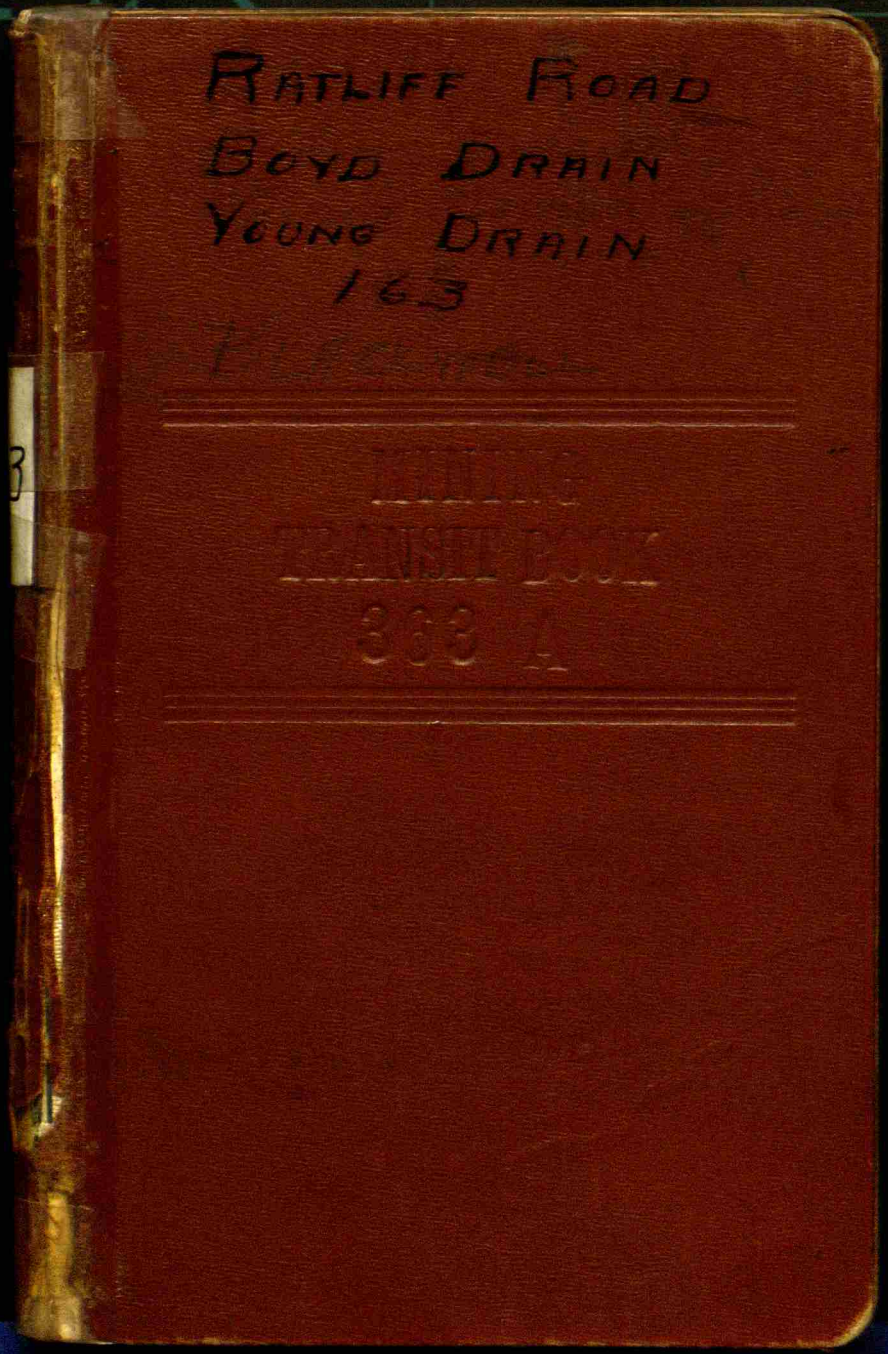

Ratliff Road
Boyd Drain
Young Drain
163
TRANSIT BOOK
363 A

D. J. Johns.
Lebanon.

KEUFFEL & ESSER CO.

DRAWING MATERIALS
AND
SURVEYING INSTRUMENTS.

NEW YORK.

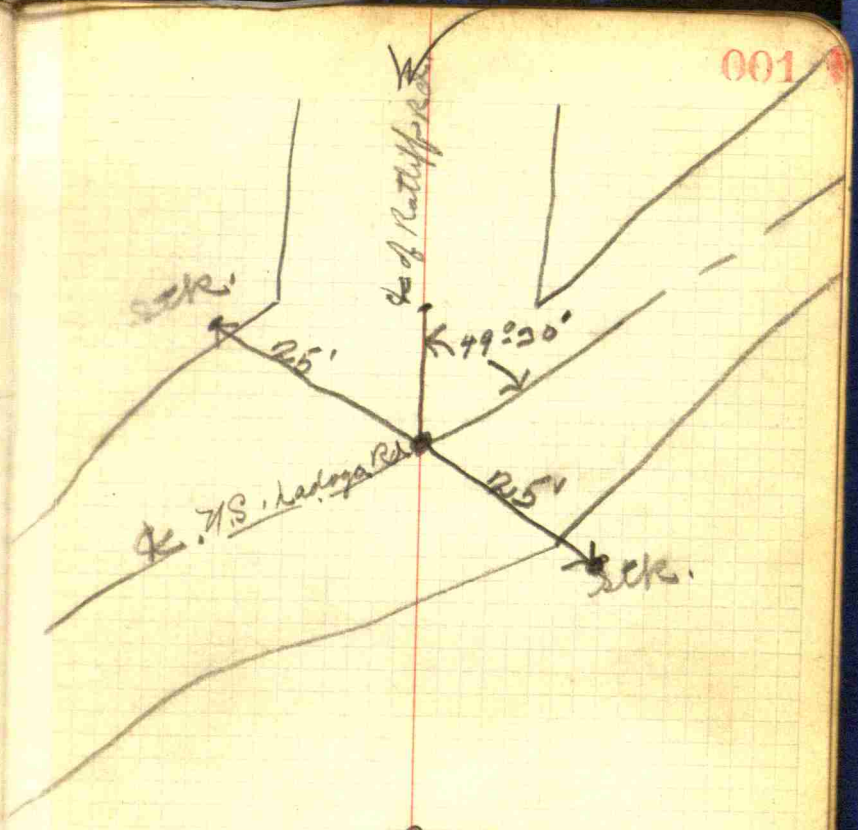
CHICAGO. ST. LOUIS. SAN FRANCISCO. MONTREAL.

TABLES FOR EXCAVATIONS AND EMBANKMENTS.

DISTANCES FROM CENTER OF ROADWAY FOR CROSS-SECTIONING.
ROADWAY 18 FEET WIDE. SIDE SLOPES 1 TO 1.
FOR SINGLE TRACK EXCAVATION.

	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	
0	9.0	9.1	9.2	9.3	9.4	9.5	9.6	9.7	9.8	9.9	0
1	10.0	10.1	10.2	10.3	10.4	10.5	10.6	10.7	10.8	10.9	1
2	11.0	11.1	11.2	11.3	11.4	11.5	11.6	11.7	11.8	11.9	2
3	12.0	12.1	12.2	12.3	12.4	12.5	12.6	12.7	12.8	12.9	3
4	13.0	13.1	13.2	13.3	13.4	13.5	13.6	13.7	13.8	13.9	4
5	14.0	14.1	14.2	14.3	14.4	14.5	14.6	14.7	14.8	14.9	5
6	15.0	15.1	15.2	15.3	15.4	15.5	15.6	15.7	15.8	15.9	6
7	16.0	16.1	16.2	16.3	16.4	16.5	16.6	16.7	16.8	16.9	7
8	17.0	17.1	17.2	17.3	17.4	17.5	17.6	17.7	17.8	17.9	8
9	18.0	18.1	18.2	18.3	18.4	18.5	18.6	18.7	18.8	18.9	9
10	19.0	19.1	19.2	19.3	19.4	19.5	19.6	19.7	19.8	19.9	10
11	20.0	20.1	20.2	20.3	20.4	20.5	20.6	20.7	20.8	20.9	11
12	21.0	21.1	21.2	21.3	21.4	21.5	21.6	21.7	21.8	21.9	12
13	22.0	22.1	22.2	22.3	22.4	22.5	22.6	22.7	22.8	22.9	13
14	23.0	23.1	23.2	23.3	23.4	23.5	23.6	23.7	23.8	23.9	14
15	24.0	24.1	24.2	24.3	24.4	24.5	24.6	24.7	24.8	24.9	15
16	25.0	25.1	25.2	25.3	25.4	25.5	25.6	25.7	25.8	25.9	16
17	26.0	26.1	26.2	26.3	26.4	26.5	26.6	26.7	26.8	26.9	17
18	27.0	27.1	27.2	27.3	27.4	27.5	27.6	27.7	27.8	27.9	18
19	28.0	28.1	28.2	28.3	28.4	28.5	28.6	28.7	28.8	28.9	19
20	29.0	29.1	29.2	29.3	29.4	29.5	29.6	29.7	29.8	29.9	20
21	30.0	30.1	30.2	30.3	30.4	30.5	30.6	30.7	30.8	30.9	21
22	31.0	31.1	31.2	31.3	31.4	31.5	31.6	31.7	31.8	31.9	22
23	32.0	32.1	32.2	32.3	32.4	32.5	32.6	32.7	32.8	32.9	23
24	33.0	33.1	33.2	33.3	33.4	33.5	33.6	33.7	33.8	33.9	24
25	34.0	34.1	34.2	34.3	34.4	34.5	34.6	34.7	34.8	34.9	25
26	35.0	35.1	35.2	35.3	35.4	35.5	35.6	35.7	35.8	35.9	26
27	36.0	36.1	36.2	36.3	36.4	36.5	36.6	36.7	36.8	36.9	27
28	37.0	37.1	37.2	37.3	37.4	37.5	37.6	37.7	37.8	37.9	28
29	38.0	38.1	38.2	38.3	38.4	38.5	38.6	38.7	38.8	38.9	29
30	39.0	39.1	39.2	39.3	39.4	39.5	39.6	39.7	39.8	39.9	30
31	40.0	40.1	40.2	40.3	40.4	40.5	40.6	40.7	40.8	40.9	31
32	41.0	41.1	41.2	41.3	41.4	41.5	41.6	41.7	41.8	41.9	32
33	42.0	42.1	42.2	42.3	42.4	42.5	42.6	42.7	42.8	42.9	33
34	43.0	43.1	43.2	43.3	43.4	43.5	43.6	43.7	43.8	43.9	34
35	44.0	44.1	44.2	44.3	44.4	44.5	44.6	44.7	44.8	44.9	35
36	45.0	45.1	45.2	45.3	45.4	45.5	45.6	45.7	45.8	45.9	36

Calculated by Julien A. Hall, M. Am. Soc. C. E.

