

TABLE 15 DESIGN LOAD CALCULATION FOR DN 800mmES

DATA: Crushing strength = 96 kN/m; Unit weight of backfill = 19.6 kN/m³; Ext. dia. = 941mm
 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	132.00	1.72	132.00	1.72	132.00	1.72	132.00	1.72
0.7	118.77	1.55	118.77	1.55	118.77	1.55	118.77	1.55
0.8	110.25	1.44	110.25	1.44	110.25	1.44	110.25	1.44
0.9	85.26	1.11	85.26	1.11	85.26	1.11	85.26	1.11
1.0	99.78	1.30	99.78	1.30	99.78	1.30	99.78	1.30
1.1	96.81	1.26	96.81	1.26	96.81	1.26	96.81	1.26
1.2	94.65	1.23	94.78	1.23	94.78	1.23	94.78	1.23
1.3	93.06	1.21	93.59	1.22	93.59	1.22	93.59	1.22
1.4	92.00	1.20	92.97	1.21	92.97	1.21	92.97	1.21
1.5	91.28	1.19	92.73	1.21	92.73	1.21	92.73	1.21
1.6	90.89	1.18	92.86	1.21	92.86	1.21	92.86	1.21
1.7	90.75	1.18	93.27	1.21	93.27	1.21	93.27	1.21
1.8	90.85	1.18	93.97	1.22	93.97	1.22	93.97	1.22
1.9	91.00	1.18	94.67	1.23	94.76	1.23	94.76	1.23
2.0	91.31	1.19	95.17	1.24	95.74	1.25	95.74	1.25
2.1	91.77	1.19	95.82	1.25	96.91	1.26	96.91	1.26
2.2	92.20	1.20	96.43	1.26	98.07	1.28	98.07	1.28
2.3	92.78	1.21	97.19	1.27	99.43	1.29	99.43	1.29
2.4	93.32	1.22	97.92	1.28	100.78	1.31	100.78	1.31
2.5	93.98	1.22	98.76	1.29	102.28	1.33	102.28	1.33
2.6	94.60	1.23	99.56	1.30	103.77	1.35	103.77	1.35
2.7	95.32	1.24	100.47	1.31	105.41	1.37	105.41	1.37
2.8	96.02	1.25	101.35	1.32	106.69	1.39	107.05	1.39
2.9	96.83	1.26	102.33	1.33	107.86	1.40	108.83	1.42
3.0	97.60	1.27	103.29	1.34	108.99	1.42	110.61	1.44
3.1	98.39	1.28	104.26	1.36	110.14	1.43	112.43	1.46
3.2	99.15	1.29	105.19	1.37	111.26	1.45	114.26	1.49
3.3	99.98	1.30	106.20	1.38	112.44	1.46	116.18	1.51
3.4	100.78	1.31	107.17	1.40	113.59	1.48	118.10	1.54
3.5	101.64	1.32	108.21	1.41	114.80	1.49	120.11	1.56
3.6	102.48	1.33	109.22	1.42	115.98	1.51	122.12	1.59
3.7	103.34	1.35	110.24	1.44	117.18	1.53	124.16	1.62
3.8	104.16	1.36	111.24	1.45	118.36	1.54	125.50	1.63
3.9	105.06	1.37	112.31	1.46	119.59	1.56	126.91	1.65
4.0	105.93	1.38	113.35	1.48	120.80	1.57	128.30	1.67
4.1	106.97	1.39	114.55	1.49	122.17	1.59	129.84	1.69
4.2	107.99	1.41	115.74	1.51	123.54	1.61	131.37	1.71
4.3	109.01	1.42	116.93	1.52	124.89	1.63	132.90	1.73
4.4	110.03	1.43	118.11	1.54	126.23	1.64	134.41	1.75
4.5	110.24	1.44	118.48	1.54	126.77	1.65	135.12	1.76
4.6	111.26	1.45	119.66	1.56	128.12	1.67	136.63	1.78
4.7	112.27	1.46	120.83	1.57	129.45	1.69	138.13	1.80
4.8	113.27	1.47	121.99	1.59	130.77	1.70	139.61	1.82
4.9	114.26	1.49	123.13	1.60	132.08	1.72	141.08	1.84
5.0	114.53	1.49	123.56	1.61	132.67	1.73	141.84	1.85
5.1	115.51	1.50	124.70	1.62	133.96	1.74	143.29	1.87
Trench width,m	1.5		1.6		1.7		1.8	

