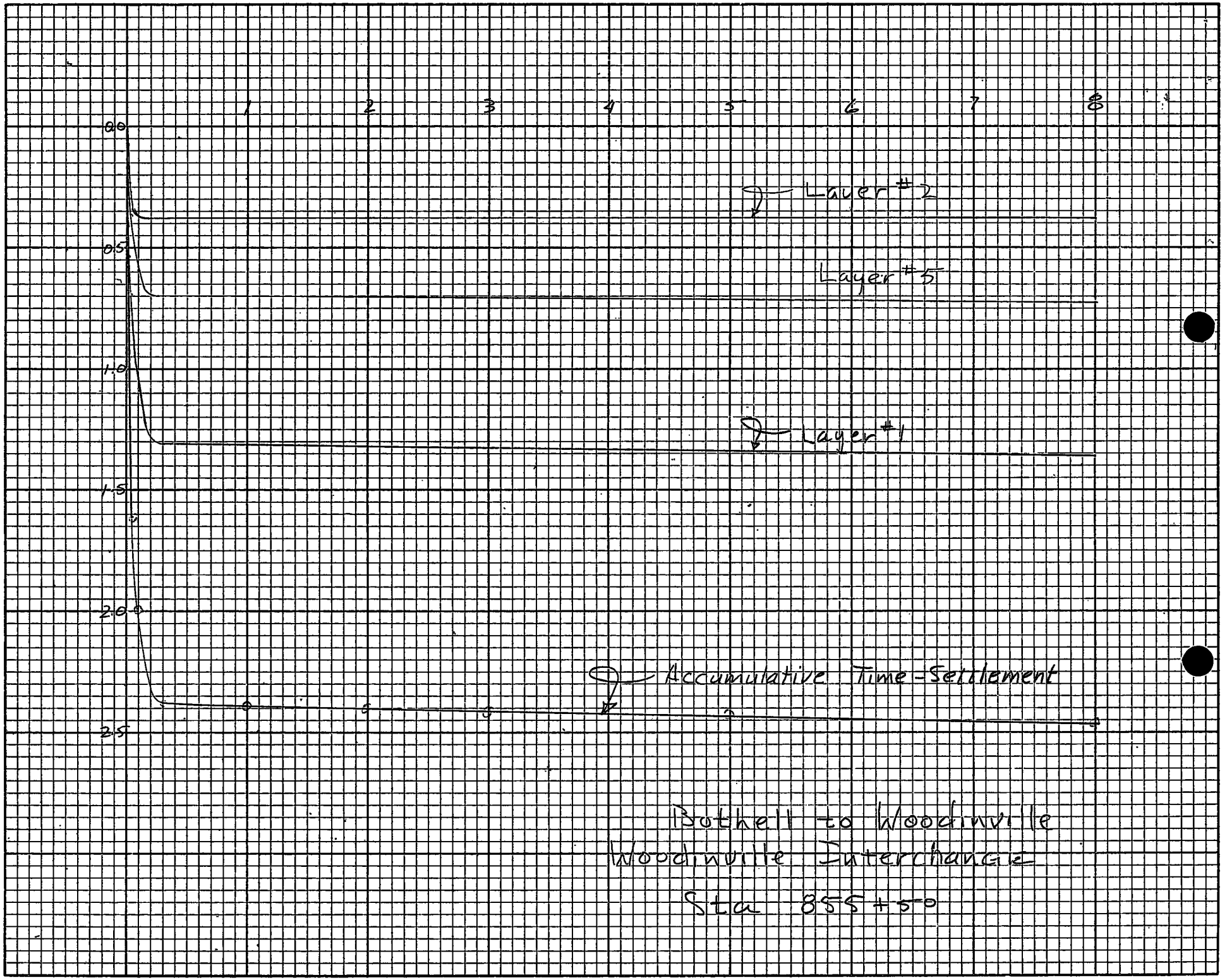
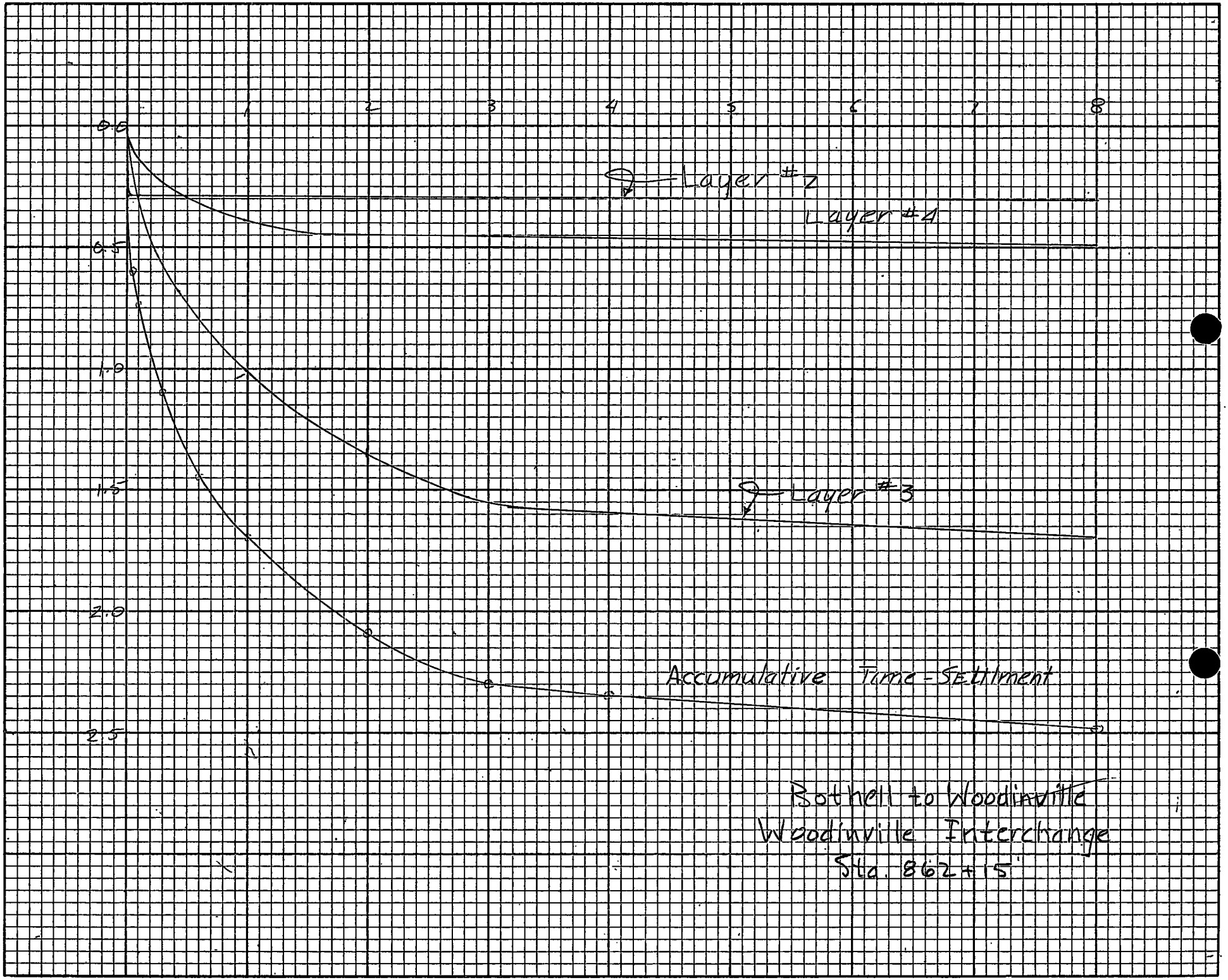


Bothell to Woodinville
Woodinville Interchange
Sta 855+50


1
2
3
4
5
6
7
8
0.0
0.5
1.0
1.5
2.0
2.5
Layer #1
Layer #4
Layer #3
Accumulative Time - Settlment
Bothell to Woodinville
Woodinville Interchange
Sta. 862+15

AJP 8/28/15

Determine Time - Rate of Settlement — Woodinville Interchange

① Sta 855+50 "D" Line

Layer #1 $d = 5.5'$

%	Settlement Feet	C ft²/yr	$(\frac{d}{2})^2$ Feet	$\frac{(\frac{d}{2})^2}{2.47c}$	N	$t_x = N\left[\frac{(\frac{d}{2})^2}{2.47c}\right]$
10	0.14	40	7.56	0.0765	0.02	0.0015
20	0.27	"	"	"	0.08	0.0061
30	0.41	"	"	"	0.17	0.0130
40	0.54	"	"	"	0.31	0.0238
50	0.68	"	"	"	0.49	0.0375
60	0.82	"	"	"	0.71	0.0544
70	0.95	"	"	"	1.00	0.0765
80	1.09	"	"	"	1.40	0.1071
90	1.22	"	"	"	2.09	0.160
100	1.36	"	"	"	∞	∞

Layer #2 $d = 5.5'$

%	Settlement Feet	C ft²/yr	$(\frac{d}{2})^2$ Feet	$\frac{(\frac{d}{2})^2}{2.47c}$	N	$t_x = N\left[\frac{(\frac{d}{2})^2}{2.47c}\right]$
10	0.04	145	7.56	0.0211	0.02	0.0004
20	0.08	"	"	"	0.08	0.0017
30	0.11	"	"	"	0.17	0.0036
40	0.15	"	"	"	0.31	0.0066
50	0.19	"	"	"	0.49	0.0103
60	0.23	"	"	"	0.71	0.0150
70	0.27	"	"	"	1.00	0.0211
80	0.30	"	"	"	1.40	0.0296
90	0.34	"	"	"	2.09	0.0441
100	0.38	"	"	"	∞	∞

① Sta 855 +50 "O" Line (Cont'd)

Layer #5 $d = 14'$

%	Settlement Feet	c ft^2/yr	$(\frac{d}{2})^2$ Feet	$\frac{(\frac{d}{2})^2}{2.47c}$	N	$t_x = N\left[\frac{(\frac{d}{2})^2}{2.47c}\right]$
10	0.07	284	49	0.07	0.02	0.0014
20	0.15	"	"	"	0.08	0.0056
30	0.22	"	"	"	0.17	0.0119
40	0.29	"	"	"	0.31	0.0217
50	0.37	"	"	"	0.49	0.0343
60	0.44	"	"	"	0.71	0.0496
70	0.51	"	"	"	1.00	0.0700
80	0.58	"	"	"	1.40	0.0980
90	0.66	"	"	"	2.09	0.1464
100	0.73	"	"	"	∞	∞

AJP 8/29/59

② Sta 862+15

Layer #2 $d = 5'$

%	settlement Feet	C ft^2/yr	$(\frac{d}{2})^2$ Feet	$\frac{(\frac{d}{2})^2}{2.47C}$	N	$t_x = N\left[\frac{(\frac{d}{2})^2}{2.47C}\right]$
10	0.03	144.8	6.25	0.0175	0.02	0.0004
20	0.06	"	"	"	0.08	0.0014
30	0.09	"	"	"	0.17	0.0030
40	0.12	"	"	"	0.31	0.0054
50	0.16	"	"	"	0.49	0.0086
60	0.19	"	"	"	0.71	0.0124
70	0.22	"	"	"	1.00	0.0175
80	0.25	"	"	"	1.40	0.0245
90	0.28	"	"	"	2.09	0.0366
100	0.31	"	"	"	∞	∞

Layer #3 $d = 19'$

%	settlement Feet	C ft^2/yr	$(\frac{d}{2})^2$ Feet	$\frac{(\frac{d}{2})^2}{2.47C}$	N	$t_x = N\left[\frac{(\frac{d}{2})^2}{2.47C}\right]$
10	0.17	26	90	1.403	0.02	0.0281
20	0.34	"	"	"	0.08	0.1124
30	0.51	"	"	"	0.17	0.238
40	0.68	"	"	"	0.31	0.435
50	0.85	"	"	"	0.49	0.688
60	1.01	"	"	"	0.71	0.996
70	1.18	"	"	"	1.00	1.403
80	1.35	"	"	"	1.40	1.97
90	1.52	"	"	"	2.09	2.83
100	1.69	"	"	"	∞	∞

AJP 8/28/59

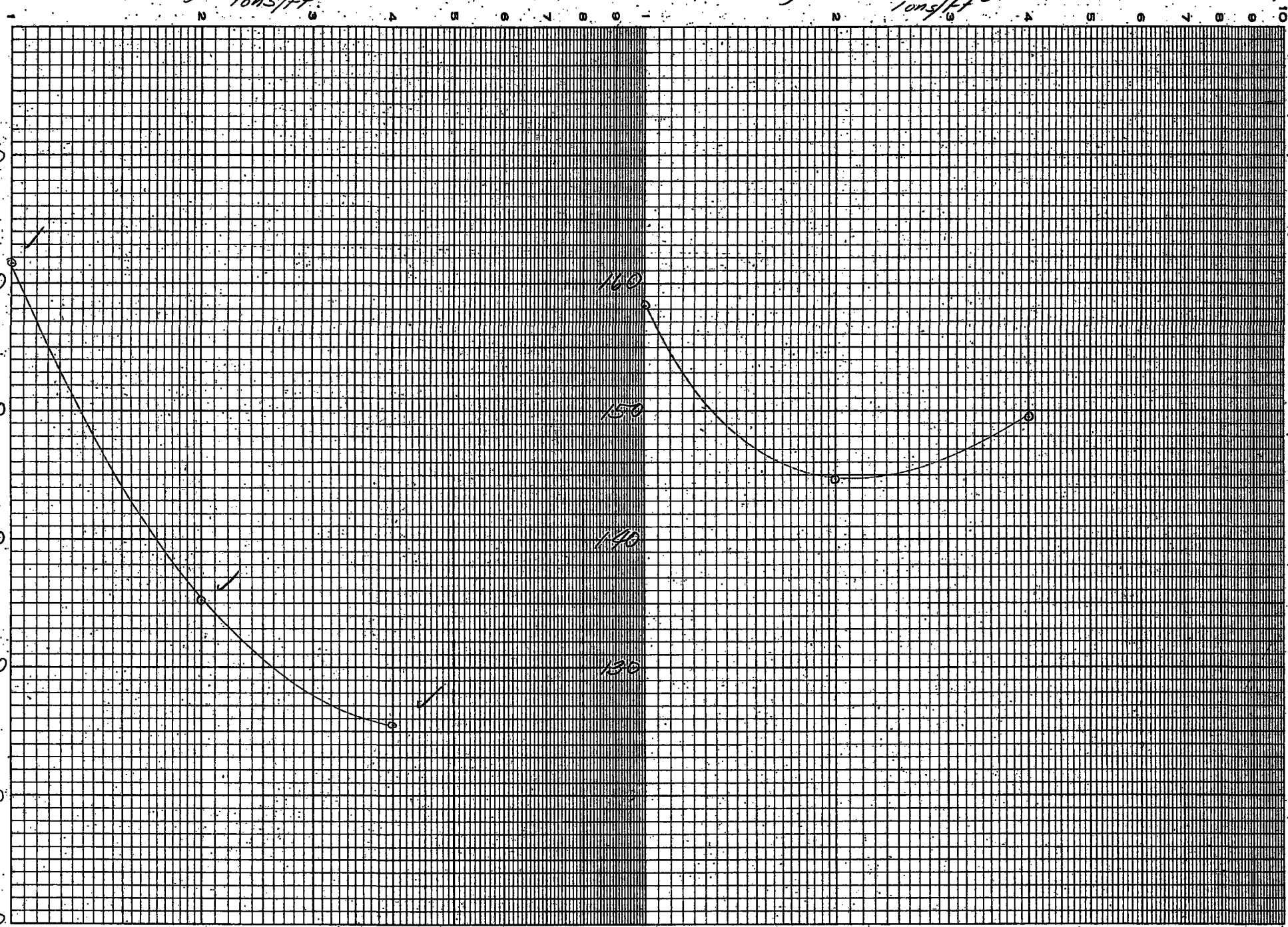
(2) Sta 862+15

Layer #4 $d = 31'$

%	Settlement Feet	c Ft/yr	$(\frac{d}{2})^2$ Feet	$\frac{(\frac{d}{2})^2}{2.47c}$	N	$t_x = N\left[\frac{(\frac{d}{2})^2}{2.47c}\right]$
10	0.05	140	240	0.695	0.02	0.0139
20	0.10	"	"	"	0.08	0.0555
30	0.15	"	"	"	0.17	0.118
40	0.20	"	"	"	0.31	0.216
50	0.25	"	"	"	0.49	0.341
60	0.29	"	"	"	0.71	0.494
70	0.34	"	"	"	1.00	0.695
80	0.39	"	"	"	1.40	0.972
90	0.44	"	"	"	2.09	1.452
100	0.49	"	"	"	∞	

NO. 340-L210 DIETZGEN GRAPH PAPER
SEMI-LOGARITHMIC
2 CYCLES X 10 DIVISIONS PER INCH

EUGENE DIETZGEN CO.
MADE IN U. S. A.



NO. 340-L210 DIETZGEN GRAPH PAPER
SEMI-LOGARITHMIC
2 CYCLES X 10 DIVISIONS PER INCH

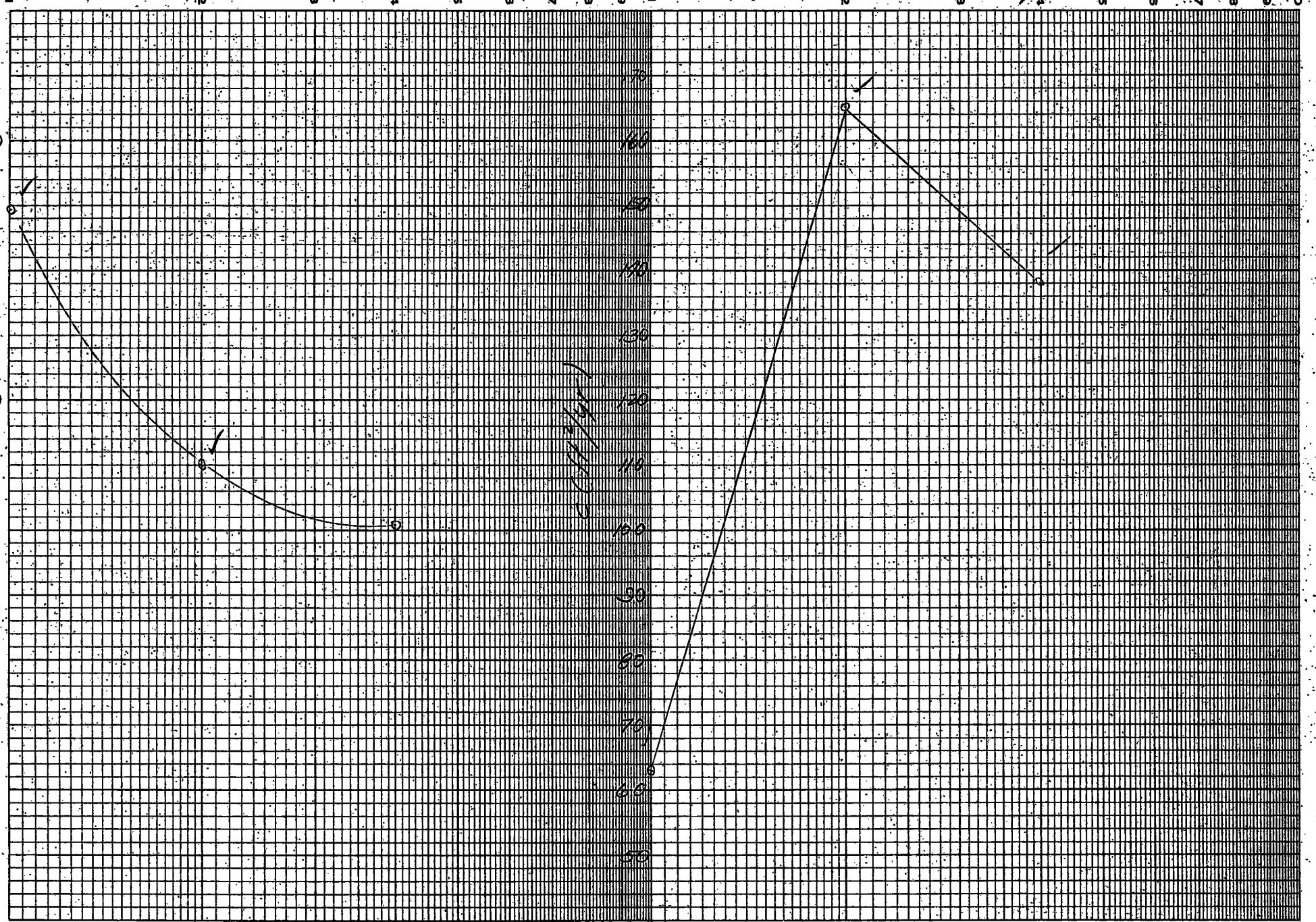
EUGENE DIETZGEN CO.
MADE IN U. S. A.

