3125	1341.43	10,244

Design Notes

- All pole shafts manufactured from ASTM A572 Grade 65 steel
- All poles are designed for flat-to-flat orientation
- No deflection limitations
- Loads as per ANSI 05.1

Steel Pole Designs Grade B - Multi-Sided Series, Continued

Wood-Pole Equivalent Class H10

Taper Rate = 0.1950 in/ft

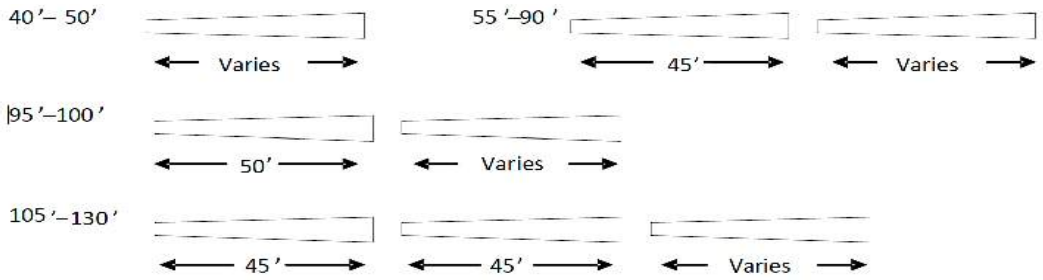
Catalog Number	Length (ft)	Embedment Depth (ft)	Top Diameter (in)	Butt Diameter (in)	Wall Thickness (in)	Ultimate Moment Capacity at GL (ft-kips)	Galvanized Weight (lbs)
40CLH10-MS	40	6	12.50	20.30	0.3125	462.97	2,319
45CLH10-MS	45	6.5	12.50	21.28	0.3125	508.03	2,667
50CLH7-MS	50	7	12.50	22.25	0.3125	554.64	3,030
55CLH7-MS	55	7.5	12.50	22.48	0.3125	561.90	3,452
60CLH7-MS	60	8	12.50	23.45	0.3125	610.87	3,842
65CLH7-MS	65	8.5	12.50	24.43	0.3125	662.48	4,248
70CLH7-MS	70	9	12.50	25.40	0.3125	715.55	4,669
75CLH7-MS	75	9.5	12.50	26.38	0.3125	771.32	5,106
80CLH7-MS	80	10	12.50	27.35	0.3125	828.51	5,557
85CLH7-MS	85	10.5	12.50	28.33	0.3125	888.44	6,025
90CLH7-MS	90	11	12.50	29.30	0.3125	949.75	6,506
95CLH7-MS	95	11.5	12.50	30.28	0.3125	1013.84	7,005
100CLH7-MS	100	12	12.50	31.25	0.3125	1079.25	7,517
105CLH7-MS	105	12.5	12.50	31.48	0.3125	1089.37	8,049
110CLH7-MS	110	13	12.50	32.45	0.3125	1157.14	8,588
115CLH7-MS	115	13.5	12.50	33.43	0.3125	1227.77	9,145
120CLH7-MS	120	14	12.50	34.40	0.3125	1299.66	9,714
125CLH7-MS	125	14.5	12.50	35.38	0.3125	1374.45	10,302
130CLH7-MS	130	15	12.50	36.35	0.3125	1450.45	10,902

Design Notes

- All pole shafts manufactured from ASTM A572 Grade 65 steel
- All poles are designed for flat-to-flat orientation
- No deflection limitations
- Loads as per ANSI 05.1

