Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER

January 20, 2017
PLANS APPROVAL DATE

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No. C57793
Exp. 3-31-18
CIVIL

TO ACCOMPANY PLANS DATED _____

PROJECTED DEPTH OF OVERHEAD BUNDLE, (d_p)

$\frac{3}{8}$" Ø MESSENGER WIRE
LASHING WIRE
d_{Max}
d_1
d_{Max} = Diameter of largest overhead conductor
$d_1 \ldots d_n$ = Diameter of other overhead conductors
d_2

$d_p = \frac{3}{8}" + d_{Max} + 0.30 * (d_1 + d_2 + \ldots d_n)$
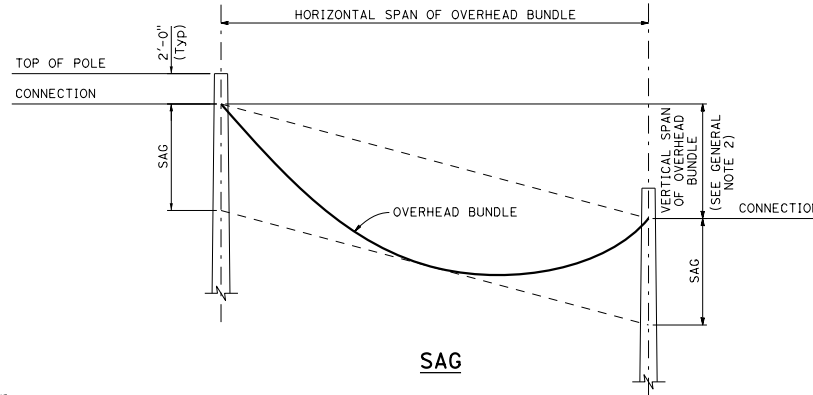
Design: AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, Fifth Edition (LTS-5).

GROUP LOAD COMBINATIONS:

I   Dead Load
II   Dead Load + Wind Load
III   Dead Load + 0.5 (Wind Load) + Ice Load
IV   Fatigue: Not used

LOADING:

Wind Loading: 100 mph (3-second gust)
Wind Recurrence Interval: 10 years
Combined height, exposure, and elevated terrain factor = 1.05
(Exposure C, structure is not located on or over the top half of a ridge, hill, or escarpment)

Ice Loading: 3.0 psf on surfaces, 0.60 in radial thickness of ice at a unit weight of 60 pcf on overhead bundles
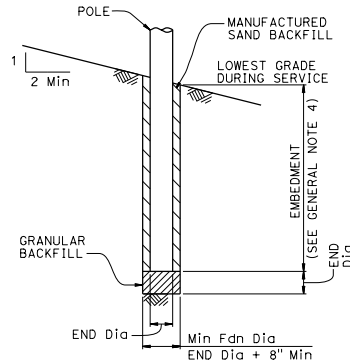
BASIC DESIGN VALUES:

Timber Poles: Fb = 1850 psi
              Fv = 110 psi
              Fcp = 230 psi
              Fc = 950 psi
              E = 1500 x 10³ psi

DESIGN WIRE BREAKING STRENGTHS:

ASTM A475, Utilities Grade, 7 strand modified by termination efficiency factor of 0.8

FOUNDATION DESIGN NOTES:

1. Pole embedment depth design is based on Broms' approximate procedure as described in Article 13.6 of AASHTO LTS-5.

2. Embedment depth is calculated based on following soil parameters,
    Cohesive Soil:
    Shear strength of soil c = 1500 psf.
    Cohesionless Soil:
    Ø = 30 deg, γ = 120 pcf.
    Soil assumed to be unsaturated.

3. An overload factor of 2.0 and an undercapacity factor of 0.7 were used for safety factor of 2.86.

4. Allowable vertical bearing pressure at the end bearing of poles is 3000 psf at 6 feet or more embedment.

5. Guy wire anchor minimum allowable tension capacity, "Qa" = 8,900 lbs.

SAG

HORIZONTAL SPAN OF OVERHEAD BUNDLE
TOP OF POLE
2'-0" (Typ)
CONNECTION
SAG
OVERHEAD BUNDLE
VERTICAL SPAN OF OVERHEAD BUNDLE (SEE GENERAL NOTE 2)
CONNECTION
SAG

POLE FOUNDATION

POLE
MANUFACTURED SAND BACKFILL
LOWEST GRADE DURING SERVICE
1
2 Min
EMBEDMENT (SEE GENERAL NOTE 4)
GRANULAR BACKFILL
END Dia
END Dia
Min Fdn Dia
END Dia + 8" Min

GENERAL NOTES:

1. The messenger wire and any combination of overhead conductors must not exceed either a self weight of 3.0 lb/ft or the maximum d in the pole selection tables.

2. The maximum vertical span is 10% of the horizontal span.

3. For poles with adjacent unbalanced horizontal spans, the shortest horizontal span must be at least 50% of the largest horizontal span.

4. Add 2'-0" for slopes above 1V:4H.

5. For a pole supporting multiple spans, calculate d_p for each span and use the largest value.

6. Do not exceed the attachments shown.

DIAMETERS AND SELF WEIGHT OF OVERHEAD CONDUCTORS

CONDUCTOR OR CABLE TYPE	DIAMETER d (in)	WEIGHT w (plf)
3 CONDUCTOR SIGNAL CABLE (3CSC)	0.400	0.0980
5 CONDUCTOR SIGNAL CABLE (5CSC)	0.500	0.1560
9 CONDUCTOR SIGNAL CABLE (9CSC)	0.650	0.2760
12 CONDUCTOR SIGNAL CABLE (12CSC)	0.800	0.3970
28 CONDUCTOR SIGNAL CABLE (28CSC)	0.900	0.6490
1-#14	0.166	0.0235
1-#12	0.185	0.0330
1-#10	0.210	0.0476
1-#8	0.271	0.0774
1-#6	0.310	0.1130
1-#4	0.359	0.1690
1-#3	0.388	0.2080
1-#2	0.420	0.2560
1-#1	0.498	0.3340
6-CONDUCTOR SIGNAL INTERCONNECT CABLE (SIC)	0.350	0.0860
12-CONDUCTOR SIGNAL INTERCONNECT CABLE (SIC)	0.500	0.1440
DETECTOR LEAD-IN CABLE (DLC)	0.310	0.0440
12 to 48-STRAND FIBER OPTIC CABLE (48FOC)	0.424	0.0600
72-STRAND FIBER OPTIC CABLE (72FOC)	0.484	0.0770
96-STRAND FIBER OPTIC CABLE (96FOC)	0.535	0.1050
144-STRAND FIBER OPTIC CABLE (144FOC)	0.670	0.1890
$\frac{3}{8}$" Ø MESSENGER WIRE	0.375	0.2730

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TEMPORARY WOOD POLES
GENERAL NOTES

NO SCALE

RSP ES-18A DATED JANUARY 20, 2017 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2015.

REVISED STANDARD PLAN RSP ES-18A

2015 REVISED STANDARD PLAN RSP ES-18A

11-22-16