Layer #3

Tons/ft²

Layer #4

Tons/ft²



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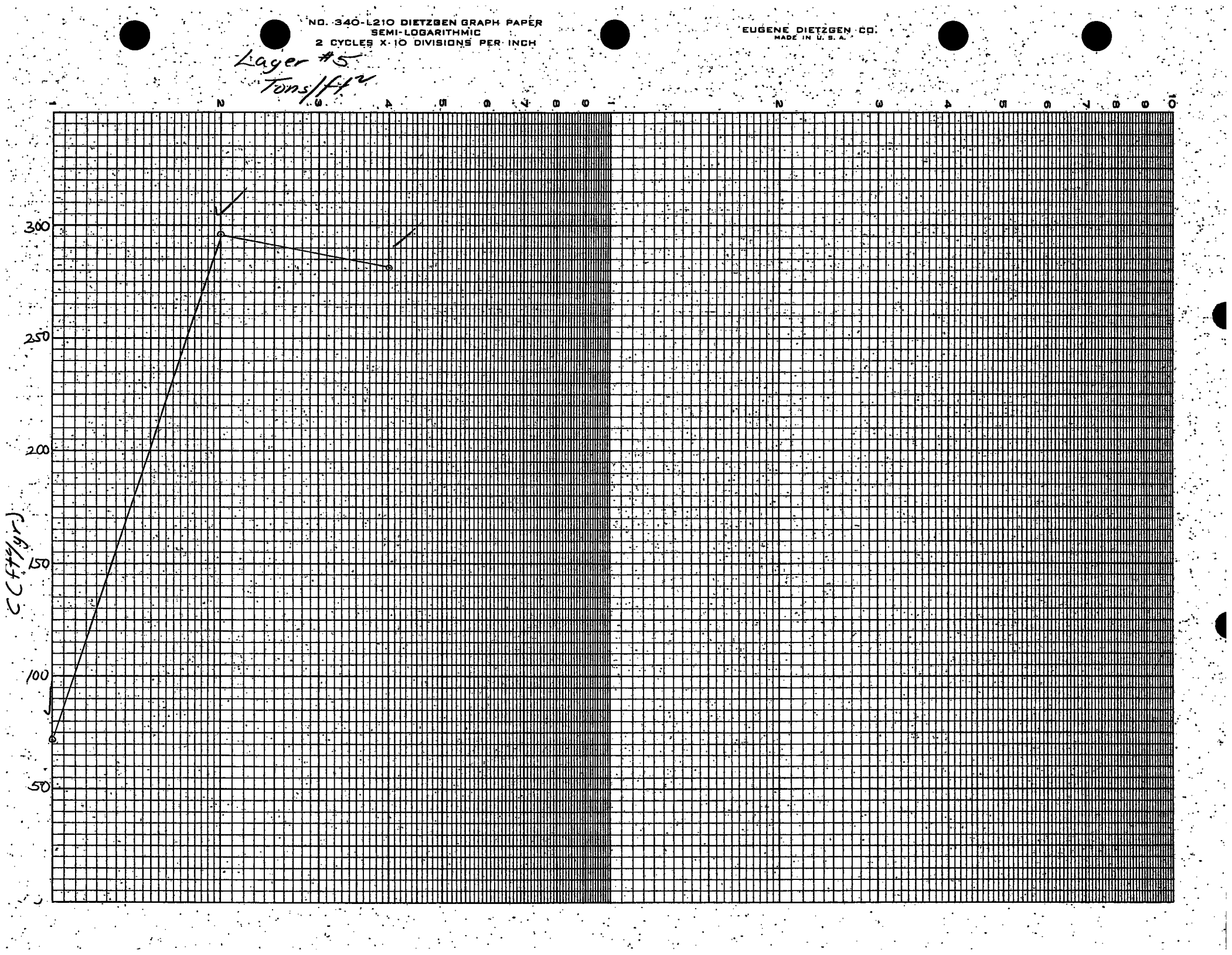
SEMI-LOGARITHMIC
2 CYCLES X 10 DIVISIONS PER INCH

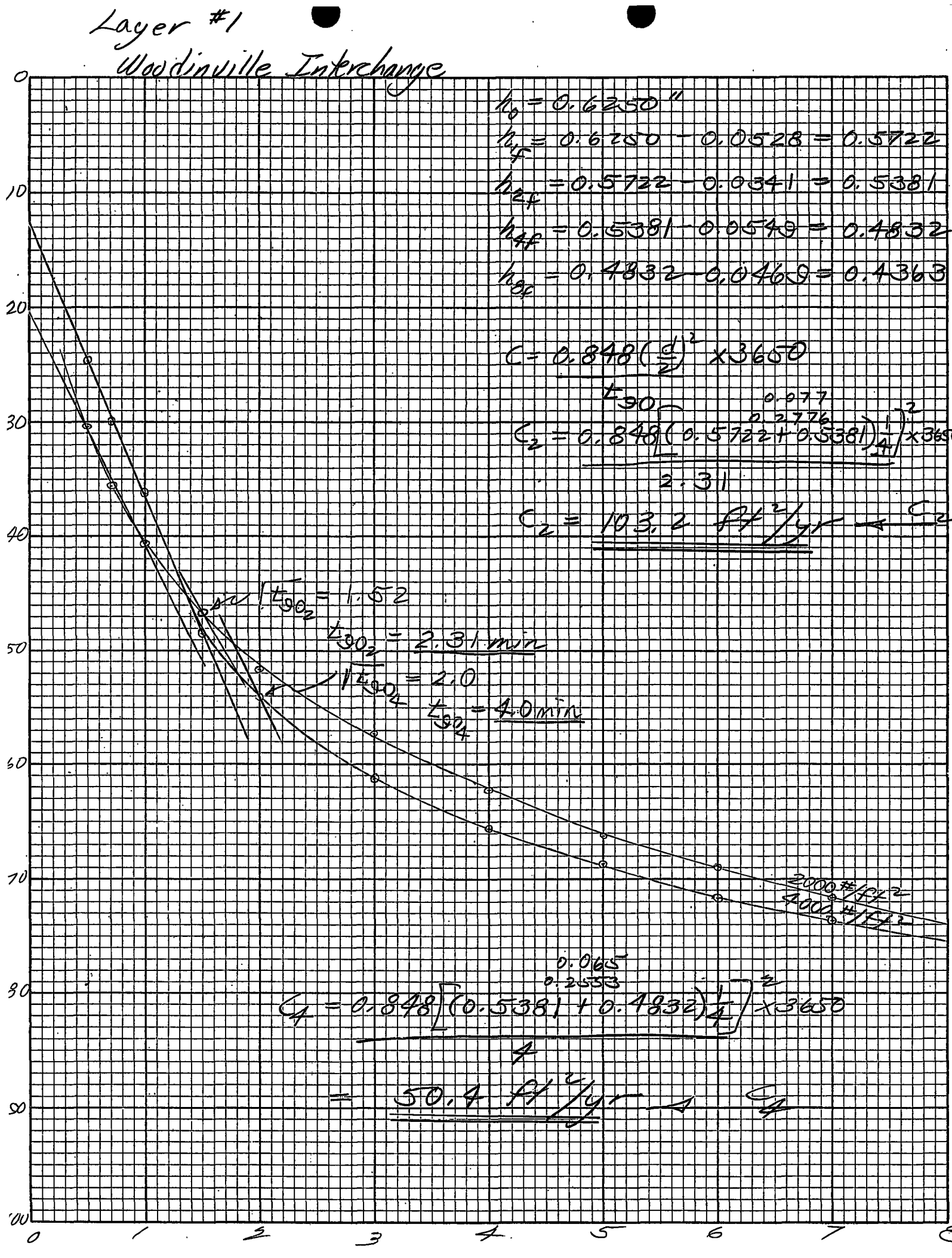
EUGENE DIETZGEN CO.
MADE IN U. S. A.

Layer #5
Tons/ft²



Layer #1

Woodinville Interchange



$h_0 = 0.6250''$

$h_{1f} = 0.6250 - 0.0528 = 0.5722$

$h_{2f} = 0.5722 - 0.0341 = 0.5381$

$h_{4f} = 0.5381 - 0.0549 = 0.4832$

$h_{8f} = 0.4832 - 0.0469 = 0.4363$

$$C = 0.848\left(\frac{d}{2}\right)^2 \times 3650$$

$$C_2 = \frac{0.848\left[\left(0.5722^{0.2776} + 0.5381^{0.2776}\right)\frac{1}{4}\right]^{-2} \times 3650}{t_{90}^{0.077}}$$

$$C_2 = \frac{103.2 \text{ ft}^2/\text{yr}}{2.31} \leftarrow C_2$$

$t_{90_2} = 1.52$

$t_{90_2} = 2.31$ min

$t_{90_4} / t_{90_2} = 2.0$

$t_{90_4} = 4.0$ min

2000 #/ft²

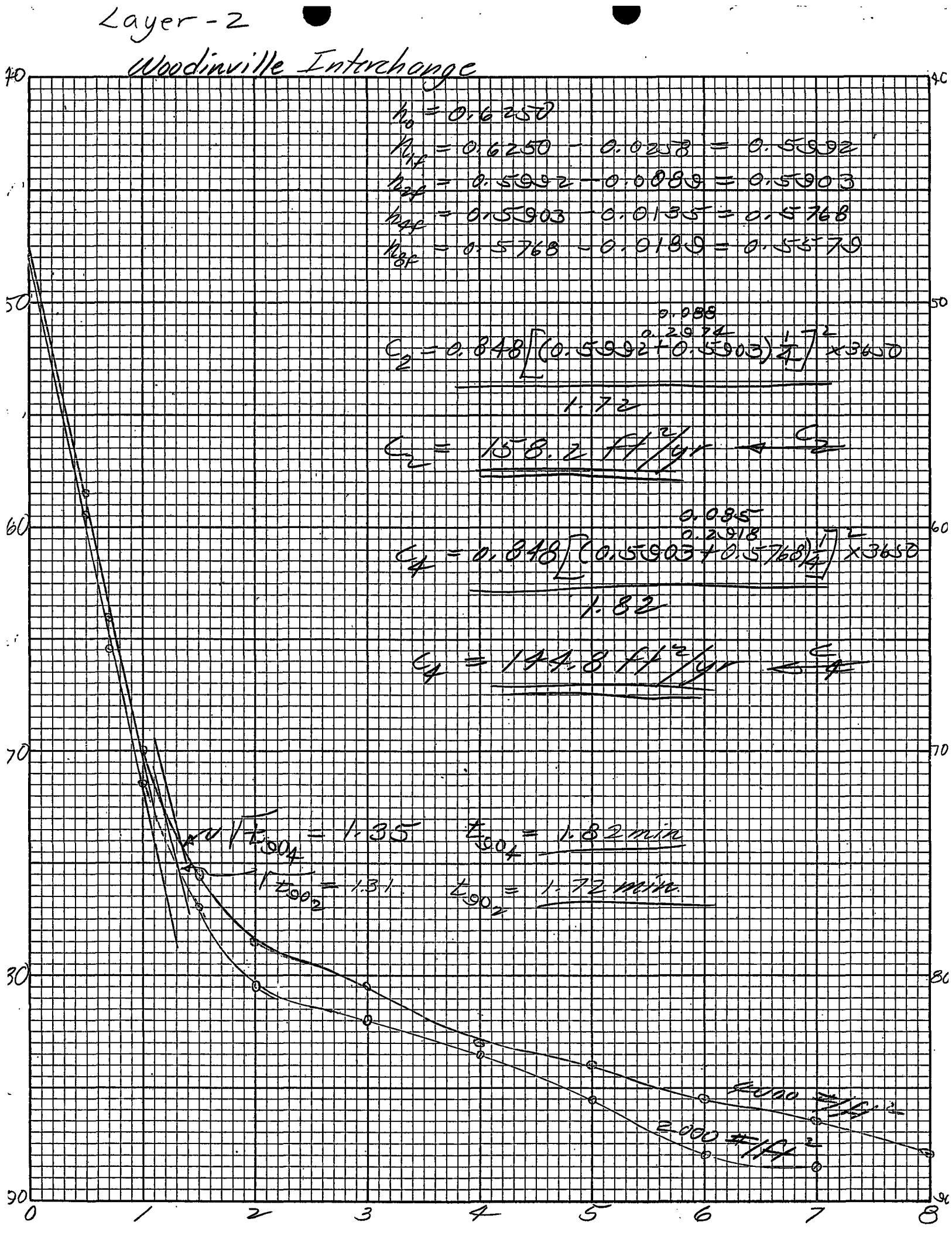
4000 #/ft²

$$C_4 = \frac{0.848\left[\left(0.5381^{0.2553} + 0.4832^{0.2553}\right)\frac{1}{4}\right]^{-2} \times 3650}{4}$$

$$= \frac{50.4 \text{ ft}^2/\text{yr}}{} \leftarrow C_4$$

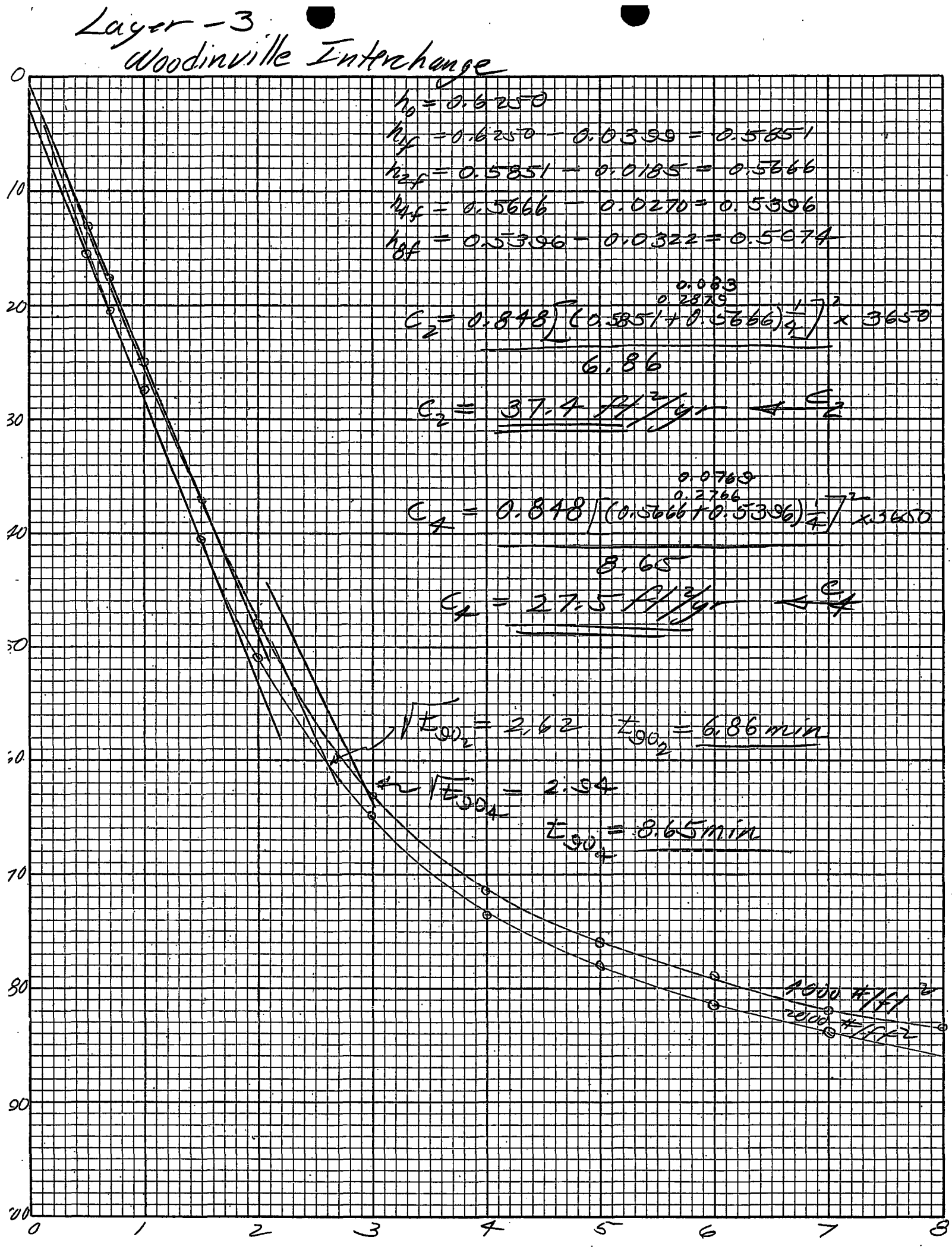
Layer - 2

Woodinville Interchange



Layer - 3

Woodinville Interchange



$h_0 = 0.6250$

$h_{1f} = 0.6250 - 0.0399 = 0.5851$

$h_{2f} = 0.5851 - 0.0185 = 0.5666$

$h_{4f} = 0.5666 - 0.0270 = 0.5396$

$h_{8f} = 0.5396 - 0.0322 = 0.5074$

$$C_2 = \frac{0.848 \left[(0.5851 + 0.5666)^{\frac{1}{2}} \right]^2 \times 365.0}{6.86}$$

(0.0833, 0.2879)

$C_2 = 37.4 \text{ ft}^2/\text{yr} \leftarrow C_2$

$$C_4 = \frac{0.848 \left[(0.5666 + 0.5396)^{\frac{1}{4}} \right]^2 \times 365.0}{8.65}$$

(0.0769, 0.2766)

$C_4 = 27.5 \text{ ft}^2/\text{yr} \leftarrow C_4$

$\sqrt{t_{90_2}} = 2.62 \quad t_{90_2} = 6.86 \text{ min}$

$\sqrt{t_{90_4}} = 2.94$

$t_{90_4} = 8.65 \text{ min}$

P_{200} #/ft^2

200 #/ft^2

Layer - 4

Woodinville Interchange

$h_0 = 0.6250$

$h_{1f} = 0.6250 - 0.0223 = 0.6027$

$h_{2f} = 0.6027 - 0.0074 = 0.5953$

$h_{4f} = 0.5953 - 0.0097 = 0.5856$

$h_{8f} = 0.5856 - 0.0141 = 0.5715$

$$C_2 = 0.848\left[\frac{(0.6027+0.5953)}{2}\right]^{\frac{1}{4}}\Big/\frac{0.09}{0.2295}\Big]^2 \times 3650$$

$$C_2 = \frac{630.0}{4.41} \text{ ft}^2/\text{yr} \leftarrow C_2$$

$$C_4 = 0.848\left[\frac{(0.5953+0.5856)}{2}\right]^{\frac{1}{4}}\Big/\frac{0.081}{0.2952}\Big]^2 \times 3650$$

$$C_4 = \frac{1605.3}{1.82} \text{ ft}^2/\text{yr} \leftarrow C_4$$

$\sqrt{t_{90_4}} = 1.35 \quad t_{90_4} = 1.82$ min

$\sqrt{t_{90_2}} = 2.10 \quad t_{90_2} = 4.41$ min

2000 #/ft²

4000 #/ft²

0 10 20 30 40 50 60 70 80 90 100

0 1 2 3 4 6 7 8 9

Layer -5

Woodinville Interchange

$h_0 = 0.6250$

$h_{1c} = 0.6250 - 0.0228 = 0.6022$

$h_{2c} = 0.6022 - 0.0093 = 0.5929$

$h_{4c} = 0.5929 - 0.0148 = 0.5781$

$h_{8c} = 0.5781 - 0.0258 = 0.5523$

$$C_2 = \frac{0.848\left[\left(\frac{0.6022 + 0.5929}{2}\right)\frac{1}{4}\right]^2 \times 3650}{3.85}$$

(0.0894 = 0.2988)

$C_2 = 71.7$ ft²/yr → C_2

$$C_4 = \frac{0.848\left[\left(\frac{0.5929 + 0.5781}{2}\right)\frac{1}{4}\right]^2 \times 3650}{0.9}$$

(0.086 = 0.2928)

$C_4 = 296$ ft²/yr → C_4

$\sqrt{t_{90_4}} = 0.95$ $\quad t_{90_4} = 0.90$ ft²/yr

$\sqrt{t_{90_2}} = 1.96$ $\quad t_{90_2} = 3.85$ ft²/yr

4,000 psf

2000 psf

0 1 2 3 4 5 6 7 8

10 20 30 40 50 60 70 80 90 100

Layer - 1

Time	$\sqrt{Time}$	2000 #/□' Ave %	4000 #/□' Ave %	8000 #/□' Ave %	16,000 #/□' Ave %
1/4	0.5	30.5	24.8	31.0	
1/2	0.707	35.7	30.0	38.2	
1	1	40.7	36.2	41.8	
2 1/4	1.50	46.8	48.3	49.4	
4	2	51.8	54.0	54.2	
9	3	57.3	61.2	61.5	
16	4	62.2	65.5	66.5	
25	5	66.2	68.7	70.5	
36	6	69.0	71.7	73.4	
49	7	71.8	73.7	76.0	
64	8				

Layer - 2

Time	$\sqrt{Time}$	2000 #/□' Ave %	4000 #/□' Ave %	8000 #/□' Ave %	16,000 #/□' Ave %
1/4	0.5	59.5	58.0	56.0	
1/2	0.707	65.5	64.0	63.0	
1	1	71.5	70.0	68.5	
2 1/4	1.5	77.0	75.5	74.5	
4	2	80.5	78.5	77.0	
9	3	82.0	80.5	80.0	
16	4	83.5	83.0	82.0	
25	5	85.5	84.0	84.0	
36	6	88.0	85.5	85.0	
49	7	88.5	86.5	86.5	
64	8	89.0	87.5	88.0	