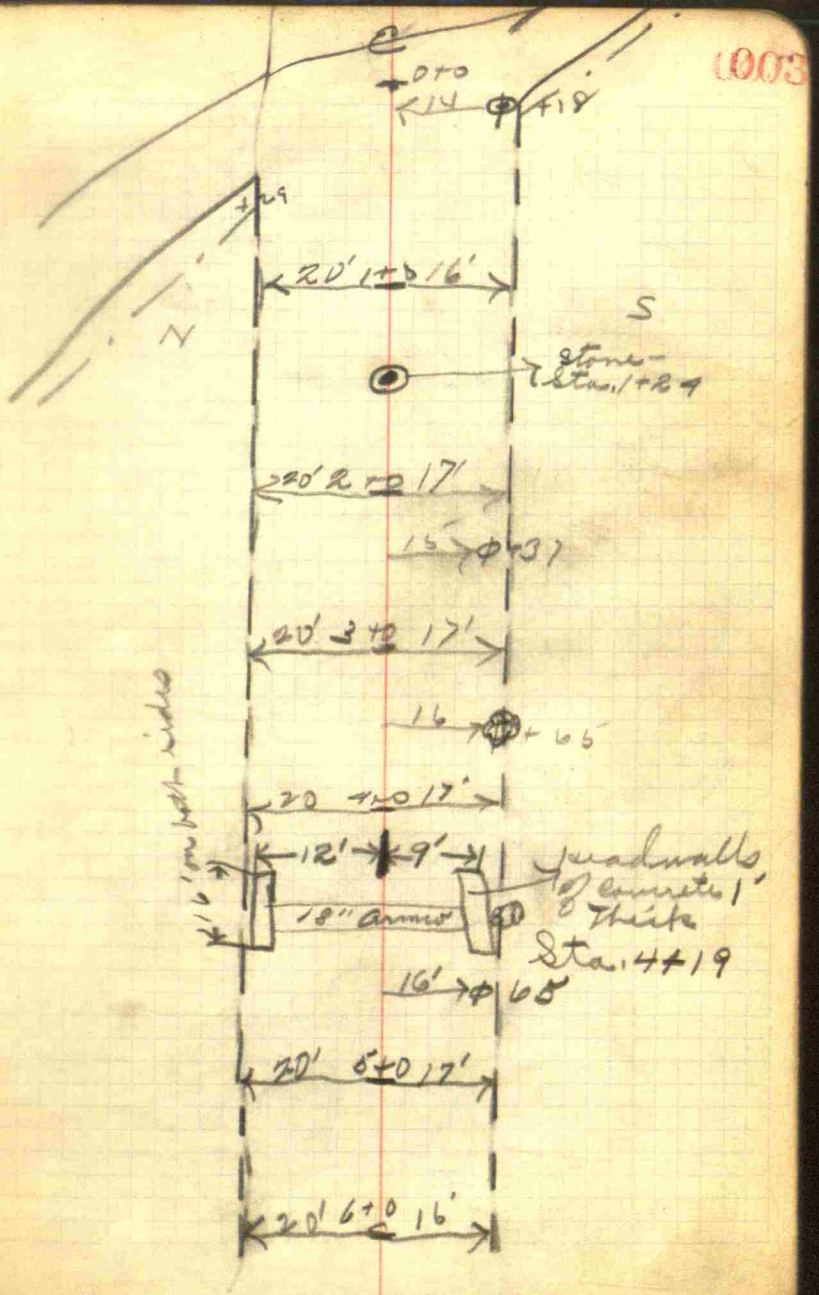


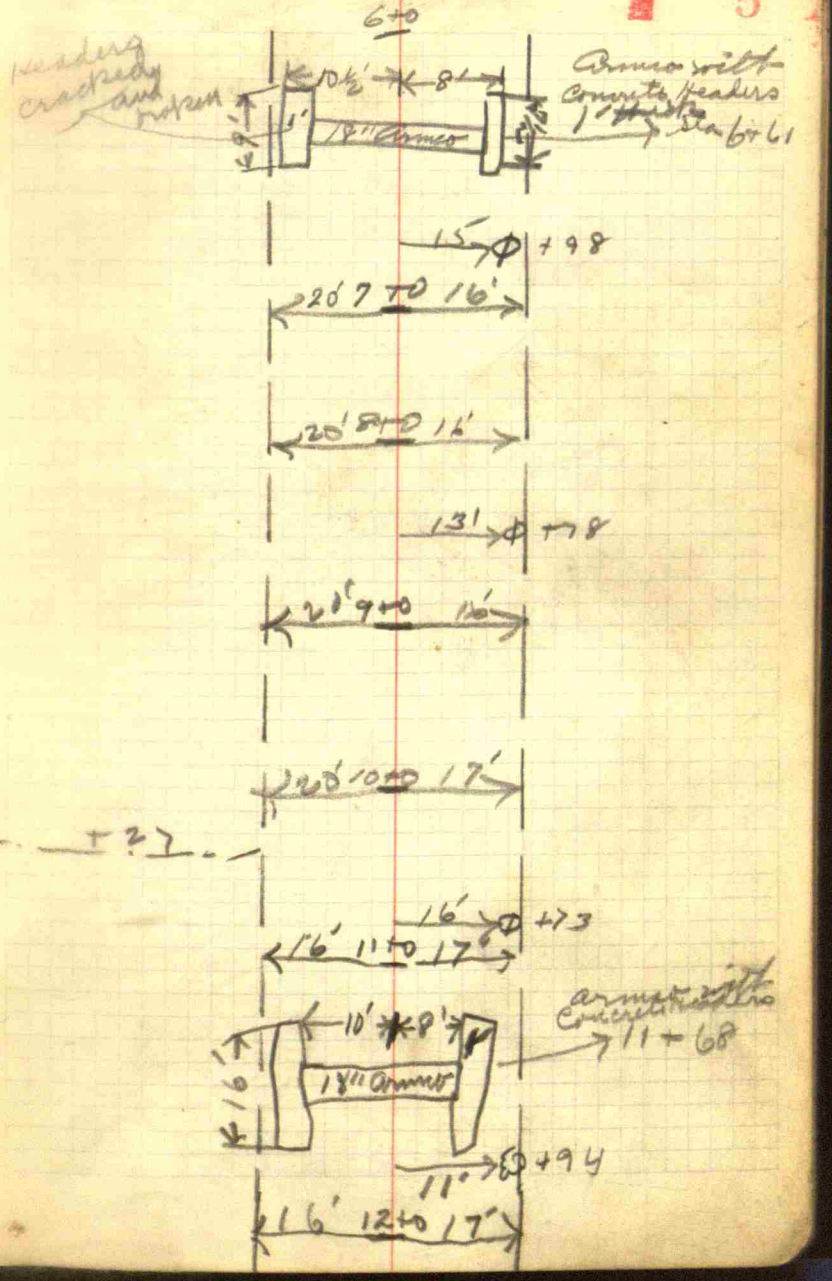
Ratliff Road – on the W
of 31-32-17-2W

0002

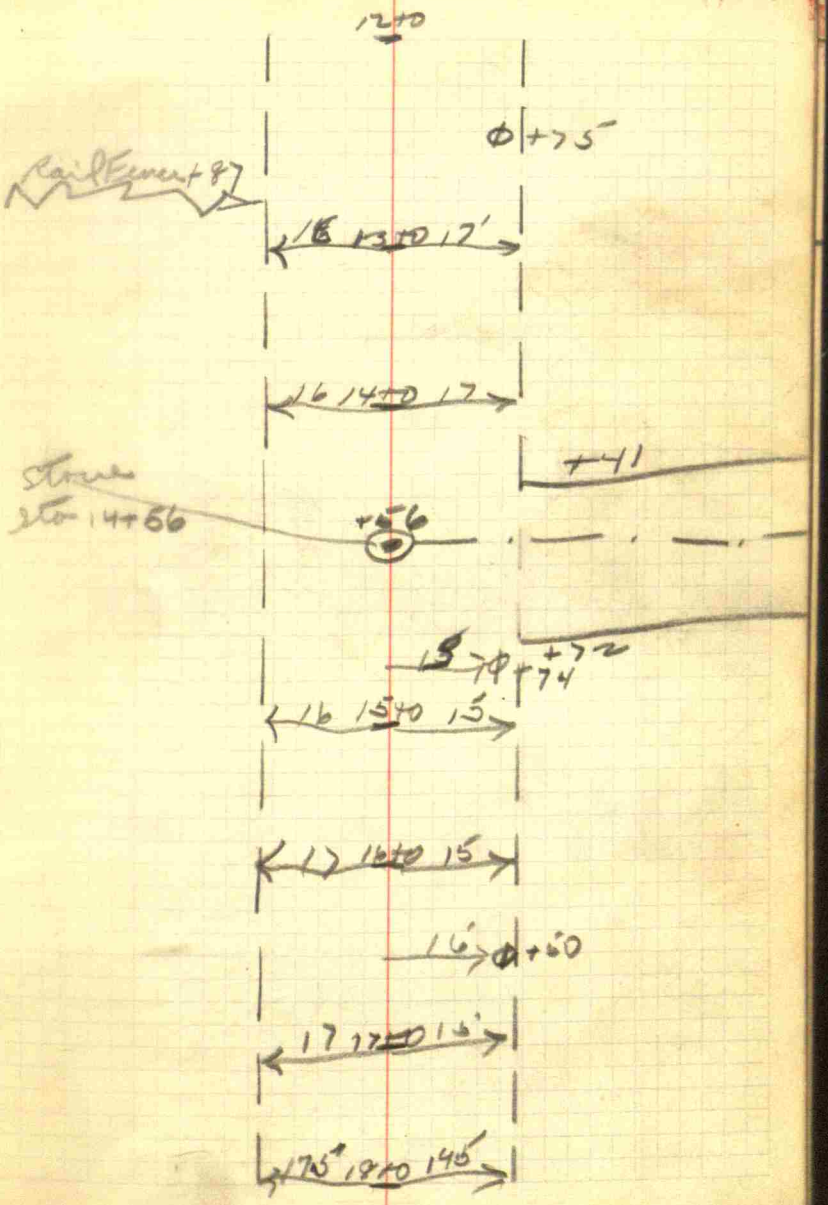
Ralliy Rd.

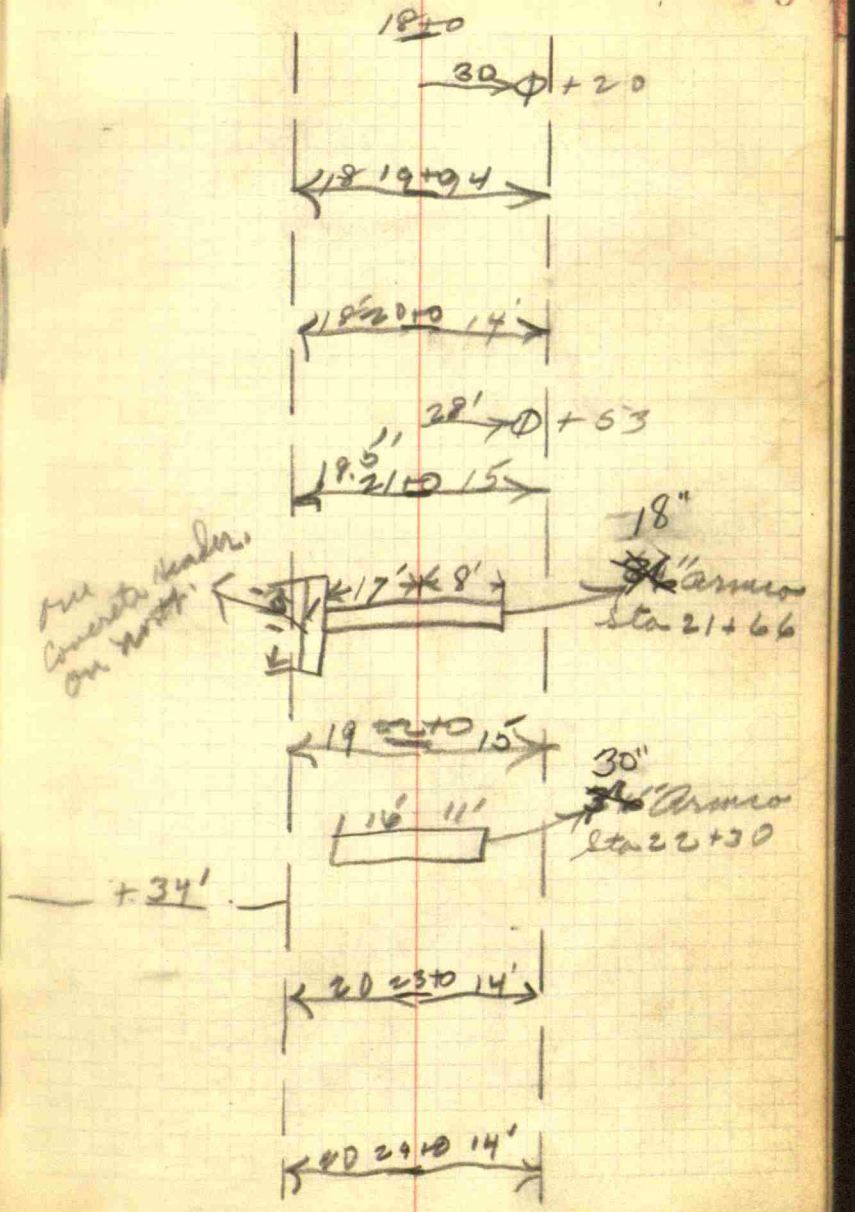
0003

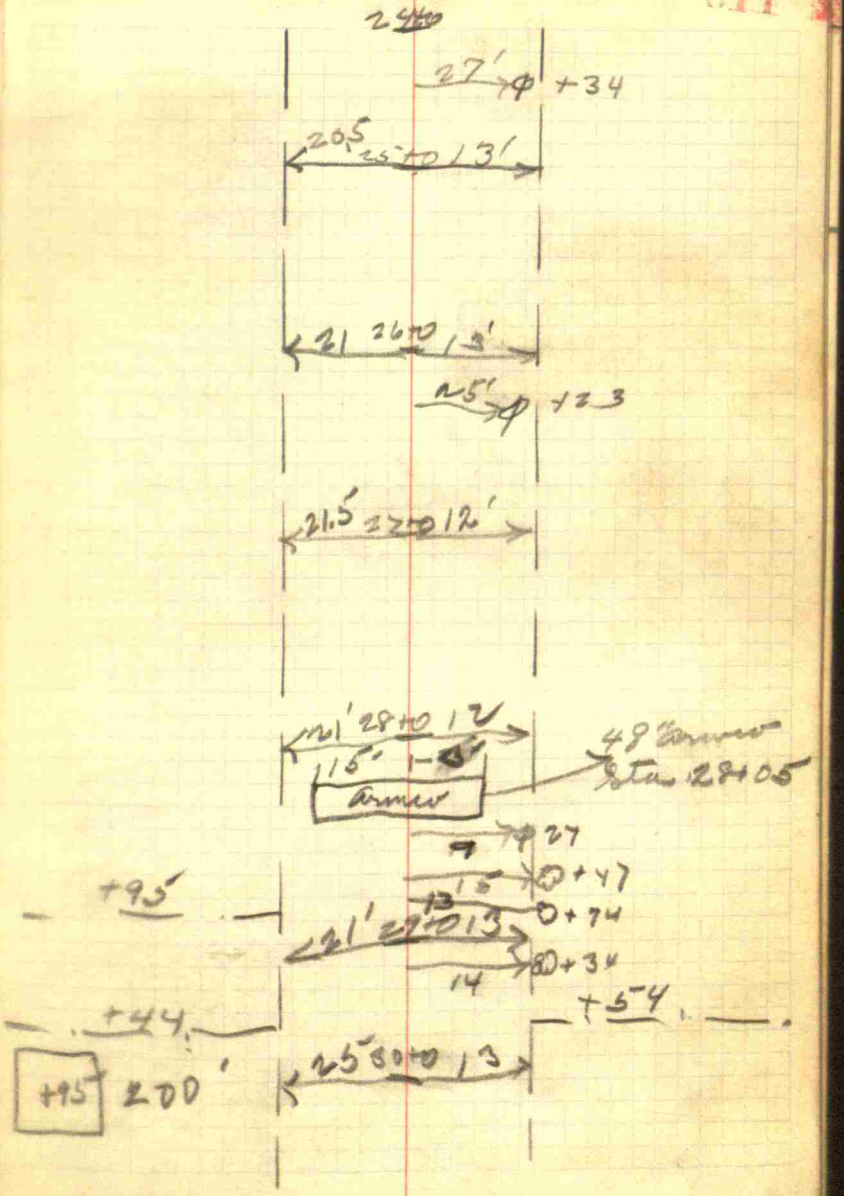


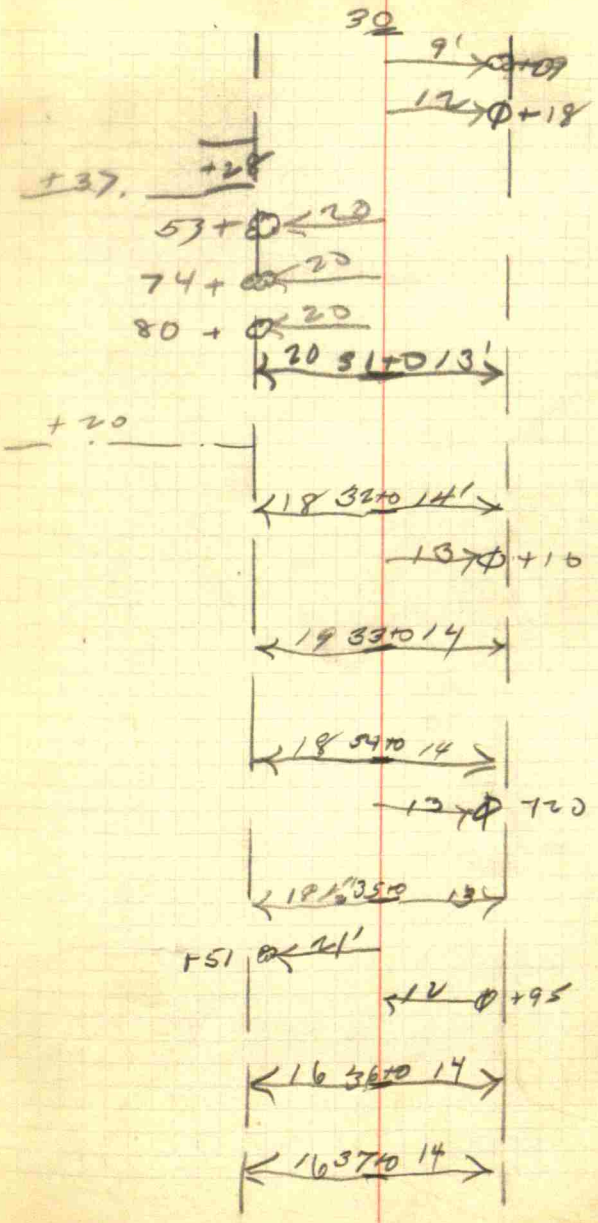

6+0
heading cracked and broken
10½'
8'
1'
18" Armco
Armco with concrete headers
Sta 6+61
15'
+98
20' 7+0 16'
20' 8+0 16'
13'
+78
20' 9+0 16'
20' 10+0 17'
16'
+73
16' 11+0 17'
armco with concrete headers
11+68
10'
8'
16'
18" Armco
11'
+94
16' 12+0 17'

