

**TABLE 13 DESIGN LOAD CALCULATION FOR DN 600mmES**

DATA: Crushing strength = 96 kN/m; Unit weight of backfill = 19.6 kN/m<sup>3</sup>; Ext. dia. = 721mm  
 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	100.61	1.31	100.61	1.31	100.61	1.31	100.61	1.31
0.7	90.47	1.18	90.47	1.18	90.47	1.18	90.47	1.18
0.8	83.94	1.09	83.94	1.09	83.94	1.09	83.94	1.09
0.9	64.79	0.84	64.79	0.84	64.79	0.84	64.79	0.84
1.0	75.92	0.99	75.92	0.99	75.92	0.99	75.92	0.99
1.1	73.64	0.96	73.64	0.96	73.64	0.96	73.64	0.96
1.2	72.08	0.94	72.08	0.94	72.08	0.94	72.08	0.94
1.3	71.17	0.93	71.17	0.93	71.17	0.93	71.17	0.93
1.4	70.70	0.92	70.70	0.92	70.70	0.92	70.70	0.92
1.5	70.51	0.92	70.51	0.92	70.51	0.92	70.51	0.92
1.6	70.61	0.92	70.61	0.92	70.61	0.92	70.61	0.92
1.7	70.93	0.92	70.93	0.92	70.93	0.92	70.93	0.92
1.8	71.46	0.93	71.46	0.93	71.46	0.93	71.46	0.93
1.9	72.07	0.94	72.07	0.94	72.07	0.94	72.07	0.94
2.0	72.82	0.95	72.82	0.95	72.82	0.95	72.82	0.95
2.1	73.60	0.96	73.71	0.96	73.71	0.96	73.71	0.96
2.2	74.03	0.96	74.61	0.97	74.61	0.97	74.61	0.97
2.3	74.58	0.97	75.64	0.98	75.64	0.98	75.64	0.98
2.4	75.09	0.98	76.68	1.00	76.68	1.00	76.68	1.00
2.5	75.68	0.99	77.83	1.01	77.83	1.01	77.83	1.01
2.6	76.23	0.99	78.98	1.03	78.98	1.03	78.98	1.03
2.7	76.87	1.00	80.23	1.04	80.23	1.04	80.23	1.04
2.8	77.47	1.01	81.48	1.06	81.48	1.06	81.48	1.06
2.9	78.16	1.02	82.85	1.08	82.85	1.08	82.85	1.08
3.0	78.81	1.03	84.21	1.10	84.21	1.10	84.21	1.10
3.1	79.48	1.03	85.28	1.11	85.61	1.11	85.61	1.11
3.2	80.11	1.04	86.09	1.12	87.01	1.13	87.01	1.13
3.3	80.79	1.05	86.94	1.13	88.48	1.15	88.48	1.15
3.4	81.45	1.06	87.76	1.14	89.95	1.17	89.95	1.17
3.5	82.15	1.07	88.63	1.15	91.49	1.19	91.49	1.19
3.6	82.83	1.08	89.48	1.17	93.03	1.21	93.03	1.21
3.7	83.51	1.09	90.33	1.18	94.61	1.23	94.61	1.23
3.8	84.18	1.10	91.16	1.19	96.19	1.25	96.19	1.25
3.9	84.89	1.11	92.03	1.20	97.84	1.27	97.84	1.27
4.0	85.57	1.11	92.88	1.21	99.49	1.30	99.49	1.30
4.1	86.38	1.12	93.85	1.22	101.29	1.32	101.29	1.32
4.2	87.18	1.14	94.81	1.23	102.50	1.33	103.10	1.34
4.3	87.98	1.15	95.76	1.25	103.61	1.35	104.92	1.37
4.4	88.76	1.16	96.70	1.26	104.71	1.36	106.76	1.39
4.5	88.93	1.16	97.02	1.26	105.19	1.37	108.00	1.41
4.6	89.71	1.17	97.95	1.28	106.28	1.38	109.88	1.43
4.7	90.49	1.18	98.88	1.29	107.36	1.40	111.77	1.46
4.8	91.25	1.19	99.79	1.30	108.43	1.41	113.66	1.48
4.9	92.00	1.20	100.69	1.31	109.48	1.43	115.57	1.50
5.0	92.20	1.20	101.04	1.32	109.99	1.43	116.94	1.52
5.1	92.94	1.21	101.93	1.33	111.02	1.45	118.88	1.55
Trench width,m	1.3		1.4		1.5		1.6	