Layer - 3

Time	√Time	2000 #/□' Ave %	4000 #/□' Ave %	8000 #/□' Ave %	16,000 #/□' Ave %
1/4	0.5	15.5	13.0	14.5	
1/2	0.707	20.5	17.5	30.0	
1	1	27.5	25.0	26.0	
2 1/4	1.50	40.5	37.0	40.5	
4	2	51.0	48.0	50.5	
9	3	65.0	63.0	66.5	
16	4	73.5	71.5	74.5	
25	5	78.0	76.0	80.5	
36	6	81.5	79.0	83.5	
49	7	84.0	82.0	86.0	
64	8	85.5	83.5	87.5	

Layer - 4

Time	√Time	2000 #/4" Ave %	4000 #/□' Ave %	8000 #/□' Ave %	16,000 #/□' Ave %
1/4	0.5	37.5	45.7	50.2	
1/2	0.707	46.7	52.5	56.7	
1	1	53.3	58.8	62.5	
2 1/4	1.50	62.0	65.8	68.0	
4	2	67.8	70.5	72.2	
9	3	74.3	75.2	76.7	
16	4	76.5	78.5	79.0	
25	5	80.5	80.7	80.5	
36	6	82.3	83.0	82.0	
49	7	84.3	85.4	83.5	
64	8				

Layer - 5

Time	√Time	2000 #/□' Ave %	4000 #/□' Ave %	8000 #/□' Ave %	16,000 #/□' Ave %
1/4	0.5	39.5	42.0	43.3	
1/2	0.707	50.3	53.0	52.3	
1	1	57.0	60.8	58.8	
2 1/4	1.50	66.5	67.5	64.0	
4	2	71.2	70.5	66.8	
9	3	75.0	73.8	70.3	
16	4	78.8	77.0	73.0	
25	5	81.5	79.3	74.5	
36	6	83.8	81.5	76.3	
49	7	85.0	83.0	77.3	
64	8				

Woodinville Interchange
PSH # 2-30 Bothell to Woodinville
L-1038 C.S. 1745
D, G, & J lines

LAYER VOID RATIO (AVERAGE OF AVERAGES)

LAYER # 1 PEAT SAMPLE # T-1354, T-4997, T-4998

e_0 = 2.762 $e_{.5}$ = 2.416 e_1 = 2.169 e_2 = 1.805 e_4 = 1.495 e_8 = 1.210

LAYER # 2 Brn Org. Silt & Clay Silt T-4995

e_0 = 1.7222 $e_{.5}$ = e_1 = e_2 = e_4 = e_8 =

LAYER # 3 Grey Clay w/Silt Lenses T-1254, 1256, 1257, 1324, 13, 25, 1328, 4993, 4994, 3658.

e_0 = 1.233 $e_{.5}$ 1.158 e_1 = 1.044 e_2 = 0.983 e_4 = 0.870 e_8 = 0.760

LAYER # 4 Stiff to Hard Grey Silty Clay T-1258, 1326, 1339

e_0 = 0.9003 $e_{.5}$ = 0.8324 e_1 = 0.8097 e_2 = 0.7799 e_4 = 0.7365 e_8 = 0.6808

LAYER # 5 Stiff to hard grey Silty Clay w/sand lenses T-1251 & T-1252

e_0 = 1.0453 $e_{.5}$ 0.9536 e_1 = 0.9237 e_2 = 0.8761 e_4 = 0.7928 e_8 = .7028

By DKF

WOODINVILLE INTERCHANGE
PSH-230 BOTHELL TO WOODINVILLE
L-1038 CS 1745
D, G, & J LINES

Sample No.	Material	% H_2O	WD	C	ϕ
	(Averages)				
-1254-1&4	Grey Clay Silt	30.1	118	310	0?
-1256-1&3	" Clay	39	112	440	0
-1257-1&3	" Clay	38	114	980	0
-1324-1&4	" Clay	51	105	230	0
-1325-1&3	" Clay	48	108	380	0
*1327-1&4	" Clay w/trace fine sand	39	114	360	0
-1328-1&4	" Clay	43	111	480	6
-4993-1&4	" Silty Clay	38	110	270	0
4994-1&3	" Clay w/trace Silt	47	108	260	0
3658-1&3	" Org Clay	42	106	150	9°
1253	Grey Clay Silt w/ silty Sand Pockets	74	96	80	8
1255	Grey Clay w/ Silt Lenses	35	112	370	0
4992	Grey Clay w/ pockets of silty Sand	41	112	500	5°
LAYER #3		43	110	380	
258	Grey Clay	34	118	1030	8
1326-1&4	Grey Clay w/ Silt Lenses	37	118	1130	0
329	Grey Silt & Clay	30	119	280	16
LAYER #4		34	118	810	5°
1252	Grey Silty Clay w/ Sand (Fine) Lenses	31	115	370	21
1251	" " " "	35	117	980	0
LAYER #5		33	116	680	10°
-4995	Brn. Org. Clay Silt & Silt w/ roots (LAYER #2)	59	93	990	8°
1354	Alternating layers of Brn. Peat & fine sand	108	88	270	0
4998	Brn Peat w/ pockets of sand	112	87	353	0
4997	Brn Fibrous Peat	186	76	560	0
LAYER #1		135	84	390	0

~~MISTAKE~~ CORRECTED — ADDED PRE-LOADED SAMPLES TO LYR #1

4993	1 Req	- 1 @ 4375	- 1 @ 2188
97	1 "	- 1 @ 2188	
95	4 "	- 1 @ 4375	

DKF 8-18-59

Main Line

Layer - 1 Peat

Sample #	Consol	Reload @ 2200	Reload @ 4400
T-1354-1,2,3,4,5	54-2	—	—
4997-1,2,3,4	97-3	97-2	—
4998-1,2,3	98-2	—	—

Layer - 2 Org silt

Sample #	Consol	Reload @ 2200	Reload @ 4400
T-4995-1,2,3,4,5,6	4995-5	—	95-4
96-1,2	—	—	—
3657-			

Layer - 3 Soft Clay

Sample #	Consol	Reload @ 2200	Reload @ 4400
4992-1,2,3	—	—	—
93-1,2,3,4	4993-2	93-4	93-3
94-1,2,3	94-2	—	—
1324-1,2,3,4	1324-3	—	—
25-1,2,3	25-2	—	—
27-1,2,3,4	—	—	—
28-1,2,3,4	28-3	—	—
1253-1,2,3,4	—	—	—
54-1,2,3,4	1254-3	—	—
55-1,2,3	—	—	—
56-1,2,3	56-2	—	—
57-1,2,3	57-2	—	—
3658-1,2,3	3658-2	—	—

Layer - 4

Sample #	Consol
T-1326-1,2,3,4	26-3
29-1,2,3,4	29-4
1258-1,2,3,4	58-3

Layer #5

Sample #

T-1251-1, 2, 3, 4

52-1, 2, 3

Consol

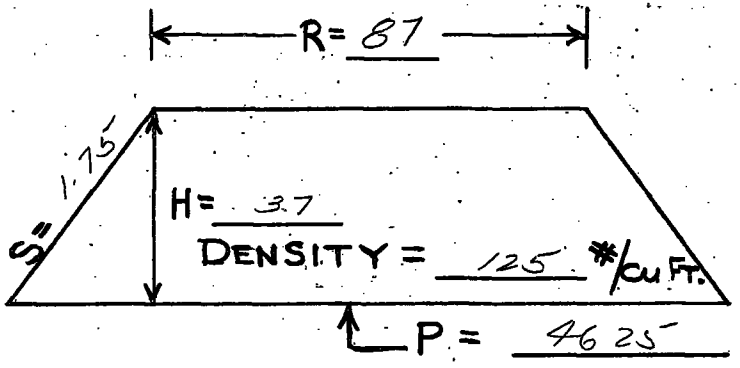
51-3

52-2

P SH. NO 2-60 SECTION Woodinville Interchange STA. 855+50 Job L-1038

Depth Below Ground Level	Depth of Stratum	Fill H= 37 @ 125 #/□'	Inactive Pressure (#/□')	Inactive Pressure (Tons/□')	D / R+SH	Pz/P	Active Pressure (Tons/□')	Total Pressure (Tons/□')	e_i	Average e_i	e_f	Average e_f	$Q = \frac{e_i - e_f}{1+e_i}(\Phi)$
Fill Pressure = 4625 #/□' =							2.31	2.31					
0	5½	W_U = 93 #/cu Ft layer #2 Org Silt 510	510	0.255	0.04	1.0	2.31	2.57	1.722 / 1.633	1.678	1.499 / 1.487	1.493	$\frac{1,018}{0.185(5.5)} = 0.38$ / 2.678
5½	5½	W_U = 22 #/cu Ft layer #1 Peat • 120	630	0.315	0.07	1.0	2.31	2.63	2.554 / 2.530	2.552	1.682 / 1.669	1.675	$\frac{4.8.2}{0.877(5.5)} = 1.36$ / 3.552
11	26	W_U = 62 #/cu Ft. Sand (T-nsd) 1610	2240	1.120	0.24	0.95	2.28	3.40	0.710 / 0.698	0.704	0.684 / 0.680	0.682	$\frac{0.022(26)}{1.704} = 0.33$
37	14	W_U = 54 #/cu Ft layer #3 clay 760	3000	1.500	0.34	0.91	2.10	3.60	0.918 / 0.900	0.909	0.813 / 0.807	0.810	$\frac{1.386}{0.099(14)} = 0.73$ / 1.909
51	30	W_U = 62 #/cu Ft											=
81		W_U = ___ #/cu Ft.											=
		W_U = ___ #/cu Ft.											=

Total Q 2.80



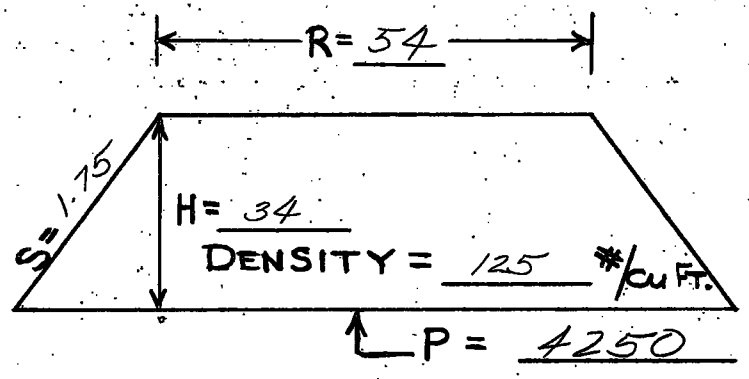
$R+SH = \frac{87 + 1.75(37)}{} = \frac{87 + 64.8}{} = 151.8$

AJP
8-26-59

P SH. NO 2-80 SECTION Woodinville Interchange STA. 859+90 Job L-1038

Depth Below Ground Level	Depth of Stratum	Fill H=34 @ 125 #/□'	Inactive Pressure (#/□')	Inactive Pressure (Tons/□')	D / R+SH	Pz/P	Active Pressure (Tons/□')	Total Pressure (Tons/□')	e_i	Average e_i	e_f	Average e_f	$Q = \frac{e_i - e_f}{1+e_i}(D)$
FILL PRESSURE = 4250 #/□' =							2.12	2.12					
0	6	W_U = 93 #/cu Ft layer #2 Org silt 558	560	0.280	0.05	1.0	2.12	2.40	1.722 1.603	1.662	1.507 1.495	1.501	$\frac{0.966}{0.161(6)} = 0.36$ 2.662
6	12	W_U = 48 #/cu Ft layrr #3 soft clay 576	1140	0.570	0.16	0.99	2.10	2.67	1.190 1.149	1.169	0.951 0.935	0.943	$\frac{0.226(12)}{2.169} = 1.25$
18	50	W_U = 62 #/cu Ft. sand 3100	4240	2.120	0.60	0.75	1.59	3.71					=
68	6	W_U = 54 #/cu Ft layer #4 clay 324	4560	2.280	0.65	0.72	1.53	3.81	0.778 0.773	0.775	0.741 0.740	0.740	$\frac{0.035(6)}{1.775} = 0.12$
74		W_U = ____ #/cu Ft											=
		W_U = ____ #/cu Ft.											=
		W_U = ____ #/cu Ft.											=

TOTAL Q 1.73



$R+SH = \frac{54 + 1.75(34)}{59.5}$

$= $ ____

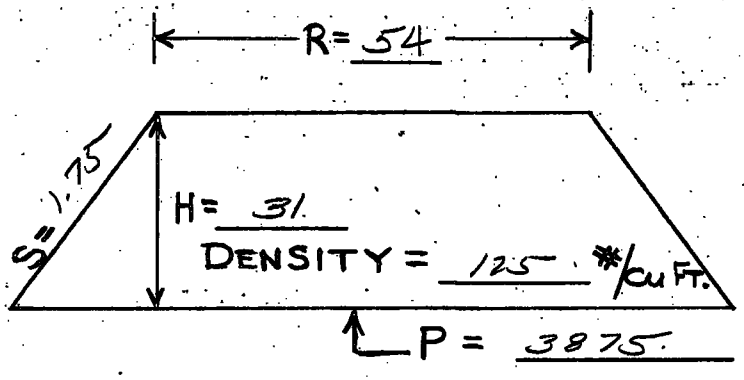
$= 113.5$

AJP
8-26-59

P SH. No 2-80 SECTION Woodinville Interchange STA. 862+15 Job L-1038

Depth Below Ground Level	Depth of Stratum	Fill H= 31 @ 125 #/□'	Inactive Pressure (#/□')	Inactive Pressure (Tons/□')	D R+SH	Pz/P	Active Pressure (Tons/□')	Total Pressure (Tons/□')	e_i	Average e_i	e_f	Average e_f	$Q = \frac{e_i - e_f}{1+e_i}(\Phi)$
Fill Pressure = 3875 #/□' =							1.94	1.94					
0		W_U = 93 #/Cu Ft layer #2							1.720		1.517		$\frac{0.840}{0.168(5)} = 0.31$
	5	org silt 465	460	0.230	0.05	1.0	1.94	2.17	1.638	1.679	1.505	1.511	2.679
5		W_U = 60 #/Cu Ft sand											=
	9	540	1000	0.500	0.13	0.99	1.92	2.42					
14		W_U = 48 #/Cu Ft. layer #3							1.158		0.950		$\frac{3.60}{0.189(19)} = 1.69$
	19	soft clay 912	1910	0.955	0.31	0.93	1.80	2.76	1.100	1.129	0.930	0.940	2.129
33		W_U = 62 #/Cu Ft sand											=
	38	2356	4270	2.135	0.66	0.72	1.40	3.54					
71		W_U = 56 #/Cu Ft layer #4							0.778		0.745		$\frac{0.868}{0.028(31)} = 0.49$
	31	silty Clay 1736	6010	3.005	0.95	0.58	1.12	4.13	0.756	0.767	0.734	0.739	1.767
102		W_U = #/Cu Ft.											=
		W_U = #/Cu Ft.											=

Total Q 2.49



$R+SH = \frac{54 + 31(1.75)}{2}$

$= \frac{54+57}{2}$

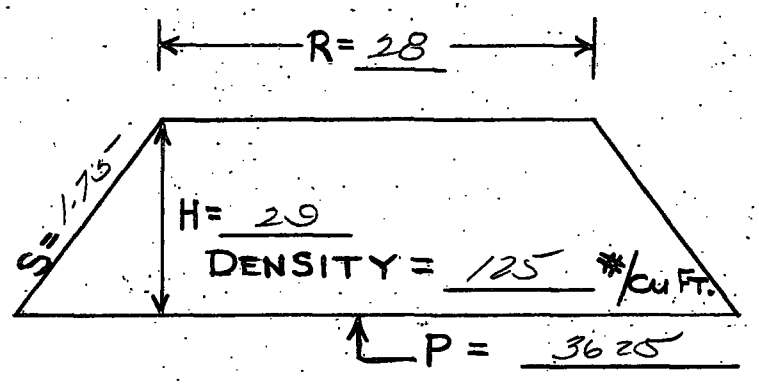
$= 108$

P SH NO 2-80 SECTION Woodinville Interchange STA. "G" 57+80 Job L-1038

Depth Below Ground Level	Depth of Stratum	Fill H= 29 @ 125 #/□'	Inactive Pressure (#/□')	Inactive Pressure (Tons/□')	D / R+SH	P_z/P	Active Pressure (Tons/□')	Total Pressure (Tons/□')	e_i	Average e_i	e_f	Average e_f	$Q = \frac{e_i - e_f}{1+e_i}(\Phi)$
Fill Pressure = 3625 #/□' =							1.81	1.81					
0		W_U = 93 #/Cu Ft layer #2							1.722	1.686	1.522	1.518	$\frac{0.588}{0.168(3.5)} = 0.22$
	3½	Drysit 326	330	0.165	0.04	1.0	1.81	1.98	1.650		1.514		2.686
3½		W_U = 48 #/Cu Ft layer #3							1.211	1.176	0.985	0.971	$\frac{4.00}{0.205(19.5)} = 1.84$
	19½	Soft Clay 936	1270	0.635	0.29	0.94	1.70	2.34	1.140		0.956		2.176
23		W_U = #/Cu Ft.											=
		W_U = #/Cu Ft											=
		W_U = #/Cu Ft											=
		W_U = #/Cu Ft.											=
		W_U = #/Cu Ft.											=

Wt @ 3½'

TOTAL Q 206



$R+SH = \frac{28+29(1.75)}{} = \frac{50.7}{} = 79$

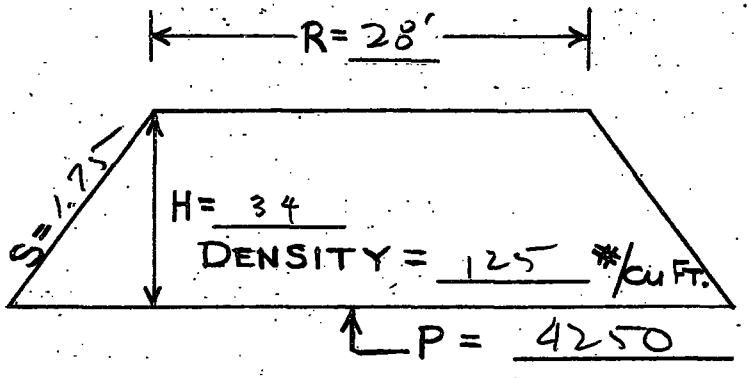
AJP
8-26-59

P.S.H. NO. 2-50 SECTION WOODINVILLE INTERCHANGE STA. 9+87.50 JOB L-70 58

DEPTH BELOW ROUND LEVEL	DEPTH OF STRATUM	FILL H= 34 @ 125 #/□'	INACTIVE PRESSURE (#/□')	INACTIVE PRESSURE (TONS/□')	D / R+SH	P_z/P	ACTIVE PRESSURE (TONS/□')	TOTAL PRESSURE (TONS/□')	e_i	AVERAGE e_i	e_f	AVERAGE e_f	$Q = \frac{e_i - e_f}{1+e_i}(D)$
FILL PRESSURE = 4250 #/□' =							2.125						
0	5½	W_U = 93 #/cu FT LAYER #2	512	0.256	5½ / 88 .042	1.00	2.125	2.381	1.722 / 1.633	1.678	1.507 / 1.495	1.501	$\frac{(.177)\ 5.5'}{2.678} = .34$
5½	7½	W_U = 22 #/cu FT 165 LAYER #1	677	0.338	13 / 88 .15	.99	2.100	2.438	2.553 / 2.503	2.528	1.717 / 1.705	1.711	$\frac{(.817)\ 7.5'}{3.528} = 1.75$
13		W_U = ___ #/cu FT.											=
		W_U = ___ #/cu FT											=
		W_U = ___ #/cu FT											=
		W_U = ___ #/cu FT.											=
		W_U = ___ #/cu FT.											=

TOTAL Q 2.11

DKF
8-24-59



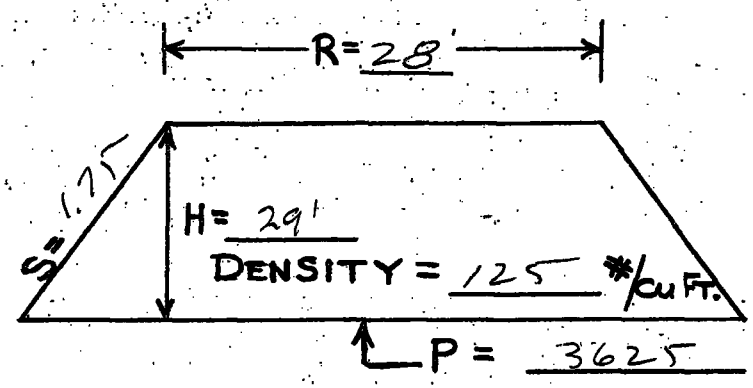
R+SH = $\frac{28 + (1.75)34}{}$
= $\frac{28 + 59.5}{}$
= 88