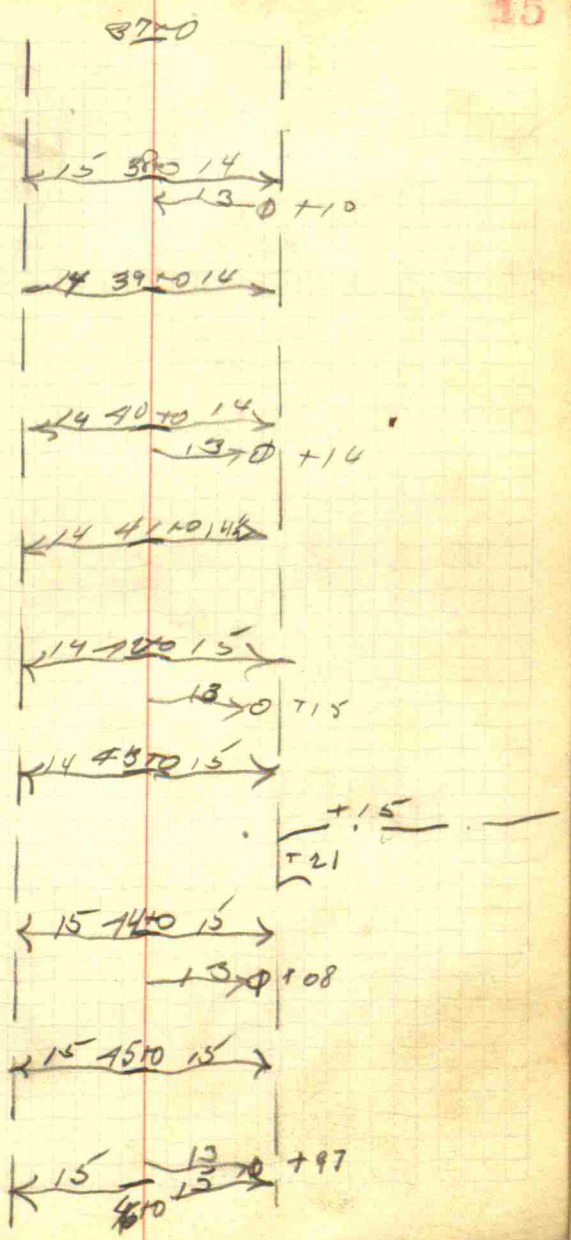
14+56
+24
13.32
+27.88

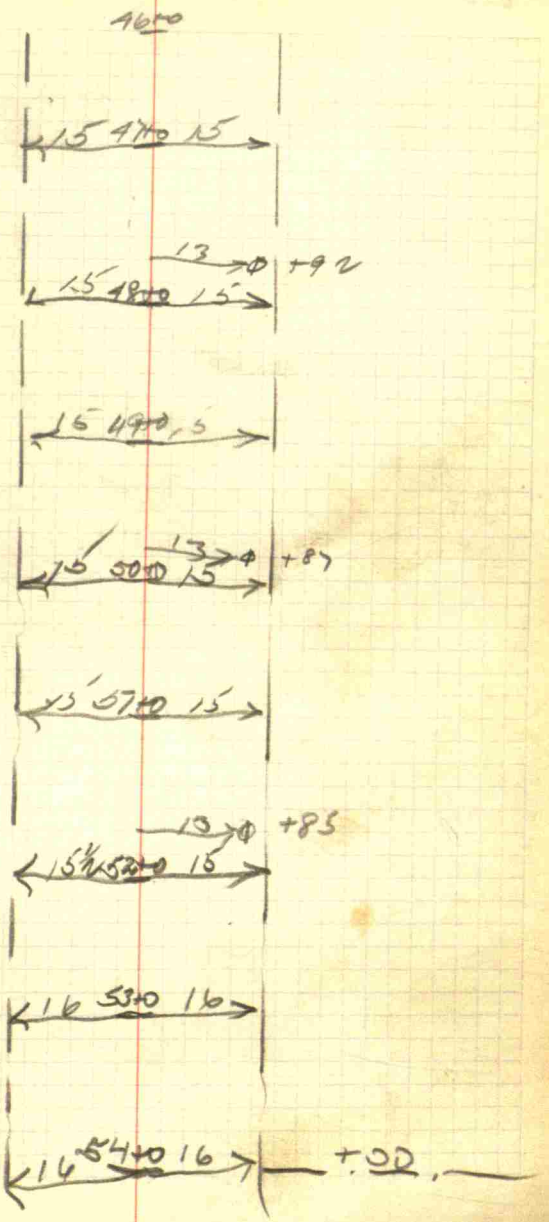


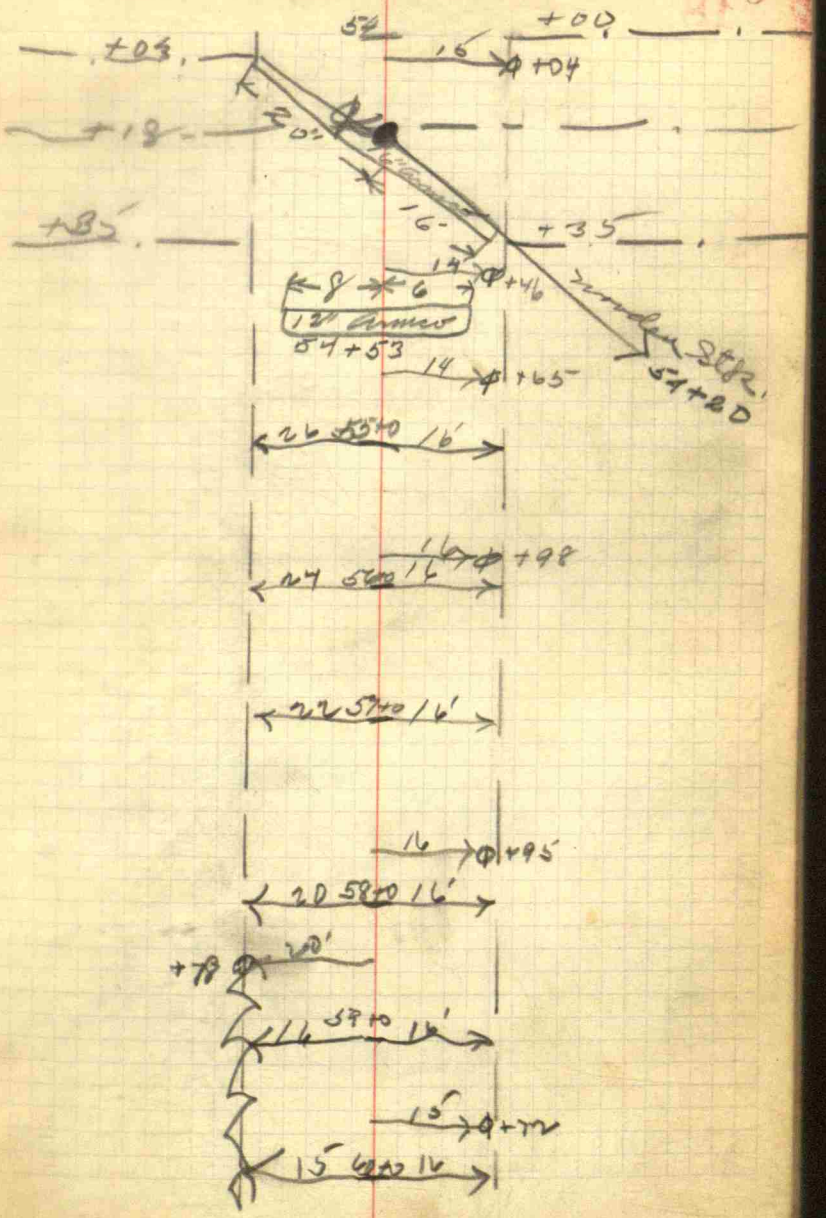

18+20
30
+20
18
19+94
18
20+10
14'
28'
+53
18.5'
21+10
15'
18"
per Concrete Header on Wall
17'
8'
Armco
Sta 21+66
19
22+10
15'
30"
16'
11'
Armco
Sta 22+30
+34'
20
23+10
14'
20
24+10
14'

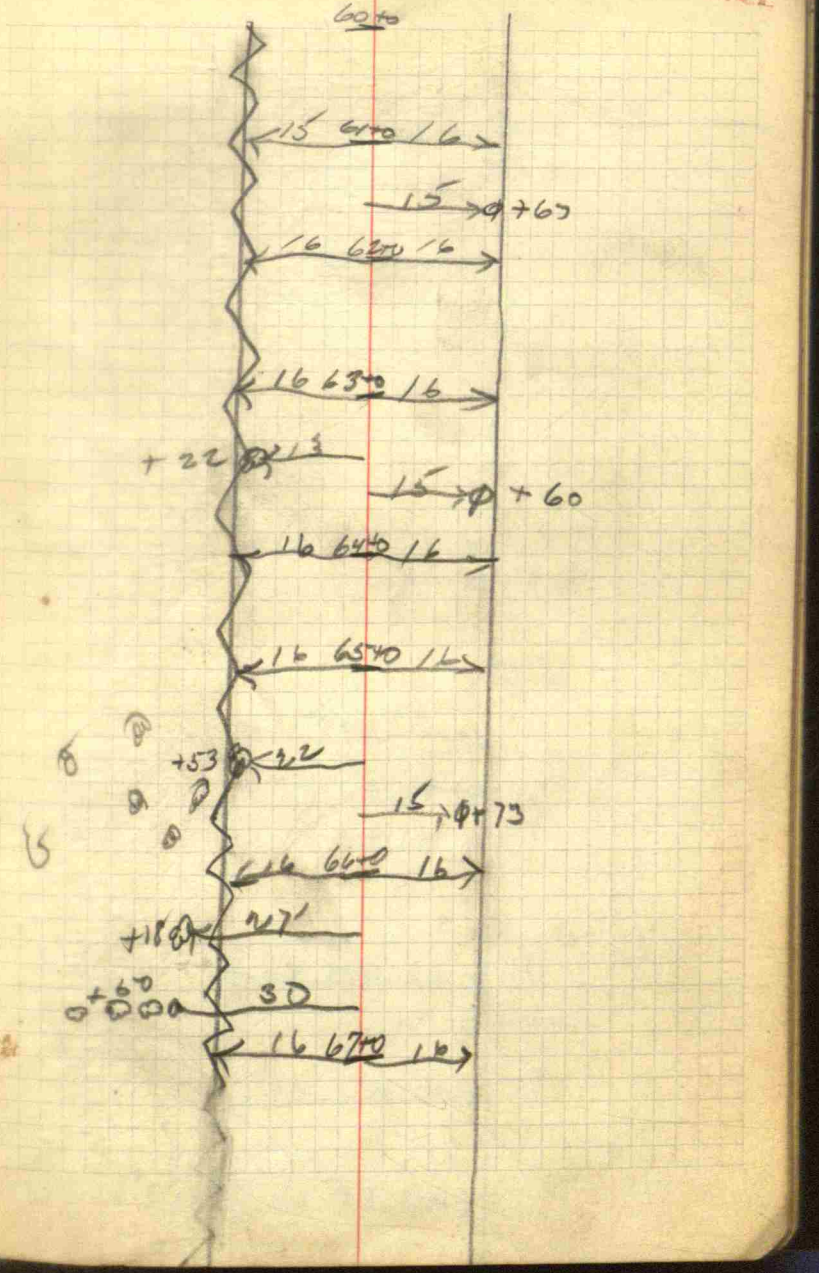

27' @ +34
20.5 25 @ 13'
21 26 @ 13'
25' @ +23
21.5 22 @ 12'
21' 28 @ 12
15'
armor
49 armor
sta 28+05
27
9
15
@ +47
13
@ +74
21' 27 @ 13
@ +34
14
+93'
+44'
+54'
+95
200'
25' 80 @ 13

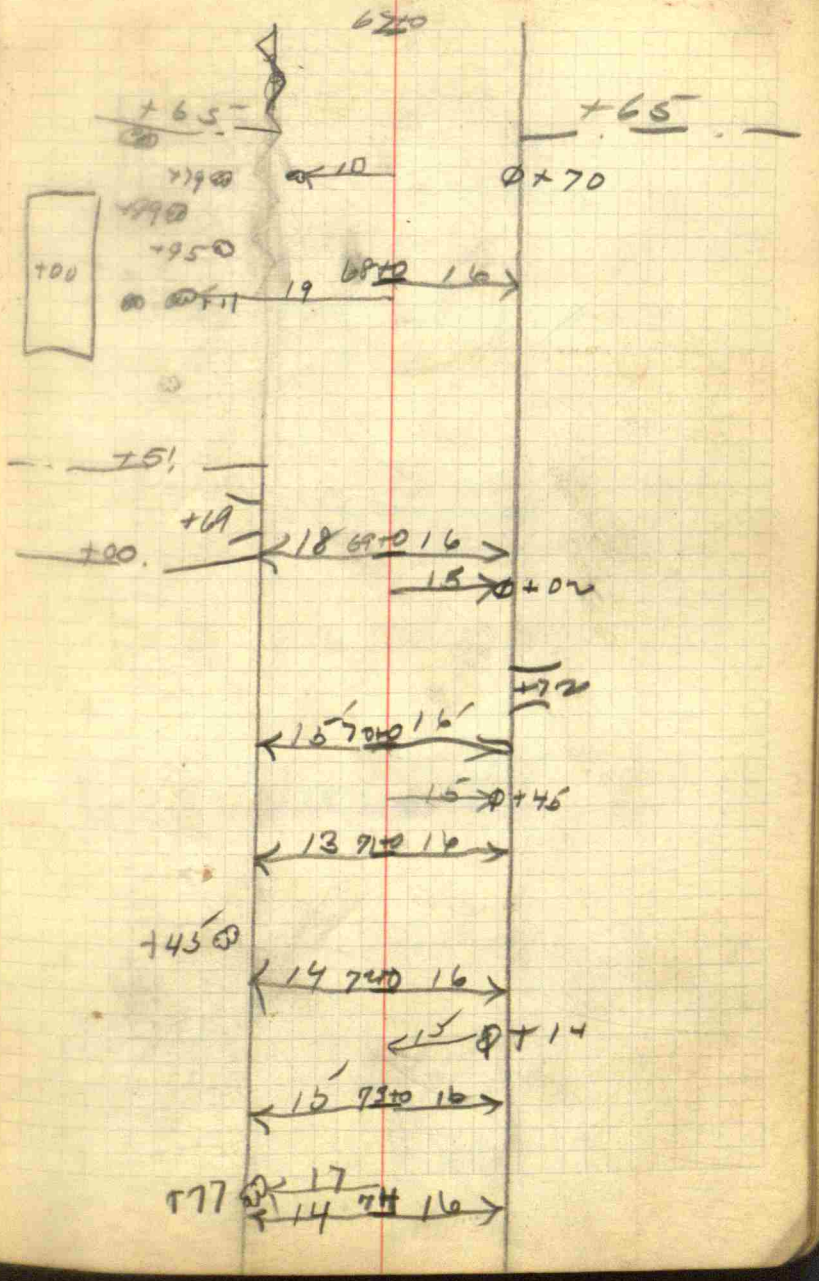

30
9'
+09
12
+18
+28
+37.
53 + 20
74 + 20
80 + 20
20 31+0 13'
+20
18 32+0 14'
13 +10
18 33+0 14
18 34+0 14
13 +20
18 35+0 13
+51
24'
12 +95
16 36+0 14
16 37+0 14

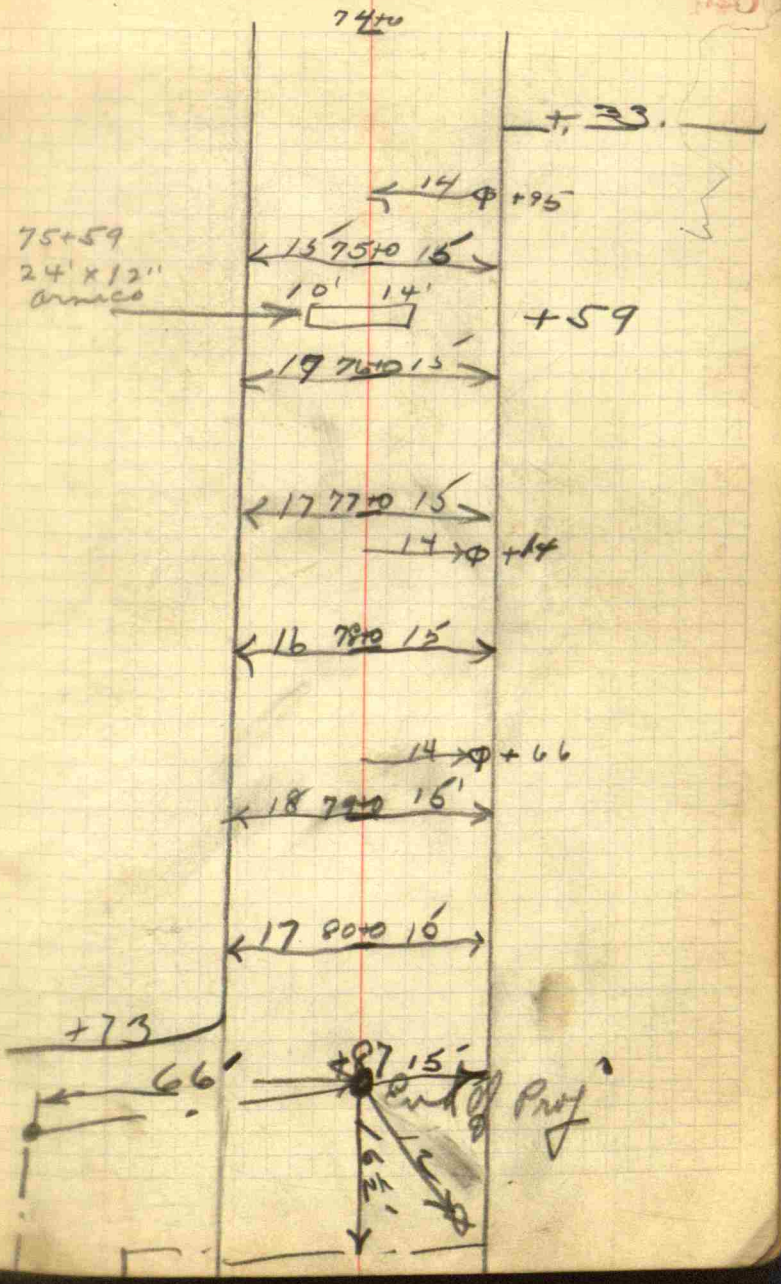

87=0
15 39=0 14
13 0 +10
14 39=0 14
14 40=0 14
13 0 +14
14 41=0 14½
14 42=0 15
13 0 +15
14 43=0 15
+15
+21
15 44=0 15
13 0 +08
15 45=0 15
15 13 +97
13
45=0


46+0
15 47+0 15
13
+92
15 48+0 15
15 49+0 15
13
+87
15 50+0 15
15 51+0 15
13
+85
15½ 52+0 16
16 53+0 16
16 54+0 16
+02.


+03
52
16
+00
+04
+18
30°
+35
14
8
6
+46
12" Armco
54+53
14
+65
54+20
26
55+10
16'
16
+98
24
56+10
16'
22
57+10
16'
16
+95
20
58+10
16'
+78
20'
16
59+10
16'
15'
+72
15
60+10
16


60±0
15 64±0 16
15 Φ +63
16 62±0 16
16 63±0 16
+22 13
15 Φ +60
16 64±0 16
16 65±0 16
+53 22
15 Φ +73
16 66±0 16
+18 27
+60 30
16 67±0 16


+65
+65
0+70
+00
19
16
+51
+69
18
16
+0
+72
16
+46
13
16
+45
14
16
+14
15
16
+77
17
14
16


74+00
+33.
14' @ +95
75+59
24" x 12" arnico
15' 75+00 16'
10' 14'
+59
19' 76+00 15'
17' 77+00 15'
14' @ +14
16' 78+00 15'
14' @ +66
18' 79+00 16'
17' 80+00 16'
+73
66'
+87.15'
End of Proj.
6 Ft.

Levels Ritly Rd.