Steel Pole Designs - RUS

RUS Section Lengths



RUS Class 1

Taper Rate = 0.136 in/ft

Catalog Number	Length (ft)	Embedment Depth (ft)	Top Diameter (in)	Butt Diameter (in)	Wall Thickness (in)	Ultimate Moment Capacity at GL (ft-kips)	Galvanized Weight (lbs)
40CLRUS1-MS	40	6	8.00	13.44	0.1875	135.38	961
45CLRUS1-MS	45	6.5	8.00	14.12	0.1875	149.77	1,110
50CLRUS1-MS	50	7	8.00	14.8	0.1875	164.9	1,265
55CLRUS1-MS	55	7.5	8.00	14.98	0.1875	168.69	1,480
60CLRUS1-MS	60	8	8.00	15.66	0.1875	184.72	1,644
65CLRUS1-MS	65	8.5	8.00	16.34	0.1875	201.47	1,816
70CLRUS1-MS	70	9	8.00	17.02	0.1875	218.95	1,995
75CLRUS1-MS	75	9.5	8.00	17.7	0.1875	237.16	2,183
80CLRUS1-MS	80	10	8.00	18.38	0.1875	256.1	2,377
85CLRUS1-MS	85	10.5	8.00	19.06	0.1875	275.76	2,578
90CLRUS1-MS	90	11	8.00	19.74	0.1875	296.15	2,786
95CLRUS1-MS	95	11.5	8.00	20.42	0.1875	317.27	3,018
100CLRUS1-MS	100	12	8.00	21.1	0.1875	339.12	3,241
105CLRUS1-MS	105	12.5	8.00	21.28	0.1875	344.55	3,554
110CLRUS1-MS	110	13	8.00	21.96	0.1875	367.3	3,786
115CLRUS1-MS	115	13.5	8.00	22.64	0.1875	390.77	4,026
120CLRUS1-MS	120	14	8.00	23.32	0.1875	414.98	4,273
125CLRUS1-MS	125	14.5	8.00	24	0.1875	435.51	4,527
130CLRUS1-MS	130	15	8.00	24.68	0.1875	454.3	4,789

Design Notes

- All pole shafts manufactured from ASTM A572 Grade 65 steel
- All poles are designed for flat-to-flat orientation
- Deflection limited to 15% of the height above Point of Fixity
- Loads per RUS Bulletin 172E-214

Steel Pole Designs - RUS, Continued

RUS Class H1

Taper Rate = 0.141 in/ft

Catalog Number	Length (ft)	Embedment Depth (ft)	Top Diameter (in)	Butt Diameter (in)	Wall Thickness (in)	Ultimate Moment Capacity at GL (ft-kips)	Galvanized Weight (lbs)
40CLRUSH1-MS	40	6	8.75	14.39	0.1875	155.98	1,039
45CLRUSH1-MS	45	6.5	8.75	15.09	0.1875	171.98	1,197
50CLRUSH1-MS	50	7	8.75	15.8	0.1875	188.77	1,364
55CLRUSH1-MS	55	7.5	8.75	15.99	0.1875	193.16	1,600
60CLRUSH1-MS	60	8	8.75	16.7	0.1875	210.93	1,777
65CLRUSH1-MS	65	8.5	8.75	17.4	0.1875	229.48	1,960
70CLRUSH1-MS	70	9	8.75	18.11	0.1875	248.81	2,151
75CLRUSH1-MS	75	9.5	8.75	18.81	0.1875	268.92	2,349
80CLRUSH1-MS	80	10	8.75	19.52	0.1875	289.82	2,556
85CLRUSH1-MS	85	10.5	8.75	20.22	0.1875	311.5	2,769
90CLRUSH1-MS	90	11	8.75	20.93	0.1875	333.96	2,990
95CLRUSH1-MS	95	11.5	8.75	21.63	0.1875	357.2	3,229
100CLRUSH1-MS	100	12	8.75	22.34	0.1875	381.22	3,465
105CLRUSH1-MS	105	12.5	8.75	22.53	0.1875	387.44	3,815
110CLRUSH1-MS	110	13	8.75	23.24	0.1875	412.45	4,061
115CLRUSH1-MS	115	13.5	8.75	23.94	0.1875	434.26	4,314
120CLRUSH1-MS	120	14	8.75	24.65	0.1875	453.74	4,575
125CLRUSH1-MS	125	14.5	8.75	25.35	0.1875	473.18	4,844
130CLRUSH1-MS	130	15	8.75	26.06	0.1875	492.56	5,121