P SH. NO 2 BO SECTION WOODINVILLE INTERCHANGE STA. "G" 5+80 Job L-1038

Depth Below Found Level	Depth of Stratum	Fill H= 29' @ 125 #/□'	Inactive Pressure (#/□')	Inactive Pressure (Tons/□')	D / R+SH	P_z/P	Active Pressure (Tons/□')	Total Pressure (Tons/□')	e_i	Average e_i	e_f	Average e_f	$Q = \frac{e_i - e_f}{1+e_i}(D)$
FILL PRESSURE = 3625 #/□' =							1.813	1.813					
0	3½'	W_U = 93 #/Cu Ft; 326; LAYER #2	326	0.163	3/79 = .038	1.00	1.813	1,976	1.722; 1,649	1.686	1.523; 1.515	1.519	$\frac{(0.167)3.5}{2.686}$ = .22
3½	19.5	W_U = 48 #/Cu Ft; 936; LAYER #3	1262	0.631	19.5/79 = .247	.95	1.72	2,357	1.212; 1.140	1.176	0.985; 0.955	.970	$\frac{(.206)19.5}{2.176}$ = 1.84
23		W_U = ___ #/Cu Ft											=
		W_U = ___ #/Cu Ft											=
		W_U = ___ #/Cu Ft											=
		W_U = ___ #/Cu Ft											=
		W_U = ___ #/Cu Ft											=

TOTAL Q 2.06

DKF



$R+SH = \frac{28 + (1.75)29}{}$

$= \frac{28 + 50.75}{}$

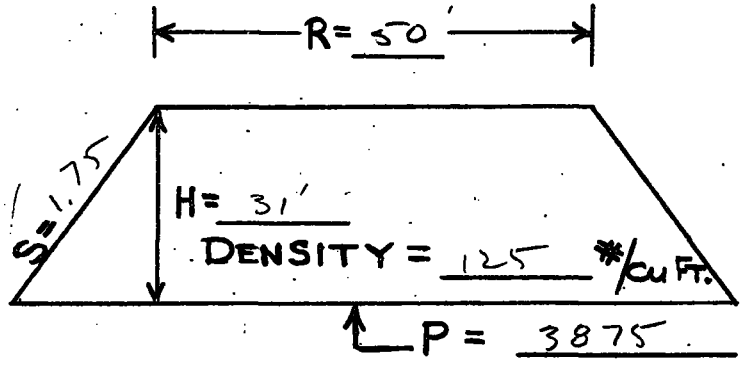
$= \frac{79}{}$

P SH. NO 2-BO SECTION WOODINVILLE INTERCHANGE STA. 862+15 Job L-1038

Depth Below Round Level	Depth of Stratum	Fill H=31 @ 125 #/□'	Inactive Pressure (#/□')	Inactive Pressure (Tons/□')	D / R+SH	Pz/P	Active Pressure (Tons/□')	Total Pressure (Tons/□')	e_i	Average e_i	e_f	Average e_f	$Q = \frac{e_i - e_f}{1+e_i}(D)$
FILL PRESSURE = 3875 #/□' =							1.937	1.937					
0	5'	W_U = 93 #/cu Ft LAYER #2	465	0.232	5/104 .05	1.00	1.937	2.169	1.722 1.637	1.680	1.517 1.505	1.511	.169(5)/2.680 = .32
5	9'	W_U = 60 #/cu Ft (540) SAND	1005	0.502	14/104 .13	.99	1.918	2.420					=
14	19	W_U = 48 #/cu Ft (912) LAYER #3	1917	0.958	33/104 .32	.92	1.782	2.740	1.157 1.104	1.129	.951 .931	.941	0.188(19)/2.129 = 1.68
33	38	W_U = 62 #/cu Ft (2356) SAND	4273	2.136	71/104 .68	.71	1.375	3.511					=
71	32	W_U = 56 #/cu Ft (1792) LAYER #4	6065	3.032	105/104 .99	.56	1.085	4.117	0.776 .752	0.766 .761	.746 .736	.741	25 0.020(32)/1.761 = .45 .36
103		W_U = ___ #/cu Ft.											=
		W_U = ___ #/cu Ft.											=

TOTAL Q 2.45 2.36

DKF 8-19-59



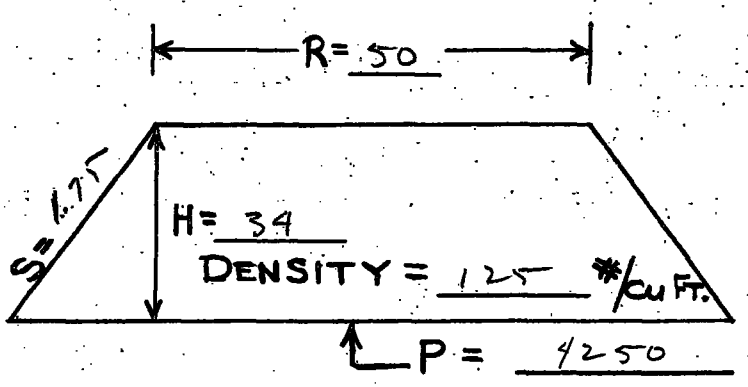
$$R+SH = \frac{50(31)1.75}{50+54} = \frac{}{104}$$

P SH. NO 2430 SECTION WOODINVILLE INTERCHANGE STA. 859+90 Job 4038

Depth Below Round Level	Depth of Stratum	Fill H=34 @ 125 #/□'	Inactive Pressure (#/□')	Inactive Pressure (Tons/□')	D / R+SH	Pz/P	Active Pressure (Tons/□')	Total Pressure (Tons/□')	e_i	Average e_i	e_f	Average e_f	$Q = \frac{e_i - e_f}{1+e_i}(D)$
FILL PRESSURE = 4250 #/□' =							2.125	2.125					
6		W_U = 93 #/Cu Ft (558)	558	0.279	6/110 .05	1.00	2.125	2.404	1.722	1.676	1.507	1.501	$\frac{0.175(6)}{2.676} = .39$
WT → 6		Layer #2							1.631		1.495		
18		W_U = 48 #/Cu Ft (576)	1134	0.567	12/110 .16	.98	2.082	2.649	1.191	1.170	0.952	0.945	$\frac{.225(12)}{2.170} = 1.24$
12		Layer #3							1.149		0.938		
68		W_U = 62 #/Cu Ft. (3100)	4234	2.117	68/110 .62	.74	1.572	3.689	SAND				
50		SAND											
74		W_U = 56 #/Cu Ft (332)	4570	2.285	74/110 .67	.71	1.509	3.794	0.777	0.775	.742	0.741	$\frac{.034(6)}{1.775} = .11$
6		Layer #4							0.773		.740		
		W_U = #/Cu Ft.											=
		W_U = #/Cu Ft.											=
		W_U = #/Cu Ft.											=

TOTAL Q 1.74

D.K.F 8-19-59



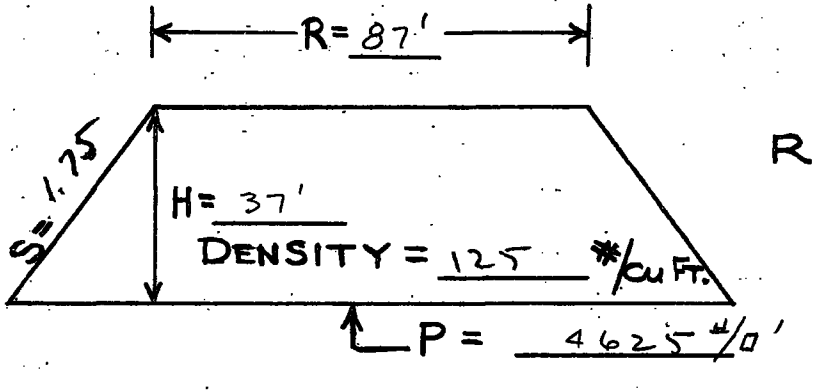
$R+SH = \frac{50 + (34)1.75}{} = \frac{50 + 60}{} = \frac{110}{}$

1514 SH. NO 2-130 SECTION WOODINVILLE INTERCHANGE STA. 855+50 Job L-1038

Depth Below Ground Level	Depth of Stratum / Thickness of Stratum	Fill H= 37' @ ___ #/□' / W_U = ___ #/cu Ft.	Inactive Pressure (#/□')	Inactive Pressure (Tons/□')	D / R+SH	P_z/P	Active Pressure (Tons/□')	Total Pressure (Tons/□')	e_i	Average e_i	e_f	Average e_f	$Q = \frac{e_i - e_f}{1+e_i}(D)$
FILL PRESSURE = 4625 #/□' =							2.312	2.312					
5'	5 WT-SS	W_U = 93 #/cu Ft (465) LAYER #2	465	0.232	5/152 = .03	1.00	2.312	2.544	1.7222 / 1.637	1.679	1.498 / 1.488	1.493	$\frac{0.186(5)}{2.679} = 0.34$
11	6	W_U = 22 #/cu Ft (132) LAYER #1	597	0.298	11/152 = .07	1.00	2.312	2.610	2.571 - 2.530	2.550	1.685 / 1.676	1.680	$\frac{0.870(6)}{3.550} = 1.47$
37	26	W_U = 62 #/cu Ft. (1612) SAND	2209	1.104	37/152 = .24	.97	2.243	3.347					
51	14	W_U = 54 #/cu Ft 756 LAYER #3	2965	1.482	51/152 = .34	.91	2.104	3.586	.919 / .905	0.912	.816 / .808	0.812	$\frac{0.100(14)}{1.912} = 0.73$
		W_U = ___ #/cu Ft.											=
		W_U = ___ #/cu Ft.											=
		W_U = ___ #/cu Ft.											=

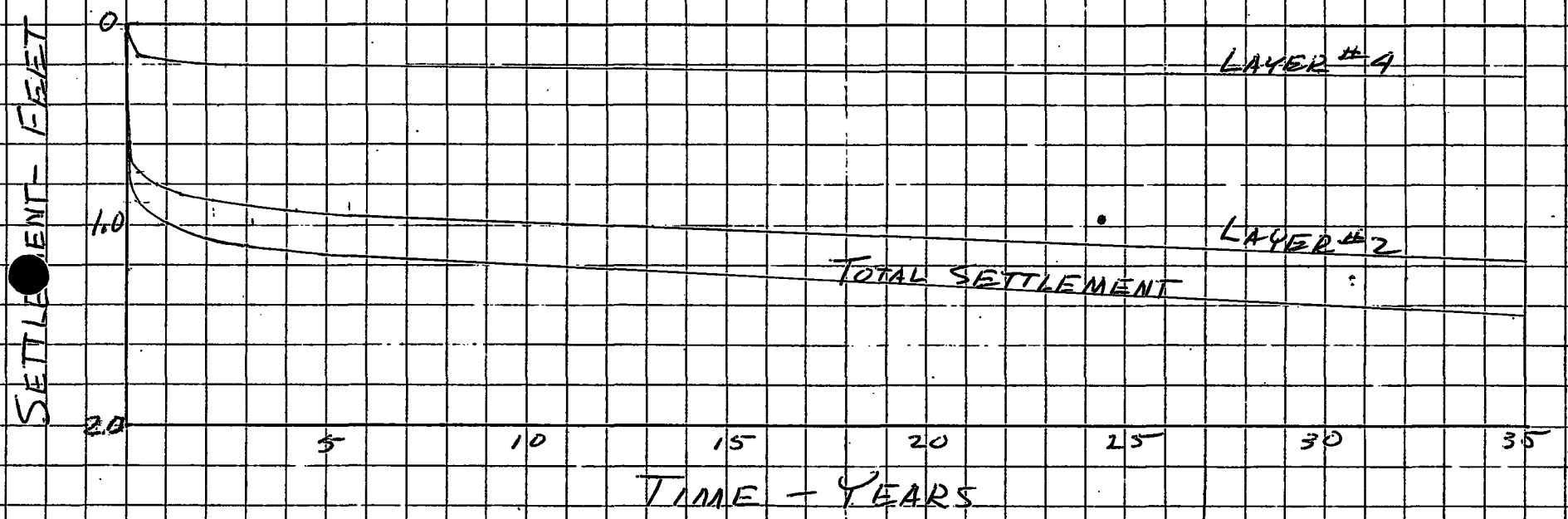
TOTAL Q 2.54

DKF 8-19-59



$$R+SH = \frac{87+(37')1.75}{87+65} = \frac{}{152}$$

SSH-2A WOODINVILLE INTERCHANGE SL-359 NEAR H#9 860+00



D.K.F. 27 MAY 58

860+00

HOLE # 4 # 1 LOCATION WOODINVILLE INTERCHANGE JOB SL-359

SAMPLE # LAYER # 2

1. $t_D = t_d \left(\frac{Da}{do}\right)^2$
2. $D_o = \frac{D}{1+e_i}$ $\frac{11 \times 12}{2.24} = 59.0$ "
3. $do = 0.2754$
4. $t_d = 1.$
5. $t_d = 1\left(\frac{\quad}{0.2754}\right)^2 = \left(\frac{214.2}{\quad}\right)^2 =$ 45900 min
6. $= \frac{\text{min}}{1440} =$ 31.86 days
7. $= \frac{\text{days}}{365} =$ 0.087 years
8. K = $\frac{P \text{ DRAINAGE FACE}}{P \text{ IMPERVIOUS FACE}}$ $\frac{P_1}{P_2} = \frac{2.42}{2.61}$
9. K = .93

TOTAL SETTLEMENT		1.18			
TEST TIME	%	SETTLEMENT (FT)	TIME 2 Drain Face	K=	TIME 1 Drain Face
1/4 min.	39	.46	.022		
1/2	43	.51	.044		
1	50	.59	0.087		
2 1/4	58	.68	.196		
4	63	.74	.348		
9	68	.80	.784		
16	72	.85	1.392		
25	75	88	2.18		
36	77	.91	3.14		
49	79	93	4.26		
64	81	96	5.57		
2 hrs	85	1.04			
3	88	1.08			
5					
6					

SAMPLE # LAYER # 4

1. $t_D = t_d \left(\frac{Da}{do}\right)^2$
2. $D_o = \frac{D}{1+e_i} = \frac{18 \times 12}{1.77} = 122$ "
3. $do = 0.3293$
4. $t_d = 1.$
5. $t_d = 1\left(\frac{\quad}{0.3293}\right)^2 = \left(\frac{371}{\quad}\right)^2 =$ 137500 min
6. $= \frac{137500 \text{ min}}{1440} =$ 95.6 days
7. $= \frac{\text{days}}{365} =$ 0.2615 years
8. K = $\frac{P \text{ DRAINAGE FACE}}{P \text{ IMPERVIOUS FACE}} = \frac{P_1}{P_2} = \frac{3.70}{4.03} =$ K
9. K = .92

TOTAL SETTLEMENT		0.30			
Test Time	%	Settlement (FT)	Time 2 Drain Face	K=	Time 1 Drain Face
1/4 min	53	.16	.065	4.1	.266
1/2	53	.16	.131		.538
1	54	.18	0.262		1.08
2 1/4	64	.20	.589		2.44
4	71	.21	1.049	4.0	4.20
9	76	.23	2.36		9.45
16	78	.23	4.19		16.8
25	80	.24	6.55		26.2
36	82	.25	9.86		39.4
49	84	.25			
64					
2 hrs					
3					
5					
6					

DKF

Sta. 859+85

HOLE # _____ LOCATION Bothell to Woodinville - Sammamish R. Br. JOB L-1038

Layer #2 SAMPLE # T-1325 T-1324 T-1354 T-1328

1. $t_D = t_d \left(\frac{Do}{do}\right)^2$
2. $Do = \frac{D}{1+ei} = \frac{11 \times 12}{2.36} = 55.9$ "
3. do =
4. $t_d = 1.$
5. $t_d = 1\left(\frac{55.9}{0.2563}\right)^2 = (218.1)^2 =$
   $= 47568$ min
6. $= \frac{\text{min}}{1440} = 33$ days
7. $= \frac{\text{days}}{365} = 0.090$ years

K =

8. $\frac{P_{\text{DRAINAGE FACE}}}{P_{\text{IMPERVIOUS FACE}}} = \frac{P_1}{P_2} =$ _____

9. K = _____

TOTAL SETTLEMENT 1.21

TEST TIME	%	SETTLEMENT (Ft)	TIME 2 Drain Face	K=	TIME 1 Drain Face
1/4 min	31	.37	.02		
1/2	39	.47	.04		
1	46	.56	0.090		
2 1/4	55	.66	.20		
4	60	.73	.36		
9	66	.80	.81		
16	70	.85	1.44		
25	73	.88	2.25		
36	76	.92	3.24		
49	78	.94	4.41		
64	80	.97	5.76		
2 hrs	84	1.02	10.8		
3	87	1.05	16.2		
5					

Layer #4 SAMPLE # T-1258 T-1326 T-1329

1. $t_D = t_d \left(\frac{Do}{do}\right)^2$
2. $Do = \frac{D}{1+ei} = \frac{18 \times 12}{1.86} = 122.6$ "
3. do =
4. $t_d = 1.$
5. $t_d = 1\left(\frac{122.6}{0.3293}\right)^2 = (372.3)^2 =$
   $=$ _____ min
6. $= \frac{138607 \text{ min}}{1440} = 96$ days
7. $= \frac{\text{days}}{365} = 0.263$ years

K =

8. $\frac{P_{\text{DRAINAGE FACE}}}{P_{\text{IMPERVIOUS FACE}}} = \frac{P_1}{P_2} = \frac{3.53}{3.98}$

9. K = .897

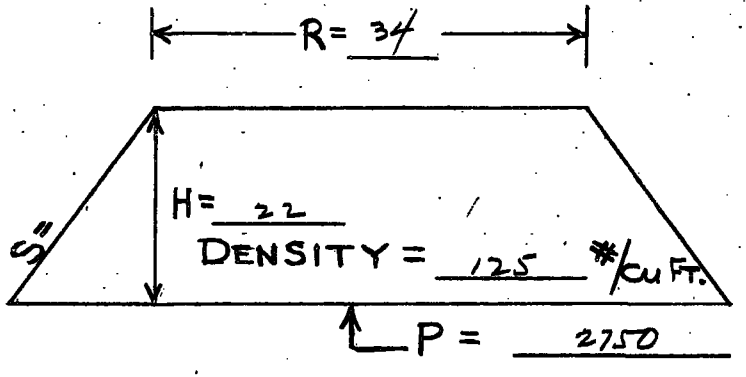
TOTAL SETTLEMENT 2.37

TEST TIME	%	SETTLEMENT (Ft)	TIME 2 Drain Face	K=	TIME 1 Drain Face
1/4 min	53	1.25	0.07	4.1	0.3
1/2	53	1.25	.13	4.1	0.5
1	54	1.27	0.263	4.1	1.0
2 1/4	66	1.56	.59	4.1	2.4
4	71	1.68	1.05	4.0	4.2
9	76	1.80	2.37	4.0	9.5
16	78	1.85	4.21	4.0	16.8
25	80	1.89	6.58	4.0	26.3
36	82	1.94	9.47	4.0	37.9
49	84	1.99	12.89		
64					
2 hrs					
3					
5					

S SH NO 2-A SECTION Woodinville Interchange "J" Line STA: J-857+60 Job SL-359

Depth Below Ground Level	Depth of Stratum	Fill H= 22 @ 125 #/□'	In Active Pressure (#/□')	Inactive Pressure (Tons/□')	D / R+SH	P_z/P	Active Pressure (Tons/□')	Total Pressure (Tons/□')	e_i	Average e_i	e_f	Average e_f	$Q = \frac{e_i - e_f}{1+e_i}(D)$
FILL PRESSURE = 2750 #/□' =							1.375	1.375					
6	6	W_U = 44 #/Cu Ft T-1324 264	264	.132	.084	160	1.375	1.507	1.425 / 1.382	1.404	1.130 / 1.100	1.115	$\frac{.289\ (6)}{2.404} = .72$
9	3	W_U = 48 #/Cu Ft Sand 144	408	.204	.12	99	1.36	1.540					=
21	12	W_U = 44 #/Cu Ft. T-1324 530	1138	.569	.29	93	1.26	1.83	1.502 / 1.430	1.466	1.258 / 1.220	1.239	$\frac{.227\ (12)}{2.466} = 1.10$
		W_U = ___ #/Cu Ft											=
		W_U = ___ #/Cu Ft											=
		W_U = ___ #/Cu Ft.											=
		W_U = ___ #/Cu Ft.											=

TOTAL Q 1.8

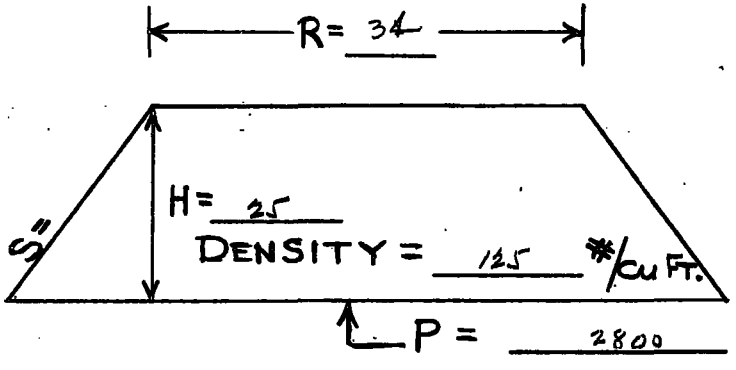


$$R+SH = \frac{22(1.75') + 34}{} = \frac{38.5' + 34}{} = \frac{72}{}$$

B SH. NO 2-A SECTION Woodinville Interchange "G" Line STA. 5+90 Job SL-359

Depth Below Ground Level	Depth of Stratum	Fill H= 25 @ 125 #/□'	Inactive Pressure (#/□')	Inactive Pressure (Tons/□')	D / R+SH	Pz/P	Active Pressure (Tons/□')	Total Pressure (Tons/□')	e_i	Average e_i	e_f	Average e_f	$Q = \frac{e_i - e_f}{1+e_i}(D)$
FILL PRESSURE = 2800 #/□' =							1.40	1.40					
5	5	W_U = 32 #/Cu Ft T-35-6 160	160	.08	.08	100	1.40	1.48	1.264 / 1.224	1.240	.941 / 933	.937	$\frac{.303\ (5)}{2.240}$ = .68
25	20	W_U = 44 #/Cu Ft T-1324 1325 3258 880	1040	.52	.32	.92	1.29	1.81	1.340 / 1.238	1.289	1.080 / 1.044	1.062	$\frac{.1227\ (20)}{2.289}$ = 1.98
		W_U = ___ #/Cu Ft.											=
		W_U = ___ #/Cu Ft											=
		W_U = ___ #/Cu Ft.											=
		W_U = ___ #/Cu Ft.											=
		W_U = ___ #/Cu Ft.											=