Sta	3' out	Stk	Ditch	Berm	℄
N. Salem Rd.		50' N.			
" "		50' S			
			50' N.		
0+00			100.55		100.27
1+00	97.25	97.49	95.64 (8)	96.95 (13)	97.57
2+0	93.07	92.94	93.06 (8)	94.50 (13)	94.92
3+0	94.86	94.78	92.00 (8)	93.46 (14)	93.90
4+0	88.97	88.75	89.67 (6)	91.94 (15)	92.00
4+19	87.71 (17)	87.70 (12' - FL)	91.62 (12 Top)	92.00 (15)	92.05
5+0	96.72	95.67	93.81 (8)	94.29 (13)	94.33
6+0	97.45	97.30	95.21 (8)	96.20 (14)	96.43
6+61	93.85 (15)	93.45 (10.5' FL.)	96.21 (10.5' Top)	96.10 (15)	96.41
7+0	94.84	95.36	95.03 (7)	96.66 (14)	96.91
8+0	99.56	99.56	98.45 (8)	99.35 (13)	99.71
9+0	99.67	99.63	99.32 (7)	100.45 (14)	100.75
10+0	100.89	100.95	99.90 (7)	101.00 (15)	101.25
11+0	100.91 (15)	100.35	98.11 (8)	98.50 (14)	98.86
11+68	93.50	93.25 (10' FL.)	96.77 (10' Top)	97.21 (5)	97.39
12+0	94.41	94.52	95.00 (6)	97.57 (14)	97.77
13+0	100.41	100.30	99.45 (7)	100.15 (12)	100.35
14+0	101.90	101.86	100.87 (7)	102.22 (13)	102.47
15+0	102.40	102.35	101.45 (7)	102.75 (12)	102.90
16+0	101.63	101.69	101.00 (6)	102.50 (17)	102.75
17+0	100.97	101.24	99.44 (7)	100.77 (13)	101.00

Rd. S.

Berm	Ditch	Stk	3' out	B.M.
50' S.				On concrete base of gate post at 0+0
98.27				
97.16 (23')	96.36 (31')	97.82	97.92	on N. brace
94.66 (26')	92.63 (35')	90.96	90.68	El. 100.00
93.62 (25)	92.72 (31)	93.72	93.52	⊙
91.81 (25)	87.53 (32)	86.01	85.88	94.72
91.83 (9' Top)	91.30 (9')	86.46 (9' FL.)	84.10 (15)	
94.16 (26)	93.44 (30)	95.04	95.00	⊙
96.10 (25)	95.08 (30)	96.05	95.90	96.46
96.15 (4')	96.02 (8' Top)	8' FL. 92.50	92.15 (14')	⊙
96.66 (26)	95.57 (30)	97.96	97.97	101.00
99.49 (26)	98.85 (30)	100.10	100.01	
100.16 (28)	99.00 (31)	99.25	99.20	
100.85 (24)	100.30 (31)	100.05	100.10	
98.50 (25)	97.76 (30)	98.86	98.74	
97.19 (4)	96.40 (8' Top)	8' FL. 92.15	90.40 (14')	
97.65 (25)	95.50 (29)	99.20	99.47	⊙
100.16 (25)	99.58 (30)	101.42	101.60	100.41
102.25 (25)	101.36 (31)	101.91	101.96	
102.80 (24)	101.55 (31)	101.91	101.93	⊙ Top Post 106.81
102.64 (23)	101.44 (31)	102.03	102.15	
100.83 (25)	99.70 (32)	101.05	101.10	

N. ⊙97.58 S ~~⊙99.29~~

	5'-3' out	stk	Ditch	Berm	℄	Berm	Ditch	stk	3' out	⊙
18+0	100.30 99.57	99.23	95.26 (8)	97.10 (15)	97.32	97.30 (24)	94.65 (29)	101.80 (47)	101.65	86.00
19+0	80.56	80.44	80.11 (6)	81.03 (12)	81.29	81.08 (25)	79.35 (33)	79.19	78.72 (50)	⊙
20+0	77.80	77.71	77.43 (6)	77.88 (12)	78.10	77.92 (23)	75.06 (32)	73.60	73.25	78.09
21+0	76.46	76.62	75.70 (6)	77.32 (12)	77.52	77.28 (24)	74.75 (32)	74.29	74.25	
21+66	(22) 73.41	FL-17' 73.40	Top 17' 76.31	(6) 77.47	77.22	76.78 (4)	18 Top 75.68	8 FL 73.10	14' 73.06	
22+0	76.41	76.01	75.40 (3)	77.60 (7)	77.66	77.55 (22)	74.75 (31)	74.66	74.26	
22+30	(21) 74.34	16'-FL 74.25	16'-Top 76.80	(10) 77.79	78.00	77.96 (2)	11 Top 76.50	11 FL. 74.00	16' 74.44	⊙ 78.22
23+0	76.50	76.45	75.70 (4)	77.87 (7)	77.84	77.53 (23)	74.96 (30)	74.95	75.10	
24+0	76.80	77.10	76.83 (3)	78.11 (11)	78.05	78.00 (22)	75.90 (30)	74.95	75.76	⊙ 7.60
25+0	78.60	78.25	76.60 (3)	78.80 (11)	78.57	78.49 (22)	77.20 (29)	77.57	77.60	⊙
26+0	82.14	82.05	77.46 (6)	80.24 (12)	79.95	79.80 (22)	78.36 (29)	78.75	78.63	90.17
27+0	80.16	80.20	79.59 (3)	81.47 (10)	81.05	81.00 (21)	78.80 (28)	79.00	79.26	
28+0	80.30	80.49	80.05 (3)	82.16 (12)	82.10	82.02 (21)	80.15 (27)	79.98	79.80	
28+05	(20) 77.90	FL 78.05	Top 15 82.02	(12) 82.34	82.22	82.22 (2)	Top 3 81.84	3' FL 77.50 (38)	8 77.67	
29+0	87.57	87.32	86.01 (3)	87.32 (10)	87.62	87.40 (22)	87.15 (25)	91.73	91.97 (45)	
30+0	94.38	94.00	92.82 (2)	93.11 (8)	93.82	93.37 (22)	92.74 (27)	94.84	94.90	
31+0	99.22	98.80	96.78 (9)	97.35 (14)	97.29	97.07 (24)	96.41 (29)	97.86	97.60	
32+0	99.35	99.46	98.11 (6)	99.21 (7)	99.02	98.90 (23)	98.18 (30)	99.67	99.12	
33+0	98.19	98.13	97.74 (6)	98.85 (12)	98.81	98.60 (24)	97.39 (28)	97.75	97.77	
34+0	99.20	99.13	98.23 (7)	99.04 (11)	99.04	98.83 (24)	98.42 (29)	98.83	98.94	
35+0	98.02	97.98	97.30 (9)	98.08 (12)	98.07	97.91 (24)	97.68 (27)	98.50	98.68	
36+0	96.47	96.65	96.57 (8)	97.42 (13)	97.50	97.23 (24)	96.30 (29)	96.82	97.05	
37+0	96.37	96.43	96.38 (8)	97.22 (14)	97.40	97.21 (24)	96.33 (30)	96.12	96.28	
38+0	96.89	96.98	96.41 (8)	97.69 (15)	97.87	97.53 (24)	96.51 (30)	96.51	96.57	
39+0	98.96	98.90	97.95 (9)	98.43 (13)	98.70	98.30 (26)	97.71 (30)	99.07	99.04	

add 10'

B.M. on S.E. cor. of lower step Water tower El.-97.81

N.

Sta	3' out	Stk	Ditch	Berm	℄
40+0	99.48	99.45	98.86 (9)	99.40 (13)	99.26
41+0	98.44	98.41	98.23 (9)	98.86 (13)	98.79
42+0	97.94	97.85	97.98 (9)	98.80 (14)	98.72
43+0	99.05	99.00	98.10 (9)	98.80 (14)	99.07
44+0	97.83	97.85	97.68 (9)	98.21 (13)	98.35
45+0	96.89	96.83	96.95 (10)	97.99 (15)	98.05
46+0	96.98	97.00	96.75 (9)	97.71 (14)	98.00
47+0	97.11	97.09	96.50 (9)	97.37 (13)	97.39
48+0	95.70	95.70	95.44 (9)	96.43 (13)	96.46
49+0	94.84	94.89	94.51 (9)	95.65 (14)	95.70
50+0	94.00	94.00	93.82 (9)	94.53 (14)	94.78
51+0	93.36	93.25	92.98 (9)	94.15 (14)	94.31
52+0	92.98	93.12	92.55 (9)	93.95 (15)	94.12
53+0	92.30	92.37	92.27 (9)	93.48 (16)	93.67
54+0	92.80 (25)	92.78 (20 FL.)	91.78 (20' Top)	93.40 (14)	93.46
54+18	92.12	91.95	93.25	93.10 (12)	93.80
Rd. S - 50'					93.48
Rd. N - 50'					93.91
54+53	92.41 (14)	92.25 (8 FL.)	93.15 (8 Top)	93.25 (6)	93.56
55+0	93.10	92.85	92.78 (8)	93.56 (12)	93.51
56+0	93.85	93.70	93.25 (6)	93.75 (11)	93.84
57+0	95.24	95.05	94.26 (4)	94.90 (11)	94.88
58+0	96.07	96.24	95.36 (6)	96.13 (12)	96.17
59+0	95.37	95.32	94.96 (7)	95.32 (12)	95.38
60+0	95.07	94.60	94.30 (7)	95.00 (14)	95.10

S

Berm	Ditch	Stk	3' out
99.23 (20)	98.50 30	99.17	99.28
98.62 (26)	98.23 30	98.31	98.30
98.60 (26)	98.05 31	97.75	97.81
98.68 (26)	98.21 30	98.28	98.41
98.26 (25)	97.72 30	97.92	98.11
97.74 (26)	96.98 31	96.74	96.90
97.51 (26)	96.81 31	96.94	97.21
97.25 (27)	96.25 31	97.00	97.21
96.37 (26)	95.38 - 29	96.00	96.15
95.42 (25)	94.60 - 30	95.32	95.43
94.51 (24)	93.83 30	94.13	94.35
94.17 (25)	93.00 31	93.08	93.27
93.78 (25)	92.50 31	92.50	92.72
93.22 (28)	92.27 33	92.02	92.25
93.25 (28)	92.44 33	92.47	92.41
93.56 (12)	93.15 16 Top	91.75 16 FL.	90.58 (21')
	Swamp — 75' - Sta 50	90.65 Sta 54+75	
93.47 (2)	93.01 6 Top	92.00 6 FL.	92.12 (12)
93.42 (23)	90.90 30	90.38	90.60
93.59 (23)	91.11 29	90.54	90.86
94.77 (23)	92.57 30	93.78	93.90
95.90 (24)	94.10 30	94.85	95.23
95.30 (25)	92.88 31	94.00	94.36
94.85 (25)	93.05 33	93.55	93.70

B.M. on Top of Culvert Post at Sta 54+35 El. 98.17

⊙ 91.75 No.

Sta	3' out	Stk	Ditch	Berm	E
61+0	94.83	94.66	94.30 (5)	94.81 (14)	95.00
62+0	94.93	94.64	94.15 (9)	94.80 (14)	94.95
63+0	94.81	94.45	93.83 (9)	94.68 (14)	94.85
64+0	94.71	94.70	93.75 (8)	94.68 (14)	94.78
65+0	94.65	94.36	93.95 (5)	94.81 (14)	95.10
66+0	94.75	94.50	94.22 (8)	94.85 (13)	94.90
67+0	94.02	94.24	94.40 (9)	94.90 (14)	95.13
68+0	94.58	94.60	94.50 (9)	94.32 (13)	94.61
69+0	91.70	91.87	92.04 (9)	92.60 (13)	92.72
70+0	90.80	91.00	90.62 (9)	91.80 (14)	92.04
71+0	92.05	92.13	90.60 (10)	91.90 (15)	91.95
72+0	90.94	91.15	90.23 (8)	91.76 (16)	91.87
73+0	89.85	90.18	89.90 (10)	91.28 (16)	91.57
74+0	91.94	92.03	89.62 (9)	91.55 (16)	91.73
75+0	90.70	90.95	89.83 (8)	91.73 (18)	91.32
75+59	90.26 (15)	89.88 (10 FL)	91.20 (10 Tot)	91.47 (6)	91.27
76+0	90.25	90.42	89.81 (9)	91.20 (16)	91.07
77+0	90.75	90.95	89.89 (8)	91.40 (17)	91.34
78+0	91.35	91.50	90.00 (9)	91.91 (17)	91.92
79+0	92.35	92.60	90.67 (9)	92.91 (17)	92.84
80+0	93.35	93.13	90.47 (10)	93.30 (16)	93.55
80+87			92.50 (40)	92.70 (20)	92.75

50' W. — 92.80

50' — B.M. on Top of corner Post N. of sta 80+87 EL. — 97.20

Rod 10'

⊙ 93.13 So

Berm	Ditch	Stk	3' out
94.72 (25)	92.47 (33)	93.30	93.36
94.62 (26)	92.35 (33)	93.30	93.50
94.53 (26)	92.40 (33)	93.32	93.86
94.60 (26)	92.24 (32)	93.32	93.84
94.70 (25)	92.42 (33)	93.21	93.83
94.69 (25)	92.14 (31)	93.40	93.64
94.84 (26)	92.25 (33)	94.05	94.00
94.40 (26)	93.28 (33)	93.57	93.75
92.68 (25)	91.65 (33)	92.72	92.85
91.80 (24)	90.75 (37)	90.81	90.72
91.80 (27)	90.73 (32)	91.10	91.24
91.66 (26)	90.14 (32)	90.73	90.84
91.30 (24)	90.15 (32)	89.85	
91.35 (27)	90.35 (32)	91.86	91.77
91.06 (28)	90.83 (33)	90.41 (14 FL.)	90.36 (20)
91.10 (9)	90.96 (14 Tot)	89.64	89.50
91.16 (28)	90.60 (33)	90.00	89.77
91.20 (29)	90.53 (32)	90.74	90.55
91.70 (28)	90.97 (32)	91.59	91.34
92.73 (28)	92.20 (32)	92.60	92.36
93.40 (29)	92.91 (32)	93.18	93.16
92.35 (20)			

⊙ 94.66

⊙ on Top of Post-sta 67+ EL. 98.55

B.M. on rock at sta to woodshed 60' No. of sta 68+0. — EL. 94.85

				Check
B.M.	No. 1.	El	100.00	
B.M.	No 2	El.	106.81	106.82
B.M.	No 3	El.	98.11	108.09
B.M.	No 4	El	98.17	108.17
B.M.	No 5	El	94.85	104.84
B.M.	No 6	El	97.20	107.18

Sta 20+00 Rt = 82.71

⊙ 100.63

⊙ 99.04

⊙ 91.89

⊙ 92.06

⊙ 102.28

⊙ 108.66

0+00=79+00	101.35	25	94.65	
1	101.17	26	93.93	
2	101.37	27	92.00	
3	101.06	28	90.20	
4	101.00	29	89.25	
5	101.15	30	85.80	
6	101.00	30+27	84.29	FL. Ditch
7	100.38		84.67	FL. of 12" tile in S. side ditch.
8	99.95			
9	99.34			
10	99.00			
11	98.70			
12	98.51			
13	97.81			
14	97.50		Top - 99.50 of 10" tile on S. side of Rd. at Cross Rds	
15	97.20			
16	96.98			
17	96.90			
18	96.58			
19	96.53			
20	95.60			
21	97.24			
22	95.90			
23	95.59			
24	95.30			

0 101.64
0 98.36
0 95.79
0 90.06

Tile can end at 29+91 - E. end of bridge.

B.M. on E. end of S. rail of bridge 90.83

Estimate of Quantities — Ratliff Rd.

7066	Cu. Yds. Exc. @	.35	2,473.10
94' x 24"	R.C. Pipe @	3.50	329.00
20' x 12"	C.M. Pipe @	1.50	30.00
62' x 18"	C.M. Pipe - Relaid @	.30	18.60
1400' x 6"	Dr. Tile @	.13	182.00
1476' x 8"	Dr. Tile @	.17	250.92
2160' x 10"	Dr. Tile @	.28	604.80
3340' x 12"	Dr. Tile @	.34	1135.60
2 - 8" x 8"	Y's @	2.00	4.00
3 - 10" x 8"	Ys @	2.00	6.00
1 - 12" x 8"	Y @	2.00	2.00
6 - 8"	Elbows @	2.00	12.00
16' x 8"	Vit. Tile @	.50	8.00
6	Sto C.B. @	40.00	240.00
100.21	Cu. Yds. Conc. @	14.00	1402.94
3926	Lbs. Steel @	.05	196.30
1860	Tons (4½" x 2¾") @	2.75	5115.00
404	Tons - ½" to Dust @	2.75	1111.00
1779	Cu. Yds. Gravel @	1.75	3113.25
			15234.51

Bonds 16500.00

0+00 = 79+0

12" Tile 0+00 – 79+85

Sta	Gd. Stk	Tile Gd	Cut	
0+00	102.68	95.25	7.83	7.38
1+0	103.69	95.10	8.52	8.59
2+0	102.62	94.95	7.45	7.67
2+35	102.36	94.90		
3+0	102.45	94.80	7.65	7.46
4+0	102.51	94.65	7.86	
5+0	104.70	94.50	10.20	
6+0	103.45	94.35	9.10	
7+0	102.08	94.20	7.88	
8+0	100.90	94.05	6.85	
9+0	100.18	93.90	6.28	
10+0	100.85	93.75	7.10	
11+0	102.12	93.60	8.52	
12+0	101.62	93.45	8.17	
13+0	99.42	93.30	6.12	
14+0	99.00	93.15	5.85	
15+0	98.48	93.00	5.48	
16+0	98.82	92.85	5.97	
17+0	98.52	92.70	5.82	
18+0	97.90	92.55	5.35	
19+0	98.30	92.40	5.90	
20+0	97.50	92.25	5.25	
21+0	97.40	92.10	5.30	
22+0	98.15	91.95	6.20	
23+0	97.55	91.80	5.75	

BM

	Gd. Stk	Tile Gd	Cut	
0+00				
79+00	102.63	95.25	7.38	
78+00	102.15	95.40	6.75	
77+00	101.42	95.55	5.87	
76+00	100.86	95.70	5.16	
75+00	101.10	95.85	5.25	
74+00	102.26	Gd 96.00	6.26	
73+00	100.46	99.85	96.15	4.31
72+00	101.96	101.30	96.30	5.66
71+00	103.06	102.06	96.45	6.61
70+00	102.89	102.47	96.60	6.29
69+00	103.56	102.83	96.75	6.81
68+00	104.53	103.70	96.90	7.63
67+00	104.44	103.80	97.05	7.39
66+00	104.75	104.15	97.20	7.55
65+00	105.10	104.30	97.35	7.75
64+00	105.01	104.46	97.50	7.51
63+00	105.17	104.60	97.65	7.52
62+00	105.17	104.65	97.80	7.37
61+00	105.50	104.76	97.95	7.55
60+00	105.15	104.40	98.10	7.05
59+00	104.89	104.15	98.25	6.64
58+00	104.89	104.15	98.40	6.49
57+00	104.65	103.95	98.55	6.10

Sta.	Gd. Sth	Tile Fd.	Cut
24+0	97.95	91.65	6.30
25+0	96.49	91.50	4.99
26+0	9440	90.40	4.00
27+0	95.46	89.30	6.16
28+0	92.96	88.20	4.76
29+0	88.92	87.10	1.82
29+85	87.59	86.00	1.59

56+00	10389	10360	98.70	5.19
55+00	10413	10333	98.85	5.28
54+00	103.15		99.00	4.15

Cut Sheet – Ratliff Rd.

