FIRM:McDonough Assoc., Inc. JOB NO. SHEET NO: 1
MADE BY:KJH DATE:09-14-2010 CHECKED BY: DATE:
TITLE:Example 1: Test by Darragh & Bell (1969) - Pile 9

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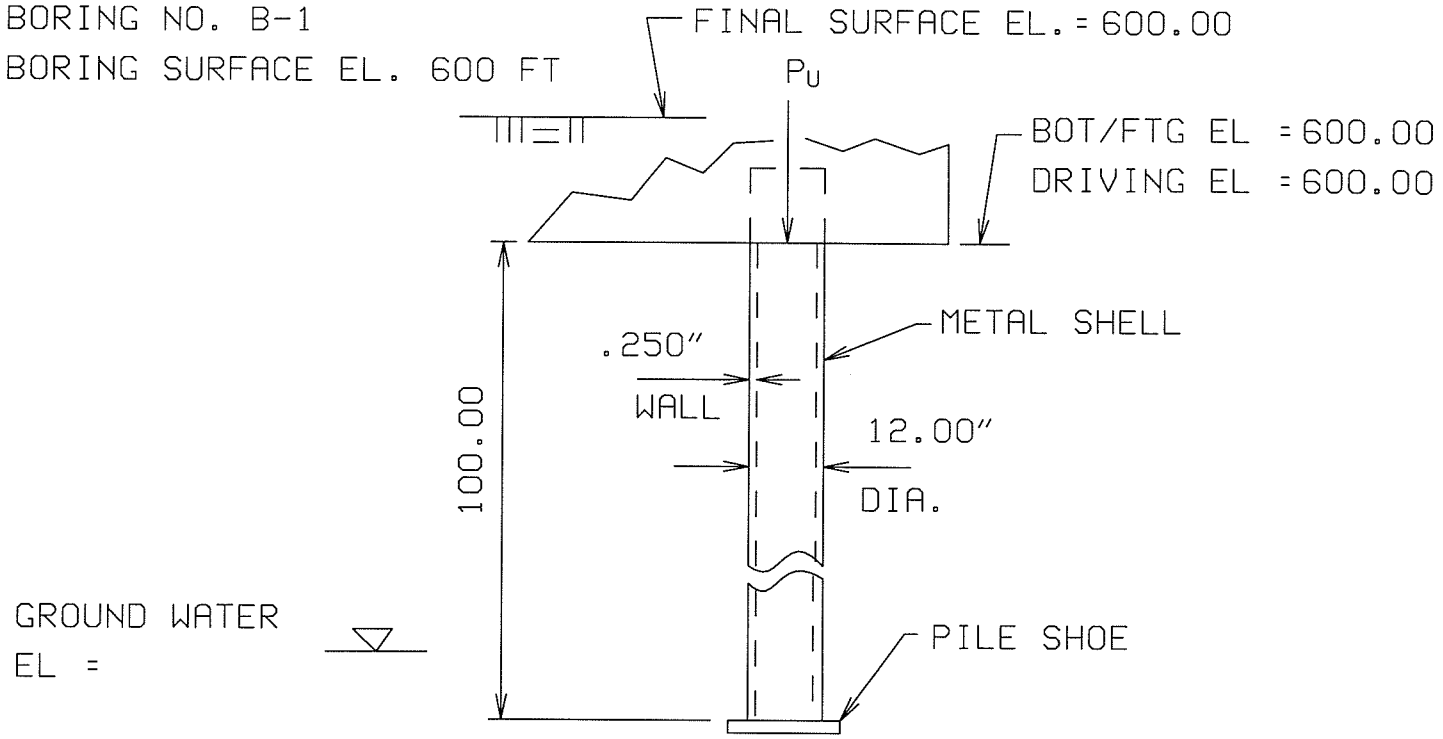
PILE SETTLEMENT CALCULATION:Pile 9



DESIGN DATA:
Pile load for estimating settlement, P= 80.0 k

SOIL DATA:

Layer No.	From Elev. (ft)	To Elev. (ft)	Soil Classification (using IDOT terminology)	SPT N (blows /ft)	Qu (tsf)	Dry Wt (pcf)	Sat Wt (pcf)
1	600.00	570.00	Cohesive Soil	6	.80	118	118
2	570.00	480.00	Cohesive Soil	6	1.85	128	128
3	480.00	400.00	Clean Medium to Coarse Sand	32		132	133

