

TABLE 12 DESIGN LOAD CALCULATION FOR DN 500mmES

DATA: Crushing strength = 80 kN/m; Unit weight of backfill = 19.6 kN/m³; Ext. dia. = 607mm
 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	83.04	1.30	83.04	1.30	83.04	1.30	83.04	1.30
0.7	74.51	1.16	74.51	1.16	74.51	1.16	74.51	1.16
0.8	69.01	1.08	69.01	1.08	69.01	1.08	69.01	1.08
0.9	52.89	0.83	52.89	0.83	52.89	0.83	52.89	0.83
1.0	62.26	0.97	62.26	0.97	62.26	0.97	62.26	0.97
1.1	60.34	0.94	60.34	0.94	60.34	0.94	60.34	0.94
1.2	59.03	0.92	59.03	0.92	59.03	0.92	59.03	0.92
1.3	58.26	0.91	58.26	0.91	58.26	0.91	58.26	0.91
1.4	57.86	0.90	57.86	0.90	57.86	0.90	57.86	0.90
1.5	57.71	0.90	57.71	0.90	57.71	0.90	57.71	0.90
1.6	57.79	0.90	57.79	0.90	57.79	0.90	57.79	0.90
1.7	58.06	0.91	58.06	0.91	58.06	0.91	58.06	0.91
1.8	58.50	0.91	58.51	0.91	58.51	0.91	58.51	0.91
1.9	58.62	0.92	59.02	0.92	59.02	0.92	59.02	0.92
2.0	58.82	0.92	59.65	0.93	59.65	0.93	59.65	0.93
2.1	59.12	0.92	60.40	0.94	60.40	0.94	60.40	0.94
2.2	59.38	0.93	61.15	0.96	61.15	0.96	61.15	0.96
2.3	59.74	0.93	62.03	0.97	62.03	0.97	62.03	0.97
2.4	60.07	0.94	62.90	0.98	62.90	0.98	62.90	0.98
2.5	60.46	0.94	63.87	1.00	63.87	1.00	63.87	1.00
2.6	60.82	0.95	64.83	1.01	64.83	1.01	64.83	1.01
2.7	61.24	0.96	65.89	1.03	65.89	1.03	65.89	1.03
2.8	61.64	0.96	66.86	1.04	66.94	1.05	66.94	1.05
2.9	62.10	0.97	67.49	1.05	68.09	1.06	68.09	1.06
3.0	62.54	0.98	68.09	1.06	69.24	1.08	69.24	1.08
3.1	62.98	0.98	68.70	1.07	70.42	1.10	70.42	1.10
3.2	63.39	0.99	69.28	1.08	71.59	1.12	71.59	1.12
3.3	63.85	1.00	69.90	1.09	72.83	1.14	72.83	1.14
3.4	64.28	1.00	70.49	1.10	74.07	1.16	74.07	1.16
3.5	64.75	1.01	71.12	1.11	75.37	1.18	75.37	1.18
3.6	65.19	1.02	71.72	1.12	76.67	1.20	76.67	1.20
3.7	65.65	1.03	72.33	1.13	78.00	1.22	78.00	1.22
3.8	66.08	1.03	72.92	1.14	79.33	1.24	79.33	1.24
3.9	66.55	1.04	73.55	1.15	80.62	1.26	80.72	1.26
4.0	67.01	1.05	74.15	1.16	81.38	1.27	82.11	1.28
4.1	67.56	1.06	74.86	1.17	82.25	1.29	83.62	1.31
4.2	68.11	1.06	75.55	1.18	83.10	1.30	85.14	1.33
4.3	68.65	1.07	76.24	1.19	83.94	1.31	86.68	1.35
4.4	69.18	1.08	76.92	1.20	84.77	1.32	88.23	1.38
4.5	69.20	1.08	77.08	1.20	85.07	1.33	89.27	1.39
4.6	69.73	1.09	77.75	1.21	85.89	1.34	90.85	1.42
4.7	70.25	1.10	78.41	1.23	86.70	1.35	92.44	1.44
4.8	70.76	1.11	79.07	1.24	87.50	1.37	94.03	1.47
4.9	71.27	1.11	79.71	1.25	88.28	1.38	95.64	1.49
5.0	71.31	1.11	79.89	1.25	88.61	1.38	96.80	1.51
5.1	71.81	1.12	80.51	1.26	89.38	1.40	98.36	1.54
Trench width,m	1.1		1.2		1.3		1.4	