Sta.	Gd. Stk.	New Gd.	Cut or Fill		
0+0				25+0	88.92
1+0	98.11	97.45	.66.C.	26+0	92.87
2+0	93.71	95.30	1.59.F.	27+0	90.34
3+0	95.68	93.15	2.53.C.	28+0	90.87
4+0	89.41	92.02	2.61.F.	29+0	97.47
5+0	97.27	92.95	4.32.C.	30+0	105.36
6+0	98.67	94.90	3.77.C.	31+0	109.85
7+0	95.81	96.85	1.01.F.	32+0	109.77
8+0	100.15	98.80	1.35.C.	33+0	109.83
9+0	100.20	99.93	.27.C.	34+0	109.70
10+0	101.43	99.45	1.98.C.	35+0	108.62
11+0	101.72	98.15	3.57.C.	36+0	107.11
12+0	95.10	97.69	2.59.F.	37+0	107.05
13+0	101.04	98.93	2.11.C.	38+0	107.37
14+0	102.05	100.61	1.44.C.	39+0	109.57
15+0	102.55	101.50	1.05.C.	40+0	110.21
16+0 ⊙	102.25	101.03	1.22.C.	41+0	109.12
17+0	101.21	98.69	2.58.C.	42+0	108.52
18+0	—	95.26		43+0	109.60
19+0	90.90	91.89	.99.F.	44+0	108.38
20+0	88.24	89.29	1.05F.	45+0	107.36
21+0	87.20	88.26	1.06F.	46+0	107.44
22+0	86.71	88.10	1.39.F.	47+0	107.61
23+0	—	88.51		48+0	106.33
24+0	87.70	89.01	1.31.F.	49+0	106.40

108.02

New Gd.	Cut	Fill
8951		.59.F.
9001	2.86	
91.32		98.F.
9426		3.39.F
98.01		.54.F
10176	4.60	
10488	4.97	
10676	3.01	
10771	1.12	
10809	1.62	
10815	.47	
10822		1.11.F.
10829		1.24.F.
10836		.99.F.
10843	1.14	
10846	1.75	
10830	.82	
10810	.42	
10790	1.70	
10770	.66	
10750		.14F
10730	.14	
10710	.51	
10679		.46F
10626		.85F

⊙ 93.72
⊙ 99.86
⊙ 94.96
⊙ 88.16
⊙ 94.19
⊙ 103.32
⊙ 108.86
⊙ 108.33

	Gd. Stk	New Gd.	Cut	Fill.
50+0	104.50	105.60		1.10
51+0	103.59	104.95		1.36
52+0	103.44	104.30		.86
53+0	102.72	103.65		.93
54+0	103.25	103.11	.14	
55+0	103.50	103.18	.32	
56+0	104.17	103.34	.83	
57+0	105.73	103.54	2.19	
58+0	106.95	103.72	3.23	
59+0	106.25	103.90	2.35	
60+0	105.48	104.08	1.40	
61+0	105.42	104.26	1.16	
62+0	105.45	104.44	1.01	
63+0	104.91	104.62	.29	
64+0	105.41	104.73	.68	
65+0	104.87	104.45	.42	
66+0	104.95	104.10	.85	
67+0	104.71	103.75	.96	
68+0	105.14	103.40	1.76	
69+0	102.64	103.05		.43
70+0	101.62	102.70		1.08
71+0	102.60	102.35	.25	
72+0	101.58	102.00	.42	
73+0	100.61	101.65		1.04
74+0	102.33	101.30	1.03	

163

163

BM
108.15

⊙ 103.26

⊙ 103.03
Turning point on rock at cross road. SW Cor. of cross roads.

⊙ 104.59

⊙ 104.80

⊙ 101.33

	L.& S.tk.	New Gd.	Cut	Fill
75+0	101.40	101.01	.39	
76+0	101.08	101.13		.05
77+0	101.49	101.31	.18	
78+0	102.08	101.49	.59	
79+0	103.04	101.67	1.37	
80+0	103.74	101.85	1.89	
80+87	103.18	102.01	1.17	

Sta	~~Grade~~	Top of tk So. side	~~Cut~~	Top of tk No. side	Cut
54+0	99.68	103.25	3'-7"	103.25	3'-7"
40+0	105.00	108.75	3'-9"	108.62	3'-8"

103.25
99.68
3.57

99.68
9
108.68

⊙ 106.75

108.62
1.12
3.67

9'-0"
3. 7"
12' 7"

9'-0"
3 8"
5' 4"

9'-0
3'-9
5'-3"

$\frac{150 \times 18^{2}}{9}$ = 300.00

$\frac{250 \times 30}{9}$ = 945.00

$\frac{300 \times 21^{7}}{9}$ = 700.00

$\frac{300 \times 31}{9_{3}}$ = 1035.00

3000
20
00

2980.00

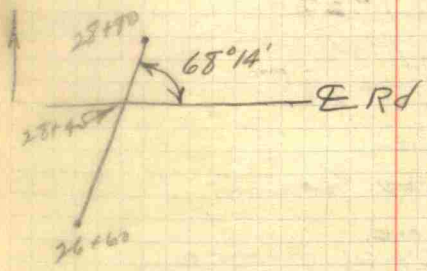
Wm T. Boyd Drain

~~Stks. 20' L of ℄~~

20' 0+30 N 33° W
20' 1+0 Def R- ~~1°28'~~ 1°8' 19"
20' 3+0 Cross Sec.

20'L. 0+0 N 14° W
0+50 Stk for Cross Sec. on ℄
20'L 1+0 Cross Sec.
3+0 Cross Sec. 20'L
6+0 Cross Sec. 20'L
9+0 Cross Sec. 20'L
12+0 Cross Sec 20'L
14+50 Fisher N. line. Stk line is 65' E of Cen W. of NW ¼ Sec 31 N & S offset on Range line is 33'
15+0 Cross Sec
20'L 17+34 Def. R- ~~33°08'~~ 33°38'
20+0 Cross Sec.
22+50 " "
25+0 " "
15'L 26+60 Def. R- 4°19'
28+45 ℄ E & W Road
340' W. to ~~NW~~ SW Cor Sec 30
29+90 Def R- 30°44'

Franklin Township



Bridge at 28+45
20' span

28+90	Ditch from NW.
32+0	Cross Sec.
34+61	Deg L 21°27'
36+0	Deg L 17°49'
37+0	Deg L 13°28'
40+0	Cross Sec.
43+40	~~Deg~~ Cross Sec.
46+0	Cross Sec.
47+77	~~Johnson Co. line~~ E+W. Fence
49+0	Cross Sec.
52+0	Cross Sec.
53+40	Deg. R 42°40'
53+40	Arm from North
56+0	Cross Sec.
57+0	Deg. R 17°24'
60+0	Cross Sec.
61+65	Deg L 18°30'
60+10	Johnson Co. line
64+0	Deg L 28°58'
66+0	Cross Sec.
68+08	Deg R. 19°52'
68+57	Johnson E. line and Boyd W. line.
71+0	Cross Sec.

40+20

~~684' West from ditch to N¼ mile stone of Sec. 30~~

72+55 Deg R - 4°53'
75+0 Cross Sec
76+42 Cooper So. Line - Boyd N. Line
77+0 Cross Sec.
78+87 Deg L 3~~4°~~
80+60 Deg L 3° 39'
83+0 Cross Sec.
86+0 " "
88+0 " "
90+20 End - So. Rail
90+29 ~~℄~~ Road + Sec. Line

632' from 5th line West
to N^r mile stone Sec 30

90+20
Bridge
24' Span 6' Rise

Sta.	5' Bank	Top Sta	Top Bank	Bot Bank	℄
0+0	45.96	46.14 Cul. at Sta 45.56	44.80	35.00	34.75
0+50	45.18			46.94	46.80
1+0	43.59	44.50	43.79	35.25	34.70
3+0	44.20	44.72	39.50	35.75	35.45
6+0	44.22	44.82	43.85	36.05	35.80
9+0	42.20	44.05	44.75	38.18	36.70
12+0	44.74	45.45	44.75	38.20	37.42
15+0	45.56	46.02	44.82	38.54	36.33
17+34	44.41	45.96	46.15	40.00	38.55
20+0	44.80	46.50	46.10	39.77	39.11
22+50	45.55	46.60	45.77	40.75	39.49
25+0	46.14	47.48	46.91	42.02	39.71
26+60	46.45	48.09	47.01	41.65	41.02
28+90	46.20	47.15	46.10	42.00	41.10
32+0	47.08	47.75	46.20	42.48	41.76
34+61	47.10	47.77	46.56	43.28	42.40
36+0	47.74	48.22	47.02	43.75	42.15
37+0	47.20	48.00	47.65	43.64	42.70
40+0	47.45	48.57	47.95	43.70	43.25
43+40	47.50	49.70	48.95	44.62	43.44
46+0	47.75	49.62	48.27	45.05	43.95
49+0	48.22	50.22	48.88	45.76	44.32
52+0	48.91	50.59	49.15	46.25	45.06
53+40	48.94	51.55	49.44	46.30	46.15
56+0	49.95	51.15	50.25	46.47	45.92

Bot Bank	Top Bk	Bank
36.66		
35.12	48.50	
39.00	42.70	
36.42	43.90	
37.40	44.60	43.68
37.95	44.90	44.60
38.50	45.35	45.06
39.76	45.95	45.55
39.62	45.90	45.60
40.81	45.29	46.30
41.12	46.28	45.88
41.45	45.75	46.08
42.35	45.95	46.45
42.80	46.97	46.76
43.73	46.99	47.00
43.45	47.26	47.25
43.98	46.84	47.60
44.90	47.70	47.95
44.76	47.97	49.25
44.94	48.47	49.10
46.38	48.95	49.48
46.35	49.20	50.45
45.17	50.06	50.81
46.30	49.60	50.31

BM. on N. end of mud wall at W. end of bridge at E+W. Road 350' So of 0+0. EL 50.00

BM on W. end of So. Handrail of Conc. Bridge at Sta 28+35 - EL. 49.53

○ 48.90

	5' Back	Top Stk	Top Back	Bot Back	E
57+0	50,00	50,97	50 47 12	46 70 15	45 83 19
60+0	50,40	51,41	50,76 11	47 35 15	46,16 18
61+65	51,14	52,04	50,73 4	47,40 5	46,38 11
64+0	51,87	52,47	50,31 6	48,04 8	46,70 16
66+0	5144	52,90	52 00 10	47 95 18	46,91 23
68+08	51,90	53,15	51,94 8	4790 15	4743 21
71+0	53,10	53,73	51,92 5	4890 12	47 70 15
72+55	54,07	54,34	52 87 5	4850 7	48,00 16
75+0	5367	5402	5201 6	49,14 9	4880 18
77+0	5424	5419	5275 4	49,95 8	49,30 16
78+87	54,96	56,62	53 95 5	5035 10	494 14
80+60	5528	5567	53,68 7	5000 14	49,60 22
83+0	55,91	54,84	53,91	5038 8	5014 14
86+0	5550	56,33	54,85 1	5080 17	5039 22
88+0	5589	57,76	5550 4	5140 20	50,67 25
90+20				50,80 22	50,57 14

Bot Bk	Top Stk	Back
469 23	50 30 26	51,15 31
4765 22	5088 26	51,40 31
4745 15	5100 18	50,55 23
47,60 20	5106 23	50,40 28
47,75 26	51,45 32	51 78 37
4811 26	51,25 32	51,90 36
4875 21	51,65 33	52,29 38
4878 23	5233 27	53 60 34
4964 24	5228 29	53 74 34
~~49,40 26~~	~~51,50~~ 5150 27	5300 32
4990 22	5335 38	5390 43
5100 25	5465 32	level
5059 22	5434 32	level
5075 27	55,70 40	5640 45
5160 30	56,92 45	level
51,65 30		

~~0 51,64~~

50.70 ①

B.M. on SW. Wing at West end of So. Handrail Sta 90+20 EL. 58.50

B.M. on SE Wing at East end of So. Handrail Sta 90+20 EL. 58.42

E ~~50,72~~

Arra #1 = 28+90

	5 Back	Top Stk	Top Bk	Bot Bk	℄	Bot Bk	Top Bk	Out
0+0	4641	47.17	4600 [5]	41.55 [18]	4090 [22]			
1+0	level	4687	46.50 [10]	level				
2+0	46.74	4745	4617 [2]	4330 [8]	4271 [9]	4346 [10]	4658 [13]	4655 [21]
3+0	level	4704	46.70		level			
4+0	~~level~~ 4550	47.39	46.90		level			
4+60	4750	48.61	4725 [4]	43.82 [8]	4295 [12]	4385 [16]	4730 [22]	4770 [27]

ART 1 F 2 -53+40

	5' Back	T of Back	T of Back	But Back	E
0+0	49.65	51.57	48.70 5	45.60 7	45.00 9
1+0	49.00	51.81	48.95 7	45.95 8	44.90 9
2+0	49.15	51.79	48.55 7	45.65 9	45.07 10
3+0	49.25	51.07	48.26 6	45.75 7	45.28 8
4+0	49.35	51.97	47.80 8	45.94 9	45.57 10
4+76	48.63	49.29	47.62 8	46.22 11	46.95 12

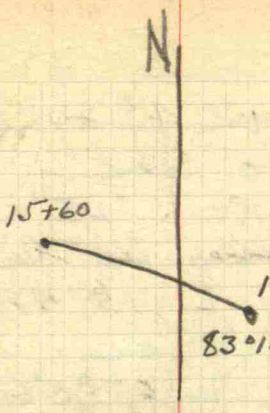
But Back	T of Back	Back
45.55 12	48.55 13	49.64 15
45.80 11	48.55 13	49.42 18
45.77 12	48.51 14	49.30 18
45.48 9	48.60 12	49.55 17
45.82 11	48.37 14	49.28 14
47.30 14	47.60 16	

Ditch NW from		
Sta 28+90		
0+0	=28+90	—
	1+0	42.14
	2+0	42.60
	3+0	43.05
	4+0	43.40

Ditch N.—		℄
53+40	=0+0	
1+0		44.90
2+0		45.05
3+0		44.85
4+0		45.55
5+0		46.60

EVERETT B. YOUNG DITCH.

0+0 E. bank Road Drain
0+35 Stk. N 70°48' E.
2+50 Cross Sec.
3+87 English E. line
430 feet So to Cor S of SE Sec. 21
4+20 Def R. 10°48'
7+0 Cross Sec.
8+65 Def R 30°09'
12+70 Def. L 6°21'
15+60 Def. L 8°38'
17+31 W. Road Fence
17+45.5 E N+S. Road
297' S. to SE corner Sec 21
17+60 E. Road Fence
17+68 Def R. 8°30'
19+0 Def L - 18°03'
21+70 Def. R. - 33°08'
23+37 Def. R - 33°42'
24+92 Def R - 18°51'
25+52 - 629' W to SE corner of Sec 21
27+0 Cross Sec
28+0 Def R. 13°26'
30+0 Cross Sec. is set 15' West of line.



Conc. Bridge Sta 17+45.5
16' Span
18' Rdway

32+0	Def. L 4°30'
34+0	Cross Sec.
35+50	Def. R. 5°28'
38+69	± Lowes So. line
38+85	Def. L 15°47'
41+0	Cross Sec.
43+0	Def. L 15°56'
45+53	Def. L 39°51'
48+0	Def. R. 10°36'
50+36	Def. L 31°47'
52+21	N+S Fence
52+63	Def. R 24°48'
53+47	Def R. 18°40'
56+0	Cross Sec.
58+0	Cross Sec.
58+37	E+W. Fence
	Yarnes No. line (?)
59+83	Def R. 47°30'
60+60	Def. R 10°23'
62+0	Cross Sec.
63+40	Def. R. 15°53'
67+54	Def. L 21°32'
70+0	Cross Sec.
72+0	Cross Sec.