FIRM:McDonough Assoc., Inc. JOB NO. SHEET NO: 2
MADE BY:KJH DATE:09-14-2010 CHECKED BY: DATE:
TITLE:Example 1: Test by Darragh & Bell (1969) - Pile 9

PILE SETTLEMENT CALCULATION:

SOIL PROPERTIES USED FOR SETTLEMENT CALCULATIONS:

No.	Es (ksf)	Pois. Ratio	Initial Void Ratio	Normal or Preconsolidated Clay	Consol. Props Cr	Consol. Props Cc	Consol. Props Ca/Cc%	Max past stress (ksf)
1	240	.40	.27	Normal Consolidated		.30	5.00	
2	555	.40	.27	Normal Consolidated		.30	5.00	
3	470	.30						

FIRM:McDonough Assoc., Inc. JOB NO. SHEET NO: 3
MADE BY:KJH DATE:09-14-2010 CHECKED BY: DATE:
TITLE:Example 1: Test by Darragh & Bell (1969) - Pile 9

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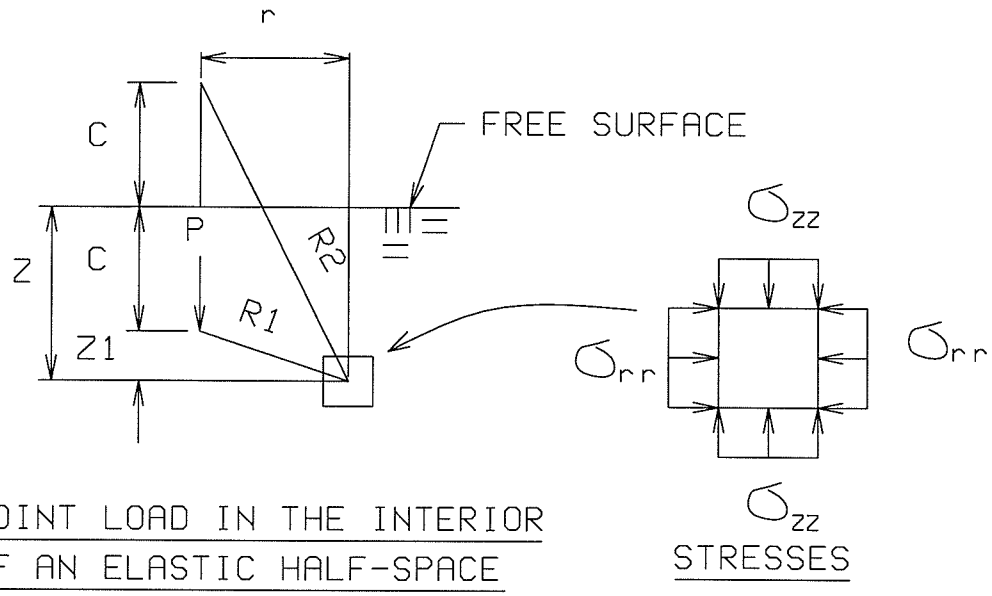
PILE SETTLEMENT CALCULATION:

THEORY FOR COMPUTING STRESSES IN SOIL DUE TO PILE OR PILE GROUP:

This program computes the stresses in the soil from the pile using Mindlin's solution to the problem of a point acting in the interior of an elastic half-space.



POINT LOAD IN THE INTERIOR OF AN ELASTIC HALF-SPACE

STRESSES

Stress in radial direction,

$$\sigma_{rr} = \frac{-1*P}{8*\pi\,(1-v)}\left|\frac{(1-2v)z_1}{R_1^3} - \frac{(1-2v)(z+7c)}{R_2^3} + \frac{4(1-v)1-2v)}{R_2\,(R_2+z+c)} - \frac{3r^2\,z1}{R_1^5}\right.$$
$$\left. - \frac{6c(1-2v)(z+c)^2 \quad -6c^2\,(z+c)-3(3-4v)r^2\,z1}{R_2^5} - \frac{30cr^2\,z(z+c)}{R_2^7}\right|$$

Stress in circumferential direction (perpendicular to the above figure),

$$\sigma_{cir} = \frac{-1*P(1-2v)}{8*\pi\,(1-v)}\left|\frac{z1}{R_1^3} + \frac{(3-4v)(z+c)-6c}{R_2^3} - \frac{4(1-v)}{R_2\,(R_2+z+c)} + \frac{6c(z+c)^2}{R_2^5} - \frac{6c^{2(z+c)}}{(1-2v)R_2^5}\right|$$

