

TABLE 18 DESIGN LOAD CALCULATION FOR DN 1200mmES

DATA: Crushing strength = 95 kN/m; Unit weight of backfill = 19.6 kN/m³; Ext. dia. = 1370mm
 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	194.31	2.56	194.31	2.56	194.31	2.56	194.31	2.56
0.7	175.05	2.30	175.05	2.30	175.05	2.30	175.05	2.30
0.8	162.64	2.14	162.64	2.14	162.64	2.14	162.64	2.14
0.9	125.87	1.66	126.25	1.66	126.25	1.66	126.25	1.66
1.0	146.46	1.93	147.40	1.94	147.40	1.94	147.40	1.94
1.1	141.52	1.86	143.07	1.88	143.07	1.88	143.07	1.88
1.2	137.91	1.81	140.11	1.84	140.11	1.84	140.11	1.84
1.3	135.49	1.78	138.03	1.82	138.39	1.82	138.39	1.82
1.4	133.85	1.76	136.58	1.80	137.48	1.81	137.48	1.81
1.5	132.71	1.75	135.63	1.78	137.13	1.80	137.13	1.80
1.6	132.08	1.74	135.19	1.78	137.32	1.81	137.32	1.81
1.7	131.82	1.73	135.12	1.78	137.92	1.81	137.92	1.81
1.8	131.92	1.74	135.42	1.78	138.93	1.83	138.94	1.83
1.9	132.13	1.74	135.82	1.79	139.52	1.84	140.09	1.84
2.0	132.57	1.74	136.45	1.80	140.34	1.85	141.51	1.86
2.1	133.24	1.75	137.32	1.81	141.39	1.86	143.21	1.88
2.2	133.88	1.76	138.14	1.82	142.41	1.87	144.91	1.91
2.3	134.75	1.77	139.20	1.83	143.66	1.89	146.88	1.93
2.4	135.58	1.78	140.22	1.85	144.87	1.91	148.86	1.96
2.5	136.58	1.80	141.41	1.86	146.25	1.92	151.03	1.99
2.6	137.55	1.81	142.56	1.88	147.59	1.94	152.62	2.01
2.7	138.68	1.82	143.88	1.89	149.10	1.96	154.32	2.03
2.8	139.78	1.84	145.17	1.91	150.57	1.98	155.97	2.05
2.9	141.05	1.86	146.62	1.93	152.21	2.00	157.80	2.08
3.0	142.28	1.87	148.04	1.95	153.81	2.02	159.59	2.10
3.1	143.55	1.89	149.49	1.97	155.45	2.05	161.42	2.12
3.2	144.78	1.90	150.91	1.99	157.05	2.07	163.20	2.15
3.3	146.11	1.92	152.43	2.01	158.76	2.09	165.09	2.17
3.4	147.42	1.94	153.91	2.03	160.42	2.11	166.95	2.20
3.5	148.82	1.96	155.50	2.05	162.20	2.13	168.90	2.22
3.6	150.20	1.98	157.06	2.07	163.94	2.16	170.83	2.25
3.7	151.61	1.99	158.65	2.09	165.71	2.18	172.78	2.27
3.8	152.99	2.01	160.21	2.11	167.45	2.20	174.70	2.30
3.9	154.48	2.03	161.88	2.13	169.30	2.23	176.73	2.33
4.0	155.93	2.05	163.51	2.15	171.11	2.25	178.73	2.35
4.1	157.63	2.07	165.39	2.18	173.16	2.28	180.96	2.38
4.2	159.33	2.10	167.26	2.20	175.22	2.31	183.19	2.41
4.3	161.02	2.12	169.13	2.23	177.26	2.33	185.42	2.44
4.4	162.71	2.14	171.00	2.25	179.31	2.36	187.64	2.47
4.5	163.24	2.15	171.70	2.26	180.18	2.37	188.70	2.48
4.6	164.95	2.17	173.58	2.28	182.24	2.40	190.93	2.51
4.7	166.65	2.19	175.45	2.31	184.29	2.42	193.15	2.54
4.8	168.34	2.21	177.31	2.33	186.32	2.45	195.36	2.57
4.9	170.01	2.24	179.16	2.36	188.34	2.48	197.56	2.60
5.0	170.66	2.25	179.98	2.37	189.33	2.49	198.72	2.61
5.1	172.34	2.27	181.83	2.39	191.35	2.52	200.91	2.64
Trench width,m	2.0		2.1		2.2		2.3	