54+56 Arm coming in from South

74+0 Cross Sec.
76+0 " "
76+26.5 N. line T.H.I. & E.
76+38 N. end Culvert.
76+47 N. Rail ℄ T.H.I.& E.
76+57 S. Rail ℄ T.H.I.& E.
76+67 S. end Culvert.
77+0 Deg. L - 16° 18'
77+0 N. end R.R. culvert
77+08 N. rail R.R.
77+13.5 S. rail R.R.
77+26 S. end Culvert R.R.
77+47 S. right of way line ℄ P. & E. R.R.
78+0 Cross Sec.
79+0 "
80+0 "
81+0 "
82+0 "
83+0 "
84+0 "
84+72 Deg. R. 23°56'
86+02 Deg R. 68°45'
87+0 Cross Sec
88+0 " "

Sta 76+50 - E culvert
6/38 under the T.H.I. & E.
7/13 Conc. Culvert. 24' long.
4'-0' Round.
Rail on East end 10'-9" long

R.R. Culvert.
77+13 - 24' long
1 Iron pipe. 3'-0"
Brick headwalls

Sta 86+02
Swains SE corner is
15' East and 11' South ℄
Stk at 86+02

89+0	Cross Sec.
90+0	" "
91+29	~~Beg.~~ L — 89°34'
91+34	Swain N. line & Pannon S. line
92+0	Cross Sec.
93+0	"
94+0	"
95+0	"
96+0	"
97+0	"
98+0	"
99+0	"
100+0	"
101+0	"
102+0	"
103+0	"
104+0	"
104+77	End.
553'	East to Cen of NW¼ Sec 34

37.66 EL. FL. ROSS DRAIN

Sta.	5' Bank	Top Bank	Top Bank	Bot. Bank	E
0+35	49.80	50.10	4830	3900	38.75
2+50	48.31	49.73	4840	41.21	40.44
4+20	48.81	49.87	48.31	42.10	41.80
7+0	48.66	49.62	48.09	42.95	42.92
8+65	49.35	50.29	4850	43.38	43.18
12+20	49.96	51.00	49.29	43.91	43.48
15+60	50.28	51.44	49.48	44.50	44.20
17+68	51.00	51.97	50.42	44.86	44.54
19+0	51.25	52.88	51.00	45.95	44.41
21+70	50.66	51.52	49.53	45.80	44.70
23+37	51.45	52.32	50.73	45.50	44.99
24+97	51.18	52.50	50.52	45.86	45.10
27+0	50.62	51.96	50.81	45.89	45.17
28+0 Sta. 15' W	51.22	52.50	51.84	45.91	45.30
30+0	51.30	52.20	50.90	46.11	45.56
32+0	51.33	52.48	51.50	46.34	46.11
34+0	51.50	52.52	51.34	46.52	46.15
35+50	51.15	52.82	50.87	46.87	46.34
38+85	51.90	53.25	52.70	48.00	46.80
41+0	52.87	53.77	52.72	47.46	47.19
43+0	51.88	52.98	50.96	47.80	47.48
45+53	51.50	52.27	52.91	48.20	47.75

39.30
1.W
37.66

BM #1
N. END OF
E. Rail of
Curve. Br.
Sta 17+45
EL. 53.57

Bottom Bank	Top Bank	Bank
39.10 20	48.06 29	48.64 34
41.12 20	47.86 26	48.30 31
42.15 16	48.21 26	48.21 31
43.05 16	49.30 24	48.55 32
43.41 15	48.72 24	48.60 29
43.78 15	48.80 22	49.80 27
44.22 13	49.95 21	50.42 26
44.78 13	50.45 20	50.86 25
44.75 14	52.51 24	52.65 30
45.30 14	50.18 19	50.45 25
45.47 14	47.88 17	48.20 25
45.12 14	50.78 22	50.80 27
46.05 24	51.03 31	51.08 36
46.15 17	51.32 23	51.78 28
45.87 15	51.26 22	50.70 40
46.35 15	51.30 22	50.80 29
46.65 13	51.70 19	51.24 25
47.02 10	51.78 17	51.54 23
47.50 16	53.18 21	53.35 26
47.50 17	53.95 19	53.25 24
47.64 13	52.00 20	52.35 25
48.20 20	52.85 31	52.35 37

	S Bank	Top Stk	Top Bank	Rail Bank	E
48+0	5362	55.50	54.38	48.80	48.47
50+36	5441	54.53	54.34	49.41	49.04
52+63	5435	56.41	55.35	49.75	49.35
53+42	5485	56.61	54.98	49.80	49.46
56+0	54.50	56.59	55.52	50.14	49.63
58+0	56.20	58.02	57.00	50.38	49.97
59+83	56.75	58.82	57.01	50.84	50.44
60+60	57+0	58.30	56.83	50.89	50.46
62+0	57.02	58.18	57.48	51.01	50.50
63+40	58.22	59.43	57.94	51.54	51.01
67+54	56.70	58.31	57.47	52.45	52.16
70+0	57.40	58.64	57.02	52.95	52.00
72+0	5680	57.94	56.55	52.78	52.20
74+0	56.79	57.76	56.91	53.00	52.25
76+0	56.58	58.14	56.84 Clay Str	53.04	52.46
77+0		59.14	58.69		52.00
78+0		58.42	57.58		52.24
79+0		57.25	56.88		52.30
80+0		58.11	57.52		52.30
81+0		57.73	57.15		52.82
82+0		57.79	57.30		52.88
83+0		57.43	56.85		52.74
84+0		57.65	56.86		53.00
84+77		57.00	56.02		52.66

Bot Bank	Top Bank	Bank
48.80	54.68	54.31
49.20	55.07	55.18
49.75	56.40	55.07
49.95	55.25	53.95
50.12	55.28	55.51
50.47	56.61	56.68
50.90	57.42	56.75
50.93	58.14	57.50
50.90	58.30	58.70
51.57	56.70	57.05
52.48	56.78	56.75
52.93	57.68	57.40
52.85	56.60	57.11
52.65	56.80	56.78
53.04	56.78	56.75

Top of wood post at Ridge Sta 66+

EL. 57.33

B.M. on W. end of So. Hdwl. of T.H. I & E Sta. 76+62

EL. 57.28

	Top Std.	Gd. at Std.	℄
86+02	5782	5683	53.07
87+0	5747	5684	52.80
88+0	5770	5649	52.97
89+0	5648	5575	53.04
90+0	5748	5665	52.89
91+29	57.07	5649	53.30
92+0	5764	5677	53.12
93+0	5724	5640	53.41
94+0	5700	56.49	5340
95+0	5723	5639	53.84
96+0	5650	5590	5360
97+0	5765	5675	53.75
98+0	57.80	5696	53.52
99+0	5685	55.97	53.75
100+0	5776	5680	5405
101+0	5803	5683	54.04
102+0	5776	5721	5430
103+0	5777	5691	5441
104+0	5733	563x	5472
104+77	5720	5670	54.68

Re-Leveled

54.15 Top of Tile at Head. 6"+(?)

ELEVATIONS AT R.R.S.

Fl. No. End T.H.I. & E. Culvert - 51.8x
Fl. So. End. " " " - 51.69
No. Rail Track — 59.43
So. rail Track — 59.38

P. & E. R.R.

Fl. No. End. R.R. Culvert — 51.32
Fl. So. End " " - 51.4x
No. rail of track — 60.05
So. rail of track — 60.01

77+50 - 8" Tile from ℄ - 52.85 Fl.
Tile is about 42.5' East of Detd.

77+82 - 5" Tile from West - 52.52

78-95 - 6" Tile from West - 52.48

79+95 - 5" Tile from West - 52.52

81+21 - 5" " " East - 53.20

81+40 - 5" " " West - 52.85

83+72 - 5" " " West 53.50

86+02 - 5" " " ℄ - 53.10

86+60 - 5" " " So. - 53.00

89+10 - 5" " " So — 53.10

(next page)

91+08	4"	Tile from	New – 53.90
93+21	5"	Tile	West – 54.18
95+96	4"	"	West – 53.80
98+86	4"	"	West – 53.90

~~B.M. on rock appx.~~
~~40' East of Sta 1041+60~~
~~EL –~~

	Top	Ground
	36th	10'
86+02		
87+0	5620	5568
88+0	5632	5570
89+0	5649	5585
90+0	5619	5560
91+0	5625	5570
92+0	5635	5571
93+10	Same	—
~~94+10~~		
94+10		
95+10		
96+10		
97+10		
98+10		
99+10		
100+10		
101+10		
101+87		

86+02 -
Deg R. 27°

10477
96
877

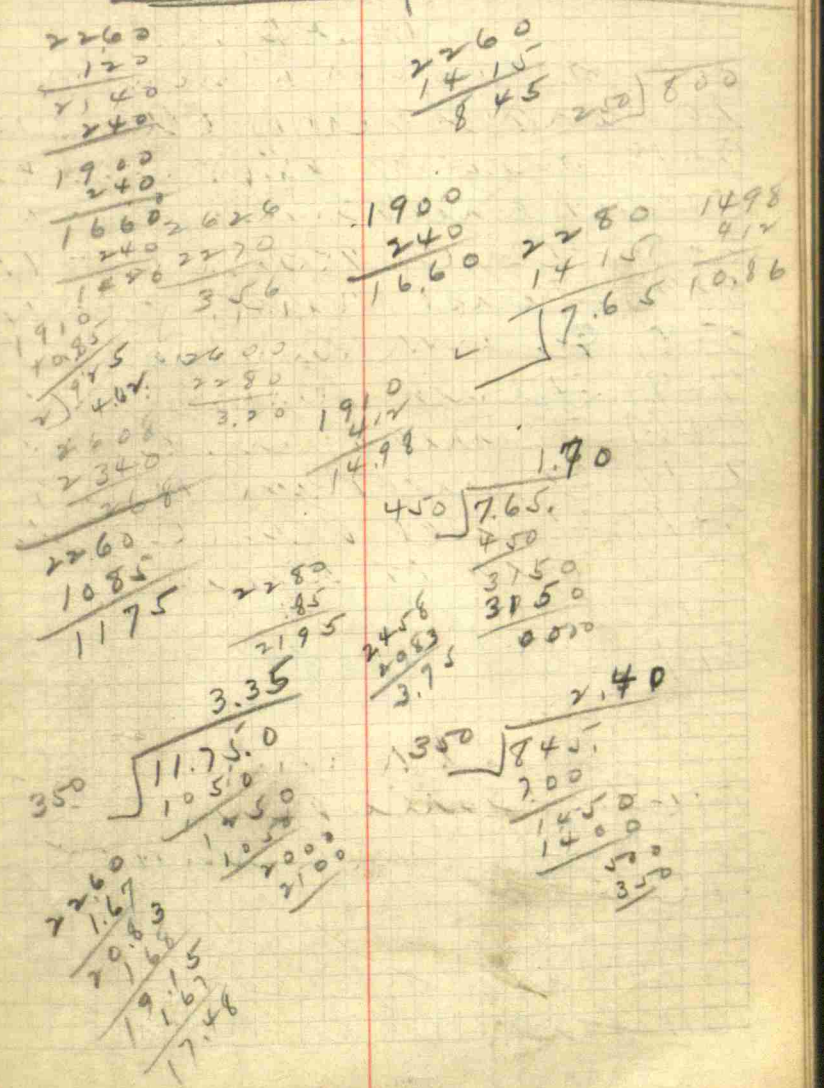
9310
877
10187

	Sta	Ground	New Grade	cut below Ground	cut below Sta
	10.85 — hole in end of culvert.				
4%	0+0		14.15	10.86	3.29	
	1+0	18.17	17.96	14.98	2.98	3.19
3%	2+0	22.55	22.02	19.10	2.92	3.45
	3+0	25.07	24.58	21.10	3.48	3.97
	3+50	26.08	25.75	22.60	3.15	3.48
	4+0	26.54	26.26	22.70	3.56	3.84
	4+50	27.60	26.00	22.80	3.20	4.80
	5+0	27.86	26.15	22.90	3.25	4.96
20%	5+50	27.86	26.35	23.00	3.35	4.86
	6+0	28.45	26.65	23.10	3.55	5.35
	6+50	28.21	26.63	23.20	3.43	5.01
	7+0	27.68	26.30	23.30	3.00	4.38
	7+50	26.97	26.08	23.40	2.68	3.57
	8+0	26.22	25.50	23.50	2.00	2.72

×20%

Tile ditch along Ratliff Rd near Waters House.

Temporary B.M.
East end of East Headwall at water is 23.58
Gateway Culvert.



CARTER-DRAIN

(HEAD)

653 feet from Ditch W
to Road then N100 Jury
0+18 Head of L.H.P. Culvert
0+94 Fence Running E+W
12+8 Fence Run. E+W
15+73 Fence Run. E+W
15+81 E arm Running W
17+94 Fence Run. W.
19+61 Fence Run. E+W.
32+14 Fence Run N+S.
36+17 Fence Run E+W
41+17 End of Drain
1041 feet North thence
1044 feet West to Road

Arm

4+69 Fence Run N+S
4+85 E Road Run N+S.
5+0 Fence Run. N+S
308 feet N. to Road Run. W
10+42 End of arm
400 feet N. to Road
Run. E+W.

Young Ditch
July 11, 1939

B.M. N. end E. rail of Bridge
Sta 17+45
El. 53.57

C.C.C. B.M. Cross Mark on NW cor. of
W. Handrail of bridge Sta 17+20
El. 77.67

77.67
53.43
24.24

	—	π	+	BM
				53.57
		54.27	0.70	
	2.38			51.89
		56.49	4.60	
	6.78			49.71
		50.93	1.22	

Yanney Ditch July 11, 1937

check CCC. B.M
53.43
0.84

℄ Ditch at yanney Bridge 17+
42.02
12.25

℄ 40.85
10.08

38.18
12 45

cut on Boyd Drain

STA.	STK	Grade	Cut
0+0		3500	
2+0		3524	
4+0	43.19	3548	7.71
6+0	4361	3572	7.89
8+0	43.86	3596	7.90
10+0	44.09	3620	7.89
12+0	44.32	3644	7.88
14+0	4454	3668	7.86
16+0	45.95	3692	9.03
18+0	4559	3716	8.13
20+0	4571	3740	8.31
22+0	46.58	3764	6.94
24+0	46.65	3788	8.77
26+0	46.40	3812	8.28
28+0	46.59	3836	8.23
30+0	4668	3868	8.05
32+0	47.36	3893	8.43
34+0	4716	3923	7.93
36+0	47.90	3953	8.37
38+0	4781	3983	7.98
40+0	4775	4013	7.62
42+0	4806	4043	7.63
44+0	4851	4073	7.78
46+0	4890	4103	7.87
48+0	4921	4133	7.88

3561

3742

181

CUT ON BOYD DRAIN

STA.	STK	GRADE	CUT
50+0	49.40	41.63	7.77
52+0	50.44	41.93	8.51
54+0	50.14	42.25	7.89
56+0	50.89	42.61	8.28
58+0	50.59	42.97	7.62
60+0	51.15	43.33	7.82
62+0	51.94	43.69	8.25
64+0	51.77	44.05	7.72
66+0	52.33	44.41	7.92
68+0	52.90	44.77	8.13
70+0	52.85	45.13	7.72
72+0	54.26	45.49	8.77
74+0	53.21	45.85	7.36
76+0	54.81	46.21	8.60

Tile Young Drop

	S+K		
76+26	57.60	49.17	8.43
76+40	57.42	49.19	8.23
77+00	58.18	49.28	8.90
77+46	53.31	49.35 / 49.68	3.96 / 3.63
78+0	55.12	49.74	5.38
78+50	54.74	49.80	4.94
79+0	55.13	49.86	5.27
79+50	54.89	49.92	4.97
80+0	55.55	49.98	5.57
80+50	55.10	50.04	5.06
81+0	55.34	50.10	5.24
81+50	55.48	50.16	5.32
82+0	55.68	50.22	5.46
82+50	55.37	50.28	5.09
83+0	55.32	50.34	4.98
83+50	55.38	50.40	4.98
84+0	55.76	50.46	5.30
84+50	55.47	50.52	4.95
84+72	56.13	50.54	5.59
85+0	55.59	50.58	5.01
85+50	55.98	50.64	5.34
86+02	55.76	50.70 / 50.87	5.06 / 4.89
86+50	56.37	50.93	5.44
87+0	56.25	50.99	5.26
87+50	56.04	51.05	4.99

1T"

14"

12"