Narrow trench load

Wide trench load

DESIGN LOAD CALCULATION FOR DN 800mmES

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	116.48	1.52	125.82	1.64	135.24	1.76	144.74	1.88
5.3	117.44	1.53	126.93	1.65	136.51	1.78	146.16	1.90
5.4	118.38	1.54	128.02	1.67	137.75	1.79	147.57	1.92
5.5	118.66	1.55	128.46	1.67	138.35	1.80	148.32	1.93
5.6	119.60	1.56	129.54	1.69	139.58	1.82	149.71	1.95
5.7	120.52	1.57	130.61	1.70	140.80	1.83	151.08	1.97
5.8	121.42	1.58	131.66	1.71	142.00	1.85	152.44	1.98
5.9	122.32	1.59	132.70	1.73	143.20	1.86	153.79	2.00
6.0	122.70	1.60	133.23	1.73	143.87	1.87	154.61	2.01
6.1	123.49	1.61	134.17	1.75	144.96	1.89	155.85	2.03
6.2	124.27	1.62	135.08	1.76	146.02	1.90	157.06	2.05
6.3	125.03	1.63	135.98	1.77	147.07	1.91	158.26	2.06
6.4	125.77	1.64	136.87	1.78	148.09	1.93	159.43	2.08
6.5	126.50	1.65	137.73	1.79	149.10	1.94	160.59	2.09
6.6	127.25	1.66	138.62	1.80	150.13	1.95	161.76	2.11
6.7	127.98	1.67	139.48	1.82	151.13	1.97	162.91	2.12
6.8	128.70	1.68	140.34	1.83	152.13	1.98	164.06	2.14
6.9	129.40	1.68	141.17	1.84	153.10	1.99	165.17	2.15
7.0	130.08	1.69	141.99	1.85	154.06	2.01	166.27	2.16
7.1	130.78	1.70	142.82	1.86	155.02	2.02	167.37	2.18
7.2	131.50	1.71	143.67	1.87	156.01	2.03	168.49	2.19
7.3	132.19	1.72	144.48	1.88	156.95	2.04	169.58	2.21
7.4	132.86	1.73	145.28	1.89	157.89	2.06	170.65	2.22
7.5	133.52	1.74	146.07	1.90	158.80	2.07	171.70	2.24
7.6	134.15	1.75	146.83	1.91	159.69	2.08	172.73	2.25
7.7	134.78	1.75	147.58	1.92	160.58	2.09	173.75	2.26
7.8	135.40	1.76	148.32	1.93	161.44	2.10	174.75	2.28
7.9	136.00	1.77	149.04	1.94	162.30	2.11	175.73	2.29
8.0	136.59	1.78	149.75	1.95	163.13	2.12	176.70	2.30
8.1	137.21	1.79	150.49	1.96	163.99	2.14	177.69	2.31
8.2	137.82	1.79	151.22	1.97	164.85	2.15	178.68	2.33
8.3	138.41	1.80	151.93	1.98	165.68	2.16	179.63	2.34
8.4	139.00	1.81	152.63	1.99	166.50	2.17	180.59	2.35
8.5	139.57	1.82	153.31	2.00	167.31	2.18	181.52	2.36
8.6	140.12	1.82	153.98	2.00	168.09	2.19	182.43	2.38
8.7	140.67	1.83	154.65	2.01	168.88	2.20	183.34	2.39
8.8	141.21	1.84	155.29	2.02	169.64	2.21	184.22	2.40
8.9	141.74	1.85	155.93	2.03	170.40	2.22	185.10	2.41
9.0	142.25	1.85	156.55	2.04	171.13	2.23	185.95	2.42
9.1	142.77	1.86	157.19	2.05	171.88	2.24	186.82	2.43
9.2	143.30	1.87	157.82	2.05	172.63	2.25	187.69	2.44
9.3	143.81	1.87	158.43	2.06	173.35	2.26	188.53	2.45
9.4	144.31	1.88	159.05	2.07	174.08	2.27	189.37	2.47
9.5	144.80	1.89	159.64	2.08	174.78	2.28	190.19	2.48
9.6	145.28	1.89	160.22	2.09	175.47	2.28	190.99	2.49
9.7	145.75	1.90	160.79	2.09	176.15	2.29	191.79	2.50
9.8	146.21	1.90	161.35	2.10	176.82	2.30	192.57	2.51
9.9	146.67	1.91	161.91	2.11	177.48	2.31	193.34	2.52
10.0	147.11	1.92	162.45	2.12	178.12	2.32	194.10	2.53
Trench width,m	1.5		1.6		1.7		1.8	