Narrow trench load

Wide trench load

DESIGN LOAD CALCULATION FOR DN 500mmES

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	72.29	1.13	81.13	1.27	90.13	1.41	99.27	1.55
5.3	72.77	1.14	81.74	1.28	90.88	1.42	100.16	1.56
5.4	73.23	1.14	82.33	1.29	91.61	1.43	101.03	1.58
5.5	73.28	1.14	82.50	1.29	91.91	1.44	101.47	1.59
5.6	73.74	1.15	83.09	1.30	92.63	1.45	102.33	1.60
5.7	74.18	1.16	83.66	1.31	93.33	1.46	103.17	1.61
5.8	74.62	1.17	84.22	1.32	94.02	1.47	104.00	1.62
5.9	75.05	1.17	84.77	1.32	94.71	1.48	104.81	1.64
6.0	75.15	1.17	84.99	1.33	95.05	1.49	105.29	1.65
6.1	75.51	1.18	85.47	1.34	95.66	1.49	106.03	1.66
6.2	75.87	1.19	85.94	1.34	96.25	1.50	106.75	1.67
6.3	76.21	1.19	86.40	1.35	96.83	1.51	107.46	1.68
6.4	76.53	1.20	86.84	1.36	97.39	1.52	108.15	1.69
6.5	76.85	1.20	87.27	1.36	97.94	1.53	108.83	1.70
6.6	77.18	1.21	87.71	1.37	98.50	1.54	109.52	1.71
6.7	77.50	1.21	88.14	1.38	99.05	1.55	110.19	1.72
6.8	77.82	1.22	88.56	1.38	99.59	1.56	110.85	1.73
6.9	78.12	1.22	88.97	1.39	100.11	1.56	111.49	1.74
7.0	78.41	1.23	89.36	1.40	100.61	1.57	112.12	1.75
7.1	78.71	1.23	89.77	1.40	101.13	1.58	112.75	1.76
7.2	79.02	1.23	90.18	1.41	101.65	1.59	113.39	1.77
7.3	79.31	1.24	90.57	1.42	102.15	1.60	114.01	1.78
7.4	79.59	1.24	90.95	1.42	102.64	1.60	114.61	1.79
7.5	79.87	1.25	91.32	1.43	103.12	1.61	115.20	1.80
7.6	80.13	1.25	91.68	1.43	103.58	1.62	115.77	1.81
7.7	80.38	1.26	92.03	1.44	104.03	1.63	116.34	1.82
7.8	80.63	1.26	92.37	1.44	104.48	1.63	116.89	1.83
7.9	80.87	1.26	92.70	1.45	104.91	1.64	117.44	1.83
8.0	81.10	1.27	93.03	1.45	105.33	1.65	117.97	1.84
8.1	81.35	1.27	93.37	1.46	105.77	1.65	118.51	1.85
8.2	81.60	1.27	93.70	1.46	106.20	1.66	119.05	1.86
8.3	81.83	1.28	94.02	1.47	106.62	1.67	119.57	1.87
8.4	82.06	1.28	94.34	1.47	107.03	1.67	120.08	1.88
8.5	82.28	1.29	94.64	1.48	107.43	1.68	120.58	1.88
8.6	82.50	1.29	94.94	1.48	107.82	1.68	121.07	1.89
8.7	82.71	1.29	95.23	1.49	108.20	1.69	121.55	1.90
8.8	82.91	1.30	95.52	1.49	108.57	1.70	122.02	1.91
8.9	83.11	1.30	95.79	1.50	108.94	1.70	122.48	1.91
9.0	83.30	1.30	96.06	1.50	109.29	1.71	122.93	1.92
9.1	83.50	1.30	96.34	1.51	109.65	1.71	123.39	1.93
9.2	83.69	1.31	96.61	1.51	110.01	1.72	123.84	1.93
9.3	83.88	1.31	96.87	1.51	110.36	1.72	124.28	1.94
9.4	84.07	1.31	97.14	1.52	110.70	1.73	124.71	1.95
9.5	84.25	1.32	97.38	1.52	111.03	1.73	125.13	1.96
9.6	84.42	1.32	97.63	1.53	111.36	1.74	125.54	1.96
9.7	84.59	1.32	97.87	1.53	111.68	1.74	125.95	1.97
9.8	84.75	1.32	98.10	1.53	111.99	1.75	126.35	1.97
9.9	84.91	1.33	98.33	1.54	112.29	1.75	126.74	1.98
10.0	85.06	1.33	98.55	1.54	112.59	1.76	127.11	1.99
Trench width,m	1.1		1.2		1.3		1.4	

Narrow trench load

Wide trench load