BM- E57.28
West S Hdwl
THITE

Sta	Sfc	Gd	Cut
88+0	56.09	51.11	4.98
88+50	56.10	51.17	4.93
89+0	56.25	51.23	5.02
89+50	56.49	51.29	5.20
90+0	56.15	51.35	4.80
90+50	56.08	51.41	4.67
91+0	56.13	51.47	4.66
91+50	56.15	51.53	4.62
92+0	56.09	51.59	4.50
92+50	56.01	51.65	4.36
93+0	57.03	51.71	5.32
93+50	55.64	51.77	3.87
94+0	55.98	51.83	4.15
94+50	56.06	51.89	4.17
95+0	55.84	51.95	3.89
95+50	56.20	52.01	4.19
96+0	56.60	52.07	4.53
96+50	56.13	52.13	4.00
97+0	56.10	52.19	3.91
97+50	56.05	52.25	3.80
98+0	56.11	52.31	3.80
98+50	56.12	52.37	3.75
99+0	56.05	52.43	3.62
99+50	56.37	52.49	3.88
100+0	56.48	52.55	3.93

93+10 Off L

Sta	Sfc	Gd	Cut
100+50	56.58	52.61	3.97
101+0	56.88	52.67	4.21
101+50	56.47	52.73	3.74
101+80	57.31	52.77	4.54

Inter Southern Life Ins Co

	Station	Cd	Bed	
0+00		92.20	91.20	
3+00	92.55	91.60	90.05	
6+00	90.05	89.20	89.10	
9+00	89.72	88.80	88.70	
12+00	89.55	88.70	—	on wing line
15+00	88.35	87.50	—	
18+0	87.00	86.15	—	
21+0	87.08	86.20	—	
24+0	86.44	85.60		
26+0	86.25	85.40		
28+0	85.82	85.00		
30+0	86.95	86.00		
32+0	86.62	85.75		
34+0	86.80	86.10		
36+0	84.95	84.10		
38+0	83.72	82.80		
40+0	84.42	83.85		
42+0	83.60	82.87		
44+0	82.96	82.10		
46+0	82.53	81.75		
48+0	82.91	82.15		
50+0	84.76	84.17		
52+0	87.10	86.10		
54+0	90.10	78.80		

BM El 100.00
NW wing at end of Rail-Culvt on State Road

Arm N from Sta —

Sta	Cd	Ditch
3+0	88.80	88.00
6+0	89.90	87.50
9+0	87.80	87.50
12+0	88.90 (ex)	88.00
14+05	90.15	89.10

	BS	HI	FS		Elev
BM.	5.44	105.44			100
0+00				9.47	95.97
+76				9.59	95.85
1+00				9.70	95.74
2+00				10.40	95.04
3+00				10.66	94.78
4+00				10.98	94.46
⊙ on 4			5.91		99.53
⊼	3.72	103.25			
5+00				8.72	94.53
6+00				9.01	94.24
7+00				9.35	93.90
8+00				9.18	94.07
9+00				9.52	93.73
⊙ 9			3.99		99.26
⊼	3.07	102.33			
10+00				9.04	93.29
11+00				9.35	92.98
12+00				8.69	93.64
13+00				8.93	93.40
14+00				9.12	93.21
⊙ 14			3.19		99.14
⊼	3.03	102.17			
15+00				9.25	92.92
16+00				9.41	92.76

99.53

6.63 106.16

FLSS 0+72	11.68	94.48
PLASTIC 0+00	11.00	95.16
BOX TO Import	1.71	104.45

		102.17			
17+00				9.29	92.88
18+00				9.06	93.11
19+00				9.56	92.61
⊙ "19			3.66		98.51
⊼	3.97	102.48			
20+00				9.66	92.88
21+00				9.73	92.75
22+00				9.88	92.60
23+00				10.20	92.28
24+00				10.19	92.29
⊙ "24			4.43		98.05
⊼	4.55	102.60			
25+00				10.73	91.89
Water 26+00				10.88	91.72
27+00				10.96	91.64
28+00				11.20	91.40
⊙ "28			3.67		98.93
⊼	2.30	101.23			
29+00				9.95	91.28
30+00				9.90	91.33
31+00				10.00	91.23
32+00				9.95	91.28
33+00				10.20	91.03
34+00				10.18	91.05
⊙ "34			4.91		96.32
⊼	4.11	100.73			

		100.43			
35+00				9.85	90.58
36+00				10.04	90.39
37+00				10.28	90.15
38+00				10.22	90.21
39+00				10.37	90.06
⊙ "39			4.08		96.30
π	3.03	99.38			
40+00				9.32	90.06
				10.15	89.23
+19					
⊙ "41				4.26	95.12
π	3.46	98.58			
+19				8.66	89.92
				9.25	89.33
41+00				8.02	90.56
42+00				8.00	90.58
43+00				8.65	89.93
⊙			8.05		90.53
π	4.53	95.06			
+50				4.35	90.71
300' West				4.80	90.26

NE Flow Into Br
FL Pipe Wood Flow

SEnd Flow Into Br
FL Pipe S end

6.44	5.91
3.72	3.99
3.07	3.19
3.03	3.66
3.97	4.43
4.55	3.67
2.30	4.91
4.11	4.08
3.08	8.05
3.46	4.80
4.53	46.69
41.24	41.95
41.21	5.26
	4.26
	9.74

100.00
90.26
9.74

	Sta.		Gd.	
4	0+0	20.20	12.20	8'-0"
4	0+33⅓	19.54	12.10	7'-5"
3	0+66⅔	19.12	12.00	7'-1½"
4	1+0	18.54	11.87	6'-8"
8	1+33⅓	18.11	11.77	6'-4"
6	1+66⅔	17.41	11.66	5'-9"
7	2+0	16.51	11.54	4'-11½"
	3+0	12.69	11.21	1'-6"
	4+0	10.32	10.88	
	5+0	8.83	(650 Ditch)	

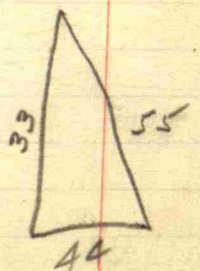
52
50
51
55
52
51
53
55
53

9 | 472 | 52.44

45
22
18
40
36
40

air. 274
Slant H. 55
R. = 44'

V = 2478 Cu. Yds



Tan A = 44/33

1.333349 = 44/33

1.333349
44

3.1416

274
r
548

0.282

486
6.2832 | 2740000.0
251328
226720
188496
382240
376992

44
44
176
176
1936

.80
55 | 44.00
440
0

53°08'

3.1416
.9936
188496
94248
28274
31416
6082.13376

2027.3
33
60819
60819
66900.9

.5999
.6 = A/55
.6
33.0

24778

1/3 (π R²) x 33

27 | 66900.9 | 2477.8
54
129
108
219
216
30

219
216

7.84
7.16
7.00
6.75

7.84
7.16
.68

2.35
1.17
52

1.65
1.75
3.50
6.90

245
0
1226

8 4 27
12 25
4 02

Natural Trigonometrical Ratios.

Angle.	Sine.	Tan.	Sec.	Cosec.	Cotg.	Cosin.		Angle.	Sine.	Tan.	Sec.	Cosec.	Cotg.	Cosin.	
° ′								° ′							
0	0	0	1.	∝	∝	1.	90	8	.1392	.1405	1.0098	7.185	7.115	.99027	82
10	.0029	.0029		343.8	343.8	I.	50	10	.1421	.1435	1.0102	7.040	6.968	.98986	50
20	.0058	.0058		171.9	171.9	.99998	40	20	.1449	.1465	1.0107	6.900	6.827	.98944	40
30	.0087	.0087		114.6	114.6	.99996	30	30	.1478	.1495	1.0111	6.766	6.691	.98902	30
40	.0116	.0116	1.0001	85.94	85.94	.99993	20	40	.1507	.1524	1.0115	6.636	6.561	.98858	20
50	.0145	.0145	1.0001	68.76	68.75	.99989	10	50	.1536	.1554	1.0120	6.512	6.435	.98814	10
1	.0175	.0175	1.0002	57.30	57.29	.99985	89	9	.1564	.1584	1.0125	6.394	6.314	.98769	81
10	.0204	.0204	1.0002	49.11	49.10	.99979	50	10	.1593	.1614	1.0129	6.277	6.197	.98723	50
20	.0233	.0233	1.0003	42.98	42.96	.99973	40	20	.1622	.1644	1.0134	6.166	6.084	.98676	40
30	.0262	.0262	1.0003	38.20	38.19	.99966	30	30	.1650	.1673	1.0139	6.059	5.976	.98629	30
40	.0291	.0291	1.0004	34.38	34.37	.99958	20	40	.1679	.1703	1.0144	5.955	5.871	.98580	20
50	.0320	.0320	1.0005	31.26	31.24	.99949	10	50	.1708	.1733	1.0148	5.855	5.769	.98531	10
2	.0349	.0349	1.0006	28.65	28.64	.99939	88	10	.1736	.1763	1.0154	5.759	5.671	.98481	80
10	.0378	.0378	1.0007	26.45	26.43	.99929	50	10	.1765	.1793	1.0160	5.665	5.576	.98430	50
20	.0407	.0407	1.0008	24.56	24.54	.99917	40	20	.1794	.1823	1.0165	5.575	5.485	.98378	40
30	.0436	.0437	1.0010	22.93	22.90	.99905	30	30	.1822	.1853	1.0170	5.488	5.396	.98325	30
40	.0465	.0466	1.0011	21.49	21.47	.99892	20	40	.1851	.1883	1.0176	5.403	5.309	.98272	20
50	.0494	.0495	1.0012	20.23	20.21	.99878	10	50	.1880	.1914	1.0181	5.320	5.226	.98218	10
3	.0523	.0524	1.0014	19.11	19.08	.99863	87	11	.1908	.1944	1.0187	5.241	5.145	.98163	79
10	.0552	.0553	1.0015	18.10	18.07	.99847	50	10	.1937	.1974	1.0193	5.164	5.066	.98107	50
20	.0581	.0582	1.0017	17.20	17.17	.99831	40	20	.1965	.2004	1.0199	5.089	4.989	.98050	40
30	.0610	.0612	1.0019	16.38	16.35	.99813	30	30	.1994	.2035	1.0205	5.016	4.915	.97992	30
40	.0640	.0641	1.0020	15.64	15.60	.99795	20	40	.2022	.2065	1.0211	4.945	4.843	.97934	20
50	.0669	.0670	1.0022	14.96	14.92	.99776	10	50	.2051	.2095	1.0217	4.877	4.773	.97875	10
4	.0698	.0699	1.0024	14.34	14.30	.99756	86	12	.2079	.2126	1.0223	4.810	4.705	.97815	78
10	.0727	.0729	1.0027	13.76	13.73	.99736	50	10	.2108	.2156	1.0230	4.745	4.638	.97754	50
20	.0756	.0758	1.0029	13.23	13.20	.99714	40	20	.2136	.2186	1.0236	4.682	4.574	.97692	40
30	.0785	.0787	1.0031	12.75	12.71	.99692	30	30	.2164	.2217	1.0243	4.620	4.511	.97630	30
40	.0814	.0816	1.0033	12.29	12.25	.99668	20	40	.2193	.2247	1.0249	4.560	4.449	.97566	20
50	.0843	.0846	1.0036	11.87	11.83	.99644	10	50	.2221	.2278	1.0256	4.502	4.390	.97502	10
5	.0872	.0875	1.0038	11.47	11.43	.99619	85	13	.2250	.2309	1.0263	4.445	4.331	.97437	77
10	.0901	.0904	1.0041	11.10	11.06	.99594	50	10	.2278	.2339	1.0270	4.390	4.275	.97371	50
20	.0929	.0934	1.0043	10.76	10.71	.99567	40	20	.2306	.2370	1.0277	4.336	4.219	.97304	40
30	.0958	.0963	1.0046	10.43	10.39	.99540	30	30	.2334	.2401	1.0284	4.284	4.165	.97237	30
40	.0987	.0992	1.0049	10.13	10.08	.99511	20	40	.2363	.2432	1.0291	4.232	4.113	.97169	20
50	.1016	.1022	1.0052	9.839	9.788	.99482	10	50	.2391	.2462	1.0299	4.182	4.061	.97100	10
6	.1045	.1051	1.0055	9.567	9.514	.99452	84	14	.2419	.2493	1.0306	4.133	4.011	.97030	76
10	.1074	.1080	1.0058	9.309	9.255	.99421	50	10	.2447	.2524	1.0314	4.086	3.962	.96959	50
20	.1103	.1110	1.0061	9.065	9.010	.99390	40	20	.2476	.2555	1.0321	4.039	3.914	.96887	40
30	.1132	.1139	1.0065	8.834	8.777	.99357	30	30	.2504	.2586	1.0329	3.994	3.867	.96815	30
40	.1161	.1169	1.0068	8.614	8.556	.99324	20	40	.2532	.2617	1.0337	3.949	3.821	.96742	20
50	.1190	.1198	1.0072	8.405	8.345	.99290	10	50	.2560	.2648	1.0345	3.906	3.776	.96667	10
7	.1219	.1228	1.0075	8.206	8.144	.99255	83	15	.2588	.2679	1.0353	3.864	3.732	.96593	75
10	.1248	.1257	1.0079	8.016	7.953	.99219	50	10	.2616	.2711	1.0361	3.822	3.688	.96517	50
20	.1276	.1287	1.0082	7.834	7.770	.99182	40	20	.2644	.2742	1.0369	3.782	3.647	.96440	40
30	.1305	.1317	1.0086	7.661	7.596	.99144	30	30	.2672	.2773	1.0377	3.742	3.606	.96363	30
40	.1334	.1346	1.0090	7.496	7.429	.99106	20	40	.2700	.2805	1.0386	3.703	3.566	.96285	20
50	.1363	.1376	1.0094	7.337	7.269	.99067	10	50	.2728	.2836	1.0394	3.665	3.526	.96206	10
							82								74
	Cosin.	Cotg.	Cosec.	Sec.	Tan.	Sine.	Angle.		Cosin.	Cotg.	Cosec.	Sec.	Tan.	Sine.	Angle.

Natural Trigonometrical Ratios.

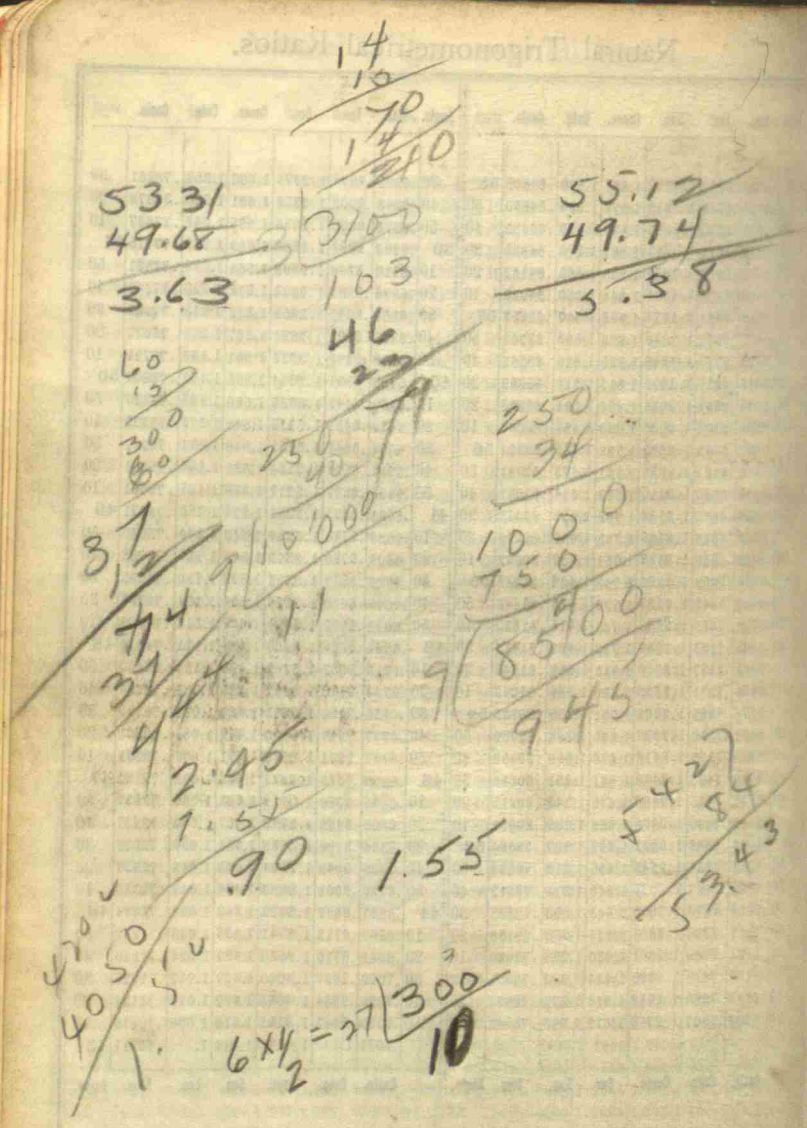
Angle.	Sine.	Tan.	Sec.	Cosec.	Cotg.	Cosin.	
° ′							
16	.2756	.2867	1.0403	3.628	3.487	.96126	74
10	.2784	.2899	1.0412	3.592	3.450	.96046	50
20	.2812	.2931	1.0423	3.556	3.412	.95964	40
30	.2840	.2962	1.0429	3.521	3.376	.95882	30
40	.2868	.2994	1.0438	3.487	3.340	.95799	20
50	.2896	.3026	1.0448	3.453	3.305	.95715	10
17	.2924	.3057	1.0457	3.420	3.271	.95630	73
10	.2952	.3089	1.0468	3.388	3.237	.95545	50
20	.2979	.3121	1.0476	3.357	3.204	.95459	40
30	.3007	.3153	1.0485	3.326	3.172	.95372	30
40	.3035	.3185	1.0495	3.295	3.140	.95284	20
50	.3062	.3217	1.0505	3.265	3.108	.95195	10
18	.3090	.3249	1.0515	3.236	3.078	.95106	72
10	.3118	.3281	1.0525	3.207	3.048	.95015	50
20	.3145	.3314	1.0535	3.179	3.018	.94924	40
30	.3173	.3346	1.0545	3.152	2.989	.94832	30
40	.3201	.3378	1.0555	3.124	2.960	.94740	20
50	.3228	.3411	1.0566	3.098	2.932	.94646	10
19	.3256	.3443	1.0576	3.072	2.904	.94552	71
10	.3283	.3476	1.0587	3.046	2.877	.94457	50
20	.3311	.3508	1.0598	3.020	2.850	.94361	40
30	.3338	.3541	1.0608	2.996	2.824	.94264	30
40	.3365	.3574	1.0619	2.971	2.798	.94167	20
50	.3393	.3607	1.0631	2.947	2.773	.94068	10
20	.3420	.3640	1.0642	2.924	2.747	.93969	70
10	.3448	.3673	1.0653	2.900	2.723	.93869	50
20	.3475	.3706	1.0665	2.878	2.699	.93769	40
30	.3502	.3739	1.0676	2.856	2.675	.93667	30
40	.3529	.3772	1.0688	2.833	2.651	.93565	20
50	.3557	.3805	1.0700	2.811	2.628	.93462	10
21	.3584	.3839	1.0711	2.790	2.605	.93358	69
10	.3611	.3872	1.0723	2.769	2.583	.93253	50
20	.3638	.3906	1.0736	2.749	2.560	.93148	40
30	.3665	.3939	1.0748	2.729	2.539	.93042	30
40	.3692	.3973	1.0760	2.709	2.517	.92935	20
50	.3719	.4006	1.0773	2.689	2.496	.92827	10
22	.3746	.4040	1.0785	2.670	2.475	.92718	68
10	.3773	.4074	1.0798	2.650	2.455	.92609	50
20	.3800	.4108	1.0811	2.632	2.434	.92499	40
30	.3827	.4142	1.0824	2.613	2.414	.92388	30
40	.3854	.4176	1.0837	2.595	2.394	.92276	20
50	.3881	.4210	1.0850	2.577	2.375	.92164	10
23	.3907	.4245	1.0864	2.559	2.356	.92050	67
10	.3934	.4279	1.0877	2.542	2.337	.91936	50
20	.3961	.4314	1.0891	2.525	2.318	.91822	40
30	.3987	.4348	1.0904	2.508	2.300	.91706	30
40	.4014	.4383	1.0918	2.491	2.282	.91590	20
50	.4041	.4417	1.0932	2.475	2.264	.91472	10
							66
	Cosin.	Cotg.	Cosec.	Sec.	Tan.	Sine.	Angle.

