

**TABLE 3 DESIGN LOAD CALCULATION FOR DN 200mm ES**

DATA: Crushing strength = 65 kN/m<sup>2</sup>; Unit weight of backfill = 19.6 kN/m<sup>3</sup>; Ext. dia. = 251mm

Ku' = 0.13; Ku = 0.19; r<sub>sd</sub>p = 0.7, Traffic load = 112.5kN; 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	34.70	0.67	34.70	0.67	34.70	0.67	34.70	0.67
0.7	31.22	0.60	31.22	0.60	31.22	0.60	31.22	0.60
0.8	28.99	0.56	28.99	0.56	28.99	0.56	28.99	0.56
0.9	22.37	0.43	22.37	0.43	22.37	0.43	22.37	0.43
1.0	26.29	0.51	26.29	0.51	26.29	0.51	26.29	0.51
1.1	25.54	0.49	25.54	0.49	25.54	0.49	25.54	0.49
1.2	25.04	0.48	25.04	0.48	25.04	0.48	25.04	0.48
1.3	24.77	0.48	24.77	0.48	24.77	0.48	24.77	0.48
1.4	24.64	0.47	24.64	0.47	24.64	0.47	24.64	0.47
1.5	24.62	0.47	24.62	0.47	24.62	0.47	24.62	0.47
1.6	24.70	0.48	24.70	0.48	24.70	0.48	24.70	0.48
1.7	24.86	0.48	24.86	0.48	24.86	0.48	24.86	0.48
1.8	25.09	0.48	25.09	0.48	25.09	0.48	25.09	0.48
1.9	25.34	0.49	25.34	0.49	25.34	0.49	25.34	0.49
2.0	25.65	0.49	25.65	0.49	25.65	0.49	25.65	0.49
2.1	26.00	0.50	26.00	0.50	26.00	0.50	26.00	0.50
2.2	26.36	0.51	26.36	0.51	26.36	0.51	26.36	0.51
2.3	26.77	0.51	26.77	0.51	26.77	0.51	26.77	0.51
2.4	27.17	0.52	27.17	0.52	27.17	0.52	27.17	0.52
2.5	27.61	0.53	27.61	0.53	27.61	0.53	27.61	0.53
2.6	28.06	0.54	28.06	0.54	28.06	0.54	28.06	0.54
2.7	28.54	0.55	28.54	0.55	28.54	0.55	28.54	0.55
2.8	29.02	0.56	29.02	0.56	29.02	0.56	29.02	0.56
2.9	29.54	0.57	29.54	0.57	29.54	0.57	29.54	0.57
3.0	30.06	0.58	30.06	0.58	30.06	0.58	30.06	0.58
3.1	30.59	0.59	30.59	0.59	30.59	0.59	30.59	0.59
3.2	31.12	0.60	31.12	0.60	31.12	0.60	31.12	0.60
3.3	31.68	0.61	31.68	0.61	31.68	0.61	31.68	0.61
3.4	32.23	0.62	32.23	0.62	32.23	0.62	32.23	0.62
3.5	32.42	0.62	32.81	0.63	32.81	0.63	32.81	0.63
3.6	32.58	0.63	33.39	0.64	33.39	0.64	33.39	0.64
3.7	32.75	0.63	33.99	0.65	33.99	0.65	33.99	0.65
3.8	32.90	0.63	34.58	0.67	34.58	0.67	34.58	0.67
3.9	33.07	0.64	35.20	0.68	35.20	0.68	35.20	0.68
4.0	33.22	0.64	35.82	0.69	35.82	0.69	35.82	0.69
4.1	33.41	0.64	36.49	0.70	36.49	0.70	36.49	0.70
4.2	33.60	0.65	37.16	0.71	37.16	0.71	37.16	0.71
4.3	33.78	0.65	37.84	0.73	37.84	0.73	37.84	0.73
4.4	33.95	0.65	38.53	0.74	38.53	0.74	38.53	0.74
4.5	33.91	0.65	39.00	0.75	39.00	0.75	39.00	0.75
4.6	34.08	0.66	39.70	0.76	39.70	0.76	39.70	0.76
4.7	34.24	0.66	40.40	0.78	40.40	0.78	40.40	0.78
4.8	34.40	0.66	41.11	0.79	41.11	0.79	41.11	0.79
4.9	34.55	0.66	41.81	0.80	41.81	0.80	41.81	0.80
5.0	34.51	0.66	42.08	0.81	42.34	0.81	42.34	0.81
5.1	34.66	0.67	42.32	0.81	43.05	0.83	43.05	0.83
Trench width,m	0.7		0.8		0.9		1.0	

