

Appendix G10

Non-Supporting Cable Example

The Design Control Condition may be placed AFTER installing the Cable(s), as shown below. This approach is best for new design, and ensures that all design limits are met. Final data without Cable(s) is not included, since this condition will not exist.

ALUMINUM COMPANY OF AMERICA SAG AND TENSION DATA

Sample Problem

Spacer Cable with Tension Control AFTER installing cable

Conductor Nominal Diameter 3/ 8 7 Strand Steel EHS
 Area= .0792 Sq. In Dia= .360 In Wt= .273 Lb/F RTS= 15400 Lb
 Data from Chart No. 1-1293
 English Units

Span= 1000.0 Feet NESC Heavy Load Zone
 Creep is NOT a Factor

Design Points				Final		Initial		
Temp	Ice	Wind	K	Weight	Sag	Tension	Sag	Tension
F	In	Psf	Lb/F	Lb/F	Ft	Lb	Ft	Lb
0.	.00	.00	.00	.273			77.75	453.
30.	.00	.00	.00	.273			78.22	450.
60.	.00	.00	.00	.273			78.69	448.
120.	.00	.00	.00	.273			79.61	443.

Above: Initial Data Prior to Cable Installation

Below: 3. Non-Supporting Cable(s) Added, Dia= .766 In ,Wt= .388 Lb/F + .013Lb/F
 0. .50 4.00 .30 5.181 87.53 7700. 87.53 7700.* NESC K factor
 has been applied
 32. .50 .00 .00 4.347 86.66 6520. 86.31 6545. only to the
 3/8" messenger wire
 0. .00 .00 .00 1.450 81.32 2307. 80.40 2332.
 30. .00 .00 .00 1.450 81.76 2296. 80.84 2320.
 60. .00 .00 .00 1.450 82.20 2284. 81.28 2308.
 120. .00 .00 .00 1.450 83.06 2262. 82.16 2285.
 * Design Condition

The Design Control Condition may be placed BEFORE installing the Cable(s), as shown below. This approach allows analysis of a line that has been up for some time, so the stringing conditions were already established. Note that when BEFORE is used, it is easy to exceed NESC limits. In this case, it may be necessary to re-string the wire.

ALUMINUM COMPANY OF AMERICA SAG AND TENSION DATA

Sample Problem

Spacer Cable with Tension Control BEFORE installing cable

Conductor Nominal Diameter 3/ 8 7 Strand Steel EHS
 Area= .0792 Sq. In Dia= .360 In Wt= .273 Lb/F RTS= 15400 Lb
 Data from Chart No. 1-1293
 English Units

Span= 1000.0 Feet NESC Heavy Load Zone
 Creep is NOT a Factor

Design Points				Final		Initial		
Temp	Ice	Wind	K	Weight	Sag	Tension	Sag	Tension
F	In	Psf	Lb/F	Lb/F	Ft	Lb	Ft	Lb
0.	.50	4.00	.30	1.226	23.88	6440.	23.88	6440.
32.	.50	.00	.00	.808	19.83	5104.	19.41	5213.
0.	.00	.00	.00	.273	8.87	3850.*	8.32	4101.
30.	.00	.00	.00	.273	9.63	3545.	8.98	3802.
60.	.00	.00	.00	.273	10.49	3256.	9.72	3514.
120.	.00	.00	.00	.273	12.48	2737.	11.45	2983.

Above: Initial Data Prior to Cable Installation

Below: 3. Non-Supporting Cable(s) Added, Dia= .766 In ,Wt= .388 Lb/F + .013Lb/F
 0. .50 4.00 .30 5.181 50.60 12974. 50.60 12974. NESC K factor
 has been applied
 32. .50 .00 .00 4.347 48.31 11388. 46.84 11736. only to the
 3/8" messenger wire
 0. .00 .00 .00 1.450 33.51 5441. 24.25 7497.
 30. .00 .00 .00 1.450 34.25 5325. 24.83 7324.
 60. .00 .00 .00 1.450 34.99 5214. ! 25.42 7154. !
 120. .00 .00 .00 1.450 36.46 5006. 26.66 6825.
 * Design Condition
 ! Exceeds NESC Bare Wire Limit