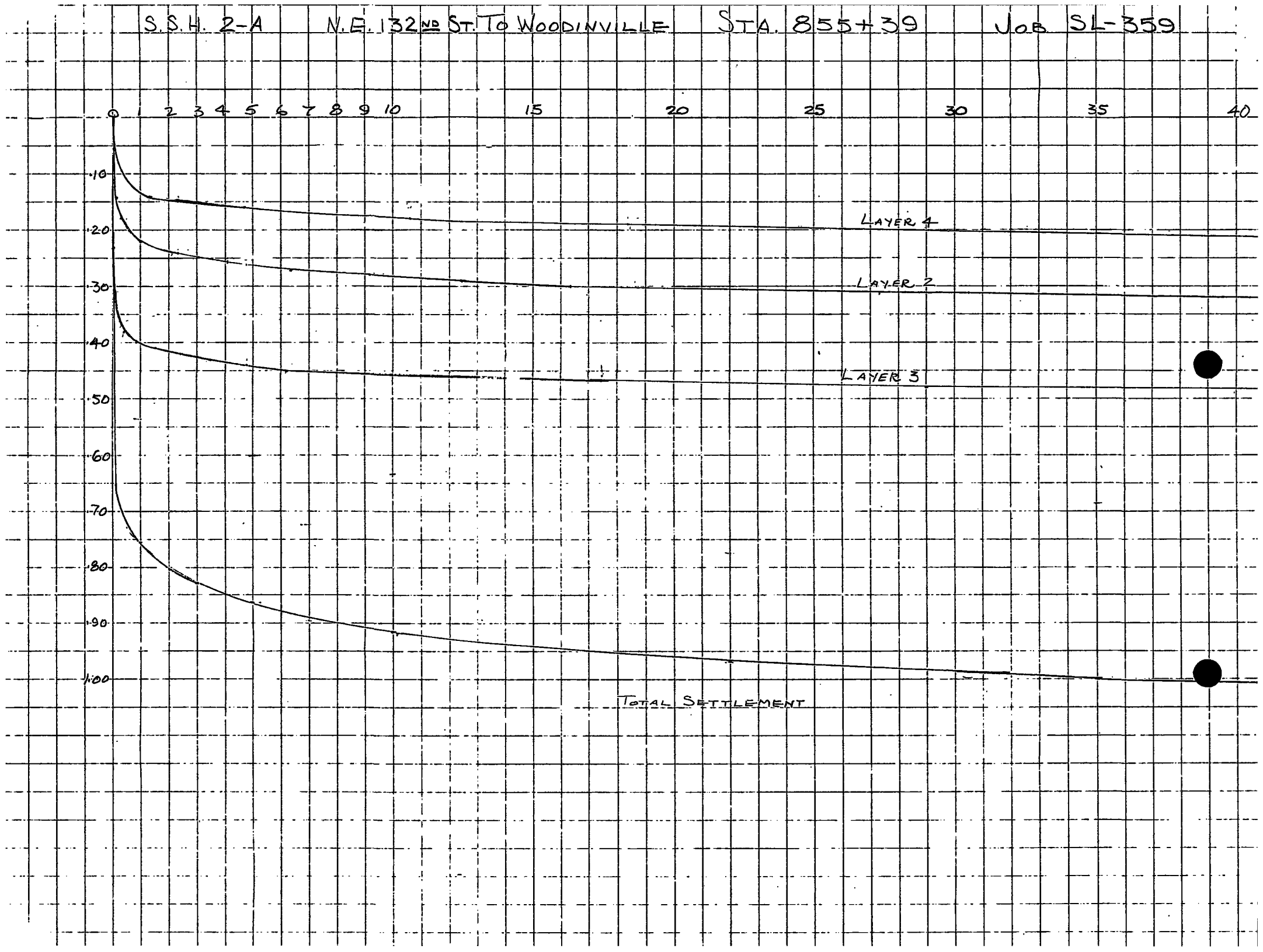
TOTAL Q = 2.6



$R+SH = \frac{25(1.75) + 34}{39.4 + 34}$

$= 63$

S.S.H. 2-A N.E. 132ND ST. TO WOODINVILLE STA. 855+39 JOB SL-359



Sta. 855+39

HOLE # _____ LOCATION Bothell to Woodinville JOB SL-359

Layer #2 SAMPLE # T-1325, T-1354-T1324, T-1328

1. $t_D = t_d \left(\frac{Do}{do}\right)^2$
2. $D_o = \frac{D}{1+e_i} = \frac{5.5 \times 12}{2.23} = 29.6$ "
3. do = 0.2563
4. $t_d = 1.$
5. $t_d = 1\left(\frac{29.6}{0.2563}\right)^2 = (115.5)^2 =$
   $= 133402$ min
6. $= \frac{\text{min}}{1440} = 92.6$ days
7. $= \frac{\text{days}}{365} = .254$ years

K =

8. $\frac{P_{\text{DRAINAGE FACE}}}{P_{\text{IMPERVIOUS FACE}}} = \frac{P_1}{P_2} =$ _____

9. K = _____

Layer #3 SAMPLE # T-1251 - T-1252

1. $t_D = t_d \left(\frac{Do}{do}\right)^2$
2. $D_o = \frac{D}{1+e_i} = \frac{11 \times 12}{1.91} = 69.1$ "
3. do = 0.3057
4. $t_d = 1.$
5. $t_d = 1\left(\frac{69.1}{0.3057}\right)^2 = (226.0)^2 =$
   $=$ _____ min
6. $= \frac{51076 \text{ min}}{1440} = 35.5$ days
7. $= \frac{\text{days}}{365} = 0.097$ years

K =

8. $\frac{P_{\text{DRAINAGE FACE}}}{P_{\text{IMPERVIOUS FACE}}} = \frac{P_1}{P_2} =$ _____

9. K = _____

TOTAL SETTLEMENT		0.37				TOTAL SETTLEMENT		0.52			
TEST TIME	%	SETTLEMENT (Ft)	TIME 2 Drain Face	K=	TIME 1 Drain Face	TEST TIME	%	SETTLEMENT (Ft)	TIME 2 Drain Face	K=	TIME 1 Drain Face
1/4 min	31	0.11	0.06			1/4 min	44	0.23	0.02		
1/2	39	0.14	.13			1/2	59	.31	.05		
1	46	.17	0.254			1	64	.33	0.097		
2 1/4	55	.20	.57			2 1/4	70	.36	.22		
4	60	.22	1.02			4	74	.38	.39		
9	66	.24	2.29			9	76	.40	.87		
16	70	.26	4.06			16	79	.41	1.55		
25	73	.27	6.35			25	81	.42	2.42		
36	76	.28	9.14			36	83	.43	3.49		
49	78	.29	12.95			49	84	.44	4.75		
64	80	.30	16.26			64	86	.45	6.21		
2 hrs	84	.31	30.48			2 hrs	88	.46	11.6		
3	87	.32	45.72			3	89	.46	17.5		
5						5	92	.48	29.1		

Sta. 855+39

HOLE # _____ LOCATION Bothell to Woodinville JOBSL-359

Layer #4 SAMPLE # T-1258 T-1326 T-1329

1. $t_D = t_d \left(\frac{Do}{do}\right)^2$
2. $D_o = \frac{D}{1+ei} = \frac{12 \times 12}{1.78} = 80.9$ "
3. do = 0.3293
4. t_d = 1.
5. $t_d = 1\left(\frac{80.9}{0.3293}\right)^2 = (245.7)^2 =$ _____ min
6. $= \frac{603685 \text{ min}}{1440} = 419.2$ days
7. $= \frac{\text{days}}{365} = 1.148$ years

K =

8. $\frac{P_{DRAINAGE\ FACE}}{P_{IMPERVIOUS\ FACE}} = \frac{P_1}{P_2} = \frac{3.86}{4.09}$

9. K = 0.94

TOTAL SETTLEMENT .0.27

TEST TIME	%	SETTLEMENT (Ft)	TIME 2 Drain Face	K=	TIME 1 Drain Face
1/4 min	53	0.14	0.29	4.1	1.19
1/2	53	.15	.57	4.1	2.34
1	59	.16	1.148	4.1	4.72
2 1/4	66	.18	2.58	4.1	10.58
4	71	.19	4.59	4.0	18.36
9	76	.21	10.33	4.0	41.32
16	78	.21	18.37	4.0	
25	80	.22	28.7	4.0	
36	82	.22	41.33	4.0	
49	84	.23		4.0	
64					
2 hrs					
3					
5					

SAMPLE #

1. $t_D = t_d \left(\frac{Do}{do}\right)^2$
2. $D_o = \frac{D}{1+ei} = \frac{\quad \times 12}{\quad} =$ _____ "
3. do =
4. t_d = 1.
5. $t_d = 1\left(\quad\right)^2 = (\quad)^2 =$ _____ min
6. $= \frac{\text{min}}{1440} =$ _____ days
7. $= \frac{\text{days}}{365} =$ _____ years

K =

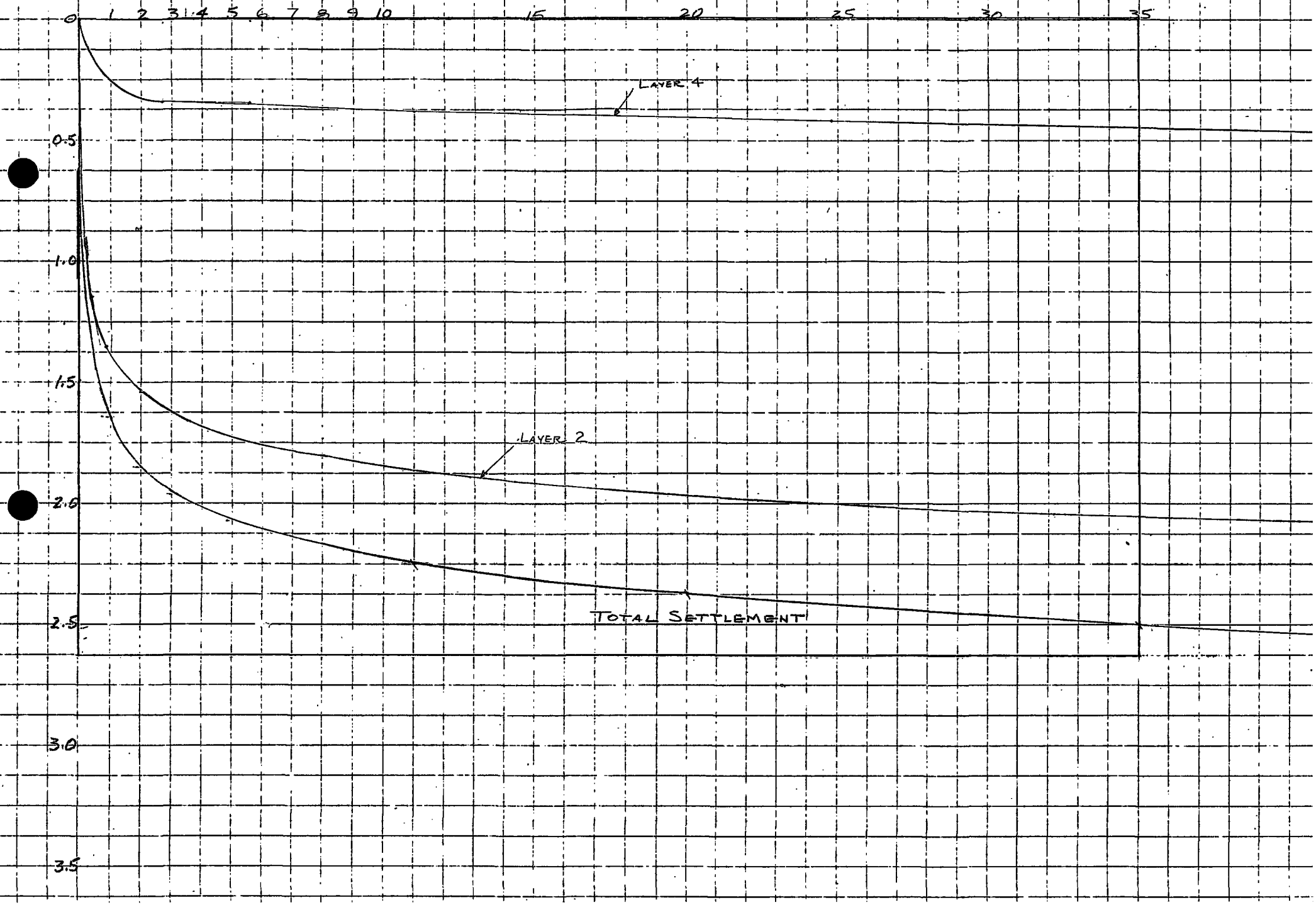
8. $\frac{P_{DRAINAGE\ FACE}}{P_{IMPERVIOUS\ FACE}} = \frac{P_1}{P_2} =$ _____

9. K = _____

TOTAL SETTLEMENT

TEST TIME	%	SETTLEMENT (Ft)	TIME 2 Drain Face	K=	TIME 1 Drain Face
1/4 min					
1/2					
1					
2 1/4					
4					
9					
16					
25					
36					
49					
64					
2 hrs					
3					
5					

S.S.H. 2-A N.E. 132ND ST. TO WOODINVILLE STA. 864+58 JOB SL-3.5



Sta. 864 + 58'

DKF

HOLE # _____ LOCATION Bothell to Woodville, Sammamish R. Br. JOB L-1038

Layer #2 SAMPLE # T-1325, T1354, T-1327, T-1328

1. $t_D = t_d \left(\frac{Do}{do}\right)^2$
2. $Do = \frac{D}{1+e_i} = \frac{34 \times 12}{2.29} = 178.2$ "
3. do = 0.2563
4. $t_d = 1.$
5. $t_d = 1\left(\frac{178.2}{0.2563}\right)^2 = (695.2)^2 =$ = _____ min
6. = $\frac{483\,303 \text{ min}}{1440}$ = 335.6 days
7. = $\frac{\text{days}}{365}$ = 0.919 years

K =

8. $\frac{P_{DRAINAGE\ FACE}}{P_{IMPERVIOUS\ FACE}} = \frac{P_1}{P_2}$ = _____

9. K = _____

TOTAL SETTLEMENT 2.82

TEST TIME	%	SETTLEMENT (Ft)	TIME 2 Drain Face	K=	TIME 1 Drain Face
1/4 min	31	.87	0.23		
1/2	39	1.10	0.46		
1	46	1.30	0.919		
2 1/4	55	1.55	2.07		
4	60	1.69	3.68		
9	66	1.86	8.27		
16	70	1.97	14.70		
25	73	2.06	22.98		
36	76	2.14	33.08		
49	78	2.20	45.03		
64	80	2.26			
2 hrs	84				
3	87				
5					

Layer #4 SAMPLE # T-1258, T1326, T-1329

1. $t_D = t_d \left(\frac{Do}{do}\right)^2$
2. $Do = \frac{D}{1+e_i} = \frac{57 \times 12}{1.79} = 382.1$ "
3. do = 0.3293
4. $t_d = 1.$
5. $t_d = 1\left(\frac{382.1}{.3293}\right)^2 = (1160.3)^2 =$ = _____ min
6. = $\frac{1\,346\,246 \text{ min}}{1440}$ = 935 days
7. = $\frac{\text{days}}{365}$ = 2.56 years

K =

8. $\frac{P_{DRAINAGE\ FACE}}{P_{IMPERVIOUS\ FACE}} = \frac{P_1}{P_2} = \frac{2.98}{4.15}$

9. K = 0.69

TOTAL SETTLEMENT .69

TEST TIME	%	SETTLEMENT (Ft)	TIME 2 Drain Face	K=	TIME 1 Drain Face
1/4 min	53	.34	0.64	4.4	2.8
1/2	53	0.34	1.28	4.4	5.6
1	59	.38	2.56	4.3	11.0
2 1/4	66	.42	5.76	4.3	24.8
4	71	.46	10.24	4.2	43.0
9	76	.48	23.04	4.2	
16	78	.50			
25	80	.51			
36	82	.52			
49	84	.54			
64					
2 hrs					
3					
5					

STA. 864+58 C.R.L.

LOCATION Bothell To Woodinville. Sammamish River Bridge JOB SL-359

LAYER #2 SAMPLE * T-1324 ~ T-1328 I-1354 ~ T-1254

REVISED

1. $T_D = t_d \left(\frac{D_o}{d_o}\right)^2$

2. $D_o = \frac{D}{1+e_i} = \frac{34 \times 12}{2.18} = 187.1$"

3. $d_o = 0.2729$

4. $t_d = 1.$

5. $T_D = 1. \left(\frac{187.1}{.2729}\right)^2 = (685.6)^2 = 470,047$ min

6. $= \frac{470,047 \text{ min}}{1440} = 326$ days

7. $= \frac{326 \text{ days}}{365} = 0.893$ years

SAMPLE * _____

1. $T_D = t_d \left(\frac{D_o}{d_o}\right)^2$

2. $D_o = \frac{D}{1+e_i} = \frac{\quad \times 12}{} = \quad$"

3. $d_o =$

4. $t_d = 1.$

5. $T_D = 1. (\quad)^2 = (\quad)^2 = \quad$ min

6. $= \frac{\quad \text{min}}{1440} = \quad$ days

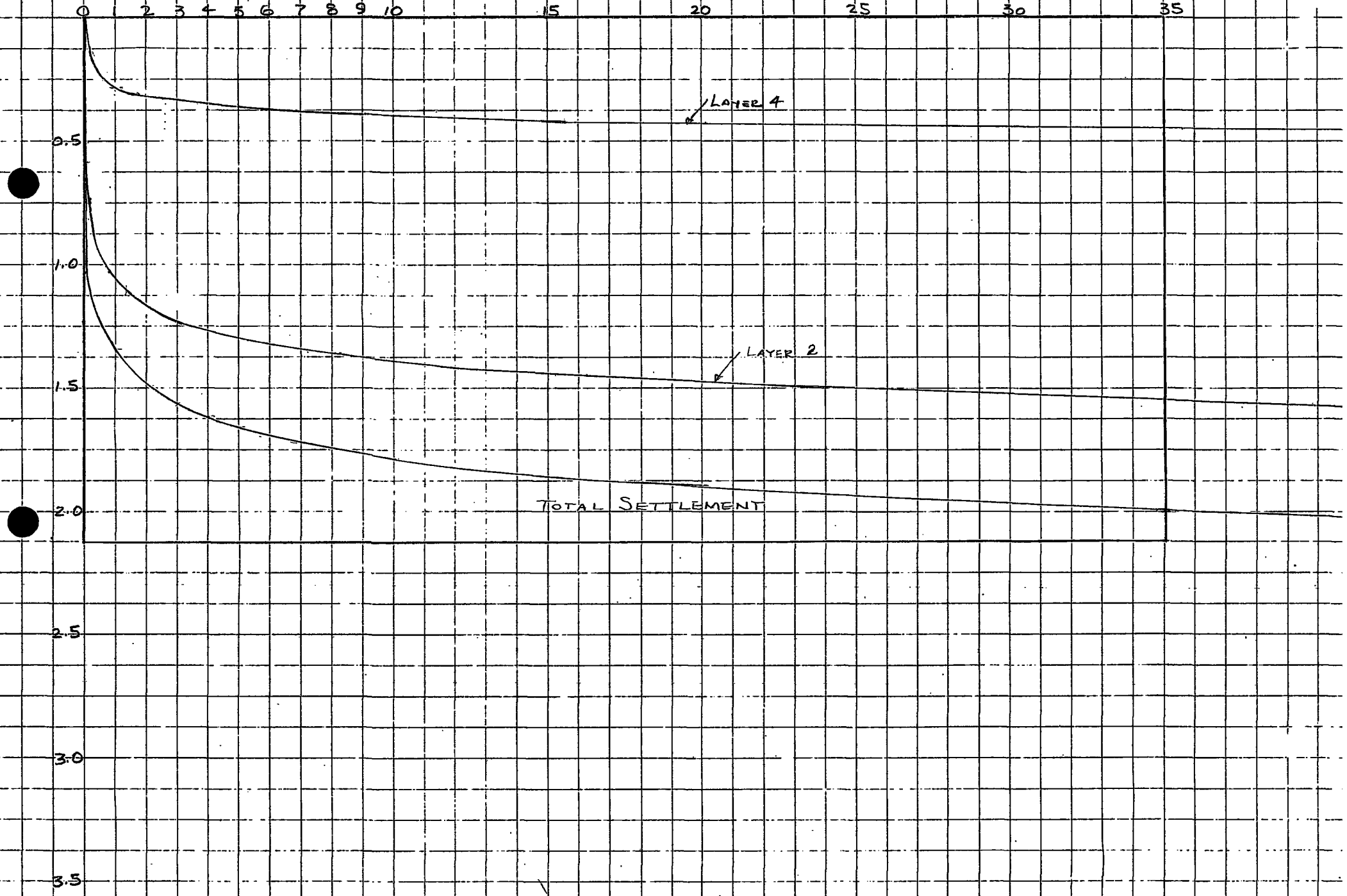
7. $= \frac{\quad \text{days}}{365} = \quad$ years