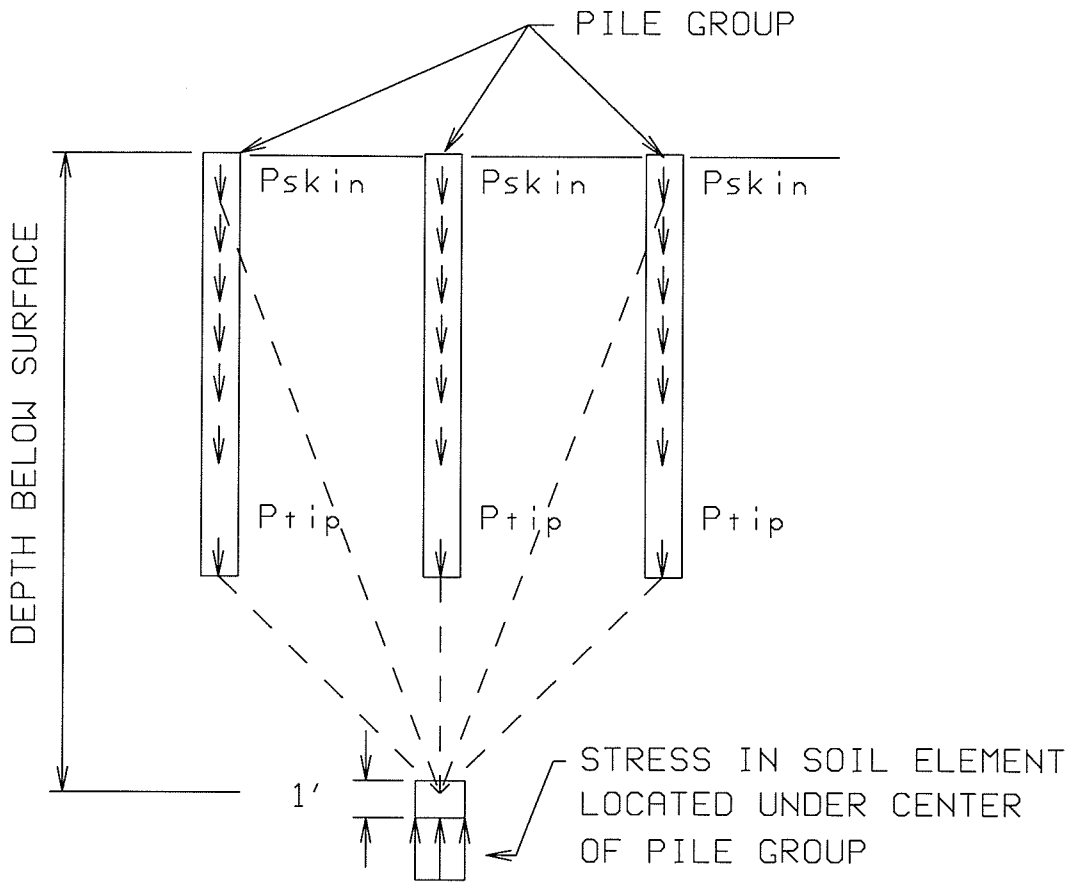
Stress in vertical direction,

$$\sigma_{zz} = \frac{-1*P}{8*\pi\,(1-v)}\left|\frac{(1-2v)z1}{R_1^3} + \frac{(1-2v)z1}{R_2^3} - \frac{3z1^3}{R_1^5}\right.$$
$$\left. - \frac{3(3-4v)z(z+c)^2 \quad -3c(z+c)(5z-c)}{R_2^5} - \frac{30cz(z+c)^3}{R_2^7}\right|$$

PILE SETTLEMENT CALCULATION:

THEORY FOR COMPUTING STRESSES IN SOIL DUE TO PILE OR PILE GROUP (Cont'd):

Stresses are computed in 1' depth increments along the center of the pile, in the case of a single pile, or along the center of the pile group, in the case of multiple piles.



The stress in each 1' element is computed by applying skin friction and tip loads as seperate load cases in Mindlin's solution. The stresses σ_{rr}, σ_{cir} and σ_{zz} in each 1' element are accumulated from all results for all the skin friction and tip loads.