Design Notes

- All pole shafts manufactured from ASTM A572 Grade 65 steel
- All poles are designed for flat-to-flat orientation
- Deflection limited to 15% of the height above Point of Fixity
- Loads per RUS Bulletin 172E-214

Steel Pole Designs - RUS, Continued

RUS Class H2

Taper Rate = 0.1525 in/ft

Catalog Number	Length (ft)	Embedment Depth (ft)	Top Diameter (in)	Butt Diameter (in)	Wall Thickness (in)	Ultimate Moment Capacity at GL (ft-kips)	Galvanized Weight (lbs)
40CLRUSH2-MS	40	6	9.00	15.1	0.1875	171.73	1,082
45CLRUSH2-MS	45	6.5	9.00	15.86	0.1875	189.91	1,249
50CLRUSH2-MS	50	7	9.00	16.62	0.1875	209	1,425
55CLRUSH2-MS	55	7.5	9.00	16.86	0.1875	214.68	1,674
60CLRUSH2-MS	60	8	9.00	17.62	0.1875	234.96	1,860
65CLRUSH2-MS	65	8.5	9.00	18.39	0.1875	256.14	2,054
70CLRUSH2-MS	70	9	9.00	19.15	0.1875	278.24	2,255
75CLRUSH2-MS	75	9.5	9.00	19.91	0.1875	301.26	2,466
80CLRUSH2-MS	80	10	9.00	20.67	0.1875	325.19	2,685
85CLRUSH2-MS	85	10.5	9.00	21.44	0.1875	350.03	2,911
90CLRUSH2-MS	90	11	9.00	22.2	0.1875	375.79	3,146
95CLRUSH2-MS	95	11.5	9.00	22.96	0.1875	402.47	3,399
100CLRUSH2-MS	100	12	9.00	23.72	0.1875	428.15	3,650
105CLRUSH2-MS	105	12.5	9.00	23.96	0.1875	434.23	4,023
110CLRUSH2-MS	110	13	9.00	24.72	0.1875	455.3	4,284
115CLRUSH2-MS	115	13.5	9.00	25.49	0.1875	476.32	4,554
120CLRUSH2-MS	120	14	9.00	26.25	0.1875	497.26	4,832
125CLRUSH2-MS	125	14.5	9.00	27.01	0.1875	518.07	5,119
130CLRUSH2-MS	130	15	9.00	27.77	0.1875	538.72	5,414

Design Notes

- All pole shafts manufactured from ASTM A572 Grade 65 steel
- All poles are designed for flat-to-flat orientation
- Deflection limited to 15% of the height above Point of Fixity
- Loads per RUS Bulletin 172E-214

Steel Pole Designs - RUS, Continued

RUS Class H3

Taper Rate = 0.1695 in/ft

Catalog Number	Length (ft)	Embedment Depth (ft)	Top Diameter (in)	Butt Diameter (in)	Wall Thickness (in)	Ultimate Moment Capacity at GL (ft-kips)	Galvanized Weight (lbs)
40CLRUSH3-MS	40	6	9.25	16.03	0.1875	193.35	1,137
45CLRUSH3-MS	45	6.5	9.25	16.88	0.1875	214.81	1,315
50CLRUSH3-MS	50	7	9.25	17.72	0.1875	237.41	1,501
55CLRUSH3-MS	55	7.5	9.25	18.03	0.1875	245.33	1,777
60CLRUSH3-MS	60	8	9.25	18.88	0.1875	269.44	1,977
65CLRUSH3-MS	65	8.5	9.25	19.72	0.1875	294.68	2,185
70CLRUSH3-MS	70	9	9.25	20.57	0.1875	321.05	2,402
75CLRUSH3-MS	75	9.5	9.25	21.42	0.1875	348.55	2,628
80CLRUSH3-MS	80	10	9.25	22.27	0.1875	377.17	2,863
85CLRUSH3-MS	85	10.5	9.25	23.11	0.1875	406.93	3,108
90CLRUSH3-MS	90	11	9.25	23.96	0.1875	433.95	3,361
95CLRUSH3-MS	95	11.5	9.25	24.81	0.1875	457.37	3,635
100CLRUSH3-MS	100	12	9.25	25.66	0.1875	480.72	3,906
105CLRUSH3-MS	105	12.5	9.25	25.96	0.1875	488.63	4,322
110CLRUSH3-MS	110	13	9.25	26.81	0.1875	511.82	4,607
115CLRUSH3-MS	115	13.5	9.25	27.66	0.1875	534.81	4,899
120CLRUSH3-MS	120	14	9.25	28.5	0.1875	557.55	5,202
125CLRUSH3-MS	125	14.5	9.25	29.35	0.1875	579.97	5,513
130CLRUSH3-MS	130	15	9.25	30.2	0.1875	602.02	5,834

