CABLE DESIGN FORMULAS

WEIGHT OF CONDUCTOR

Weight = 340.5 D2GNK = pounds/1000 ft.
D = Diameter of conductor in inches
G = Specific gravity of conductor material
(8.89 for copper, 2.71 for aluminum)
K = weight increase factor for stranded
Conductor. (K = 1 for solid conductor)
N = number of strands

No. of strands	K
19	1.02
37	1.026
49	1.03
133 or more	1.04

WEIGHT OF INSULATION

Weight= 340.5 (D2-d2) G= pounds/1000 ft.
D= diameter over insulation in inches
d= diameter over conductor in inches
G= specific gravity of insulation

WEIGHT OF JACKET

Weight= 340.5 (D2-d2) G= pounds/1000 ft.
D= diameter over jacket in inches
d= diameter under jacket in inches
G= specific gravity of jacket material

WEIGHT OF TAPE

Weight= 136Gt[(d + t) + (d + 3t) f]= pounds/1000 ft.
t= tape thickness in inches
f= multiplying factor from % lap
d= diameter of cable under tape in inches
G= specific gravity of tape % lap

% lap	f
171/2	0.35
25	0.05
33	0.67
50	1.0

TOTAL WIGHT OF CABLED CONDUCTOR

Weight = N x L x W = pounds/1000 ft.
N = number of conductors
W = weight of one conductor
L = twisting loss factor = 1.03

No. of Conductors	Factor	No. of Conductors	Factor
2	2.	12	4.155
3	2.154	16	4.7
4	2.414	19	5.0
5	2.7	27	6.155
6	3.0	37	7.0
7	3.0	41	8.0
10	4.0	61	9.0

Use the following formula for other combinations: O.D. = 1.155 x No. Cond. X Diameter of individual conductor
To determine the approximate O.D. of finished cable, double the wall thickness of wire, add this figure to the O.D. of the desired stranded conductor and multiply this dimension by the indicated factor for the number of conductors to be in the cable. Add .025" for a bare, tinned, or silver plated copper shield of #36 ga. Wire: e.g. 6 conductors of 24 ga., 19/36 stranded Type E wire with overall shield- 2 x .010" wall = 0.20" + .025" conductor O.D. = .045" finished wire, 0.45" x 3 (Factor for 6 conductors) = .135"

Shield .025

Finished Cable . 160"
(No Jacket)

12