2.65

TEST TIME	%	SETTLEMENT (Ft.)	TIME 2 DRAIN FACE	K=	TIME 1 DRAIN FACE
1/4 min	36	.95	0.22		
1/2	43	1.14	0.45		
1	51	1.35	0.893		
2 1/4	58	1.54	2.01		
4	63	1.66	3.57		
9	68	1.80	8.04		
16	72	1.91	14.29		
25	75	1.99	22.33		
36	77	2.04	32.15		
49	79	2.10	43.76		
64	81	2.15	57.15		
2 hrs.	85	2.26	107.16		
3					
5					
6					

TEST TIME	%	SETTLEMENT (Ft)	TIME 2 DRAIN FACE	K=	TIME 1 DRAIN FACE
1/4 min					
1/2					
1					
2 1/4					
4					
9					
16					
25					
36					
49					
64					
2 hrs					
3					
5					
6					

S.S.H. 2-A N.E. 132ND ST. TO WOODINVILLE STA. 862+20 JOB SL-359



Sta. 862+20

DKF

HOLE # _____ LOCATION Bothell to Woodinville-Sammish P. Rte. JOB L-1038

Layer #2 SAMPLE # T-1325, T-1354, T-1324, T-1328

1. $t_D = t_d \left(\frac{Do}{do}\right)^2$
2. $Do = \frac{D}{1+e_i} = \frac{20.5' \times 12}{2.30} = 107.0''$
3. do =
4. $t_d = 1.$
5. $t_d = 1\left(\frac{107.0}{.0256}\right)^2 = (417.5)^2 =$ = _____ min
6. = $\frac{1743.06 \text{ min}}{1440}$ = 121 days
7. = $\frac{\text{days}}{365}$ = .332 years

K =

8. $\frac{P_{DRAINAGE\ FACE}}{P_{IMPERVIOUS\ FACE}} = \frac{P_1}{P_2}$ = _____

9. K = _____

Layer #4 SAMPLE # T-1258, T-1326, T-1329

1. $t_D = t_d \left(\frac{Do}{do}\right)^2$
2. $Do = \frac{D}{1+e_i} = \frac{35' \times 12}{1.77} = 237.3''$
3. do =
4. $t_d = 1.$
5. $t_d = 1\left(\frac{237.3}{0.3293}\right)^2 = (720.6)^2 =$ = _____ min
6. = $\frac{519269 \text{ min}}{1440}$ = 361 days
7. = $\frac{\text{days}}{365}$ = .989 years

K =

8. $\frac{P_{DRAINAGE\ FACE}}{P_{IMPERVIOUS\ FACE}} = \frac{P_1}{P_2} = \frac{3.30}{3.86}$

9. K = 0.86

TOTAL SETTLEMENT	1.87				
TEST TIME	%	SETTLEMENT (Ft)	TIME 2 Drain Face	K=	TIME 1 Drain Face
1/4 min	31	0.58	0.08		
1/2	34	.73	.17		
1	46	.86	0.332		
2 1/4	55	1.03	.75		
4	60	1.12	1.33		
9	66	1.23	2.99		
16	70	1.31	5.31		
25	73	1.36	8.30		
36	76	1.42	11.95		
49	78	1.46	16.27		
64	80	1.49	21.25		
2 hrs	84	1.57	34.84		
3	87	1.63			
5					

TOTAL SETTLEMENT	0.59				
TEST TIME	%	SETTLEMENT (Ft)	TIME 2 Drain Face	K=	TIME 1 Drain Face
1/4 min	53	.31	0.25	4.1	1.0
1/2	53	.31	0.49	4.1	2.0
1	59	.35	0.989	4.1	4.0
2 1/4	66	.39	2.23	4.1	9.1
4	71	.42	3.96	4.0	15.6
9	76	.45	8.90	4.0	35.6
16	78	.46	15.82	4.0	
25	80	.47	24.7		
36	82	.48			
49	84	.49			
64					
2 hrs					
3					
5					

868+00 DKF

HOLE # H#3 LOCATION WOODINVILLE INTERCHANGE JOB SC-359

SAMPLE # LAYER #2

1. $t_D = t_d \left(\frac{Dd}{do}\right)^2$
2. $D_o = \frac{D}{1+e_i}$ $\frac{24 \times 12}{2.194} = 131.2''$
3. $do = 0.2754$
4. $t_d = 1.$
5. $t_d = 1\left(\frac{131.2}{0.2754}\right)^2 = (477)^2 =$ _____ min
6. $= \frac{227600 \text{ min}}{1440} =$ _____ days
7. $= \frac{1580 \text{ days}}{365} = 0.433$ years

K =

8. $\frac{P \text{ DRAINAGE FACE}}{P \text{ IMPERVIOUS FACE}}$ $\frac{P_1}{P_2} = \frac{2.00}{2.40}$
9. K = .83

TOTAL SETTLEMENT		1.96			
TEST TIME	%	SETTLEMENT (FT)	TIME 2 Drain Face	K=	TIME 1 Drain Face
1/4 min.	34	0.76	0.108	4.4	.475
1/2	43	.84	.216	4.4	.95
1	50	.97	0.433	4.3	1.9
2 1/4	58	1.14	.976	4.2	4.1
4	63	1.24	1.73	4.2	7.3
9	68	1.33	3.90	4.2	16.4
16	72	1.41	6.95	4.1	28.5
25	75	1.47	10.73	4.1	44.2
36	77	1.51	15.6	4.1	
49	79	1.55			
64	81	1.59			
2 hrs	85	1.67			
3	88	1.73			
5					
6					

SAMPLE # LAYER #1

1. $t_D = t_d \left(\frac{Dd}{do}\right)^2$
2. $D_o = \frac{D}{1+e_i} = \frac{31 \times 12}{1.96} = 189.9''$
3. $do = 0.3060$
4. $t_d = 1.$
5. $t_d = 1\left(\frac{189.9}{0.3060}\right)^2 = (621)^2 =$ _____ min
6. $= \frac{385000 \text{ min}}{1440}$ 267.4 days
7. $= \frac{\text{days}}{365} = .733$ years

K =

8. $\frac{P \text{ DRAINAGE FACE}}{P \text{ IMPERVIOUS FACE}} = \frac{P_1}{P_2} = \frac{2.40}{2.50} = K$
9. K = .84

TOTAL SETTLEMENT		0.95			
Test Time	%	Settlement (FT)	Time 2 Drain Face	K=	Time 1 Drain Face
1/4 min	34	.32	.183		
1/2	43	.41	.366		
1	52	.49	0.733		
2 1/4	59	.56	1.65		
4	62	.59	2.93		
9	68	.65	6.59		
16	72	.72	11.73		
25	76	.72	18.2		
36	78	.74	26.4		
49	80	.76	35.8		
64	81	.77			
2 hrs	86	.82			
3	88	.84			
5					
6					

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27 MAY 58

HOLE # H#3 LOCATION WOODINVILLE INTERCHANGE JOB SL-359

SAMPLE

1. $t_D = t_d \left(\frac{Da}{do}\right)^2$
2. $Do = \frac{D}{1+e_i}$ ____ X12 = ____ "
3. do =
4. t_d = 1.
5. t_d = 1 (____)^2 = (____)^2 = ____ min
6. = ____ min / 1440 = ____ days
7. = ____ days / 365 = ____ years

K =

8. $\frac{P \text{ DRAINAGE FACE}}{P \text{ IMPERVIOUS FACE}}$ $\frac{P_1}{P_2}$ = ____

9. K = ____

TOTAL SETTLEMENT ____

TEST TIME	%	SETTLEMENT (Ft)	TIME 2 Drain Face K=	TIME 1 Drain Face
1/4 min.	53			
1/2	53			
1	59			
2 1/4	66			
4	71			
9	76			
16	78			
25	80			
36	82			
49	84			
64				
2 hrs				
3				
5				
6				

SAMPLE # LAYER #4

1. $t_D = t_d \left(\frac{Da}{do}\right)^2$
2. $Do = \frac{D}{1+e_i}$ = 94 / 1.76 X12 = 641 "
3. do = 0.3293
4. t_d = 1.
5. t_d = 1 (641 / 0.3293)^2 (1945)^2 = ____ min
6. = 3785000 min / 1440 = 2630 days
7. = ____ days / 365 = 7.21 years

K =

8. $\frac{P \text{ DRAINAGE FACE}}{P \text{ IMPERVIOUS FACE}} = \frac{P_1}{P_2} = \frac{2.99}{5.07}$ = K

9. K = .59

TOTAL SETTLEMENT 1.07

Test Time	%	Settlement (Ft)	Time 2 Drain Face	K=	Time 1 Drain Face
1/4 min	53	.57	1.80	9.8	8.65
1/2	53	.57	3.60	9.8	17.3
1	59	.63	7.21	9.4	34.6
2 1/4	66	.71	16.2	9.3	78
4	71	.76	38.8	9.2	
9	76	.81	64.8	9.2	
16	78	.83			
25	80	.86			
36	82	.88			
49	84	.90			
64					
2 hrs					
3					
5					
6					

STA. 868+00 C.R.L.

HOLE # H-3 LOCATION BOTHELL TO WOODINVILLE – SAMMAMISH RIVER BRIDGE JOB SL-359

SAMPLE # T-1258

1. $t_D = t_d \left(\frac{Do}{do}\right)^2$
2. $D_o = \frac{D}{1+e_i}$ $\frac{92 \times 12}{1.789} = 616.''$
3. $d_o = 0.3145$
4. $t_d = 1.$
5. $t_d = 1\left(\frac{616}{0.3145}\right)^2 = (1958.6)^2 =$ 3,836,114 min
6. $= \frac{3,836,114 \text{ min}}{1440} =$ 2664 days
7. $= \frac{\text{days}}{365} =$ 7.3 years

K =

8. $\frac{P \text{ DRAINAGE FACE}}{P \text{ IMPERVIOUS FACE}}$ $\frac{P_1}{P_2} = \frac{3.09}{5.10}$

9. K = .60

TOTAL SETTLEMENT 1.23

TEST TIME	%	SETTLEMENT (FT)	TIME 2 Drain Face	K=	TIME 1 Drain Face
1/4 min.	24	.30	1.83	5.3	9.70
1/2	34	.42	3.65	5.0	18.25
1	45	.55	7.30	4.7	34.31
2 1/4	59	.73	16.43	4.4	72.29
4	67	.82	29.2	4.3	
9	76	.94	65.7	4.2	
16	80	.98	116.8	4.2	
25	82	1.01			
36	84	1.03			
49	86	1.06			
64	87	1.07			
2 hrs	90	1.11			
3					
5					
6					

SAMPLE

1. $t_D = t_d \left(\frac{Do}{do}\right)^2$
2. $D_o = \frac{D}{1+e_i} =$ ____ x12 = ____''
3. $d_o =$
4. $t_d = 1.$
5. $t_d = 1(\quad)^2 = (\quad)^2 =$ ____ min
6. $= \frac{\text{min}}{1440}$ ____ days
7. $= \frac{\text{days}}{365} =$ ____ years

K =

8. $\frac{P \text{ DRAINAGE FACE}}{P \text{ IMPERVIOUS FACE}} = \frac{P_1}{P_2} =$ ____ = K

9. K = ____

TOTAL SETTLEMENT

Test Time	%	Settlement (FT)	Time 2 Drain Face	K=	Time 1 Drain Face
1/4 min					
1/2					
1					
2 1/4					
4					
9					
16					
25					
36					
49					
64					
2 hrs					
3					
5					
6					

STA. 868+00 C.R.L.

HOLE # H-3 LOCATION Bothell To Woodinville - Sammamish River Bridge JOB SL-359

SAMPLE # T-1254

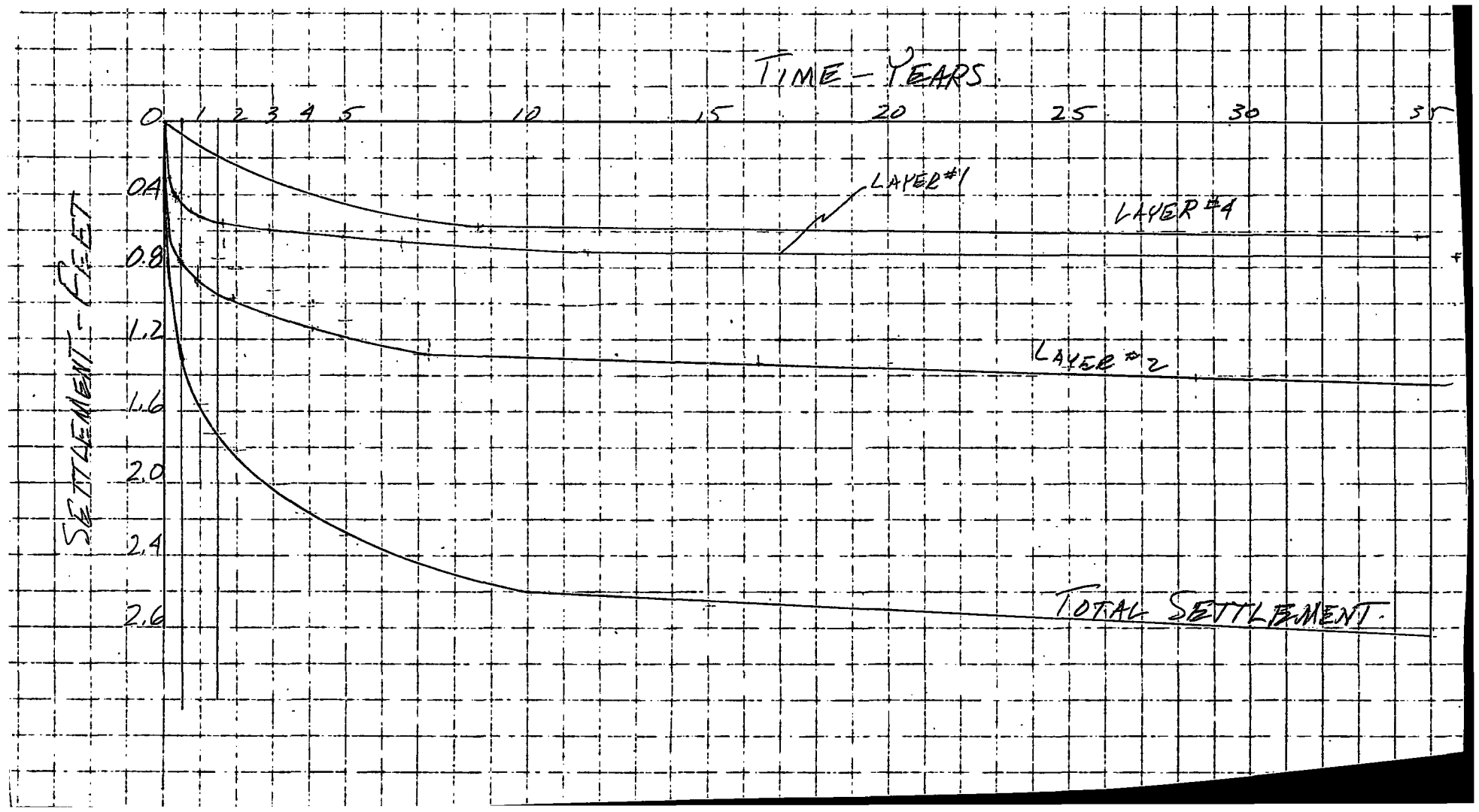
1. $t_D = t_d \left(\frac{Da}{do}\right)^2$
2. $D_o = \frac{D}{1+e_i}$ $\frac{24 \times 12}{1.783} = 161.5''$
3. $do = 0.3393$
4. $t_d = 1.$
5. $t_d = 1\left(\frac{161.5}{0.3393}\right)^2 = (476.)^2 =$ 226,576 min
6. $= \frac{226,576 \text{ min}}{1440} =$ 157 days
7. $= \frac{157 \text{ days}}{365} =$ 0.43 years
8. K = $\frac{P \text{ DRAINAGE FACE}}{P \text{ IMPERVIOUS FACE}}$ $\frac{P_1}{P_2} = \frac{1.935}{2.445}$
9. K = .79

TOTAL SETTLEMENT		1.00			
TEST TIME	%	SETTLEMENT (FT)	TIME 2 Drain Face	K = .8	TIME 1 Drain Face
1/4 min.	55	.55	0.11	4.2	.46
1/2	60	.60	0.22	4.2	.92
1	65	.65	0.43	4.2	1.81
2 1/4	70	.70	0.97	4.2	4.07
4	74	.74	1.72	4.1	7.05
9	77	.77	3.87		15.87
16	80	.80	6.88		28.21
25	81	.81	10.75		44.08
36	83	.83	15.48		
49	84	.84	21.07		
64	85	.85	25.57		
2 hrs	89	.89			
3					
5					
6					

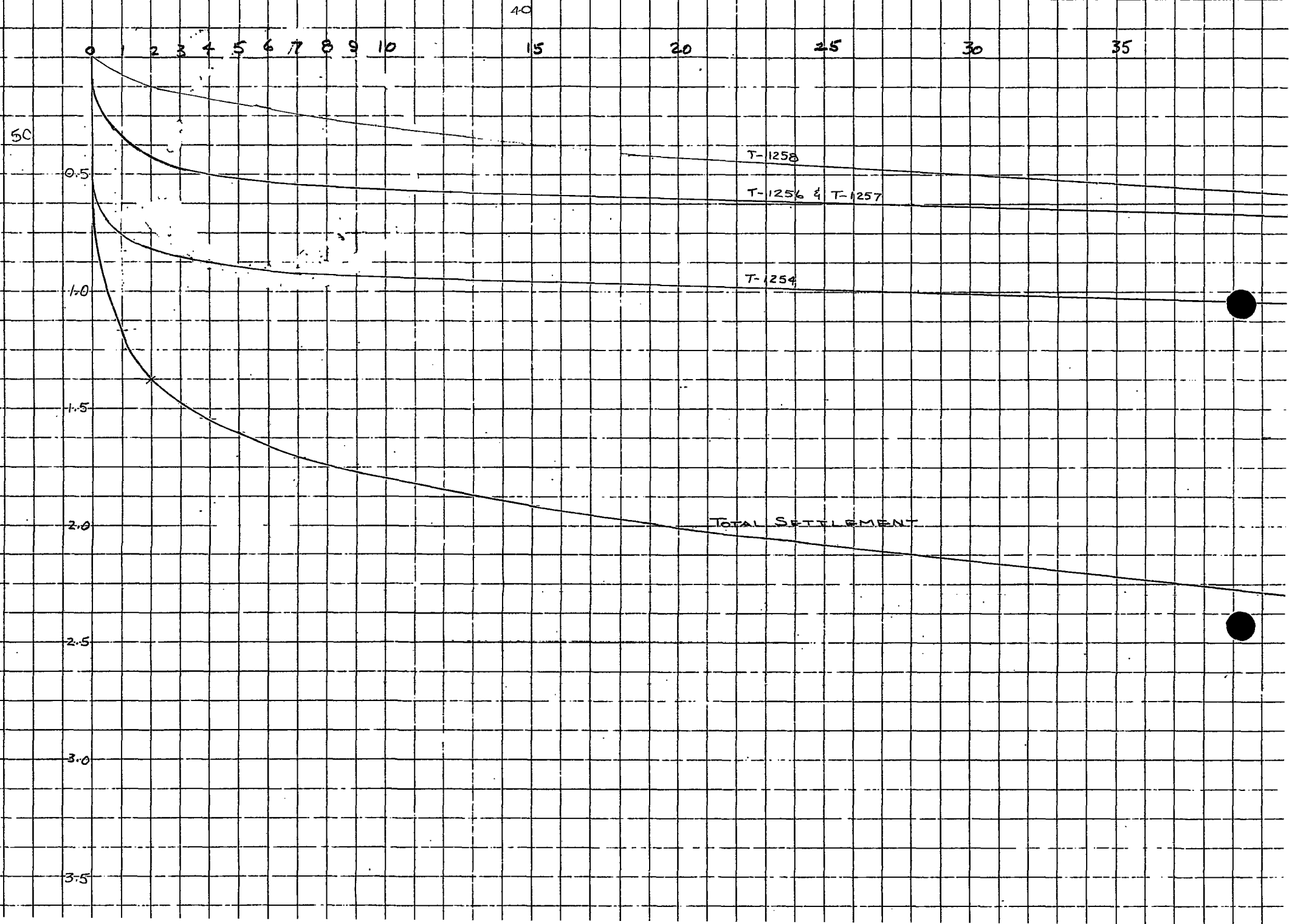
SAMPLE # T-1256 — T-1257

1. $t_D = t_d \left(\frac{Da}{do}\right)^2$
2. $D_o = \frac{D}{1+e_i} = \frac{31 \times 12}{1.958} = 189.9''$
3. $do = .3060$
4. $t_d = 1.$
5. $t_d = 1\left(\frac{189.9}{0.3060}\right)^{2.3}\left(620.6\right)^2 =$ 385,144 min
6. $= \frac{385,144 \text{ min}}{1440}$ 267 days
7. $= \frac{267 \text{ days}}{365} = 0.73$ years
8. K = $\frac{P \text{ DRAINAGE FACE}}{P \text{ IMPERVIOUS FACE}} = \frac{P_1}{P_2} = \frac{2.445}{2.948} = K$
9. K = .83