Narrow trench load

Wide trench load

**DESIGN LOAD CALCULATION FOR DN 600mmES**

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	93.67	1.22	102.80	1.34	112.05	1.46	120.81	1.57
5.3	94.39	1.23	103.67	1.35	113.06	1.47	122.55	1.60
5.4	95.09	1.24	104.51	1.36	114.05	1.49	123.69	1.61
5.5	95.29	1.24	104.85	1.37	114.54	1.49	124.33	1.62
5.6	95.99	1.25	105.68	1.38	115.52	1.50	125.46	1.63
5.7	96.67	1.26	106.50	1.39	116.48	1.52	126.57	1.65
5.8	97.34	1.27	107.31	1.40	117.42	1.53	127.66	1.66
5.9	98.00	1.28	108.10	1.41	118.36	1.54	128.74	1.68
6.0	98.26	1.28	108.50	1.41	118.90	1.55	129.42	1.69
6.1	98.84	1.29	109.21	1.42	119.75	1.56	130.42	1.70
6.2	99.40	1.29	109.91	1.43	120.58	1.57	131.39	1.71
6.3	99.95	1.30	110.59	1.44	121.39	1.58	132.35	1.72
6.4	100.49	1.31	111.25	1.45	122.19	1.59	133.28	1.74
6.5	101.01	1.32	111.90	1.46	122.97	1.60	134.20	1.75
6.6	101.55	1.32	112.56	1.47	123.77	1.61	135.13	1.76
6.7	102.07	1.33	113.21	1.47	124.54	1.62	136.05	1.77
6.8	102.59	1.34	113.85	1.48	125.31	1.63	136.95	1.78
6.9	103.08	1.34	114.46	1.49	126.06	1.64	137.83	1.79
7.0	103.56	1.35	115.07	1.50	126.79	1.65	138.69	1.81
7.1	104.06	1.35	115.68	1.51	127.52	1.66	139.56	1.82
7.2	104.57	1.36	116.30	1.51	128.27	1.67	140.44	1.83
7.3	105.05	1.37	116.90	1.52	128.99	1.68	141.29	1.84
7.4	105.52	1.37	117.49	1.53	129.70	1.69	142.12	1.85
7.5	105.98	1.38	118.06	1.54	130.39	1.70	142.94	1.86
7.6	106.42	1.39	118.61	1.54	131.07	1.71	143.74	1.87
7.7	106.85	1.39	119.16	1.55	131.73	1.72	144.53	1.88
7.8	107.28	1.40	119.70	1.56	132.38	1.72	145.30	1.89
7.9	107.69	1.40	120.22	1.57	133.02	1.73	146.06	1.90
8.0	108.10	1.41	120.73	1.57	133.65	1.74	146.81	1.91
8.1	108.52	1.41	121.26	1.58	134.29	1.75	147.57	1.92
8.2	108.94	1.42	121.79	1.59	134.93	1.76	148.33	1.93
8.3	109.34	1.42	122.29	1.59	135.54	1.76	149.06	1.94
8.4	109.74	1.43	122.79	1.60	136.16	1.77	149.79	1.95
8.5	110.13	1.43	123.28	1.61	136.75	1.78	150.50	1.96
8.6	110.50	1.44	123.75	1.61	137.33	1.79	151.19	1.97
8.7	110.88	1.44	124.22	1.62	137.91	1.80	151.88	1.98
8.8	111.23	1.45	124.68	1.62	138.47	1.80	152.55	1.99
8.9	111.59	1.45	125.13	1.63	139.02	1.81	153.22	2.00
9.0	111.92	1.46	125.56	1.63	139.56	1.82	153.86	2.00
9.1	112.28	1.46	126.01	1.64	140.10	1.82	154.52	2.01
9.2	112.63	1.47	126.45	1.65	140.65	1.83	155.17	2.02
9.3	112.96	1.47	126.88	1.65	141.18	1.84	155.80	2.03
9.4	113.30	1.48	127.31	1.66	141.70	1.85	156.43	2.04
9.5	113.62	1.48	127.72	1.66	142.21	1.85	157.04	2.04
9.6	113.93	1.48	128.12	1.67	142.70	1.86	157.64	2.05
9.7	114.24	1.49	128.52	1.67	143.20	1.86	158.24	2.06
9.8	114.54	1.49	128.90	1.68	143.67	1.87	158.81	2.07
9.9	114.84	1.50	129.28	1.68	144.15	1.88	159.39	2.08
10.0	115.12	1.50	129.65	1.69	144.61	1.88	159.95	2.08
<b>Trench width,m</b>	<b>1.3</b>		<b>1.4</b>		<b>1.5</b>		<b>1.6</b>	

Narrow trench load

Wide trench load