THARP DRAIN
EADS DRAIN

165

RAINBOW
363 A

KEUFFEL & ESSER CO.

DRAWING MATERIALS
AND
SURVEYING INSTRUMENTS.
NEW YORK.

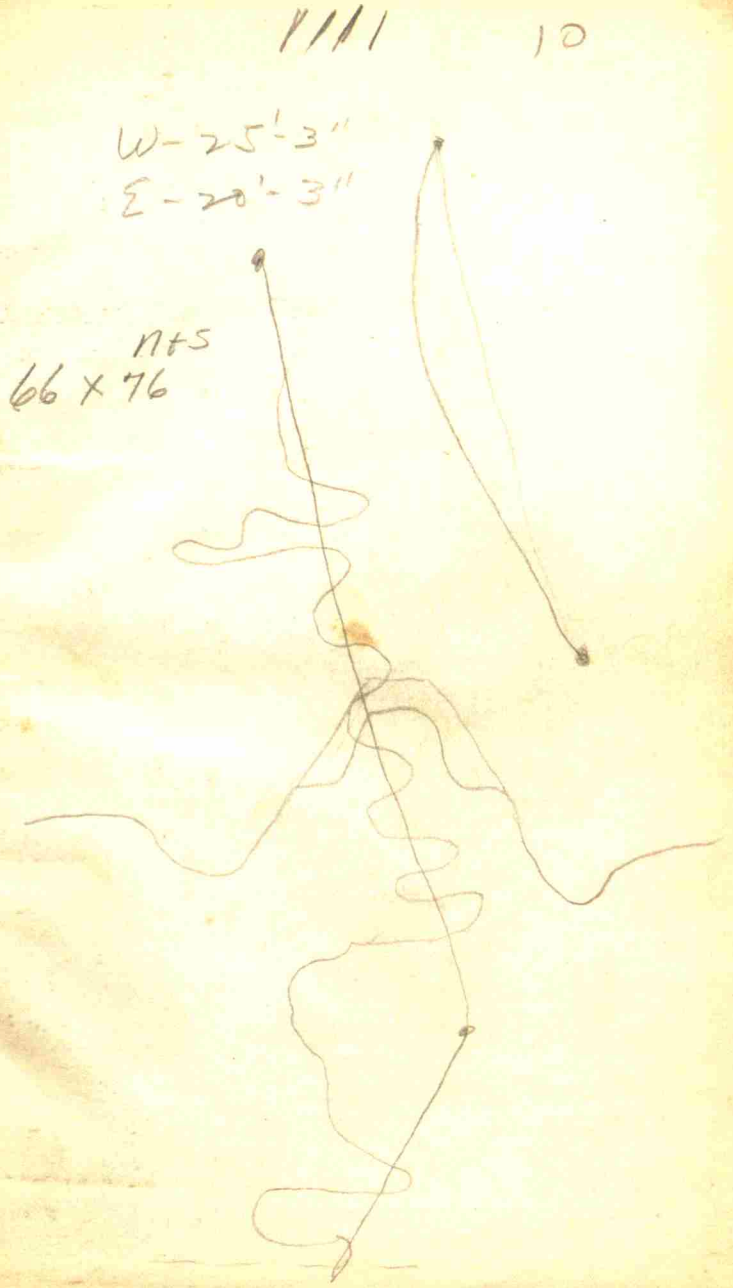
CHICAGO. ST. LOUIS. SAN FRANCISCO. MONTREAL.

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	52.1	32.2	32.3	32.4	32.5	32.6	32.7	32.8	32.9	23
24	33.0	53.1	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.



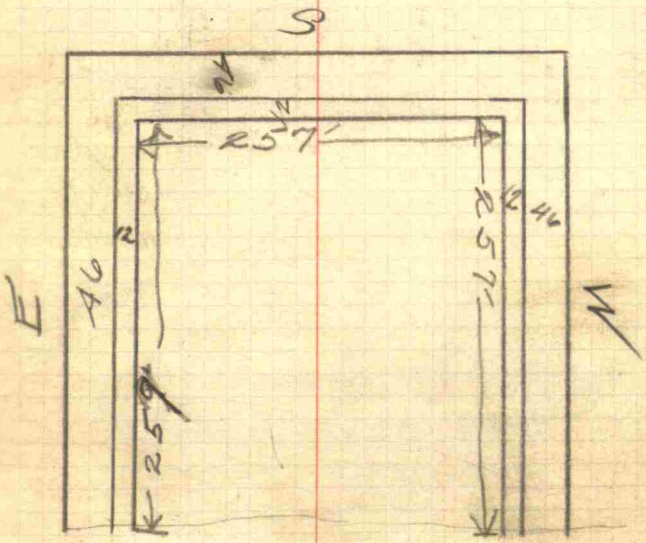
29
6
35
8
27

66 | 40

17
465
27
195
189

45.
30.00.
26
360
330
30

66 |



2. Error 3+63 to Stk 6+00
237'

600
363
237

3.