Design Notes

- All pole shafts manufactured from ASTM A572 Grade 65 steel
- All poles are designed for flat-to-flat orientation
- Deflection limited to 15% of the height above Point of Fixity
- Loads per RUS Bulletin 172E-214

Steel Pole Designs - RUS, Continued

RUS Class H4

Taper Rate = 0.20 in/ft

Catalog Number	Length (ft)	Embedment Depth (ft)	Top Diameter (in)	Butt Diameter (in)	Wall Thickness (in)	Ultimate Moment Capacity at GL (ft-kips)	Galvanized Weight (lbs)
40CLRUSH4-MS	40	6	9.35	17.35	0.1875	225.67	1,203
45CLRUSH4-MS	45	6.5	9.35	18.35	0.1875	253.1	1,396
50CLRUSH4-MS	50	7	9.35	19.35	0.1875	282.11	1,600
55CLRUSH4-MS	55	7.5	9.35	19.78	0.1875	277.73	1,902
60CLRUSH4-MS	60	8	9.35	20.78	0.1875	325.72	2,121
65CLRUSH4-MS	65	8.5	9.35	21.78	0.1875	358.51	2,351
70CLRUSH4-MS	70	9	9.35	22.78	0.1875	392.88	2,591
75CLRUSH4-MS	75	9.5	9.35	23.78	0.1875	427.22	2,843
80CLRUSH4-MS	80	10	9.35	24.78	0.1875	454.85	3,105
85CLRUSH4-MS	85	10.5	9.35	25.78	0.1875	482.41	3,377
90CLRUSH4-MS	90	11	9.35	26.78	0.1875	509.8	3,661
95CLRUSH4-MS	95	11.5	9.35	27.78	0.1875	536.93	3,977
100CLRUSH4-MS	100	12	9.35	28.78	0.1875	563.7	4,282
105CLRUSH4-MS	105	12.5	9.35	29.21	0.1875	574.58	4,754
110CLRUSH4-MS	110	13	9.35	30.21	0.1875	600.67	5,074
115CLRUSH4-MS	115	13.5	9.35	31.21	0.1875	626.15	5,405
120CLRUSH4-MS	120	14	9.35	32.21	0.1875	650.94	5,746
125CLRUSH4-MS	125	14.5	9.35	33.21	0.1875	674.93	6,099
130CLRUSH4-MS	130	15	9.35	34.21	0.1875	698.02	6,463

Design Notes

- All pole shafts manufactured from ASTM A572 Grade 65 steel
- All poles are designed for flat-to-flat orientation
- Deflection limited to 15% of the height above Point of Fixity
- Loads per RUS Bulletin 172E-214