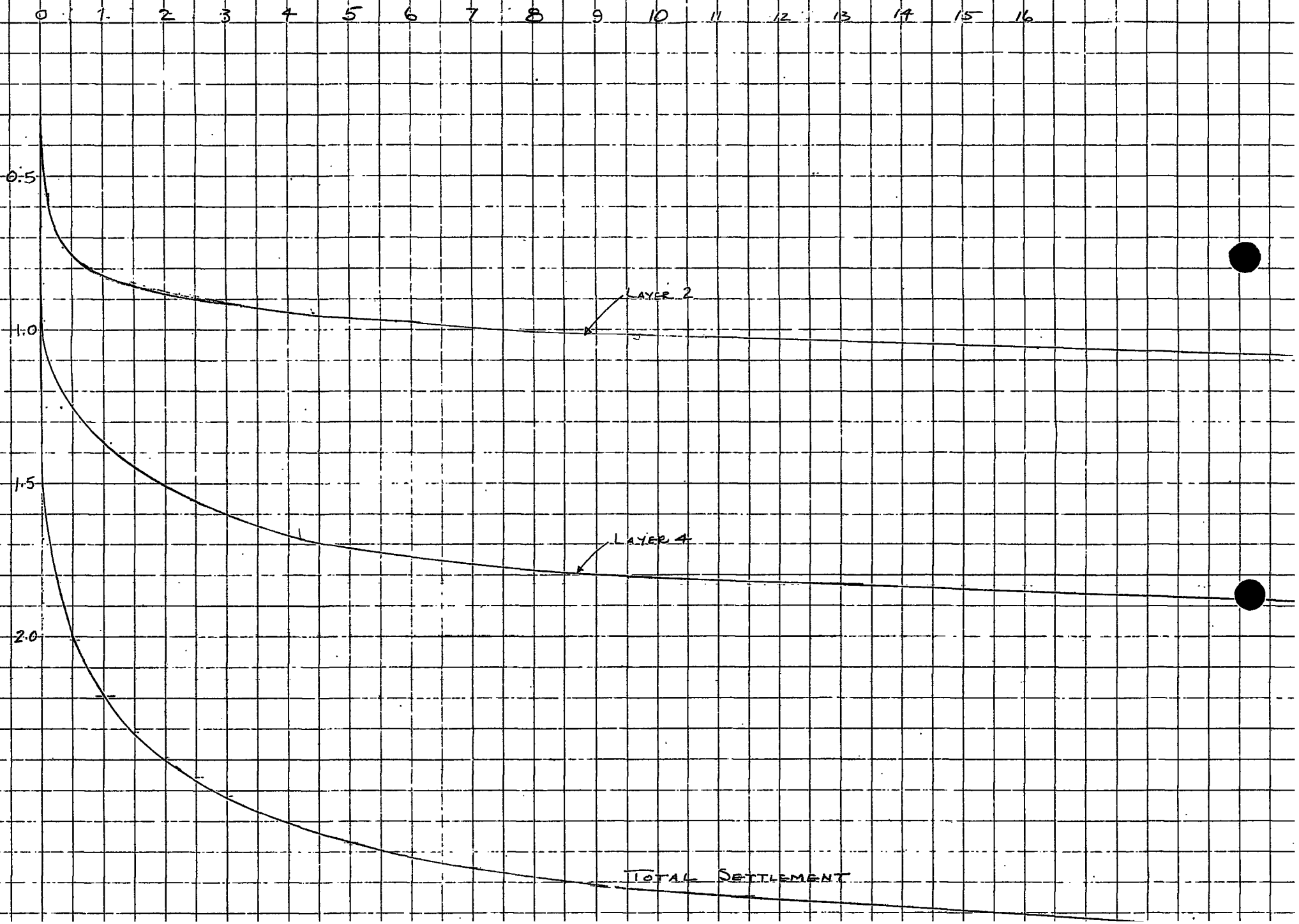
TOTAL SETTLEMENT		.92			
Test Time	%	Settlement (Ft)	Time 2 Drain Face	K =	Time 1 Drain Face
1/4 min	34	0.31	0.18	4.4	.792
1/2	43	0.40	0.37	4.4	1.63
1	52	0.48	0.73	4.3	3.14
2 1/4	59	0.54	1.64	4.2	6.89
4	63	0.58	2.92	4.2	12.26
9	68	0.63	6.57	4.2	27.59
16	72	0.66	11.68	4.1	47.89
25	76	0.70	18.25		74.82
36	78	0.72	26.28		
49	80	0.74	35.77		
64	82	0.75			
2 hrs					
3					
5					
6					


TIME - YEARS
0
1
2
3
4
5
10
15
20
25
30
35
SETTLEMENT - FEET
0.4
0.8
1.2
1.6
2.0
2.4
2.6
LAYER #1
LAYER #4
LAYER #2
TOTAL SETTLEMENT

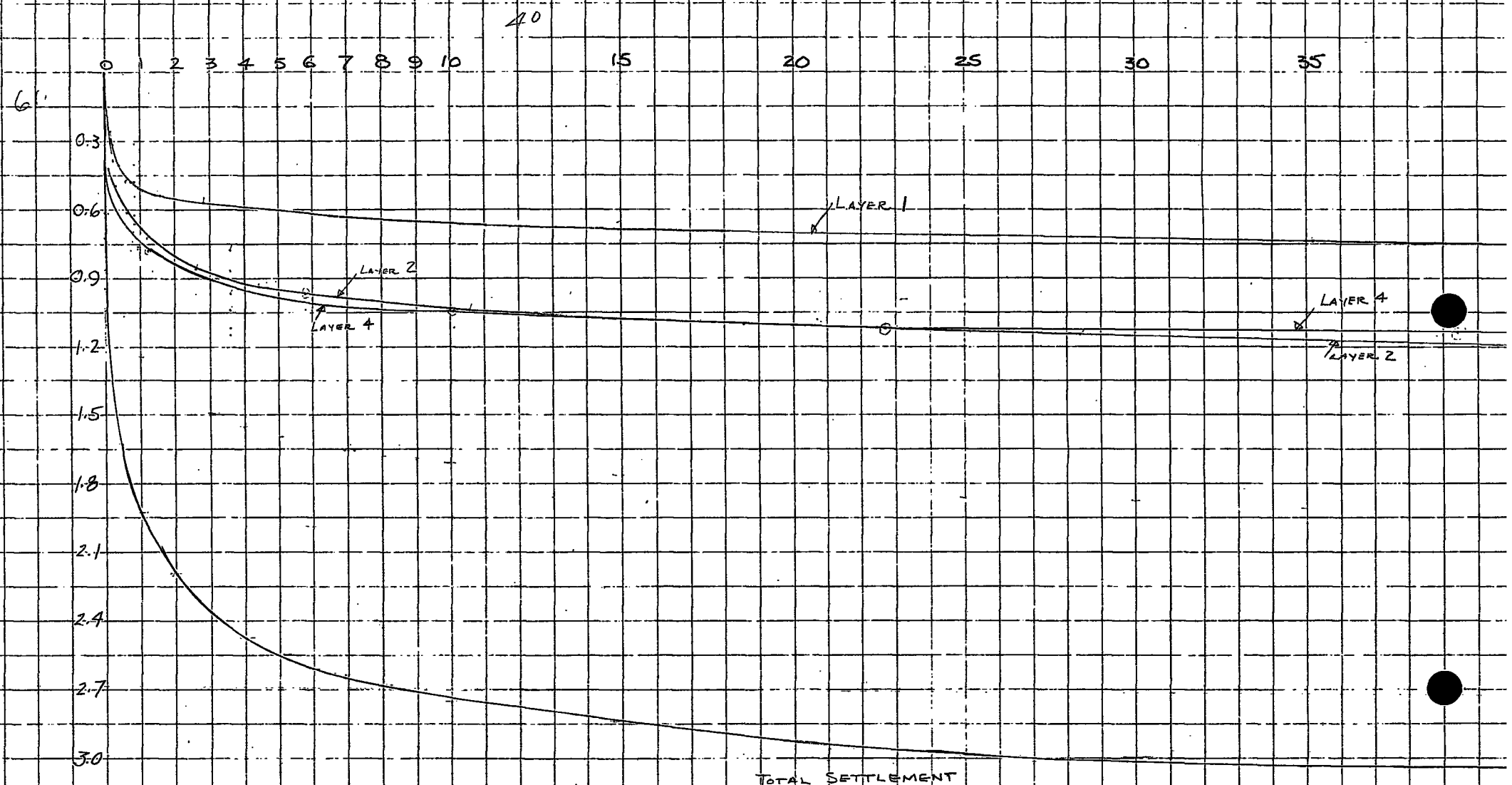
S.S.H. 2-A NE 132ND ST. TO WOODINVILLE STA. 868+00 JOB SL-259



S.S.H. 2-A N.E. 132ND ST. TO WOODINVILLE STA. 859+85 JOB SL-359



S.S.H. 2-A N.E. 132ND ST. TO WOODINVILLE STA. 873+10 JOB SL-359



Sta. 873 +10

D.K.F

HOLE # 49 LOCATION Bothell to Woodinville JOB L-1810

Layer #2 SAMPLE # T-1325, T1354, T-1324, T-1328

1. $t_D = (t_d (\frac{Do}{do})^2)$
2. $Do = \frac{D}{1+ei} = \frac{19 \times 12}{2.3} = 99.1$"
3. do = 0.2563
4. $t_d = 1.$
5. $t_D = 1(\frac{99.1}{0.2563})^2 = (386.3)^2 =$ = _____ min
6. = $\frac{169000 \text{ min}}{1440}$ = 103.5 days
7. = $\frac{\text{days}}{365}$ = .284 years

K =

8. $\frac{P_{DRAINAGE\ FACE}}{P_{IMPERVIOUS\ FACE}} = \frac{P_1}{P_2} = \frac{2.09}{2.38}$ =

9. K = 0.878

Layer #1 SAMPLE # T-1256 & T-1257

1. $t_D = t_d (\frac{Do}{do})^2$
2. $Do = \frac{D}{1+ei} = \frac{30 \times 12}{1.96} = 183.7$"
3. do = 0.3060
4. $t_d = 1.$
5. $t_D = 1(\frac{183.7}{0.3060})^2 = (600.3)^2 =$ = 360,360 min
6. = $\frac{\text{min}}{1440}$ = 264 days
7. = $\frac{264 \text{ days}}{365}$ = 0.724 years

K =

8. $\frac{P_{DRAINAGE\ FACE}}{P_{IMPERVIOUS\ FACE}} = \frac{P_1}{P_2}$ = _____

9. K = _____

TOTAL SETTLEMENT		1.57				TOTAL SETTLEMENT		0.93			
TEST TIME	%	SETTLEMENT (Ft)	TIME 2 Drain Face	K=	TIME 1 Drain Face	TEST TIME	%	SETTLEMENT (Ft)	TIME 2 Drain Face	K=	TIME 1 Drain Face
1/4 min	34	0.49	.07	4.1	0.3	1/4 min	34	31	0.18		
1/2	39	.61	.14	4.1	.6	1/2	43	.40	0.36		
1 →	46	.72	0.284	4.1	1.2	1	52	.48	0.72		
2 1/4	55	.86	.64	4.1	2.6	2 1/4	59	.54	1.62		
4	60	.94	1.14	4.1	4.7	4	62	.57	2.86		
9	66	1.04	12.56	4.1	10.5	9	68	.62	6.50		
16	70	1.10	4.54	4.1	18.6	16	72	.66	11.05		
25	73	1.15	7.10	4.0	28.4	25	76	.70	18.00		
36	76	1.19	10.22	4.0	41.0	36	78	.72	25.90		
49	78	1.22	13.92	4.0		49	80	.74	35.20		
64	80	1.25	18.18			64	81	.75			
2 hrs	84	1.32	34.08			2 hrs	86	.79			
3	87	1.37				3	88	.81			
5						5					

DKF

Sta. 873+

HOLE # _____ LOCATION Bothell to Woodinville JOBL-1038

Layer #4 SAMPLE # T-1258, T-1326 & T-1329

1. $t_D = t_d \left(\frac{Do}{do}\right)^2$
2. $Do = \frac{D}{1+e_i} = \frac{86 \times 12}{1.76} = 586.0$ "
3. do = 0.3293
4. t_d = 1.
5. $t_D = 1\left(\frac{}{0.3293}\right)^2 = (177.9)^2 =$ = 31694 min
6. = $\frac{\text{min}}{1440}$ = 219.8 days
7. = $\frac{\text{days}}{365}$ = 0.60 years

K =

8. $\frac{P_{\text{DRAINAGE FACE}}}{P_{\text{IMPERVIOUS FACE}}} = \frac{P_1}{P_2} = \frac{3.41}{5.19}$

9. K = .658

TOTAL SETTLEMENT 1.47

TEST TIME	%	SETTLEMENT (Ft)	TIME 2 Drain Face	K=	TIME 1 Drain Face
1/4 min	53	0.78	0.15	4.4	1.3
1/2	53	0.78	.30	4.4	1.3
1	59	.87	0.60	4.3	2.6
2 1/4	66	.97	1.35	4.3	5.8
4	71	1.04	2.40	4.2	10.1
9	76	1.12	5.40	4.2	22.7
16	78	1.15	9.60	4.1	39.4
25	80	1.19	15.00	4.1	
36	82	1.21	21.60	4.1	
49	84	1.23	29.40		
64			38.40		
2 hrs					
3					
5					

SAMPLE #

1. $t_D = t_d \left(\frac{Do}{do}\right)^2$
2. $Do = \frac{D}{1+e_i} = \frac{\quad \times 12}{\quad} =$ "
3. do =
4. t_d = 1.
5. $t_d = 1\left(\frac{}{}\right)^2 = (\quad)^2 =$ = min
6. = $\frac{\text{min}}{1440}$ = days
7. = $\frac{\text{days}}{365}$ = years

K =

8. $\frac{P_{\text{DRAINAGE FACE}}}{P_{\text{IMPERVIOUS FACE}}} = \frac{P_1}{P_2} =$

9. K =

TOTAL SETTLEMENT

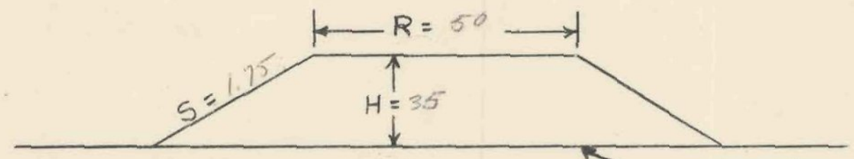
TEST TIME	%	SETTLEMENT (Ft)	TIME 2 Drain Face	K=	TIME 1 Drain Face
1/4 min					
1/2					
1					
2 1/4					
4					
9					
16					
25					
36					
49					
64					
2 hrs					
3					
5					

NEAR H#4

SSH 1[illegible]. 2-A Section W[illegible]NVILLE INTERCHANGE – N.E. 132ND ST TO WOODINVILLE Sta. 8[illegible]+00 Job SL-359

Fill H = 35 @ 125 #/cu.ft.	Inactive Pressure (#/□')	Inactive Pressure (Tons/□')	D / R+SH	P_z/P	Active Pressure (Tons/□')	Total Pressure (Tons/□')	e_i	e_i (Average)	e_f	e_f (Average)	$Q = \frac{e_i - e_f}{1 + e_i}(D)$
35											
FILL 4375#					2.19	2.19					
0 SILTY SAND											
(7) Wu = 65 #/cu.ft.			7/111								= =
7 455#	455	0.23	0.06	1.0	2.19	2.42					
LAYER #2							1.27		1.00		
(11) Wu = 44 #/cu.ft.			11/111					1.24		1.00	$\frac{(1.24-1.00)\,11}{1+1.24} = \frac{0.24\,(11)}{2.24} = 1.18$
18 484#	939#	0.47	0.16	0.98	2.14	2.61	1.22		0.99		
FINE SAND & GRAVEL											
(51) Wu = 63 #/cu.ft.			69/111								= =
69 3213#	4152	2.08	0.62	0.74	1.62	3.70					
LAYER #4							0.78		0.74		
(18) Wu = 56 #/cu.ft.			87/111					0.77		0.74	$\frac{(0.77-0.74)\,18}{1+0.77} = \frac{0.03\,(18)}{1.77} = 0.30$
87 1008#	5160	2.58	0.78	.66	1.45	4.03	0.76		0.73		
Wu = #/cu.ft.											= =
Wu = #/cu.ft.											= =
Wu = #/cu.ft.											= =
Wu = #/cu.ft.											= =

Q = 1.48 DKP

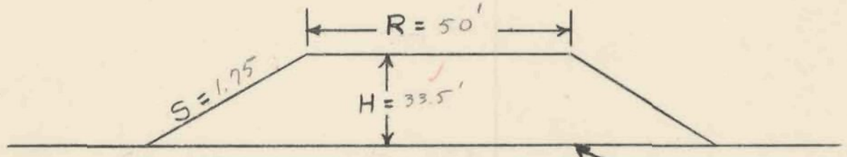


P = 4375# OR 2.187 TONS

R+SH = 50 + (1.75 x 35)
= 50 + 61.25
= 111.25

S SH . . 2A Section I thell to Woodinville - Sammamish River Bridge Sta. 859 85' Job L-1038

Fill H = 33.5' @ 125 #/cu.ft.	Inactive Pressure (#/□')	Inactive Pressure (Tons/□')	D / R+SH	P_z/P	Active Pressure (Tons/□')	Total Pressure (Tons/□')	e_i	e_i (Average)	e_f	e_f (Average)	$Q = \frac{e_i - e_f}{1 + e_i}(D)$
4200 ~~4190#~~					2.10	2.10 ~~2.09~~					
0 Org silt & sand.											
(7) Wu = 65 #/cu.ft. 455#	455	0.23	7/108.6 0.06	1.0	2.10	2.32					$\frac{(1.36 - 1.10)\,11}{1 + 1.36} = \frac{(0.26)\,11}{2.36} = 1.21$
7 L_2											
(11) Wu = ~~33~~ #/cu.ft. ~~1324~~ 43 ~~1367~~ 495 ~~369~~ #	9.50 818	0.48 ~~0.41~~	18/108.6 0.17	0.98	2.05	2.53 ~~2.46~~	~~1.38~~ 1.500 1.453 1.466 1.34	1.477 ~~1.36~~	~~1.10~~ 1.170 1.187 ~~1.09~~	1.159 ~~1.10~~	$\frac{1.477 - 1.159}{2.477} = \frac{.318}{2.477}\ (11) = 1.41$
18 Fine sand											
(38) Wu = 62 #/cu.ft. 2356	3306 ~~3174~~	1.653 ~~1.59~~	56/108.6 0.52	0.81	1.70	3.34 ~~3.23~~					= =
56 Sand & gravel											
(13) Wu = 65 #/cu.ft. 845	4150 ~~4019~~	2.075 ~~2.01~~	69/108.6 0.64	0.73	1.53	3.61 ~~3.53~~					= =
69 L_4											
(18) Wu = 56 #/cu.ft. 1329 T 1326 1008	5160 ~~5027~~	2.580 ~~2.64~~	87/108.6 0.80	0.64	1.34	3.92 3.98	~~0.86~~ .754 .742 ~~0.85~~	.748 ~~0.86~~	~~0.74~~ .726 .722 ~~0.73~~	.724 ~~0.74~~	$\frac{.748 - .726}{(0.86 - 0.74)\,18} = \frac{.022}{(0.12)\,18} = \frac{.116}{1.86} = .116$
87											
Wu = #/cu.ft.											= =
Wu = #/cu.ft.											= =
Wu = #/cu.ft.											= =



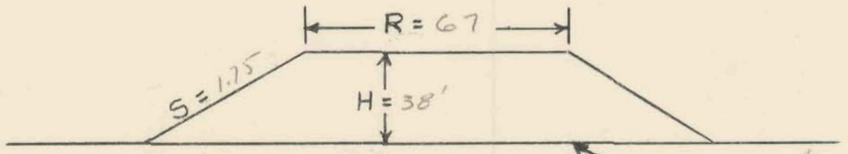
R + SH = 50' + (1.75 × 33.5')
= 50' + 58.6'
= 108.6'.