This program takes into account deflection compatibility along the length of the pile when determining skin friction and tip loads. Pile loads are computed using by solving a finite element equation:

$[K_{pile} + K_{soil}] * [S_{soil}] = [F_{pile}]$

$[S] = [K_{pile} + K_{soil}] * [F_{pile}]$

where $[K_{pile}]$ = pile stiffness matrix

$[K_{soil}]$ = soil stiffness matrix (derived using Mindlin's solution)

$[F_{pile}]$ = external forces applied to pile

$[S]$ = pile settlement at each joint due to external forces

Skin friction is calculated by solving the finite element equation:

$[K_{soil}] * [S] = [F_{soil}]$

Skin and tip resistances are limited to ultimate stresses.
If skin resistance exceeds the ultimate, slip will occurs. This program
iterates for the slip condition, identifying locations where slip occurs.

PILE SETTLEMENT CALCULATION:

Components of Settlement (*):

Total settlement is comprised of the following components:

$S_t = S_e + S_c + S_s$ (AASHTO LRFD Eq. 10.6.2.4.1-1)

where,

S_e = elastic settlement
S_c = primary consolidation settlement
S_s = secondary settlement

S_e , ELASTIC SETTLEMENT:

The elastic vertical strain in each soil element is computed as,

$\varepsilon_v = 1/E_s * (\sigma_v - \mu \sigma_x - \mu \sigma_y)$

The elastic shortening of each soil element is,

$\Delta S = \sum \varepsilon_y * h$

where h=height of each element = 1 ft

Then the total elastic settlement under a point is the summation of the shortening of all the elements located directly under the point:

$S_e = \sum \Delta S$

S_c , PRIMARY CONSOLIDATION SETTLEMENT:

Unlike spread footings, the consolidation settlement of piles in clay is not a significant portion of the total settlement (Refer to "Pile Analysis and Design", by Poulos and Davis, p. 97). Whereas for a spread footing consolidation settlement in clay may be several times the immediate settlement, for piles immediate settlement predominates.

"Confirmation of the predominance of immediate settlement may be obtained from a considerable number of published results of maintained tests of piles...that show that at loads well below the ultimate, there is only a relatively small amount of time-dependent settlement..."
(Ref. Poulos and Davis, p. 97)

This program approaches the time dependent stiffness of soil as follows:

1. Granular layers are modeled as having constant stiffness, E
2. Clay layers are modeled using two different stiffnesses:
   - Immediate settlements are computed based on clay layers using E undrained state.
   - Final settlements are computed based on clay layers using Eu in the drained state. For this purpose the program uses the following,

     E (drained) = E (undrained) * 2*(1 + v)/3 (see Ref. Eq. 5-43)

     where v = Poisson's ratio in drained state

The consolidation portion of settlement is the difference between the final settlement and the immediate settlement resulting from two computations.

FIRM:McDonough Assoc., Inc. JOB NO. SHEET NO: 6
MADE BY:KJH DATE:09-14-2010 CHECKED BY: DATE:
TITLE:Example 1: Test by Darragh & Bell (1969) - Pile 9

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PILE SETTLEMENT CALCULATION:

S_s , SECONDARY SETTLEMENT:

In geotechnical analysis, the settlement that occurs in clay after primary consolidation is called secondary settlement (sometimes called creep).

The AASHTO LRFD specification provides the following equation,

$S_s = H/(1+e_0) * C_a * \log_{10}(t/t_{90})$ (AASHTO LRFD Eq. 10.6.2.4.3-9)

Due to the complications of C_a being stress dependent, as an alternative to using the above equation, this program computes the ultimate secondary settlement as,

$S_s = S_c * C_a / C_c$

The ratio, C_a / C_c typically ranges from 4% to 6%, per the FHWA Publication, "Evaluation of Soil and Rock Properties", (FHWA-IF-02-034, p. 134).

NOTES TO DESIGNER:

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1. Settlement predications are largely dependent on the choice of properties and should be considered as estimates only.
2. Designer should evaluate if elastic settlements are relevant to differential settlement studies, or if elastic settlments should be ignored.
3. Consolidation settlement occurs at a rate that is not considered by this program. The designer may need additional data from time rates determined from consolidation if this influences construction procedures or serviceabilty issues for a structure. Time rates of consolidation are typically provided from consolidation test data.