Steel Pole Designs - RUS, Continued

RUS Class H5

Taper Rate = 0.167 in/ft

Catalog Number	Length (ft)	Embedment Depth (ft)	Top Diameter (in)	Butt Diameter (in)	Wall Thickness (in)	Ultimate Moment Capacity at GL (ft-kips)	Galvanized Weight (lbs)
40CLRUSH5-MS	40	6	9.50	16.18	0.25	260.03	1,510
45CLRUSH5-MS	45	6.5	9.50	17.01	0.25	288.33	1,746
50CLRUSH5-MS	50	7	9.50	17.85	0.25	318.1	1,995
55CLRUSH5-MS	55	7.5	9.50	18.02	0.25	323.66	2,359
60CLRUSH5-MS	60	8	9.50	18.86	0.25	355.15	2,622
65CLRUSH5-MS	65	8.5	9.50	19.69	0.25	388.1	2,898
70CLRUSH5-MS	70	9	9.50	20.53	0.25	422.52	3,184
75CLRUSH5-MS	75	9.5	9.50	21.36	0.25	458.4	3,483
80CLRUSH5-MS	80	10	9.50	22.2	0.25	495.74	3,794
85CLRUSH5-MS	85	10.5	9.50	23.03	0.25	534.55	4,117
90CLRUSH5-MS	90	11	9.50	23.87	0.25	574.82	4,452
95CLRUSH5-MS	95	11.5	9.50	24.7	0.25	616.55	4,814
100CLRUSH5-MS	100	12	9.50	25.54	0.25	659.74	5,173
105CLRUSH5-MS	105	12.5	9.50	25.71	0.25	667.73	5,714
110CLRUSH5-MS	110	13	9.50	26.54	0.25	712.65	6,087
115CLRUSH5-MS	115	13.5	9.50	27.38	0.25	759.03	6,474
120CLRUSH5-MS	120	14	9.50	28.21	0.25	806.88	6,872
125CLRUSH5-MS	125	14.5	9.50	29.05	0.25	856.18	7,277
130CLRUSH5-MS	130	15	9.50	29.88	0.25	906.95	7,697

Design Notes

- All pole shafts manufactured from ASTM A572 Grade 65 steel
- All poles are designed for flat-to-flat orientation
- Deflection limited to 15% of the height above Point of Fixity
- Loads per RUS Bulletin 172E-214

Steel Pole Designs - RUS, Continued

RUS Class H6

Taper Rate = 0.176 in/ft

Catalog Number	Length (ft)	Embedment Depth (ft)	Top Diameter (in)	Butt Diameter (in)	Wall Thickness (in)	Ultimate Moment Capacity at GL (ft-kips)	Galvanized Weight (lbs)
40CLRUSH6-MS	40	6	10.25	17.29	0.25	298.14	1,621
45CLRUSH6-MS	45	6.5	10.25	18.17	0.25	330.07	1,874
50CLRUSH6-MS	50	7	10.25	19.05	0.25	363.62	2,140
55CLRUSH6-MS	55	7.5	10.25	19.26	0.25	371.01	2,530
60CLRUSH6-MS	60	8	10.25	20.14	0.25	406.53	2,811
65CLRUSH6-MS	65	8.5	10.25	21.02	0.25	443.68	3,105
70CLRUSH6-MS	70	9	10.25	21.9	0.25	482.45	3,412
75CLRUSH6-MS	75	9.5	10.25	22.78	0.25	522.84	3,731
80CLRUSH6-MS	80	10	10.25	23.66	0.25	564.86	4,062
85CLRUSH6-MS	85	10.5	10.25	24.54	0.25	608.51	4,406
90CLRUSH6-MS	90	11	10.25	25.42	0.25	653.78	4,764
95CLRUSH6-MS	95	11.5	10.25	26.3	0.25	700.67	5,162
100CLRUSH6-MS	100	12	10.25	27.18	0.25	749.19	5,544
105CLRUSH6-MS	105	12.5	10.25	27.39	0.25	759.78	6,126
110CLRUSH6-MS	110	13	10.25	28.27	0.25	810.26	6,524
115CLRUSH6-MS	115	13.5	10.25	29.15	0.25	862.38	6,934
120CLRUSH6-MS	120	14	10.25	30.03	0.25	916.11	7,356
125CLRUSH6-MS	125	14.5	10.25	30.91	0.25	971.48	7,792
130CLRUSH6-MS	130	15	10.25	31.79	0.25	1021.67	8,240

