

TABLE 17 DESIGN LOAD CALCULATION FOR DN 1000mmES

DATA: Crushing strength = 95 kN/m; Unit weight of backfill = 19.6 kN/m³; Ext. dia. = 1180mm
 Ku' = 0.13; Ku = 0.19; r_{sd}p = 0.5; Traffic load = 112.5 kN; Factor of Safety = 1.25

Trench cover m	Design load kN/m	Bedding factor	Design load kN/m	Bedding factor	Design load kN/m	Bedding factor	Design load kN/m	Bedding factor
0.6	166.28	2.19	166.28	2.19	166.28	2.19	166.28	2.19
0.7	149.69	1.97	149.69	1.97	149.69	1.97	149.69	1.97
0.8	139.00	1.83	139.00	1.83	139.00	1.83	139.00	1.83
0.9	107.66	1.42	107.66	1.42	107.66	1.42	107.66	1.42
1.0	125.88	1.66	125.88	1.66	125.88	1.66	125.88	1.66
1.1	121.78	1.60	122.15	1.61	122.15	1.61	122.15	1.61
1.2	118.75	1.56	119.60	1.57	119.60	1.57	119.60	1.57
1.3	116.74	1.54	118.12	1.55	118.12	1.55	118.12	1.55
1.4	115.40	1.52	117.34	1.54	117.34	1.54	117.34	1.54
1.5	114.48	1.51	117.03	1.54	117.03	1.54	117.03	1.54
1.6	114.00	1.50	117.11	1.54	117.20	1.54	117.20	1.54
1.7	113.83	1.50	117.13	1.54	117.72	1.55	117.72	1.55
1.8	113.97	1.50	117.47	1.55	118.59	1.56	118.59	1.56
1.9	114.20	1.50	117.88	1.55	119.58	1.57	119.58	1.57
2.0	114.62	1.51	118.49	1.56	120.81	1.59	120.81	1.59
2.1	115.23	1.52	119.30	1.57	122.27	1.61	122.27	1.61
2.2	115.81	1.52	120.07	1.58	123.73	1.63	123.73	1.63
2.3	116.59	1.53	121.03	1.59	125.43	1.65	125.43	1.65
2.4	117.34	1.54	121.96	1.60	126.60	1.67	127.13	1.67
2.5	118.22	1.56	123.03	1.62	127.86	1.68	129.01	1.70
2.6	119.07	1.57	124.07	1.63	129.08	1.70	130.88	1.72
2.7	120.06	1.58	125.24	1.65	130.44	1.72	132.94	1.75
2.8	121.01	1.59	126.38	1.66	131.77	1.73	134.99	1.78
2.9	122.11	1.61	127.67	1.68	133.23	1.75	137.22	1.81
3.0	123.18	1.62	128.91	1.70	134.67	1.77	139.45	1.83
3.1	124.27	1.64	130.19	1.71	136.12	1.79	141.74	1.87
3.2	125.33	1.65	131.43	1.73	137.55	1.81	143.68	1.89
3.3	126.47	1.66	132.75	1.75	139.05	1.83	145.37	1.91
3.4	127.58	1.68	134.05	1.76	140.53	1.85	147.02	1.93
3.5	128.78	1.69	135.42	1.78	142.09	1.87	148.76	1.96
3.6	129.95	1.71	136.77	1.80	143.61	1.89	150.47	1.98
3.7	131.15	1.73	138.15	1.82	145.17	1.91	152.21	2.00
3.8	132.32	1.74	139.49	1.84	146.69	1.93	153.91	2.03
3.9	133.57	1.76	140.92	1.85	148.30	1.95	155.70	2.05
4.0	134.80	1.77	142.32	1.87	149.88	1.97	157.45	2.07
4.1	136.23	1.79	143.93	1.89	151.66	2.00	159.42	2.10
4.2	137.66	1.81	145.54	1.91	153.44	2.02	161.37	2.12
4.3	139.09	1.83	147.13	1.94	155.21	2.04	163.32	2.15
4.4	140.51	1.85	148.73	1.96	156.98	2.07	165.26	2.17
4.5	140.93	1.85	149.31	1.96	157.74	2.08	166.19	2.19
4.6	142.35	1.87	150.91	1.99	159.51	2.10	168.14	2.21
4.7	143.78	1.89	152.50	2.01	161.27	2.12	170.07	2.24
4.8	145.19	1.91	154.08	2.03	163.02	2.14	171.99	2.26
4.9	146.59	1.93	155.65	2.05	164.75	2.17	173.90	2.29
5.0	147.10	1.94	156.32	2.06	165.60	2.18	174.91	2.30
5.1	148.49	1.95	157.88	2.08	167.32	2.20	176.81	2.33
Trench width,m	1.8		1.9		2.0		2.1	

