

**TABLE 14 DESIGN LOAD CALCULATION FOR DN 700mmES**

DATA: Crushing strength = 90 kN/m; Unit weight of backfill = 19.6 kN/m<sup>3</sup>; Ext. dia. = 831mm  
 Ku' = 0.13; Ku = 0.19; r<sub>sd</sub>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	116.26	1.61	116.26	1.61	116.26	1.61	116.26	1.61
0.7	104.58	1.45	104.58	1.45	104.58	1.45	104.58	1.45
0.8	97.05	1.35	97.05	1.35	97.05	1.35	97.05	1.35
0.9	74.98	1.04	74.98	1.04	74.98	1.04	74.98	1.04
1.0	87.81	1.22	87.81	1.22	87.81	1.22	87.81	1.22
1.1	85.18	1.18	85.18	1.18	85.18	1.18	85.18	1.18
1.2	83.39	1.16	83.39	1.16	83.39	1.16	83.39	1.16
1.3	82.34	1.14	82.34	1.14	82.34	1.14	82.34	1.14
1.4	81.79	1.14	81.79	1.14	81.79	1.14	81.79	1.14
1.5	81.58	1.13	81.58	1.13	81.58	1.13	81.58	1.13
1.6	81.53	1.13	81.69	1.13	81.69	1.13	81.69	1.13
1.7	81.47	1.13	82.06	1.14	82.06	1.14	82.06	1.14
1.8	81.63	1.13	82.67	1.15	82.67	1.15	82.67	1.15
1.9	81.83	1.14	83.37	1.16	83.37	1.16	83.37	1.16
2.0	82.16	1.14	84.23	1.17	84.23	1.17	84.23	1.17
2.1	82.62	1.15	85.27	1.18	85.27	1.18	85.27	1.18
2.2	83.05	1.15	86.30	1.20	86.30	1.20	86.30	1.20
2.3	83.61	1.16	87.49	1.22	87.49	1.22	87.49	1.22
2.4	84.14	1.17	88.69	1.23	88.69	1.23	88.69	1.23
2.5	84.76	1.18	89.53	1.24	90.01	1.25	90.01	1.25
2.6	85.34	1.19	90.29	1.25	91.33	1.27	91.33	1.27
2.7	86.02	1.19	91.15	1.27	92.78	1.29	92.78	1.29
2.8	86.67	1.20	91.98	1.28	94.22	1.31	94.22	1.31
2.9	87.42	1.21	92.90	1.29	95.79	1.33	95.79	1.33
3.0	88.13	1.22	93.79	1.30	97.36	1.35	97.36	1.35
3.1	88.86	1.23	94.70	1.32	98.98	1.37	98.98	1.37
3.2	89.56	1.24	95.57	1.33	100.59	1.40	100.59	1.40
3.3	90.31	1.25	96.49	1.34	102.28	1.42	102.28	1.42
3.4	91.03	1.26	97.39	1.35	103.78	1.44	103.98	1.44
3.5	91.81	1.28	98.34	1.37	104.91	1.46	105.76	1.47
3.6	92.57	1.29	99.27	1.38	106.00	1.47	107.54	1.49
3.7	93.34	1.30	100.20	1.39	107.11	1.49	109.36	1.52
3.8	94.08	1.31	101.12	1.40	108.19	1.50	111.18	1.54
3.9	94.89	1.32	102.08	1.42	109.33	1.52	113.08	1.57
4.0	95.66	1.33	103.03	1.43	110.44	1.53	114.98	1.60
4.1	96.58	1.34	104.11	1.45	111.69	1.55	117.05	1.63
4.2	97.49	1.35	105.18	1.46	112.93	1.57	119.14	1.65
4.3	98.40	1.37	106.25	1.48	114.16	1.59	121.24	1.68
4.4	99.30	1.38	107.31	1.49	115.39	1.60	123.36	1.71
4.5	99.49	1.38	107.66	1.50	115.89	1.61	124.19	1.72
4.6	100.38	1.39	108.71	1.51	117.11	1.63	125.57	1.74
4.7	101.27	1.41	109.76	1.52	118.32	1.64	126.94	1.76
4.8	102.15	1.42	110.79	1.54	119.51	1.66	128.29	1.78
4.9	103.02	1.43	111.81	1.55	120.68	1.68	129.63	1.80
5.0	103.26	1.43	112.20	1.56	121.23	1.68	130.34	1.81
5.1	104.11	1.45	113.21	1.57	122.39	1.70	131.66	1.83
Trench width,m	1.4		1.5		1.6		1.7	