FIRM:McDonough Assoc., Inc. JOB NO. SHEET NO: 7
MADE BY:KJH DATE:09-14-2010 CHECKED BY: DATE:
TITLE:Example 1: Test by Darragh & Bell (1969) - Pile 9

PILE SETTLEMENT CALCULATION:

INITIAL COMPUTED PILE SETTLEMENT AT TOP OF PILE

Δ_{top} = .101 inch

INITIAL COMPUTED PILE SETTLEMENT NEXT TO PILE

Elev. (ft)	Layer No.	Pile Reactions Due to P (k)	DownDrag Forces DD (k)	Pile Settlement,Se (in)			Fill Settlement Se (in)
				Due to P= 80.0 k	Due to DD	Total	
600.00	1	0.00	0.00	.10	0.00	.10	0.00
599.00	1	-2.56	0.00	0.09	0.00	0.09	0.00
598.00	1	1.30	0.00	0.09	0.00	0.09	0.00
597.00	1	1.33	0.00	0.09	0.00	0.09	0.00
596.00	1	1.34	0.00	.09	0.00	.09	0.00
595.00	1	1.35	0.00	0.09	0.00	0.09	0.00
594.00	1	1.32	0.00	0.08	0.00	0.08	0.00
593.00	1	1.30	0.00	0.08	0.00	0.08	0.00
592.00	1	1.27	0.00	.08	0.00	.08	0.00
591.00	1	1.25	0.00	0.08	0.00	0.08	0.00
590.00	1	1.22	0.00	0.08	0.00	0.08	0.00
589.00	1	1.20	0.00	0.07	0.00	0.07	0.00
588.00	1	1.16	0.00	0.07	0.00	0.07	0.00
587.00	1	1.14	0.00	.07	0.00	.07	0.00
586.00	1	1.12	0.00	0.07	0.00	0.07	0.00
585.00	1	1.10	0.00	0.07	0.00	0.07	0.00
584.00	1	1.07	0.00	0.06	0.00	0.06	0.00
583.00	1	1.05	0.00	0.06	0.00	0.06	0.00
582.00	1	1.03	0.00	0.06	0.00	0.06	0.00
581.00	1	1.02	0.00	.06	0.00	.06	0.00
580.00	1	1.00	0.00	0.06	0.00	0.06	0.00
579.00	1	.98	0.00	0.06	0.00	0.06	0.00
578.00	1	.97	0.00	0.05	0.00	0.05	0.00
577.00	1	.97	0.00	0.05	0.00	0.05	0.00
576.00	1	.96	0.00	0.05	0.00	0.05	0.00
575.00	1	.97	0.00	0.05	0.00	0.05	0.00
574.00	1	.99	0.00	.05	0.00	.05	0.00
573.00	1	1.03	0.00	0.05	0.00	0.05	0.00
572.00	1	1.18	0.00	0.05	0.00	0.05	0.00
571.00	1	2.80	0.00	0.04	0.00	0.04	0.00
570.00	2	1.89	0.00	0.04	0.00	0.04	0.00
569.00	2	1.73	0.00	0.04	0.00	0.04	0.00
568.00	2	1.60	0.00	0.04	0.00	0.04	0.00
567.00	2	1.51	0.00	0.04	0.00	0.04	0.00
566.00	2	1.43	0.00	0.04	0.00	0.04	0.00
565.00	2	1.36	0.00	0.04	0.00	0.04	0.00
564.00	2	1.30	0.00	0.04	0.00	0.04	0.00

PILE SETTLEMENT CALCULATION:

INITIAL COMPUTED PILE SETTLEMENT NEXT TO PILE (Cont'd)