Narrow trench load

Wide trench load

DESIGN LOAD CALCULATION FOR DN 800mmES

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
10.1	147.62	1.92	163.06	2.12	178.84	2.33	194.92	2.54
10.2	148.13	1.93	163.66	2.13	179.54	2.34	195.74	2.55
10.3	148.63	1.94	164.26	2.14	180.24	2.35	196.54	2.56
10.4	149.12	1.94	164.84	2.15	180.92	2.36	197.33	2.57
10.5	149.60	1.95	165.41	2.15	181.60	2.36	198.11	2.58
10.6	150.07	1.95	165.98	2.16	182.26	2.37	198.88	2.59
10.7	150.53	1.96	166.53	2.17	182.92	2.38	199.64	2.60
10.8	150.99	1.97	167.08	2.18	183.56	2.39	200.39	2.61
10.9	151.44	1.97	167.62	2.18	184.19	2.40	201.12	2.62
11	151.88	1.98	168.15	2.19	184.82	2.41	201.85	2.63
11.1	152.31	1.98	168.67	2.20	185.43	2.41	202.56	2.64
11.2	152.74	1.99	169.18	2.20	186.04	2.42	203.27	2.65
11.3	153.16	1.99	169.68	2.21	186.63	2.43	203.96	2.66
11.4	153.57	2.00	170.18	2.22	187.22	2.44	204.65	2.66
11.5	153.97	2.00	170.67	2.22	187.80	2.45	205.32	2.67
11.6	154.37	2.01	171.15	2.23	188.37	2.45	205.99	2.68
11.7	154.76	2.02	171.62	2.23	188.93	2.46	206.64	2.69
11.8	155.14	2.02	172.08	2.24	189.48	2.47	207.29	2.70
11.9	155.52	2.02	172.54	2.25	190.03	2.47	207.93	2.71
12	155.89	2.03	172.99	2.25	190.56	2.48	208.55	2.72
12.1	156.25	2.03	173.43	2.26	191.09	2.49	209.17	2.72
12.2	156.61	2.04	173.87	2.26	191.61	2.49	209.78	2.73
12.3	156.96	2.04	174.30	2.27	192.12	2.50	210.38	2.74
12.4	157.31	2.05	174.72	2.27	192.63	2.51	210.98	2.75
12.5	157.65	2.05	175.13	2.28	193.12	2.51	211.56	2.75
12.6	157.98	2.06	175.54	2.29	193.61	2.52	212.14	2.76
12.7	158.31	2.06	175.94	2.29	194.09	2.53	212.70	2.77
12.8	158.63	2.07	176.34	2.30	194.57	2.53	213.26	2.78
12.9	158.95	2.07	176.73	2.30	195.03	2.54	213.81	2.78
13	159.26	2.07	177.11	2.31	195.49	2.55	214.36	2.79
13.1	159.57	2.08	177.49	2.31	195.95	2.55	214.89	2.80
13.2	159.87	2.08	177.86	2.32	196.39	2.56	215.42	2.80
13.3	160.16	2.09	178.22	2.32	196.83	2.56	215.94	2.81
13.4	160.46	2.09	178.58	2.33	197.26	2.57	216.45	2.82
13.5	160.74	2.09	178.93	2.33	197.69	2.57	216.96	2.83
13.6	161.02	2.10	179.28	2.33	198.11	2.58	217.46	2.83
13.7	161.30	2.10	179.62	2.34	198.52	2.58	217.95	2.84
13.8	161.57	2.10	179.96	2.34	198.93	2.59	218.43	2.84
13.9	161.84	2.11	180.29	2.35	199.33	2.60	218.91	2.85
14	162.10	2.11	180.61	2.35	199.72	2.60	219.38	2.86
14.1	162.35	2.11	180.93	2.36	200.11	2.61	219.85	2.86
14.2	162.61	2.12	181.24	2.36	200.49	2.61	220.30	2.87
14.3	162.86	2.12	181.55	2.36	200.87	2.62	220.75	2.87
14.4	163.10	2.12	181.86	2.37	201.24	2.62	221.20	2.88
14.5	163.34	2.13	182.16	2.37	201.61	2.63	221.63	2.89
14.6	163.58	2.13	182.45	2.38	201.97	2.63	222.07	2.89
14.7	163.81	2.13	182.74	2.38	202.32	2.63	222.49	2.90
14.8	164.04	2.14	183.03	2.38	202.67	2.64	222.91	2.90
14.9	164.26	2.14	183.31	2.39	203.02	2.64	223.32	2.91
15.0	164.48	2.14	183.59	2.39	203.35	2.65	223.73	2.91
Trench width,m	1.5		1.6		1.7		1.8	

Narrow trench load

Wide trench load