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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	34.79	0.67	42.55	0.82	43.77	0.84	43.77	0.84
5.3	34.93	0.67	42.78	0.82	44.50	0.86	44.50	0.86
5.4	35.06	0.67	42.99	0.83	45.22	0.87	45.22	0.87
5.5	35.01	0.67	43.03	0.83	45.77	0.88	45.77	0.88
5.6	35.13	0.68	43.24	0.83	46.50	0.89	46.50	0.89
5.7	35.25	0.68	43.44	0.84	47.24	0.91	47.24	0.91
5.8	35.37	0.68	43.63	0.84	47.97	0.92	47.97	0.92
5.9	35.48	0.68	43.82	0.84	48.71	0.94	48.71	0.94
6.0	35.45	0.68	43.87	0.84	49.31	0.95	49.31	0.95
6.1	35.53	0.68	44.03	0.85	50.03	0.96	50.03	0.96
6.2	35.61	0.68	44.18	0.85	50.75	0.98	50.75	0.98
6.3	35.68	0.69	44.32	0.85	51.47	0.99	51.47	0.99
6.4	35.75	0.69	44.46	0.85	52.19	1.00	52.19	1.00
6.5	35.81	0.69	44.59	0.86	52.91	1.02	52.91	1.02
6.6	35.88	0.69	44.72	0.86	53.64	1.03	53.64	1.03
6.7	35.94	0.69	44.85	0.86	54.32	1.04	54.37	1.05
6.8	36.00	0.69	44.97	0.86	54.52	1.05	55.10	1.06
6.9	36.06	0.69	45.09	0.87	54.71	1.05	55.83	1.07
7.0	36.11	0.69	45.20	0.87	54.89	1.06	56.56	1.09
7.1	36.16	0.70	45.32	0.87	55.08	1.06	57.30	1.10
7.2	36.23	0.70	45.43	0.87	55.27	1.06	58.04	1.12
7.3	36.28	0.70	45.54	0.88	55.44	1.07	58.79	1.13
7.4	36.33	0.70	45.65	0.88	55.62	1.07	59.53	1.14
7.5	36.37	0.70	45.74	0.88	55.78	1.07	60.27	1.16
7.6	36.41	0.70	45.84	0.88	55.94	1.08	61.01	1.17
7.7	36.45	0.70	45.93	0.88	56.09	1.08	61.75	1.19
7.8	36.49	0.70	46.01	0.88	56.24	1.08	62.49	1.20
7.9	36.53	0.70	46.10	0.89	56.38	1.08	63.24	1.22
8.0	36.56	0.70	46.17	0.89	56.52	1.09	63.98	1.23
8.1	36.60	0.70	46.26	0.89	56.66	1.09	64.73	1.24
8.2	36.63	0.70	46.34	0.89	56.80	1.09	65.48	1.26
8.3	36.67	0.71	46.42	0.89	56.93	1.09	66.24	1.27
8.4	36.70	0.71	46.50	0.89	57.06	1.10	66.99	1.29
8.5	36.73	0.71	46.57	0.90	57.19	1.10	67.74	1.30
8.6	36.76	0.71	46.63	0.90	57.31	1.10	68.49	1.32
8.7	36.79	0.71	46.70	0.90	57.42	1.10	68.84	1.32
8.8	36.81	0.71	46.76	0.90	57.53	1.11	69.01	1.33
8.9	36.83	0.71	46.82	0.90	57.64	1.11	69.18	1.33
9.0	36.85	0.71	46.88	0.90	57.75	1.11	69.34	1.33
9.1	36.88	0.71	46.94	0.90	57.85	1.11	69.51	1.34
9.2	36.90	0.71	47.00	0.90	57.96	1.11	69.67	1.34
9.3	36.93	0.71	47.05	0.90	58.06	1.12	69.82	1.34
9.4	36.95	0.71	47.11	0.91	58.16	1.12	69.97	1.35
9.5	36.97	0.71	47.16	0.91	58.25	1.12	70.12	1.35
9.6	36.98	0.71	47.21	0.91	58.34	1.12	70.26	1.35
9.7	37.00	0.71	47.25	0.91	58.43	1.12	70.40	1.35
9.8	37.02	0.71	47.30	0.91	58.51	1.13	70.53	1.36
9.9	37.03	0.71	47.34	0.91	58.59	1.13	70.66	1.36
10.0	37.04	0.71	47.38	0.91	58.67	1.13	70.79	1.36
<b>Trench width,m</b>	<b>0.7</b>		<b>0.8</b>		<b>0.9</b>		<b>1.0</b>	