0002

4. MARTIN DUGAN DRAIN

0+00	N. 31° W
2+00	Sta
3+63	Def R 38°40' ✓
6+0	Sta
8+0	Sta
8+45	E+W. Fence Lohmann No line
9+33	Def. R 39°34' ✓
11+0	Sta
13+64	Def R. 13°26' ✓
15+74	W Rd Fence & N.+S Rd.
16+0	Def L 8°52' ✓
16+14	E Rd Fence & N.+S Rd.
17+97	E.+W. Fence Eberett So. line
18+58	Def L-13°17' ✓
19+98	Def R 24°22' ✓
22+0	Sta
22+47	N.+S Fence
24+63	Def L- 7°39' ✓
29+33	Def R- 3°07' ✓
31+18	Def R- 5°04' ✓
32+83	Def L- 24°31' ✓
32+95	N.+S. Fence Prop. line
34+62	Def R 38°48' ✓
37+0	Sta

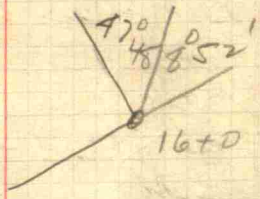
5.

15+95 ℄ Rd. 134 feet No to the cntr of Sec 23

Bridge at Sta 16+0
Steel Bridge - Rock Abut.

Span — 24'-0"
Rise — 4'-6"
Rdway — 13'-6"

5640
8 1/2
4748



From 0+0 E to ℄ Rd.
311'

39+50	Def	R	6°21' ✓
42+27	Def	L	49°00' ✓
46+30	Def	R	64°34'
48+31	Def	L	36°07'
49+0	Def	L	60°14'
51+0	Stk		
53+74	Def	R	60°57
53+94	Arm		
54+17	Shirley West line.		

563 Feet North to NE Corner of Sec. 23.

56+01	Def	R	5°33'
58+60	Def	L	11°04
61+71	Def	R	34°10'
64+0	Stk		
66+63	Def	L	1°35'
68+0	Stk		
70+74	Def	L	26°39'
73+0	Stk		
74+26	Def	L	38°41'
74+39	Shirley No. line - E+W Rd South line		
74+54	℄ E+W. Rd.		

768 Feet East to N.W. mile stone Sec 24

53+94 Arm #1

70+74 — 190' N to Rd.

66+63 — 202' N to Rd

61+71 — 200' N. to Rd.

1330' E of cen of Sec 23 and 860' N to ditch at Sta 32+83

74+71	N. Fence of E+W. Rd		
77+49	Prop. line Lawler E. line - Hogan W.		
77+58	Deg.	R	32° 30'
78+57	Deg	L	16°05'
80+50	Deg	R	19°07'
81+95	Deg	L	44°50'
83+28	16" Tile from West		
84+63	Deg	L.	9°40'
85+81	E+W. Fence		
86+08	Deg	L	20°33'
87+90	Deg	R	36°35'
89+55	Deg	R.	43°48'
92+38	W. Fence of N+S Rd.		
92+52	℄ of N+S. Rd.		
92+61	End of Project		

340 Feet No to Hogan's No. line + Dugan S line

16" tile — 6'-0" E of 92+61 —

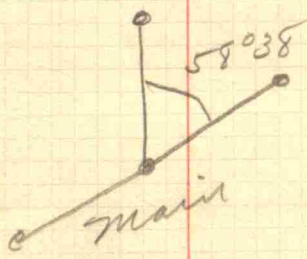
Bridge at Sta 74+54
Concrete Flat top
Rise 5'-0"
Span 10'-0"
Rdway 20'-0"
Rails 29'-6" long

Bridge at Sta 92+52
Concrete Flat top
Rise — 4'-0"
Span — 9'-6"
Rdway — 16'-0"
Rails — 13'-0" long

10" Arm
Starts at Sta. 53+94 on Main Drain

0+00	Beg	L - 58°38'
2+32	Def	L 39°-07'
5+0	Stk	
6+62	So Fence of E & W Rd	
6+79	℄ Rd.	
6+99	No. Rd Fence of E & W Rd	
7+18	Beg	R. 4°28'
8+74	Def	L 14°22'
10+97	Def	R 32°14'
13+0	Stk	
15+0	Stk	
17+0	Def	R 10°26'
18+25	Def	L 18°00'
19+40	End	

Sta. 6+99
288 7 ect East to N 1/4 E corner of Sec 23



Bridge at Sta 6+99.
Rdway - 19'-0"
Rise - 3'-6"
Span - 4'-9"
Rails - 6'-6" long.

