

TABLE 9 DESIGN LOAD CALCULATION FOR DN 400mmSS

DATA: Crushing strength = 48 kN/m; Unit weight of backfill = 19.6 kN/m³; Ext. dia. = 460mm
 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	63.02	1.64	67.26	1.75	63.02	1.64	63.02	1.64
0.7	56.56	1.47	61.29	1.60	56.56	1.47	56.56	1.47
0.8	52.39	1.36	57.58	1.50	52.39	1.36	52.39	1.36
0.9	40.17	1.05	45.77	1.19	40.17	1.05	40.17	1.05
1.0	47.27	1.23	53.24	1.39	47.27	1.23	47.27	1.23
1.1	45.82	1.19	52.12	1.36	45.82	1.19	45.82	1.19
1.2	44.83	1.17	51.41	1.34	44.83	1.17	44.83	1.17
1.3	44.25	1.15	51.09	1.33	44.25	1.15	44.25	1.15
1.4	43.94	1.14	51.00	1.33	43.94	1.14	43.94	1.14
1.5	43.82	1.14	51.06	1.33	43.82	1.14	43.82	1.14
1.6	43.89	1.14	51.26	1.33	43.89	1.14	43.89	1.14
1.7	44.09	1.15	51.57	1.34	44.09	1.15	44.09	1.15
1.8	44.43	1.16	51.99	1.35	44.43	1.16	44.43	1.16
1.9	44.82	1.17	52.41	1.36	44.82	1.17	44.82	1.17
2.0	45.30	1.18	52.90	1.38	45.30	1.18	45.30	1.18
2.1	45.87	1.19	53.44	1.39	45.87	1.19	45.87	1.19
2.2	46.44	1.21	53.96	1.41	46.44	1.21	46.44	1.21
2.3	47.10	1.23	54.54	1.42	47.10	1.23	47.10	1.23
2.4	47.76	1.24	55.08	1.43	47.76	1.24	47.76	1.24
2.5	48.49	1.26	55.67	1.45	48.49	1.26	48.49	1.26
2.6	49.22	1.28	56.23	1.46	49.22	1.28	49.22	1.28
2.7	50.02	1.30	56.83	1.48	50.02	1.30	50.02	1.30
2.8	50.82	1.32	57.40	1.49	50.82	1.32	50.82	1.32
2.9	51.69	1.35	58.02	1.51	51.69	1.35	51.69	1.35
3.0	52.56	1.37	58.61	1.53	52.56	1.37	52.56	1.37
3.1	53.46	1.39	59.20	1.54	53.46	1.39	53.46	1.39
3.2	53.94	1.40	59.76	1.56	54.35	1.42	54.35	1.42
3.3	54.37	1.42	60.35	1.57	55.29	1.44	55.29	1.44
3.4	54.78	1.43	60.91	1.59	56.23	1.46	56.23	1.46
3.5	55.21	1.44	61.50	1.60	57.21	1.49	57.21	1.49
3.6	55.62	1.45	62.06	1.62	58.19	1.52	58.19	1.52
3.7	56.03	1.46	62.63	1.63	59.20	1.54	59.20	1.54
3.8	56.43	1.47	63.17	1.65	60.21	1.57	60.21	1.57
3.9	56.85	1.48	63.74	1.66	61.26	1.60	61.26	1.60
4.0	57.25	1.49	64.29	1.67	62.32	1.62	62.32	1.62
4.1	57.73	1.50	64.91	1.69	63.46	1.65	63.46	1.65
4.2	58.19	1.52	65.52	1.71	64.62	1.68	64.62	1.68
4.3	58.66	1.53	66.12	1.72	65.78	1.71	65.78	1.71
4.4	59.11	1.54	66.71	1.74	66.95	1.74	66.95	1.74
4.5	59.16	1.54	66.90	1.74	67.74	1.76	67.74	1.76
4.6	59.61	1.55	67.48	1.76	68.94	1.80	68.94	1.80
4.7	60.05	1.56	68.05	1.77	70.14	1.83	70.14	1.83
4.8	60.47	1.57	68.61	1.79	71.35	1.86	71.35	1.86
4.9	60.89	1.59	69.16	1.80	72.57	1.89	72.57	1.89
5.0	60.96	1.59	69.36	1.81	73.45	1.91	73.45	1.91
5.1	61.37	1.60	69.89	1.82	74.68	1.94	74.68	1.94
Trench width,m	1.0		1.1		1.2		1.3	