Narrow trench load

Wide trench load

DESIGN LOAD CALCULATION FOR DN 1000mmES

Trench cover m	Design load kN/m	Bedding factor	Design load kN/m	Bedding factor	Design load kN/m	Bedding factor	Design load kN/m	Bedding factor
5.2	149.87	1.97	159.43	2.10	169.03	2.22	178.69	2.35
5.3	151.24	1.99	160.96	2.12	170.73	2.25	180.55	2.38
5.4	152.59	2.01	162.47	2.14	172.40	2.27	182.39	2.40
5.5	153.12	2.01	163.16	2.15	173.26	2.28	183.42	2.41
5.6	154.47	2.03	164.67	2.17	174.93	2.30	185.25	2.44
5.7	155.79	2.05	166.15	2.19	176.57	2.32	187.06	2.46
5.8	157.10	2.07	167.62	2.21	178.21	2.34	188.85	2.48
5.9	158.41	2.08	169.08	2.22	179.83	2.37	190.64	2.51
6.0	159.06	2.09	169.89	2.24	180.80	2.38	191.77	2.52
6.1	160.24	2.11	171.22	2.25	182.29	2.40	193.42	2.55
6.2	161.40	2.12	172.53	2.27	183.75	2.42	195.05	2.57
6.3	162.53	2.14	173.82	2.29	185.20	2.44	196.65	2.59
6.4	163.65	2.15	175.09	2.30	186.62	2.46	198.23	2.61
6.5	164.74	2.17	176.34	2.32	188.02	2.47	199.79	2.63
6.6	165.86	2.18	177.61	2.34	189.45	2.49	201.37	2.65
6.7	166.97	2.20	178.86	2.35	190.85	2.51	202.93	2.67
6.8	168.06	2.21	180.10	2.37	192.24	2.53	204.48	2.69
6.9	169.12	2.23	181.31	2.39	193.60	2.55	205.99	2.71
7.0	170.17	2.24	182.50	2.40	194.95	2.57	207.49	2.73
7.1	171.23	2.25	183.71	2.42	196.30	2.58	208.99	2.75
7.2	172.32	2.27	184.94	2.43	197.68	2.60	210.53	2.77
7.3	173.37	2.28	186.14	2.45	199.02	2.62	212.01	2.79
7.4	174.40	2.29	187.31	2.46	200.34	2.64	213.48	2.81
7.5	175.42	2.31	188.46	2.48	201.64	2.65	214.93	2.83
7.6	176.40	2.32	189.59	2.49	202.91	2.67	216.35	2.85
7.7	177.38	2.33	190.71	2.51	204.17	2.69	217.75	2.87
7.8	178.34	2.35	191.81	2.52	205.41	2.70	219.14	2.88
7.9	179.29	2.36	192.89	2.54	206.64	2.72	220.51	2.90
8.0	180.22	2.37	193.96	2.55	207.84	2.73	221.86	2.92
8.1	181.18	2.38	195.05	2.57	209.08	2.75	223.24	2.94
8.2	182.14	2.40	196.14	2.58	210.31	2.77	224.61	2.96
8.3	183.07	2.41	197.21	2.59	211.51	2.78	225.95	2.97
8.4	184.00	2.42	198.26	2.61	212.70	2.80	227.28	2.99
8.5	184.90	2.43	199.29	2.62	213.86	2.81	228.59	3.01
8.6	185.78	2.44	200.31	2.64	215.01	2.83	229.87	3.02
8.7	186.66	2.46	201.32	2.65	216.16	2.84	231.15	3.04
8.8	187.52	2.47	202.30	2.66	217.27	2.86	232.41	3.06
8.9	188.37	2.48	203.28	2.67	218.38	2.87	233.65	3.07
9.0	189.20	2.49	204.23	2.69	219.47	2.89	234.87	3.09
9.1	190.04	2.50	205.21	2.70	220.57	2.90	236.11	3.11
9.2	190.89	2.51	206.18	2.71	221.67	2.92	237.34	3.12
9.3	191.71	2.52	207.12	2.73	222.74	2.93	238.54	3.14
9.4	192.53	2.53	208.06	2.74	223.81	2.94	239.74	3.15
9.5	193.33	2.54	208.98	2.75	224.85	2.96	240.91	3.17
9.6	194.11	2.55	209.88	2.76	225.87	2.97	242.07	3.19
9.7	194.89	2.56	210.78	2.77	226.90	2.99	243.22	3.20
9.8	195.65	2.57	211.66	2.78	227.90	3.00	244.34	3.22
9.9	196.40	2.58	212.53	2.80	228.89	3.01	245.46	3.23
10.0	197.13	2.59	213.38	2.81	229.86	3.02	246.56	3.24
Trench width,m	1.8		1.9		2.0		2.1	

Narrow trench load

Wide trench load