Design Notes

- All pole shafts manufactured from ASTM A572 Grade 65 steel
- All poles are designed for flat-to-flat orientation
- Deflection limited to 15% of the height above Point of Fixity
- Loads per RUS Bulletin 172E-214

Appendix A: Transmission Pole Design Data Sheet

Project Information

Customer: _____ **Project Location:** _____

Date: _____ **Structure Type: Dead End / Tangent / Angle**

Pole Length: _____ ft **Pole Height Above Ground:** _____ ft

Anchor Base ☐ **Embedded** ☐ **Specified Embedment Depth** _____ ft

Note: Embedment depth is calculated as 10% x pole height + 2ft unless otherwise specified

Conductor Data				
	Overhead Shield Wire	Conductor 1	Conductor 2	Conductor 3
Name/Type (Ex "Penguin" ACSR)				
Elevation Above Ground (FT)				
Wind Span (FT)				
Weight Span (FT				
Line Angle (DEG)				

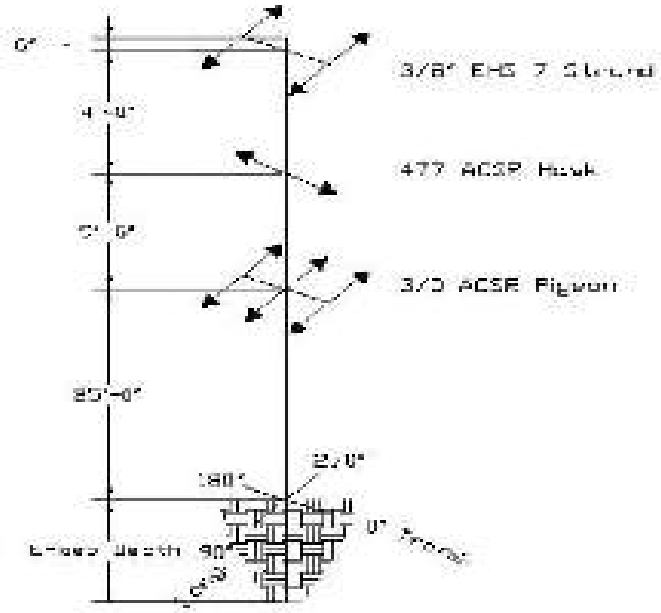
Guy Data				
	Guy 1	Guy 2	Guy 3	Guy 4
Attachment Elevation (FT)				
Azimuth (DEG)				
Guy Load (FT)				

Load Case Data				
Load Case 1				
Load Case Description:				
Ahead Span Tension (LBS)			Overload Factors	
Back Span Tension (LBS)			Wind	
Wind Pressure (PSF)			Tension	
Radial Ice Thickness (IN)			Vertical	
Deflection Requirement:				
Load Case 2				
Load Case Description:				
Ahead Span Tension (LBS)			Overload Factors	
Back Span Tension (LBS)			Wind	
Wind Pressure (PSF)			Tension	
Radial Ice Thickness (IN)			Vertical	
Deflection Requirement				

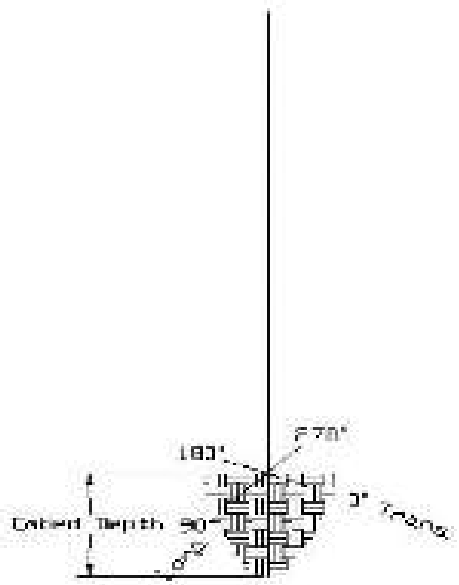
Load Case 3				
Load Case Description:				
Ahead Span Tension (LBS)			Overload Factors	
Back Span Tension (LBS)			Wind	
Wind Pressure (PSF)			Tension	
Radial Ice Thickness (IN)			Vertical	
Deflection Requirement				

Appendix A: Transmission Pole Design Data Sheet, Cont.