Narrow trench load

Wide trench load

DESIGN LOAD CALCULATION FOR DN 400mmSS

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	61.76	1.61	70.41	1.83	75.92	1.98	75.92	1.98
5.3	62.15	1.62	70.93	1.85	77.16	2.01	77.16	2.01
5.4	62.53	1.63	71.42	1.86	78.40	2.04	78.40	2.04
5.5	62.59	1.63	71.60	1.86	79.34	2.07	79.34	2.07
5.6	62.96	1.64	72.09	1.88	80.60	2.10	80.60	2.10
5.7	63.32	1.65	72.56	1.89	81.86	2.13	81.86	2.13
5.8	63.67	1.66	73.03	1.90	82.63	2.15	83.12	2.16
5.9	64.02	1.67	73.49	1.91	83.21	2.17	84.39	2.20
6.0	64.11	1.67	73.69	1.92	83.53	2.18	85.42	2.22
6.1	64.40	1.68	74.09	1.93	84.05	2.19	86.65	2.26
6.2	64.68	1.68	74.48	1.94	84.56	2.20	87.89	2.29
6.3	64.95	1.69	74.86	1.95	85.05	2.21	89.13	2.32
6.4	65.21	1.70	75.22	1.96	85.53	2.23	90.37	2.35
6.5	65.46	1.70	75.58	1.97	86.00	2.24	91.60	2.39
6.6	65.72	1.71	75.94	1.98	86.47	2.25	92.86	2.42
6.7	65.97	1.72	76.29	1.99	86.93	2.26	94.12	2.45
6.8	66.22	1.72	76.64	2.00	87.38	2.28	95.38	2.48
6.9	66.46	1.73	76.97	2.00	87.82	2.29	96.63	2.52
7.0	66.68	1.74	77.29	2.01	88.24	2.30	97.89	2.55
7.1	66.91	1.74	77.61	2.02	88.67	2.31	99.16	2.58
7.2	67.15	1.75	77.94	2.03	89.11	2.32	100.45	2.62
7.3	67.38	1.75	78.26	2.04	89.52	2.33	101.10	2.63
7.4	67.59	1.76	78.57	2.05	89.93	2.34	101.61	2.65
7.5	67.80	1.77	78.86	2.05	90.32	2.35	102.12	2.66
7.6	68.00	1.77	79.15	2.06	90.70	2.36	102.60	2.67
7.7	68.19	1.78	79.43	2.07	91.07	2.37	103.08	2.68
7.8	68.38	1.78	79.70	2.08	91.44	2.38	103.55	2.70
7.9	68.56	1.79	79.96	2.08	91.80	2.39	104.00	2.71
8.0	68.74	1.79	80.22	2.09	92.14	2.40	104.45	2.72
8.1	68.92	1.79	80.48	2.10	92.50	2.41	104.90	2.73
8.2	69.11	1.80	80.75	2.10	92.85	2.42	105.35	2.74
8.3	69.28	1.80	81.00	2.11	93.19	2.43	105.78	2.75
8.4	69.45	1.81	81.25	2.12	93.52	2.44	106.21	2.77
8.5	69.62	1.81	81.48	2.12	93.84	2.44	106.63	2.78
8.6	69.77	1.82	81.72	2.13	94.16	2.45	107.03	2.79
8.7	69.93	1.82	81.94	2.13	94.47	2.46	107.44	2.80
8.8	70.08	1.82	82.16	2.14	94.77	2.47	107.82	2.81
8.9	70.22	1.83	82.38	2.15	95.06	2.48	108.21	2.82
9.0	70.36	1.83	82.58	2.15	95.35	2.48	108.58	2.83
9.1	70.50	1.84	82.79	2.16	95.63	2.49	108.95	2.84
9.2	70.65	1.84	83.01	2.16	95.92	2.50	109.32	2.85
9.3	70.78	1.84	83.21	2.17	96.20	2.51	109.68	2.86
9.4	70.92	1.85	83.41	2.17	96.47	2.51	110.04	2.87
9.5	71.05	1.85	83.60	2.18	96.73	2.52	110.38	2.87
9.6	71.17	1.85	83.78	2.18	96.99	2.53	110.72	2.88
9.7	71.29	1.86	83.96	2.19	97.24	2.53	111.05	2.89
9.8	71.40	1.86	84.14	2.19	97.49	2.54	111.37	2.90
9.9	71.52	1.86	84.31	2.20	97.73	2.54	111.69	2.91
10.0	71.63	1.87	84.47	2.20	97.96	2.55	112.00	2.92
Trench width,m	1.0		1.1		1.2		1.3	

Narrow trench load

Wide trench load