Angle.	Sine.	Tan.	Sec.	Cosec.	Cotg.	Cosin.	
° ′							
24	.4067	.4452	1.0946	2.459	2.246	.91355	66
10	.4094	.4487	1.0961	2.443	2.229	.91236	50
20	.4120	.4522	1.0975	2.427	2.211	.91116	40
30	.4147	.4557	1.0989	2.411	2.194	.90996	30
40	.4173	.4592	1.1004	2.396	2.177	.90875	20
50	.4200	.4628	1.1019	2.381	2.161	.90753	10
25	.4226	.4663	1.1034	2.366	2.145	.90631	65
10	.4253	.4699	1.1049	2.351	2.128	.90507	50
20	.4279	.4734	1.1064	2.337	2.112	.90383	40
30	.4305	.4770	1.1079	2.323	2.097	.90259	30
40	.4331	.4806	1.1095	2.309	2.081	.90133	20
50	.4358	.4841	1.1110	2.295	2.066	.90007	10
26	.4384	.4877	1.1126	2.281	2.050	.89879	64
10	.4410	.4913	1.1142	2.268	2.035	.89752	50
20	.4436	.4950	1.1158	2.254	2.020	.89623	40
30	.4462	.4986	1.1174	2.241	2.006	.89493	30
40	.4488	.5022	1.1190	2.228	1.991	.89363	20
50	.4514	.5059	1.1207	2.215	1.977	.89232	10
27	.4540	.5095	1.1223	2.203	1.963	.89101	63
10	.4566	.5132	1.1240	2.190	1.949	.88968	50
20	.4592	.5169	1.1257	2.178	1.935	.88835	40
30	.4617	.5206	1.1274	2.166	1.921	.88701	30
40	.4643	.5243	1.1291	2.154	1.907	.88566	20
50	.4669	.5280	1.1308	2.142	1.894	.88431	10
28	.4695	.5317	1.1326	2.130	1.881	.88295	62
10	.4720	.5354	1.1343	2.119	1.868	.88158	50
20	.4746	.5392	1.1361	2.107	1.855	.88020	40
30	.4772	.5430	1.1379	2.096	1.842	.87882	30
40	.4797	.5467	1.1397	2.085	1.829	.87743	20
50	.4823	.5505	1.1415	2.073	1.816	.87603	10
29	.4848	.5543	1.1434	2.063	1.804	.87462	61
10	.4874	.5581	1.1452	2.052	1.792	.87321	50
20	.4899	.5619	1.1471	2.041	1.780	.87178	40
30	.4924	.5658	1.1490	2.031	1.767	.87036	30
40	.4950	.5696	1.1509	2.020	1.756	.86892	20
50	.4975	.5735	1.1528	2.010	1.744	.86748	10
30	.5000	.5774	1.1547	2.	1.732	.86603	60
10	.5025	.5812	1.1566	1.990	1.720	.86457	50
20	.5050	.5851	1.1586	1.980	1.709	.86310	40
30	.5075	.5890	1.1606	1.970	1.698	.86163	30
40	.5100	.5930	1.1626	1.961	1.686	.86015	20
50	.5125	.5969	1.1646	1.951	1.675	.85866	10
31	.5150	.6009	1.1666	1.942	1.664	.85717	59
10	.5175	.6048	1.1687	1.932	1.653	.85567	50
20	.5200	.6088	1.1707	1.923	1.643	.85416	40
30	.5225	.6128	1.1728	1.914	1.632	.85264	30
40	.5250	.6168	1.1749	1.905	1.621	.85112	20
50	.5275	.6208	1.1770	1.896	1.611	.84958	10
							58
	Cosin.	Cotg.	Cosec.	Sec.	Tan.	Sine.	Angle.

Natural Trigonometrical Ratios.

Angle.	Sine.	Tan.	Sec.	Cosec.	Cotg.	Cosin.	
° ′							
32	.5299	.6248	1.1792	1.887	1.600	.84805	58
10	.5324	.6289	1.1813	1.878	1.590	.84650	50
20	.5348	.6330	1.1835	1.870	1.580	.84495	40
30	.5373	.6371	1.1857	1.861	1.570	.84339	30
40	.5398	.6412	1.1879	1.853	1.560	.84182	20
50	.5422	.6453	1.1901	1.844	1.550	.84025	10
33	.5446	.6494	1.1924	1.836	1.540	.83867	57
10	.5471	.6536	1.1946	1.828	1.530	.83708	50
20	.5495	.6577	1.1969	1.820	1.520	.83549	40
30	.5519	.6619	1.1992	1.812	1.511	.83389	30
40	.5544	.6661	1.2015	1.804	1.501	.83228	20
50	.5568	.6703	1.2039	1.796	1.492	.83066	10
34	.5592	.6745	1.2062	1.788	1.483	.82904	56
10	.5616	.6787	1.2086	1.781	1.473	.82741	50
20	.5640	.6830	1.2110	1.773	1.464	.82577	40
30	.5664	.6873	1.2134	1.766	1.455	.82413	30
40	.5688	.6916	1.2158	1.758	1.446	.82248	20
50	.5712	.6959	1.2183	1.751	1.437	.82082	10
35	.5736	.7002	1.2208	1.743	1.428	.81915	55
10	.5760	.7046	1.2233	1.736	1.419	.81748	50
20	.5783	.7089	1.2258	1.729	1.411	.81580	40
30	.5807	.7133	1.2283	1.722	1.402	.81412	30
40	.5831	.7177	1.2309	1.715	1.393	.81242	20
50	.5854	.7221	1.2335	1.708	1.385	.81072	10
36	.5878	.7265	1.2361	1.701	1.376	.80902	54
10	.5901	.7310	1.2387	1.695	1.368	.80730	50
20	.5925	.7355	1.2413	1.688	1.360	.80558	40
30	.5948	.7400	1.2440	1.681	1.351	.80386	30
40	.5972	.7445	1.2468	1.675	1.343	.80212	20
50	.5995	.7490	1.2494	1.668	1.335	.80038	10
37	.6018	.7536	1.2521	1.662	1.327	.79864	53
10	.6041	.7581	1.2549	1.655	1.319	.79688	50
20	.6065	.7627	1.2577	1.649	1.311	.79512	40
30	.6088	.7673	1.2605	1.643	1.303	.79335	30
40	.6111	.7720	1.2633	1.636	1.295	.79158	20
50	.6134	.7766	1.2661	1.630	1.288	.78980	10
38	.6157	.7813	1.2690	1.624	1.280	.78801	52
10	.6180	.7860	1.2719	1.618	1.272	.78622	50
20	.6202	.7907	1.2748	1.612	1.265	.78442	40
	Cosin.	Cotg.	Cosec.	Sec.	Tan.	Sine.	Angle.

Angle.	Sins.	Tan.	Sec.	Cosec.	Cotg.	Cosin.	
° ′							
30	.6225	.7954	1.2778	1.606	1.257	.78261	30
40	.6248	.8002	1.2808	1.601	1.250	.78079	20
50	.6271	.8050	1.2838	1.595	1.242	.77897	10
39	.6293	.8098	1.2868	1.589	1.235	.77715	51
10	.6316	.8146	1.2898	1.583	1.228	.77531	50
20	.6338	.8195	1.2929	1.578	1.220	.77347	40
30	.6361	.8243	1.2959	1.572	1.213	.77162	30
40	.6383	.8292	1.2991	1.567	1.206	.76977	20
50	.6406	.8342	1.3022	1.561	1.199	.76791	10
40	.6428	.8391	1.3054	1.556	1.192	.76604	50
10	.6450	.8441	1.3086	1.550	1.185	.76417	50
20	.6472	.8491	1.3118	1.545	1.178	.76229	40
30	.6494	.8541	1.3151	1.540	1.171	.76041	30
40	.6517	.8591	1.3184	1.535	1.164	.75851	20
50	.6539	.8642	1.3217	1.529	1.157	.75661	10
41	.6561	.8693	1.3251	1.524	1.150	.75471	49
10	.6583	.8744	1.3284	1.519	1.144	.75280	50
20	.6604	.8796	1.3318	1.514	1.137	.75088	40
30	.6626	.8847	1.3352	1.509	1.130	.74896	30
40	.6648	.8899	1.3386	1.504	1.124	.74703	20
50	.6670	.8952	1.3421	1.499	1.117	.74509	10
42	.6691	.9004	1.3456	1.494	1.111	.74314	48
10	.6713	.9057	1.3492	1.490	1.104	.74120	50
20	.6734	.9110	1.3527	1.485	1.098	.73924	40
30	.6756	.9163	1.3563	1.480	1.091	.73728	30
40	.6777	.9217	1.3600	1.476	1.085	.73531	20
50	.6799	.9271	1.3638	1.471	1.079	.73333	10
43	.6820	.9325	1.3673	1.466	1.072	.73135	47
10	.6841	.9380	1.3711	1.462	1.066	.72937	50
20	.6862	.9435	1.3748	1.457	1.060	.72737	40
30	.6884	.9490	1.3786	1.453	1.054	.72537	30
40	.6905	.9545	1.3824	1.448	1.048	.72337	20
50	.6926	.9601	1.3863	1.444	1.042	.72136	10
44	.6947	.9657	1.3902	1.440	1.036	.71934	46
10	.6967	.9713	1.3941	1.435	1.030	.71732	50
20	.6988	.9770	1.3980	1.431	1.024	.71529	40
30	.7009	.9827	1.4020	1.427	1.018	.71325	30
40	.7030	.9884	1.4061	1.422	1.012	.71121	20
50	.7050	.9942	1.4101	1.418	1.006	.70916	10
	.7071	1.	1.414	1.414	1.	.70711	45
	Cosin.	Cotg.	Cosec.	Sec.	Tan.	Sine.	Angle.



99.26
93.46
5.80

DISTANCES FROM CENTER OF ROADWAY FOR CROSS-SECTIONING.

ROADWAY 14 FEET WIDE. SIDE SLOPES 1½ TO 1.

FOR SINGLE TRACK EMBANKMENT.

	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	
0	7.0	7.2	7.3	7.5	7.6	7.8	7.9	8.1	8.2	8.4	0
1	8.5	8.7	8.8	9.0	9.1	9.3	9.4	9.6	9.7	9.9	1
2	10.0	10.2	10.3	10.5	10.6	10.8	10.9	11.1	11.2	11.4	2
3	11.5	11.7	11.8	12.0	12.1	12.3	12.4	12.6	12.7	12.9	3
4	13.0	13.2	13.3	13.5	13.6	13.8	13.9	14.1	14.2	14.4	4
5	14.5	14.7	14.8	15.0	15.1	15.3	15.4	15.6	15.7	15.9	5
6	16.0	16.2	16.3	16.5	16.6	16.8	16.9	17.1	17.2	17.4	6
7	17.5	17.7	17.8	18.0	18.1	18.3	18.4	18.6	18.7	18.9	7
8	19.0	19.2	19.3	19.5	19.6	19.8	19.9	20.1	20.2	20.4	8
9	20.5	20.7	20.8	21.0	21.1	21.3	21.4	21.6	21.7	21.9	9
10	22.0	22.2	22.3	22.5	22.6	22.8	22.9	23.1	23.2	23.4	10
11	23.5	23.7	23.8	24.0	24.1	24.3	24.4	24.6	24.7	24.9	11
12	25.0	25.2	25.3	25.5	25.6	25.8	25.9	26.1	26.2	26.4	12
13	26.5	26.7	26.8	27.0	27.1	27.3	27.4	27.6	27.7	27.9	13
14	28.0	28.2	28.3	28.5	28.6	28.8	28.9	29.1	29.2	29.4	14
15	29.5	29.7	29.8	30.0	30.1	30.3	30.4	30.6	30.7	30.9	15
16	31.0	31.2	31.3	31.5	31.6	31.8	31.9	32.1	32.2	32.4	16
17	32.5	32.7	32.8	33.0	33.1	33.3	33.4	33.6	33.7	33.9	17
18	34.0	34.2	34.3	34.5	34.6	34.8	34.9	35.1	35.2	35.4	18
19	35.5	35.7	35.8	36.0	36.1	36.3	36.4	36.6	36.7	36.9	19
20	37.0	37.2	37.3	37.5	37.6	37.8	37.9	38.1	38.2	38.4	20
21	38.5	38.7	38.8	39.0	39.1	39.3	39.4	39.6	39.7	39.9	21
22	40.0	40.2	40.3	40.5	40.6	40.8	40.9	41.1	41.2	41.4	22
23	41.5	41.7	41.8	42.0	42.1	42.3	42.4	42.6	42.7	42.9	23
24	43.0	43.2	43.3	43.5	43.6	43.8	43.9	44.1	44.2	44.4	24
25	44.5	44.7	44.8	45.0	45.1	45.3	45.4	45.6	45.7	45.9	25
26	46.0	46.2	46.3	46.5	46.6	46.8	46.9	47.1	47.2	47.4	26
27	47.5	47.7	47.8	48.0	48.1	48.3	48.4	48.6	48.7	48.9	27
28	49.0	49.2	49.3	49.5	49.6	49.8	49.9	50.1	50.2	50.4	28
29	50.5	50.7	50.8	51.0	51.1	51.3	51.4	51.6	51.7	51.9	29
30	52.0	52.2	52.3	52.5	52.6	52.8	52.9	53.1	53.2	53.4	30
31	53.5	53.7	53.8	54.0	54.1	54.3	54.4	54.6	54.7	54.9	31
32	55.0	55.2	55.3	55.5	55.6	55.8	55.9	56.1	56.2	56.4	32
33	56.5	56.7	56.8	57.0	57.1	57.3	57.4	57.6	57.7	57.9	33
34	58.0	58.2	58.3	58.5	58.6	58.8	58.9	59.1	59.2	59.4	34
35	59.5	59.7	59.8	60.0	60.1	60.3	60.4	60.6	60.7	60.9	35
36	61.0	61.2	61.3	61.5	61.6	61.8	61.9	62.1	62.2	62.4	36

Calculated by Julien A. Hall, M. Am. Soc. C. E.