679
232
447

486
447
39

9261
1800
11061

Levels Dugan ditch

Sta	3' out	Top stk	Bank	Bottom	℄
outlet					36.30
0+0	38.69	38.82	38.28	36.65	36.39
2+0	38.48	38.81	38.40	37.07	36.95
3+63	39.10	39.48	39.35	37.30	37.16
6+0	40.05	40.70	40.04	38.70	38.20
8+0	41.20	42.02	41.25	41.25	41.00
9+33	41.65	41.87	41.55	41.67	
11+0	41.70	42.38	42.10	42.22	
13+64	43.30	44.00	42.42	41.54	41.40
16+0	46.75	47.26	43.08	42.45	42.12
✓ 18+58	45.00	45.55	44.65	42.81	42.32
19+98	44.98	45.50	44.79	42.70	42.25
✓ 22+0	45.70	46.40	45.10	43.00	42.85
✓ 24+63	46.10	46.52	45.90	45.80	46.00
✓ 27+0	46.39	47.17	46.20	46.31	46.40
✓ 29+33	47.00	47.81	47.20	43.93	43.60
✓ 31+18	49.26	49.64	48.65	44.76	43.60
✓ 32+83	47.43	47.97	46.24	44.40	44.40
✓ 34+62	48.28	48.83	46.65	45.18	44.70
✓ 37+0	48.40	48.27	47.08	45.85	45.10
✓ 39+50	49.76	50.17	49.30	46.41	46.18
✓ 42+27	50.36	50.28	48.70	47.08	46.40
✓ 46+30	51.05	51.05	51.11	47.38	47.20
✓ 48+31	52.50	53.13	52.69	47.95	47.64

Bottom	Bank	Zip.
36.69	37.84	37.85
37.20	38.62	38.30
37.50	39.78	41.80
38.50	39.16	41.65
40.85		
41.68	41.85	
42.50	42.65	
41.75	43.80	43.95
42.40	42.76	
42.95	44.31	45.00
43.91	44.95	
43.10	44.88	
46.50		
45.45		
43.85	45.90	48.25
44.12	46.50	48.08
44.75	46.00	46.65
45.15	46.42	47.30
45.68	47.80	48.20
46.62	47.98	48.91
47.08	48.98	49.80
47.45	51.94	52.08
47.81	51.70	51.50

B.M. 1.5.
on Black Rock
75' E of
ditch.
EL. 50.00

⊙ 40.37

B.M. on SO
end of W. rail
of bridge
Sta 16+0
EL. 49.79

⊙ 45.55

EL 46.43
on high point
of rock 50'
West of Sta
24+63

~~⊙ 47.61~~
~~⊙ 47.80~~
~~⊙ 50.28~~
⊙

Sta	3' cut	Ditch	Bank	Bottom	℄
49+0	54.10	54.22	54.08	47.95	47.70
51+0	53.61	54.52	53.80	48.20	48.12
53+74	52.62	53.37	53.65	49.08	48.79
56+01	53.50	54.12	54.10	49.37	49.30
58+60	54.85	55.67	54.82	50.29	49.79
61+71	54.00	54.77	54.20	50.60	50.50
64+0	55.05	55.63	55.10	51.40	51.23
66+63	55.30	55.80	55.30	51.82	51.65
68+0	56.09	56.30	55.71	52.30	52.20
70+74	56.80	56.30		52.99	52.50
73+0	57.80	56.21	57.67	53.27	52.90
74+36	57.30	57.34	52.60 →		53.40
77+56	57.40	57.54	56.90	53.56	53.20
78+57	58.50	58.71	58.30	53.78	53.35
80+50	57.90	58.42	58.19	53.65	53.55
81+95	58.55	58.43		53.90	53.30
83+28	16" file	FL.	53.45	- Top	54.70
84+63	59.43	60.00	59.50	54.26	53.85
86+08	59.14	59.77	59.35	54.55	54.35
87+90	59.73	60.33	59.80	54.76	54.31
89+55	58.95	59.32	58.80	55.00	54.35
92+61		60.11	59.70	55.24	55.00

FL. 16" file at head - 53.62

Bottom	Bank	Top
47.90 17	52.89 23	51.92 28
48.20 13	52.89 20	52.80 25
49.08 20	54.86 20	54.30 35
49.60 16	54.55 25	54.40 30
50.12 14	53.78 20	54.08 25
50.70 17	55.80 30	55.60 33
51.34 10	54.78 23	54.71 28
51.68 12	55.52 21	55.50 22
52.35 14	55.89 23	55.99 22
52.84 16	56.10 30	56.38 40
53.21 16	57.25 29	57.37 33
53.44 11	57.21 33	57.38 37
53.58 16	57.95 20	57.50 35
53.65 14	58.35 23	58.70 28
53.78 15	58.32 23	58.60 24
54.00 14	57.77 24	58.00 26
54.20 14	57.52 22	57.89 25
54.52 22	58.47 36	58.48 40
54.94 17	59.22 28	59.55 31
55.10 16	58.90 25	59.20 30
55.28 14	59.60 22	