Narrow trench load

Wide trench load

DESIGN LOAD CALCULATION FOR DN 1200mmES

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	174.00	2.29	183.66	2.42	193.36	2.54	203.09	2.67
5.3	175.66	2.31	185.48	2.44	195.34	2.57	205.25	2.70
5.4	177.28	2.33	187.27	2.46	197.31	2.60	207.38	2.73
5.5	177.97	2.34	188.12	2.48	198.33	2.61	208.57	2.74
5.6	179.60	2.36	189.92	2.50	200.29	2.64	210.70	2.77
5.7	181.20	2.38	191.69	2.52	202.23	2.66	212.81	2.80
5.8	182.80	2.41	193.45	2.55	204.15	2.69	214.90	2.83
5.9	184.39	2.43	195.20	2.57	206.06	2.71	216.98	2.86
6.0	185.22	2.44	196.19	2.58	207.23	2.73	218.31	2.87
6.1	186.66	2.46	197.80	2.60	208.99	2.75	220.24	2.90
6.2	188.08	2.47	199.38	2.62	210.74	2.77	222.15	2.92
6.3	189.48	2.49	200.93	2.64	212.45	2.80	224.03	2.95
6.4	190.86	2.51	202.47	2.66	214.15	2.82	225.89	2.97
6.5	192.21	2.53	203.98	2.68	215.82	2.84	227.72	3.00
6.6	193.59	2.55	205.52	2.70	217.52	2.86	229.58	3.02
6.7	194.96	2.57	207.04	2.72	219.19	2.88	231.42	3.05
6.8	196.31	2.58	208.55	2.74	220.86	2.91	233.25	3.07
6.9	197.63	2.60	210.02	2.76	222.49	2.93	235.04	3.09
7.0	198.94	2.62	211.48	2.78	224.10	2.95	236.81	3.12
7.1	200.26	2.63	212.95	2.80	225.73	2.97	238.59	3.14
7.2	201.61	2.65	214.45	2.82	227.39	2.99	240.41	3.16
7.3	202.92	2.67	215.91	2.84	229.00	3.01	242.18	3.19
7.4	204.21	2.69	217.35	2.86	230.59	3.03	243.92	3.21
7.5	205.48	2.70	218.77	2.88	232.16	3.05	245.64	3.23
7.6	206.71	2.72	220.15	2.90	233.69	3.07	247.33	3.25
7.7	207.94	2.74	221.53	2.91	235.22	3.10	249.01	3.28
7.8	209.16	2.75	222.89	2.93	236.73	3.11	250.67	3.30
7.9	210.35	2.77	224.22	2.95	238.21	3.13	252.31	3.32
8.0	211.53	2.78	225.54	2.97	239.68	3.15	253.92	3.34
8.1	212.74	2.80	226.90	2.99	241.18	3.17	255.57	3.36
8.2	213.95	2.82	228.25	3.00	242.68	3.19	257.22	3.38
8.3	215.12	2.83	229.57	3.02	244.14	3.21	258.82	3.41
8.4	216.30	2.85	230.88	3.04	245.59	3.23	260.43	3.43
8.5	217.44	2.86	232.16	3.05	247.02	3.25	262.00	3.45
8.6	218.56	2.88	233.42	3.07	248.42	3.27	263.55	3.47
8.7	219.69	2.89	234.68	3.09	249.82	3.29	265.09	3.49
8.8	220.78	2.90	235.91	3.10	251.19	3.31	266.61	3.51
8.9	221.87	2.92	237.14	3.12	252.56	3.32	268.11	3.53
9.0	222.93	2.93	238.33	3.14	253.89	3.34	269.59	3.55
9.1	224.01	2.95	239.55	3.15	255.25	3.36	271.08	3.57
9.2	225.10	2.96	240.77	3.17	256.60	3.38	272.58	3.59
9.3	226.15	2.98	241.95	3.18	257.92	3.39	274.04	3.61
9.4	227.21	2.99	243.14	3.20	259.24	3.41	275.50	3.62
9.5	228.23	3.00	244.29	3.21	260.53	3.43	276.92	3.64
9.6	229.24	3.02	245.43	3.23	261.80	3.44	278.33	3.66
9.7	230.25	3.03	246.57	3.24	263.07	3.46	279.73	3.68
9.8	231.23	3.04	247.67	3.26	264.31	3.48	281.11	3.70
9.9	232.21	3.06	248.78	3.27	265.54	3.49	282.48	3.72
10.0	233.16	3.07	249.86	3.29	266.75	3.51	283.82	3.73
Trench width,m	2.0		2.1		2.2		2.3	

Narrow trench load

Wide trench load