Elev. (ft)	Layer No.	Pile Reactions Due to P (k)	DownDrag Forces DD (k)	Pile Settlement, Se (in)			Fill Settlement Se (in)
				Due to P= 80.0 k	Due to DD	Total	
563.00	2	1.24	0.00	0.04	0.00	0.04	0.00
562.00	2	1.19	0.00	.04	0.00	.04	0.00
561.00	2	1.14	0.00	0.03	0.00	0.03	0.00
560.00	2	1.10	0.00	.04	0.00	.04	0.00
559.00	2	1.06	0.00	0.03	0.00	0.03	0.00
558.00	2	1.02	0.00	0.03	0.00	0.03	0.00
557.00	2	.98	0.00	0.03	0.00	0.03	0.00
556.00	2	.95	0.00	0.03	0.00	0.03	0.00
555.00	2	.92	0.00	0.03	0.00	0.03	0.00
554.00	2	.88	0.00	0.03	0.00	0.03	0.00
553.00	2	.86	0.00	0.03	0.00	0.03	0.00
552.00	2	.83	0.00	0.03	0.00	0.03	0.00
551.00	2	.80	0.00	0.03	0.00	0.03	0.00
550.00	2	.78	0.00	0.02	0.00	0.02	0.00
549.00	2	.75	0.00	0.02	0.00	0.02	0.00
548.00	2	.73	0.00	0.02	0.00	0.02	0.00
547.00	2	.71	0.00	0.02	0.00	0.02	0.00
546.00	2	.69	0.00	0.02	0.00	0.02	0.00
545.00	2	.67	0.00	0.02	0.00	0.02	0.00
544.00	2	.65	0.00	0.02	0.00	0.02	0.00
543.00	2	.63	0.00	0.02	0.00	0.02	0.00
542.00	2	.61	0.00	0.02	0.00	0.02	0.00
541.00	2	.60	0.00	0.02	0.00	0.02	0.00
540.00	2	.58	0.00	0.02	0.00	0.02	0.00
539.00	2	.57	0.00	0.02	0.00	0.02	0.00
538.00	2	.55	0.00	0.02	0.00	0.02	0.00
537.00	2	.54	0.00	0.02	0.00	0.02	0.00
536.00	2	.52	0.00	0.02	0.00	0.02	0.00
535.00	2	.51	0.00	0.02	0.00	0.02	0.00
534.00	2	.50	0.00	0.02	0.00	0.02	0.00
533.00	2	.49	0.00	0.02	0.00	0.02	0.00
532.00	2	.48	0.00	0.02	0.00	0.02	0.00
531.00	2	.47	0.00	0.02	0.00	0.02	0.00
530.00	2	.46	0.00	0.01	0.00	0.01	0.00
529.00	2	.45	0.00	0.01	0.00	0.01	0.00
528.00	2	.44	0.00	0.01	0.00	0.01	0.00
527.00	2	.43	0.00	0.01	0.00	0.01	0.00

TITLE:Example 1: Test by Darragh & Bell (1969) - Pile 9

PILE SETTLEMENT CALCULATION:

INITIAL COMPUTED PILE SETTLEMENT NEXT TO PILE (Cont'd)

Elev. (ft)	Layer No.	Pile Reactions Due to P (k)	DownDrag Forces DD (k)	Pile Settlement,Se (in) Due to P= 80.0 k	Due to DD	Total	Fill Settlement Se (in)
526.00	2	.43	0.00	0.01	0.00	0.01	0.00
525.00	2	.42	0.00	0.01	0.00	0.01	0.00
524.00	2	.41	0.00	0.01	0.00	0.01	0.00
523.00	2	.41	0.00	0.01	0.00	0.01	0.00
522.00	2	.40	0.00	0.01	0.00	0.01	0.00
521.00	2	.40	0.00	0.01	0.00	0.01	0.00
520.00	2	.39	0.00	.02	0.00	.02	0.00
519.00	2	.39	0.00	0.01	0.00	0.01	0.00
518.00	2	.39	0.00	0.01	0.00	0.01	0.00
517.00	2	.38	0.00	0.01	0.00	0.01	0.00
516.00	2	.38	0.00	0.01	0.00	0.01	0.00
515.00	2	.38	0.00	0.01	0.00	0.01	0.00
514.00	2	.38	0.00	0.01	0.00	0.01	0.00
513.00	2	.38	0.00	0.01	0.00	0.01	0.00
512.00	2	.38	0.00	0.01	0.00	0.01	0.00
511.00	2	.38	0.00	.02	0.00	.02	0.00
510.00	2	.38	0.00	0.01	0.00	0.01	0.00
509.00	2	.39	0.00	.02	0.00	.02	0.00
508.00	2	.39	0.00	0.01	0.00	0.01	0.00
507.00	2	.40	0.00	0.01	0.00	0.01	0.00
506.00	2	.41	0.00	0.01	0.00	0.01	0.00
505.00	2	.43	0.00	0.01	0.00	0.01	0.00
504.00	2	.44	0.00	0.01	0.00	0.01	0.00
503.00	2	.47	0.00	0.01	0.00	0.01	0.00
502.00	2	.52	0.00	0.01	0.00	0.01	0.00
501.00	2	.81	0.00	.01	0.00	.01	0.00
500.00	2	.62	0.00	0.01	0.00	0.01	0.00
Totals =		80.00 k	0.00 k				

FIRM:McDonough Assoc., Inc. JOB NO. SHEET NO: 10
MADE BY:KJH DATE:09-14-2010 CHECKED BY: DATE:
TITLE:Example 1: Test by Darragh & Bell (1969) - Pile 9

PILE SETTLEMENT CALCULATION:

LONG TERM COMPUTED PILE SETTLEMENT AT TOP OF PILE

Δ_{top} = .104 inch

LONG TERM COMPUTED PILE SETTLEMENT NEXT TO PILE

Elev. (ft)	Layer No.	Pile Reactions Due to P (k)	DownDrag Forces DD (k)	Pile Settl.,Se+Sc+Ss (in) Due to P= 80.0 k	Due to DD	Total	Fill Settlement Se+Sc+Ss (in)
600.00	1	-0.00	0.00	.10	0.00	.10	0.00
599.00	1	-2.44	0.00	.10	0.00	.10	0.00
598.00	1	1.25	0.00	0.09	0.00	0.09	0.00
597.00	1	1.27	0.00	0.09	0.00	0.09	0.00
596.00	1	1.29	0.00	0.09	0.00	0.09	0.00
595.00	1	1.29	0.00	0.09	0.00	0.09	0.00
594.00	1	1.27	0.00	.09	0.00	.09	0.00
593.00	1	1.25	0.00	0.08	0.00	0.08	0.00
592.00	1	1.23	0.00	0.08	0.00	0.08	0.00
591.00	1	1.20	0.00	0.08	0.00	0.08	0.00
590.00	1	1.18	0.00	0.08	0.00	0.08	0.00
589.00	1	1.15	0.00	0.08	0.00	0.08	0.00
588.00	1	1.13	0.00	0.07	0.00	0.07	0.00
587.00	1	1.11	0.00	0.07	0.00	0.07	0.00
586.00	1	1.08	0.00	0.07	0.00	0.07	0.00
585.00	1	1.06	0.00	0.07	0.00	0.07	0.00
584.00	1	1.04	0.00	0.07	0.00	0.07	0.00
583.00	1	1.02	0.00	0.07	0.00	0.07	0.00
582.00	1	1.00	0.00	0.06	0.00	0.06	0.00
581.00	1	.99	0.00	0.06	0.00	0.06	0.00
580.00	1	.97	0.00	0.06	0.00	0.06	0.00
579.00	1	.96	0.00	0.06	0.00	0.06	0.00
578.00	1	.95	0.00	0.06	0.00	0.06	0.00
577.00	1	.95	0.00	0.06	0.00	0.06	0.00
576.00	1	.94	0.00	0.05	0.00	0.05	0.00
575.00	1	.95	0.00	0.05	0.00	0.05	0.00
574.00	1	.97	0.00	0.05	0.00	0.05	0.00
573.00	1	1.02	0.00	0.05	0.00	0.05	0.00
572.00	1	1.16	0.00	.05	0.00	.05	0.00
571.00	1	2.80	0.00	0.05	0.00	0.05	0.00
570.00	2	1.86	0.00	0.05	0.00	0.05	0.00
569.00	2	1.70	0.00	0.04	0.00	0.04	0.00
568.00	2	1.58	0.00	0.04	0.00	0.04	0.00
567.00	2	1.49	0.00	.05	0.00	.05	0.00
566.00	2	1.41	0.00	0.04	0.00	0.04	0.00
565.00	2	1.35	0.00	0.04	0.00	0.04	0.00
564.00	2	1.29	0.00	0.04	0.00	0.04	0.00

TITLE:Example 1: Test by Darragh & Bell (1969) - Pile 9

PILE SETTLEMENT CALCULATION:

LONG TERM COMPUTED PILE SETTLEMENT NEXT TO PILE (Cont'd)

