

**TABLE 8 DESIGN LOAD CALCULATION FOR DN 350mmES**

DATA: Crushing strength = 75 kN/m; Unit weight of backfill = 19.6 kN/m<sup>3</sup>; Ext. dia. = 430mm  
 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	58.93	0.98	58.93	0.98	58.93	0.98	58.93	0.98
0.7	52.89	0.88	52.89	0.88	52.89	0.88	52.89	0.88
0.8	48.99	0.82	48.99	0.82	48.99	0.82	48.99	0.82
0.9	37.57	0.63	37.57	0.63	37.57	0.63	37.57	0.63
1.0	44.21	0.74	44.21	0.74	44.21	0.74	44.21	0.74
1.1	42.85	0.71	42.85	0.71	42.85	0.71	42.85	0.71
1.2	41.92	0.70	41.92	0.70	41.92	0.70	41.92	0.70
1.3	41.38	0.69	41.38	0.69	41.38	0.69	41.38	0.69
1.4	41.10	0.68	41.10	0.68	41.10	0.68	41.10	0.68
1.5	40.98	0.68	40.98	0.68	40.98	0.68	40.98	0.68
1.6	41.04	0.68	41.04	0.68	41.04	0.68	41.04	0.68
1.7	41.23	0.69	41.23	0.69	41.23	0.69	41.23	0.69
1.8	41.55	0.69	41.55	0.69	41.55	0.69	41.55	0.69
1.9	41.91	0.70	41.91	0.70	41.91	0.70	41.91	0.70
2.0	42.36	0.71	42.36	0.71	42.36	0.71	42.36	0.71
2.1	42.89	0.71	42.89	0.71	42.89	0.71	42.89	0.71
2.2	43.43	0.72	43.43	0.72	43.43	0.72	43.43	0.72
2.3	44.04	0.73	44.04	0.73	44.04	0.73	44.04	0.73
2.4	44.66	0.74	44.66	0.74	44.66	0.74	44.66	0.74
2.5	45.35	0.76	45.35	0.76	45.35	0.76	45.35	0.76
2.6	45.67	0.76	46.03	0.77	46.03	0.77	46.03	0.77
2.7	45.97	0.77	46.78	0.78	46.78	0.78	46.78	0.78
2.8	46.25	0.77	47.53	0.79	47.53	0.79	47.53	0.79
2.9	46.57	0.78	48.34	0.81	48.34	0.81	48.34	0.81
3.0	46.88	0.78	49.15	0.82	49.15	0.82	49.15	0.82
3.1	47.18	0.79	49.99	0.83	49.99	0.83	49.99	0.83
3.2	47.46	0.79	50.82	0.85	50.82	0.85	50.82	0.85
3.3	47.76	0.80	51.70	0.86	51.70	0.86	51.70	0.86
3.4	48.04	0.80	52.58	0.88	52.58	0.88	52.58	0.88
3.5	48.35	0.81	53.50	0.89	53.50	0.89	53.50	0.89
3.6	48.64	0.81	54.42	0.91	54.42	0.91	54.42	0.91
3.7	48.93	0.82	55.36	0.92	55.36	0.92	55.36	0.92
3.8	49.20	0.82	55.83	0.93	56.30	0.94	56.30	0.94
3.9	49.51	0.83	56.27	0.94	57.28	0.95	57.28	0.95
4.0	49.79	0.83	56.69	0.94	58.27	0.97	58.27	0.97
4.1	50.14	0.84	57.18	0.95	59.34	0.99	59.34	0.99
4.2	50.49	0.84	57.67	0.96	60.42	1.01	60.42	1.01
4.3	50.83	0.85	58.14	0.97	61.51	1.03	61.51	1.03
4.4	51.17	0.85	58.60	0.98	62.60	1.04	62.60	1.04
4.5	51.13	0.85	58.70	0.98	63.34	1.06	63.34	1.06
4.6	51.46	0.86	59.15	0.99	64.46	1.07	64.46	1.07
4.7	51.78	0.86	59.60	0.99	65.59	1.09	65.59	1.09
4.8	52.09	0.87	60.03	1.00	66.72	1.11	66.72	1.11
4.9	52.40	0.87	60.46	1.01	67.85	1.13	67.85	1.13
5.0	52.38	0.87	60.56	1.01	68.68	1.14	68.68	1.14
5.1	52.68	0.88	60.97	1.02	69.50	1.16	69.83	1.16
Trench width,m	0.9		1.0		1.1		1.2	