Q = 1.57 / 2.37

WOODINVILLE INTERCHANGE

5 SH 1 . 2-A Section N. 132ND St. To WOODINVILLE Sta. 955 + 45 Job SL 359 H#6

Fill H = 38' @4750 #/cu.ft.	Inactive Pressure (#/□')	Inactive Pressure (Tons/□')	D / R+SH	P_z/P	Active Pressure (Tons/□')	Total Pressure (Tons/□')	e_i	e_i (Average)	e_f	e_f (Average)	$Q = \frac{e_i - e_f}{1 + e_i}(D)$
38											
(38) FILL 4750					2.38	2.38					
0 ORG. SILTY SAND											
(6) Wu = 65 #/cu.ft. 390#	390#	0.195 T	6/134 .0447	1.0	2.38	2.58					= =
6 LAYER #2							1.28		0.995		
(5) Wu = 44 #/cu.ft. 220#	610#	0.305 T	11/134 .082	1.0	2.38	2.68	1.25	1.26	0.987	0.991	$\frac{1.26 - 0.991\,(5)}{1 + 1.26} = \frac{(0.269)\,5}{2.26} = .595$
11 FINE SAND											
(26) Wu = 62 #/cu.ft. 1610#	2220#	1.110 T	31/134 .276	0.94	2.24	3.34					= =
37 LAYER #3							0.924		0.817		
(11) Wu = 54 #/cu.ft. 595#	2815#	1.407 T	48/134 .358	0.90	2.14	3.55	0.902	0.913	0.810	0.814	$\frac{0.913 - 0.814\,(11)}{1 + 0.913} = \frac{(0.099)\,11}{1.913} = .568$
48 SAND & GR.											
(19) Wu = 65 #/cu.ft. 1235#	4050#	2.025 T	67/134 .50	0.82	1.95	3.98					= =
67 LAYER #4							0.775		0.735		
(12) Wu = 56 #/cu.ft. 672#	4722#	2.361 T	79/134 .58	0.76	1.81	4.17	0.768	.772	0.732	0.734	$\frac{0.772 - 0.734\,(12)}{1 + 0.772} = \frac{0.038\,(12)}{1.772} = .257$
79											
Wu = #/cu.ft.											= =
Wu = #/cu.ft.											= =

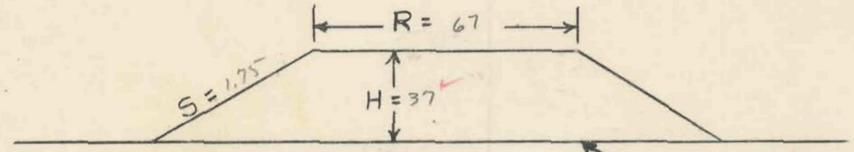


R + SH = 67 + [1.75(38')]
= 67 + 66.5
= 133.5

Q = 1.93 DKF

S SH . . 2A Section Bothell to Woodinville - Sammamish River Bridge Sta. 85[illegible] + 39 Job L-1038

Fill H = 37' @ 125 #/cu.ft.	Inactive Pressure (#/□')	Inactive Pressure (Tons/□')	D / R+SH	P_z/P	Active Pressure (Tons/□')	Total Pressure (Tons/□')	e_i	e_i (Average)	e_f	e_f (Average)	$Q = \frac{e_i - e_f}{1 + e_i}(D)$
37 Fill 4625#					2.31	2.31					
0 Org. silty sand (5.5) Wu = 65 #/cu.ft. 5.5 358#	358	0.18	5.5/131.8 0.0417	1.0	2.31	2.49					= =
(5.5) Wu = ~~33~~ 30 #/cu.ft. T-1354 105' 182# 11 Fine sand	~~540~~ 526	0.27	11/131.8 0.0835	~~1.0~~ .99	2.31	2.58	~~1.435~~ 1.435 ~~1.413~~ 1.413	1.434 ~~1.23~~	~~1.163~~ 1.163 ~~1.158~~ 1.158	1.160 ~~1.08~~	$\frac{(1.424-1.160)\ 5.5}{2.424\ \ 1+1.23} = \frac{.264\ \ 0.15(5.5)(5.5)}{2.424\ \ 2.23} = .60\ \ 0.37$
(26) Wu = 62 #/cu.ft. 37 1610# L-3	~~2150~~ 2135	1.08	37/131.8 0.281	~~0.94~~ .93	2.17	3.25					= =
(11) Wu = 55 #/cu.ft. 48 T-1251 605# Sand & gravel	~~2755~~ 2737	1.38	48/131.8 0.364	~~0.90~~ .89	2.08	3.46	~~0.92~~ ~~.956~~ ~~.951~~ ~~.941~~ 0.90	.946 0.91	~~0.82~~ ~~0.856~~ .842 0.81	0.846 ~~0.82~~	$\frac{(.946-.846)\ 11}{1.946\ \ 1+0.91} = \frac{.10\ \ 0.09(11)}{1.946\ \ 1.91} = .58\ \ 0.52$
(19) Wu = 65#/cu.ft. 67 1236# L-4	~~3441~~ 3924	1.99	67/131.8 0.509	~~0.81~~ .82	1.87	3.86					= =
(12) Wu = 56#/cu.ft. 79 T-1326 672#	~~4663~~ 4646	2.33	79/131.8 0.599	0.76	1.76	4.09	~~0.78~~ ~~.736~~ ~~.728~~ 0.77	.732 ~~0.78~~	~~0.74~~ ~~.706~~ .703 0.73	.703 ~~0.74~~	$\frac{(.732-.703)\ 12}{1.732\ \ 1+.78} = \frac{.029(12)}{1.732\ \ 1.78} = .19\ \ 0.27$
Wu = #/cu.ft.											= =
Wu = #/cu.ft.											= =

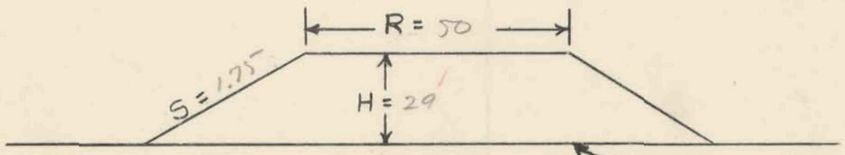


R + SH = 67 + (1.75 × 37)
= 67 + 64.8
= 131.8

$Q = \frac{~~1.16~~}{1.37}$

5 SH No. 2A Section E Shell to Woodinville - Summamish River Bridge Sta. 864+58' Job L-1038

Fill H = 29' @ 125 #/cu.ft.	Inactive Pressure (#/□')	Inactive Pressure (Tons/□')	D / R+SH	P_z/P	Active Pressure (Tons/□')	Total Pressure (Tons/□')	e_i	e_i (Average)	e_f	e_f (Average)	$Q = \frac{e_i - e_f}{1 + e_i} (D)$
3630					1.81	1.81					
0 Dry S, Silt & fi Sand											
(13) Wu = 65 #/cu.ft. 845# 13	845	0.42	13/100.7 = 0.13	0.99	1.79	2.21					$\frac{(1.18-1.01)34}{1+1.18} = \frac{.17(34)}{2.18} = 2.65$
(34) Wu = 33 #/cu.ft. 1122# 47 ∠2	1967	0.98	47/100.7 = 0.47	0.84	1.52	2.50	~~1.33~~ 1.23 1.14 ~~1.25~~	~~1.18~~ 1.02 ~~1.24~~	~~1.11~~ 1.00 ~~1.08~~	~~1.10~~ 1.01	$\frac{(1.29-1.10)34}{1+1.29} = \frac{0.19(34)}{2.29} = ~~2.82~~$
Fine Sand (24) Wu = 62 #/cu.ft. 1488# 71	3455	1.73	71/100.7 = 0.71	0.69	1.25	2.48					= =
(57) Wu = 56 #/cu.ft. 3192# 128 ∠4	6647	3.32	128/100.7 = 1.27	0.46	0.83	4.15	0.78 0.75	.76	0.75 0.73	0.74	$\frac{(0.76-0.74)57}{1+0.76} = \frac{0.02(57)}{1.76} = 0.64$
Wu = #/cu.ft.											= =
Wu = #/cu.ft.											= =
Wu = #/cu.ft.											= =
Wu = #/cu.ft.											= =



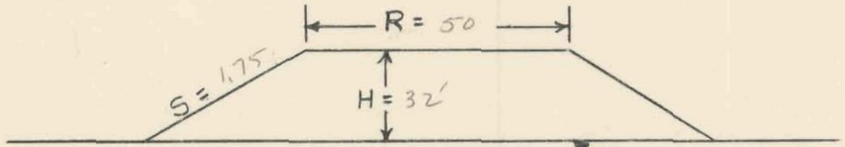
R+SH = 50 + (1.75 x 29)
= 50 + 50.7'
= 100.7'

$Q = \frac{~~3.96~~}{3.29}$

NEAR H# 5

℄ SH 1. 2-A Section WOODINVILLE INTERCHANGE - N.E. 132ND ST TO WOODINVILLE Sta. 86 + 20 Job 54-359

Fill H = 32 @ 125 #/cu.ft.	Inactive Pressure (#/□')	Inactive Pressure (Tons/□')	D / R+SH	P_z/P	Active Pressure (Tons/□')	Total Pressure (Tons/□')	e_i	e_i (Average)	e_f	e_f (Average)	$Q = \frac{e_i - e_f}{1+e_i}(D)$
4000#					2.0	2.0					
0 SILTY SAND											
(13) Wu = 65 #/cu.ft. 845#	845#	0.42 T	13/106 0.12	0.99	1.98	2.40					= =
13 LAYER #2											
(20) Wu = 44 #/cu.ft. 880#	1725#	2.86 T	33/106 0.31	0.93	1.86	2.72	1.22 1.16	1.19	1.01 0.98	1.00	$\frac{1.19-1.00(20)}{1+1.19} = \frac{0.19(20)}{2.19} = 1.74$
33 BLU FINESAND											
(38) Wu = 62 #/cu.ft. 2356#	4081#	2.04 T	71/106 0.67	0.71	1.42	3.46					= =
71 LAYER #4											
(32) Wu = 56 #/cu.ft. 1792#	5873#	2.94 T	103/106 0.97	0.56	1.12	4.06	.78 0.75	.76	0.74 0.73	0.74	$\frac{0.76-0.74(32)}{1+0.76} = \frac{0.02(32)}{1.76} = 0.36$
103											
Wu = #/cu.ft.											= =
Wu = #/cu.ft.											= =
Wu = #/cu.ft.											= =
Wu = #/cu.ft.											= =



R+SH = 50 + (1.75 × 32)
= 50 + 56
= 106

Q = 2.10 DKF

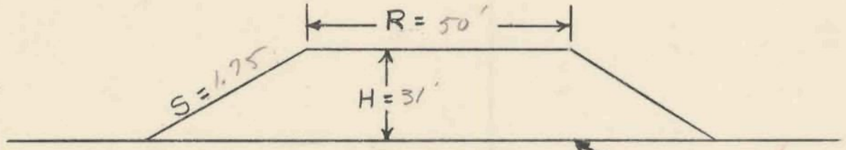
Used Ave. Void Ratio, W.D. of Layers 2 & 4

Layer #4 { T-1326, T-1329, T-1253

Layer #2 { T-1351, 1325, 1324, 1254, 1328

SSH . . 2A Section I thell to Woodinville – Sammamish River Bridge Sta. 862 + 20' Job L-1038

Fill H = 31' @ 125 #/cu.ft.	Inactive Pressure (#/□')	Inactive Pressure (Tons/□')	D / R+SH	P_z/P	Active Pressure (Tons/□')	Total Pressure (Tons/□')	e_i	e_i (Average)	e_f	e_f (Average)	$Q = \frac{e_i - e_f}{1 + e_i}(D)$
3880#					1.938 / 1.94	1.94					
0 — Org. sandy silt & sand											
(13.5) Wu = 65 #/cu.ft.	910 / 877	.455 / 0.44	15/104.5 = 0.13	0.99	1.42	2.373 / 2.36					= =
(20.5) Wu = 33 / 50 #/cu.ft. T-328 fine sand	1810 / 1553	.905 / 0.77	34/104.5 = 0.33	0.93 / 0.92	1.80 / 1.78	2.702 / 2.56	1.33 / 1.202 / 1.148 / 1.28	1.175 / 1.30	1.10 / 1.020 / 0.948 / 1.08	1.009 / 1.04	$\frac{(1.30-1.09)\,20.5}{2.175 + 1.30} = \frac{0.2 \times 20.5}{2.175 + 2.30} = 1.38 / 1.87$
(37) Wu = 62 #/cu.ft.	4105	2.052 / 1.92	69/104.5 = 0.66	0.71	1.38	3.435 / 3.30					= =
(31) Wu = 56 #/cu.ft. T-1326 1329	5845	2.922 / 2.74	100/104.5 = .96 / 1.01	0.57 / 0.55	1.10 / 1.07	4.023 / 3.86	0.78 / .751 / .736 / 0.76	.744 / 0.77	.715 / .721 / 0.74	0.725 / 0.74	$\frac{(0.77-0.74)\,35}{2.175 + 1 + 0.77} = \frac{0.03 \times 35}{2.175 + 1.77} = 0.59 / 0.34$
Wu = #/cu.ft.											= =
Wu = #/cu.ft.											= =
Wu = #/cu.ft.											= =
Wu = #/cu.ft.											= =



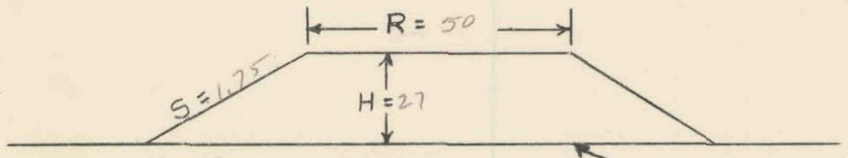
R + SH = 50' + (1.75 × 31')
= 50' + 54.5
= 104.5

$Q = \frac{2.45}{1.72}$

#43

S SH 1... 2-A Section WOODINVILLE INTERCHANGE — NE 132ND ST TO WOODINVILLE Sta. 868 ..0 Job SL-359

Fill H = 27 @ 125 #/cu.ft.	Inactive Pressure (#/□')	Inactive Pressure (Tons/□')	D / R+SH	P_z/P	Active Pressure (Tons/□')	Total Pressure (Tons/□')	e_i	e_i (Average)	e_f	e_f (Average)	$Q = \frac{e_i - e_f}{1 + e_i}(D)$
3375#					1.69	1.69					
0											
(10) Wu = 65 #/cu.ft. 650#	650#	0.32	10/97 0.10	0.99	1.68	2.00					= =
10 LAYER #2											
(24) Wu = 44 #/cu.ft. 1056#	1706#	0.85	34/97 0.35	0.92	1.55	2.40	1.24 / 1.15	1.20	1.09 / 1.01	1.02	$\frac{1.20 - 1.02(24)}{1 + 1.20} = \frac{0.18(24)}{2.20} = 1.96$ (1.97)
34 LAYER #1											
(31) Wu = 52 #/cu.ft. 1612#	3318#	1.66	65/97 0.67	0.71	1.20	2.86	0.48 / 0.95	.96	0.91 / 0.89	0.90	$\frac{0.96 - 0.90(31)}{1 + 0.96} = \frac{0.06(31)}{1.96} = 0.95$
65 DENSE SAND											
(6) Wu = 62 #/cu.ft. 372#	3690#	1.84	71/97 0.73	0.68	1.15	2.99					= =
71 LAYER #4											
94 Wu = 56 #/cu.ft. 5264#	8954#	4.48	165/97 1.70	0.35	0.59	5.07	0.78 / 0.73	0.76	0.75 / 0.72	0.74	$\frac{0.76 - 0.74(94)}{1 + 0.76} = \frac{0.02(94)}{1.76} = 1.07$ (1.22)
165											
Wu = #/cu.ft.											= =
Wu = #/cu.ft.											= =
Wu = #/cu.ft.											= =



R+SH = 50 + (1.75 × 27)
= 50 + 47
= 97

P = 3375# OR 1.69 TONS

Q = 398 LBF

Wu, VOID RATIOS TAKEN FROM AVERAGES COMPUTED FROM TEST SAMPLES IN LAYERS.

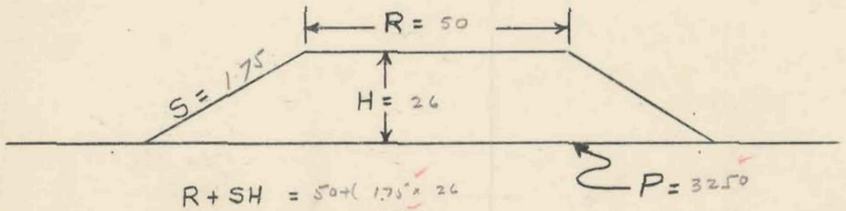
LAYER #1 { T-1256, 1257

LAYER #2 { T-1354, 1325, 1324, 1328, 1254

LAYER #4 { T-1326, 1329, 1258

S SH ... 2-A Section ...odenville Interchange Sta. Hole # 3-... - Sta 868 Job L-1038

Fill H = 26 @ 125 #/cu.ft.	Inactive Pressure (#/□')	Inactive Pressure (Tons/□')	D / R+SH	P_z/P	Active Pressure (Tons/□')	Total Pressure (Tons/□')	e_i	e_i (Average)	e_f	e_f (Average)	$Q = \frac{e_i - e_f}{1 + e_i} (D)$
3250 Fill					1.625	1.625					
0 Silty Sand											
10 Wu = 65 #/cu.ft. 650	650	.325	10/95.5 .10	.99	1.610	1.935					= =
10											
24 Wu = 95 #/cu.ft. T-1254 1320	1970	0.985	34/95.5 .36	.90	1.460	2.445	0.805 0.764	.783	0.718 0.700	.709	$\frac{.783 - .709\ (24)}{1.783} = \frac{.074\ (24)}{1.783} = 1.00$
34											
31 Wu = 52 #/cu.ft. T-1256 1257 1610	3580	1.790	65/95.5 .68	.71	1.158	2.948	.976 .939	.958	.911 .880	.90	$\frac{.958 - .90\ (31)}{1.958} = \frac{.058\ (31)}{1.958} = .92$
65 Fine Sand											
7 Wu = 60 #/cu.ft. 420	4000	2.000	72/95.5 .75	.67	1.090	3.09					= =
72											
38 Wu = 55 #/cu.ft. T-1258 2090	6040	3.045	110/95.5 1.15	.49	.89	3.845	.828 .793	.811	.792 .768	.780	$\frac{.811 - .780\ (38)}{1.811} = \frac{.031\ (38)}{1.811} = .65$
110 Blue silt-clay											
92 Wu = 55 #/cu.ft. T-1258 5060	9060	4.53	164/95.5 1.72	.35	.57	5.10	(.828)? .75	.789	.792 .738	.765	$\frac{.789 - .765\ (92)}{1.789} = \frac{.024\ (92)}{1.789} = 1.23$
164											
Wu = #/cu.ft.											= =
Wu = #/cu.ft.											= =



R+SH = 50 + (1.75 x 26
= 50 + 45.5
= 95.5

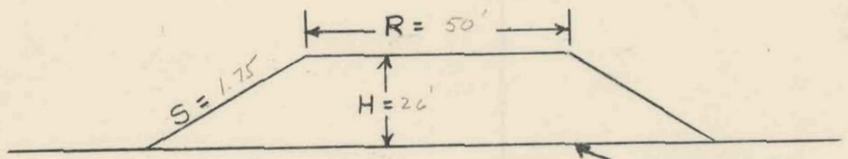
$Q = \frac{\cancel{2.57}}{3.15}$

SL-359

5 SH 1 , 2A Section Bothell to Woodinville - Sta. 873 10 Jo' L-1038

Fill H = 26 @ 125 #/cu.ft.	Inactive Pressure (#/□')	Inactive Pressure (Tons/□')	D / R+SH	P_z/P	Active Pressure (Tons/□')	Total Pressure (Tons/□')	e_i	e_i (Average)	e_f	e_f (Average)	$Q = \frac{e_i - e_f}{1 + e_i}(D)$
3250#					1.625	1.625					
0 Org. silt & sand.			15/95.5								
(15) W_u = 65 #/cu.ft.											= =
15 975#	975	0.49	0.16	0.99	1.60	2.09					
(19) W_u = 33 #/cu.ft. L_2			34/95.5				1.32		~~1.12~~ 1.05	1.08	$\frac{(1.30 - \frac{1.08}{1.11})\,19}{1 + 1.30} = \frac{(\frac{0.22}{0.19})\,19}{2.3} =$ ~~1.57~~ 1.81
34 627#	1602	0.81	0.36	0.90	1.45	2.26	1.27	1.30	1.10 ~~1.09~~	~~1.11~~	
(30) W_u = 53 #/cu.ft. L_1			64/95.5				0.98		0.92		$\frac{(0.96 - 0.90)\,30}{1 + 0.96} = \frac{(0.06)\,30}{1.96} =$ 0.92
64 1590	3192	1.59	0.67	0.72	1.17	2.76	0.95	0.96	0.88	0.90	
(7) W_u = 62 #/cu.ft. swamp			71/95.5								= =
71 434#	3626	1.81	0.74	0.67	1.09	2.90					
(84) W_u = 56 #/cu.ft. L_4 T=1258 T=1324 T=1329			157/95.5				0.78		~~0.74~~ 0.755	0.74	$\frac{(0.76 - 0.74)\,86}{1 + 0.76} = \frac{(0.02)\,86}{1.76} =$ 0.98 ~~1.47~~
157 4816#	8442	4.22	1.65	0.36	0.59	4.81	0.73	0.76	0.72		
W_u = #/cu.ft.											= =
W_u = #/cu.ft.											= =
W_u = #/cu.ft.											= =

Q = 3.71 ~~3.96~~



R + SH = 50' + (1.75 × 26)
= 50' + 45.5'
= 95.5