Example Sketch



Sketch of Structure



Additional Information: _____

_____

Appendix B: WPE Loads and Ground Line Moments

B.1 Wood Pole Equivalent Load

Pole Class	ANSI 05.1 Load (lbs)	Wood Pole Equivalent (lbs)
5	1,900	1,235
4	2,400	1,560
3	3,000	1,950
2	3,700	2,405
1	4,500	2,925
H1	5,400	3,510
H2	6,400	4,160
H3	7,500	4,875
H4	8,700	5,655
H5	10,000	6,500
H6	11,400	7,410
H7*	12.900	8,385
H8*	14,500	9,425
H9*	16,400	10,660
H10*	18,462	12,000

Wood pole equivalent loads charted are applicable for NESC Grade B construction, embedment depths equal to 10% of the pole length plus 2ft and an equivalency factor of 2,6/4.0 = 0.65

H2 Wood Pole Equivalent Load Example:
6,400# x (2.6/4.0) = 4,160#

**NOTE: ANSI Wood Pole Standard classes only go up to H6. The H7 thru H10 loads depicted have been derived through industry best practice.*

B.2 Minimun Ground Line Moments, Round Tapered Poles

Pole Class	Pole Length (ft)										
	30	**35**	**40**	**45**	**50**	**55**	**60**	**65**	**70**	**75**	**80**
5	28.41	33.96	39.52	45.08	50.64	56.19	61.75	67.31	72.87	78.42	83.98
4	35.88	42.90	49.92	56.94	63.96	70.98	78.00	85.02	92.04	99.06	106.08
3	44.85	53.63	62.40	71.18	79.95	88.73	97.50	106.28	115.05	123.83	132.60
2	55.32	66.14	76.96	87.78	98.61	109.43	120.25	131.07	141.90	152.72	163.54
1	67.28	80.44	93.60	106.76	119.93	133.09	146.25	159.41	172.58	185.74	198.90
H1	80.73	96.53	112.32	128.12	143.91	159.71	175.50	191.30	207.09	222.89	238.68
H2	95.68	114.40	133.12	151.84	170.56	189.28	208.00	226.72	245.44	264.16	282.88
H3	112.13	134.06	156.00	177.94	199.88	221.81	243.75	265.69	287.63	309.56	331.50
H4	130.07	155.51	180.96	206.41	231.86	257.30	282.75	308.20	333.65	359.09	--

Appendix B: WPE Loads and Ground Line Moments, Cont.

B.3 Minimun Ground Line Moments, Multi-Sided Poles, 40-85ft.

Pole Class	Pole Length (ft)									
	40	45	50	55	60	65	70	75	80	85
1	93.60	106.76	119.93	133.09	146.25	159.41	172.58	185.74	198.90	212.23
H1	112.32	128.12	143.91	159.71	175.50	191.30	207.09	222.89	238.68	254.48
H2	133.12	151.84	170.56	189.28	208.00	226.72	245.44	264.16	282.88	301.60
H3	156.00	177.94	199.88	221.81	243.75	265.69	287.63	309.56	331.50	353.44
H4	180.96	206.41	231.86	257.30	282.75	308.20	333.65	359.09	384.54	409.99
H5	208.00	237.25	266.50	295.75	325.00	354.25	383.50	412.75	442.00	471.25
H6	237.12	270.47	303.81	337.16	370.50	403.85	437.19	470.54	503.88	537.23
H7	268.32	306.05	343.79	381.52	419.25	456.98	494.72	532.45	570.18	607.91
H8	301.06	344.01	386.43	428.84	471.25	513.66	556.08	598.49	640.90	683.31
H9	341.12	389.09	437.06	485.03	533.33	580.97	628.94	676.91	724.88	772.85
H10	384.00	438.00	492.00	546.00	600.00	654.00	708.00	762.00	816.00	870.00

B.3 Minimun Ground Line Moments, Multi-Sided Poles, 90-130ft.