Narrow trench load

Wide trench load

**DESIGN LOAD CALCULATION FOR DN 350mmES**

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	52.97	0.88	61.38	1.02	70.03	1.17	70.98	1.18
5.3	53.25	0.89	61.78	1.03	70.55	1.18	72.15	1.20
5.4	53.52	0.89	62.16	1.04	71.06	1.18	73.31	1.22
5.5	53.50	0.89	62.25	1.04	71.26	1.19	74.18	1.24
5.6	53.77	0.90	62.62	1.04	71.75	1.20	75.36	1.26
5.7	54.03	0.90	62.99	1.05	72.23	1.20	76.54	1.28
5.8	54.28	0.90	63.35	1.06	72.71	1.21	77.72	1.30
5.9	54.53	0.91	63.70	1.06	73.17	1.22	78.91	1.32
6.0	54.54	0.91	63.81	1.06	73.39	1.22	79.86	1.33
6.1	54.74	0.91	64.11	1.07	73.80	1.23	81.02	1.35
6.2	54.93	0.92	64.40	1.07	74.20	1.24	82.18	1.37
6.3	55.11	0.92	64.68	1.08	74.58	1.24	83.33	1.39
6.4	55.29	0.92	64.94	1.08	74.96	1.25	84.49	1.41
6.5	55.45	0.92	65.20	1.09	75.32	1.26	85.65	1.43
6.6	55.63	0.93	65.47	1.09	75.69	1.26	86.21	1.44
6.7	55.80	0.93	65.73	1.10	76.04	1.27	86.68	1.44
6.8	55.96	0.93	65.98	1.10	76.39	1.27	87.14	1.45
6.9	56.11	0.94	66.22	1.10	76.73	1.28	87.58	1.46
7.0	56.26	0.94	66.45	1.11	77.06	1.28	88.01	1.47
7.1	56.41	0.94	66.69	1.11	77.39	1.29	88.45	1.47
7.2	56.58	0.94	66.93	1.12	77.73	1.30	88.89	1.48
7.3	56.72	0.95	67.16	1.12	78.05	1.30	89.31	1.49
7.4	56.87	0.95	67.38	1.12	78.36	1.31	89.72	1.50
7.5	57.00	0.95	67.60	1.13	78.66	1.31	90.12	1.50
7.6	57.13	0.95	67.80	1.13	78.95	1.32	90.50	1.51
7.7	57.25	0.95	68.00	1.13	79.23	1.32	90.88	1.51
7.8	57.37	0.96	68.19	1.14	79.51	1.33	91.25	1.52
7.9	57.49	0.96	68.38	1.14	79.78	1.33	91.61	1.53
8.0	57.60	0.96	68.56	1.14	80.04	1.33	91.96	1.53
8.1	57.72	0.96	68.75	1.15	80.31	1.34	92.32	1.54
8.2	57.84	0.96	68.93	1.15	80.57	1.34	92.68	1.54
8.3	57.95	0.97	69.11	1.15	80.83	1.35	93.02	1.55
8.4	58.06	0.97	69.29	1.15	81.08	1.35	93.36	1.56
8.5	58.16	0.97	69.45	1.16	81.32	1.36	93.68	1.56
8.6	58.26	0.97	69.61	1.16	81.56	1.36	94.00	1.57
8.7	58.36	0.97	69.77	1.16	81.79	1.36	94.31	1.57
8.8	58.45	0.97	69.92	1.17	82.01	1.37	94.61	1.58
8.9	58.53	0.98	70.07	1.17	82.23	1.37	94.91	1.58
9.0	58.62	0.98	70.21	1.17	82.44	1.37	95.20	1.59
9.1	58.71	0.98	70.36	1.17	82.65	1.38	95.49	1.59
9.2	58.80	0.98	70.51	1.18	82.86	1.38	95.78	1.60
9.3	58.88	0.98	70.65	1.18	83.07	1.38	96.06	1.60
9.4	58.96	0.98	70.78	1.18	83.27	1.39	96.34	1.61
9.5	59.04	0.98	70.91	1.18	83.46	1.39	96.60	1.61
9.6	59.11	0.99	71.04	1.18	83.65	1.39	96.86	1.61
9.7	59.19	0.99	71.16	1.19	83.84	1.40	97.11	1.62
9.8	59.26	0.99	71.28	1.19	84.01	1.40	97.36	1.62
9.9	59.32	0.99	71.40	1.19	84.19	1.40	97.60	1.63
10.0	59.38	0.99	71.51	1.19	84.35	1.41	97.84	1.63
<b>Trench width,m</b>	<b>0.9</b>		<b>1.0</b>		<b>1.1</b>		<b>1.2</b>	

Narrow trench load

Wide trench load