Narrow trench load

Wide trench load

**DESIGN LOAD CALCULATION FOR DN 700mmES**

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	104.96	1.46	114.21	1.59	123.55	1.72	132.97	1.85
5.3	105.80	1.47	115.19	1.60	124.68	1.73	134.26	1.86
5.4	106.61	1.48	116.15	1.61	125.80	1.75	135.53	1.88
5.5	106.85	1.48	116.54	1.62	126.33	1.75	136.22	1.89
5.6	107.67	1.50	117.50	1.63	127.44	1.77	137.48	1.91
5.7	108.46	1.51	118.44	1.64	128.53	1.79	138.72	1.93
5.8	109.25	1.52	119.36	1.66	129.60	1.80	139.95	1.94
5.9	110.02	1.53	120.28	1.67	130.66	1.81	141.16	1.96
6.0	110.34	1.53	120.74	1.68	131.27	1.82	141.91	1.97
6.1	111.03	1.54	121.56	1.69	132.23	1.84	143.02	1.99
6.2	111.69	1.55	122.36	1.70	133.18	1.85	144.11	2.00
6.3	112.35	1.56	123.15	1.71	134.11	1.86	145.19	2.02
6.4	112.98	1.57	123.92	1.72	135.02	1.88	146.24	2.03
6.5	113.60	1.58	124.68	1.73	135.91	1.89	147.28	2.05
6.6	114.24	1.59	125.45	1.74	136.81	1.90	148.33	2.06
6.7	114.86	1.60	126.20	1.75	137.70	1.91	149.36	2.07
6.8	115.48	1.60	126.95	1.76	138.59	1.92	150.38	2.09
6.9	116.08	1.61	127.67	1.77	139.44	1.94	151.37	2.10
7.0	116.66	1.62	128.38	1.78	140.28	1.95	152.35	2.12
7.1	117.25	1.63	129.09	1.79	141.13	1.96	153.33	2.13
7.2	117.86	1.64	129.83	1.80	141.99	1.97	154.33	2.14
7.3	118.44	1.65	130.53	1.81	142.83	1.98	155.30	2.16
7.4	119.01	1.65	131.22	1.82	143.64	2.00	156.25	2.17
7.5	119.56	1.66	131.90	1.83	144.44	2.01	157.18	2.18
7.6	120.10	1.67	132.55	1.84	145.22	2.02	158.09	2.20
7.7	120.63	1.68	133.20	1.85	145.99	2.03	158.99	2.21
7.8	121.14	1.68	133.83	1.86	146.75	2.04	159.88	2.22
7.9	121.65	1.69	134.45	1.87	147.49	2.05	160.75	2.23
8.0	122.14	1.70	135.06	1.88	148.22	2.06	161.60	2.24
8.1	122.66	1.70	135.69	1.88	148.97	2.07	162.47	2.26
8.2	123.17	1.71	136.31	1.89	149.71	2.08	163.34	2.27
8.3	123.67	1.72	136.92	1.90	150.43	2.09	164.18	2.28
8.4	124.16	1.72	137.52	1.91	151.15	2.10	165.02	2.29
8.5	124.63	1.73	138.10	1.92	151.85	2.11	165.84	2.30
8.6	125.09	1.74	138.67	1.93	152.53	2.12	166.64	2.31
8.7	125.55	1.74	139.23	1.93	153.20	2.13	167.44	2.33
8.8	125.99	1.75	139.78	1.94	153.86	2.14	168.21	2.34
8.9	126.43	1.76	140.32	1.95	154.51	2.15	168.98	2.35
9.0	126.85	1.76	140.84	1.96	155.15	2.15	169.73	2.36
9.1	127.28	1.77	141.38	1.96	155.79	2.16	170.49	2.37
9.2	127.72	1.77	141.91	1.97	156.44	2.17	171.24	2.38
9.3	128.14	1.78	142.43	1.98	157.06	2.18	171.98	2.39
9.4	128.55	1.79	142.95	1.99	157.68	2.19	172.71	2.40
9.5	128.95	1.79	143.44	1.99	158.28	2.20	173.42	2.41
9.6	129.34	1.80	143.93	2.00	158.87	2.21	174.12	2.42
9.7	129.74	1.80	144.42	2.01	159.46	2.21	174.81	2.43
9.8	130.11	1.81	144.88	2.01	160.02	2.22	175.49	2.44
9.9	130.48	1.81	145.35	2.02	160.59	2.23	176.16	2.45
10.0	130.84	1.82	145.80	2.02	161.14	2.24	176.81	2.46
<b>Trench width,m</b>	<b>1.4</b>		<b>1.5</b>		<b>1.6</b>		<b>1.7</b>	

Narrow trench load

Wide trench load