Pole Class	Pole Length (ft)								
	90	95	100	105	110	115	120	125	130
1	225.23	238.39	251.55	264.71	277.88	291.04	304.20	317.36	330.53
H1	270.27	286.07	301.86	317.66	333.45	349.25	365.04	380.84	396.63
H2	320.32	339.04	357.76	376.48	395.20	413.92	432.64	451.36	470.08
H3	375.38	397.31	419.25	441.19	463.13	485.06	507.00	528.94	550.88
H4	435.44	460.88	486.33	511.78	537.23	562.67	588.12	613.57	639.02
H5	500.50	529.75	559.00	588.25	617.50	646.75	676.00	705.25	734.50
H6	570.57	603.92	637.26	670.61	703.95	737.30	770.64	803.99	837.33
H7	645.65	683.38	721.11	758.84	796.58	834.31	872.04	909.77	947.51
H8	725.73	768.14	810.55	852.96	895.38	937.79	980.20	1022.61	1065.03
H9	820.82	868.79	916.76	964.73	1012.70	1060.67	1108.64	1156.61	1204.58
H10	924.00	978.00	1032.00	1086.00	1140.00	1194.00	1248.00	1302.00	1356.00

Appendix C: Finding the Right Steel Pole Solution

C.1 Example 1

Given:
NESC Grade B construction
60 ft pole length needed
160 ft-kips required ground line moment

Find:
What is the wood-pole equivalent class required to meet the given criteria?

Solution:
Per Appendix B.2 Table, the minimum class required to meet the 160 ft-kip ground line moment would be a 60 ft Class H1 steel pole.

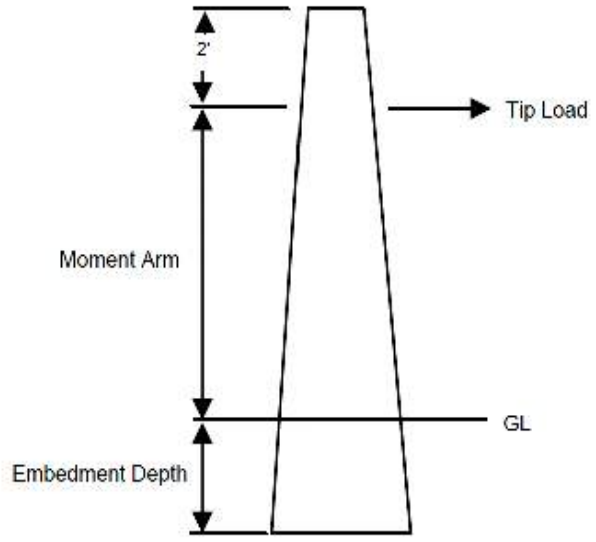
Pole Class	Pole Length (ft)			
	45	50	55	60
5	45.08	50.64	56.19	61.75
4	56.94	63.96	70.98	78.00
3	71.18	79.95	88.73	97.50
2	87.78	98.61	109.43	120.25
1	106.76	119.93	133.09	146.25
H1	128.12	143.91	159.71	175.50
H2	151.84	170.56	189.28	208.00
H3	177.94	199.88	221.81	243.75
H4	206.41	231.86	257.30	282.75

C.2 Example 2

Given:
80 ft Class H2 Pole

Find:
What is the minimum ground line moment?

Solution:
The inimum ground line moment is 282.88 ft-kips.



Embedment Depth: (80 ft . 10%) + 2 Ft = 10 ft

Moment Arm: 80 ft - 10 ft - 2 ft = 68 ft

Minimum Ground Line Moment:
4,160# x 68 ft / (1 kip/1000#) = 282.88 ft-kips