

PORTLAND PUBLIC SCHOOLS
TECHNICAL DESIGN AND CONSTRUCTION STANDARDS

PPS Division 27: Communications Standards

CONDUIT & CABLE FILL CALCULATIONS

Conduit Fill Calculations

Formulas Used to Calculate Fill Ratio		
First Cable $\frac{d^2}{D^2} < 65\%$	Second Cable $\frac{d_1^2 + d_2^2}{D^2} \leq 31\%$	Third Cable $\frac{d_1^2 + d_2^2 + d_3^2}{D^2}$
Legend d = Cable Diameter d ₁ = First Cable Diameter d ₂ = Second Cable Diameter d ₃ = Third Cable D = Raceway diameter		

Conduit Fill Chart

Trade Size	Metric Designator	Conduit ID		Cable Counts (by cable OD in millimeters / inches)					
		mm	in	4.6 / 0.18	5.0 / 0.20	6.0 / 0.24	7.0 / 0.28	8.0 / 0.31	9.0 / 0.35
1/2	16	15.80	0.622	3	2	2	1	1	0
3/4	21	20.93	0.824	6	5	3	2	2	2
1	27	26.65	1.049	10	8	5	4	3	3
1-1/4	35	35.05	1.380	17	14	9	7	5	5
1-1/2	41	40.89	1.610	24	19	13	9	8	8
2	53	52.50	2.067	39	32	22	16	13	13
2-1/2	63	62.71	2.469	56	45	31	23	19	19
3	78	77.93	3.068	87	70	49	36	29	29
3-1/2	91	90.12	3.548	116	94	65	48	39	39
4	103	102.30	4.026	150	121	84	62	50	50