Elev. (ft)	Layer No.	Pile Reactions Due to P (k)	DownDrag Forces DD (k)	Pile Settl.,Se+Sc+Ss (in) Due to P= 80.0 k	Due to DD	Total	Fill Settlement Se+Sc+Ss (in)
563.00	2	1.23	0.00	0.04	0.00	0.04	0.00
562.00	2	1.18	0.00	0.04	0.00	0.04	0.00
561.00	2	1.14	0.00	0.04	0.00	0.04	0.00
560.00	2	1.10	0.00	0.03	0.00	0.03	0.00
559.00	2	1.06	0.00	0.03	0.00	0.03	0.00
558.00	2	1.02	0.00	0.03	0.00	0.03	0.00
557.00	2	.98	0.00	0.03	0.00	0.03	0.00
556.00	2	.95	0.00	0.03	0.00	0.03	0.00
555.00	2	.92	0.00	0.03	0.00	0.03	0.00
554.00	2	.89	0.00	0.03	0.00	0.03	0.00
553.00	2	.86	0.00	0.03	0.00	0.03	0.00
552.00	2	.84	0.00	0.03	0.00	0.03	0.00
551.00	2	.81	0.00	.03	0.00	.03	0.00
550.00	2	.79	0.00	0.03	0.00	0.03	0.00
549.00	2	.76	0.00	0.03	0.00	0.03	0.00
548.00	2	.74	0.00	0.03	0.00	0.03	0.00
547.00	2	.72	0.00	0.02	0.00	0.02	0.00
546.00	2	.70	0.00	0.02	0.00	0.02	0.00
545.00	2	.68	0.00	0.02	0.00	0.02	0.00
544.00	2	.66	0.00	0.02	0.00	0.02	0.00
543.00	2	.64	0.00	0.02	0.00	0.02	0.00
542.00	2	.63	0.00	0.02	0.00	0.02	0.00
541.00	2	.61	0.00	0.02	0.00	0.02	0.00
540.00	2	.59	0.00	0.02	0.00	0.02	0.00
539.00	2	.58	0.00	0.02	0.00	0.02	0.00
538.00	2	.57	0.00	0.02	0.00	0.02	0.00
537.00	2	.55	0.00	0.02	0.00	0.02	0.00
536.00	2	.54	0.00	0.02	0.00	0.02	0.00
535.00	2	.53	0.00	0.02	0.00	0.02	0.00
534.00	2	.52	0.00	0.02	0.00	0.02	0.00
533.00	2	.51	0.00	0.02	0.00	0.02	0.00
532.00	2	.50	0.00	0.02	0.00	0.02	0.00
531.00	2	.49	0.00	0.02	0.00	0.02	0.00
530.00	2	.48	0.00	.02	0.00	.02	0.00
529.00	2	.47	0.00	0.02	0.00	0.02	0.00
528.00	2	.46	0.00	0.02	0.00	0.02	0.00
527.00	2	.45	0.00	0.02	0.00	0.02	0.00

TITLE:Example 1: Test by Darragh & Bell (1969) - Pile 9

PILE SETTLEMENT CALCULATION:

LONG TERM COMPUTED PILE SETTLEMENT NEXT TO PILE (Cont'd)

Elev. (ft)	Layer No.	Pile Reactions Due to P (k)	DownDrag Forces DD (k)	Pile Settl.,Se+Sc+Ss (in) Due to P= 80.0 k	Due to DD	Total	Fill Settlement Se+Sc+Ss (in)
526.00	2	.44	0.00	0.02	0.00	0.02	0.00
525.00	2	.44	0.00	0.01	0.00	0.01	0.00
524.00	2	.43	0.00	.02	0.00	.02	0.00
523.00	2	.42	0.00	0.01	0.00	0.01	0.00
522.00	2	.42	0.00	0.01	0.00	0.01	0.00
521.00	2	.42	0.00	0.01	0.00	0.01	0.00
520.00	2	.41	0.00	0.01	0.00	0.01	0.00
519.00	2	.41	0.00	0.01	0.00	0.01	0.00
518.00	2	.40	0.00	0.01	0.00	0.01	0.00
517.00	2	.40	0.00	0.01	0.00	0.01	0.00
516.00	2	.40	0.00	0.01	0.00	0.01	0.00
515.00	2	.40	0.00	0.01	0.00	0.01	0.00
514.00	2	.40	0.00	0.01	0.00	0.01	0.00
513.00	2	.40	0.00	0.01	0.00	0.01	0.00
512.00	2	.40	0.00	0.01	0.00	0.01	0.00
511.00	2	.40	0.00	0.01	0.00	0.01	0.00
510.00	2	.41	0.00	0.01	0.00	0.01	0.00
509.00	2	.41	0.00	0.01	0.00	0.01	0.00
508.00	2	.42	0.00	0.01	0.00	0.01	0.00
507.00	2	.42	0.00	0.01	0.00	0.01	0.00
506.00	2	.43	0.00	0.01	0.00	0.01	0.00
505.00	2	.45	0.00	0.01	0.00	0.01	0.00
504.00	2	.47	0.00	0.01	0.00	0.01	0.00
503.00	2	.50	0.00	0.01	0.00	0.01	0.00
502.00	2	.54	0.00	0.01	0.00	0.01	0.00
501.00	2	.85	0.00	0.01	0.00	0.01	0.00
500.00	2	.65	0.00	0.01	0.00	0.01	0.00
Totals =		80.00 k	0.00 k				