17

~~54.52~~

~~54.17~~

~~54.77~~

~~55.80~~

56.30

B.M. on East end of No. rail of bridge at Sta. 74+54
EL. 61.75

~~60.00~~

B.M. on So. End of East Rail of bridge at Sta 92+61
EL. 62.00

B.M. Sta 92+61 – 62.00
⊙ 59.24
⊙ 60.48
check B.M. Sta 74+54 – 61.78
⊙ 59.05
⊙ 59.23
B.M. ~~Strom~~ – Sta 6+79 – 58.56
⊙ 62.25
⊙ 63.29
⊙ 63.86
⊙ 60.26
⊙ 57.02
check B.M Sta 16+0 49.84
⊙ 53.15
check 49.96

So

Sta	3' ant	Top Stk	Arm Bank	Arm Bottom	E	Bottom	Bank	ant	21
0+0	54.00	55.17	54.55	49.20	49.03	49.25	53.25	53.40	B.M. on Top of E. end of No. Rail of bridge Sta 6+79 EL. 58.56
2+32	56.46	57.24	56.85	51.39	51.10	51.32	55.00	54.97	
5+0	56.15	56.29	56.71	51.65	51.47	51.65	55.55	55.84	
7+18	57.62	58.53	58.03	54.70	53.35	51.88	E-11 51.44	51.93	
	53.32	54.44	56.94	57.03					
8+74	58.29	59.10	58.81	55.59	53.45	52.38	E-11 52.00	52.30	
	53.24	55.04	58.86	58.35					① 57.95
10+97	57.16	57.95	58.04	55.72	54.23	52.89	E 52.76	53.90	
	55.42	59.44	58.60						
13+0	58.90	59.43	58.95	56.46	54.46	52.79	E 52.60	52.85	
	54.25	55.59	57.70	57.92					
15+0	59.54	59.86	59.38	56.64	55.31	53.48	E 53.15	53.40	
	54.68	56.30	59.80	59.84					
17+0	59.75	60.54	60.00	58.25	55.78	53.75	E-11 53.42	53.60	B.M. on So end of W. Abut of wall ↓ EL. 58.05
	55.10	56.68	60.58	60.50					
18+25	60.10	60.52	60.02	58.48	55.27	54.00	E 53.50	54.04	
	55.38	57.10	59.45	58.60					
19+40	58.20	58.80	54.40	E 53.25	54.10	58.00			

FL. N Tile 53.58

FL. W Tile 53.55

~~2 Upstream~~

Sta	℄
0+0	34.30
-1+0	33.50
-2+0	33.70
-3+0	33.50

Sta	℄
0+00	34.30
1+0	33.76
2+0	35.87
3+0	33.90
4+0	35.70
5+0	34.90
6+0	33.70
7+0	33.90
8+0	32.25
9+0	32.70
10+0	32.55
11+0	33.60
12+0	32.45
13+0	32.85
14+0	31.67
15+0	31.78
16+0	32.08
17+0	30.91
18+0	31.08

32.00

Sta	℄
19+0	30.20
20+0	30.30
21+0	30.67
22+0	30.60
23+0	31.70

~~0 42.15~~
~~0 36.16~~
~~0 33.37~~
~~0 33.78~~
~~0 31.30~~

33.35

Stream comes in from East at sta 19+60

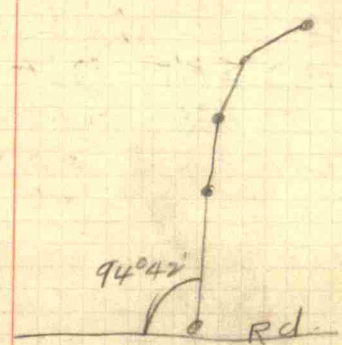
B.M. on SE corner of N.E. wing of R.R. bridge sta 22+75 + EL. 41.15

31 JOHN WARNOCK DRAIN.

STA.	
0+0	S 79° E.
2+45	Def L 59°04'
3+36	Def L 27°53'
4+78	Def L 8° 18'
5+54	Leave old channell
6+36	Stk on Cut off. Hits old channell at 6+88
9+14	℄ Rd. is 548 Ft. West of
	¼ mile stone Sec. 27.
9+05	Def R. 2°29'
	and So. Rail of Bridge
10+65	Leaves old channell
11+55	Stk Cross section
12+15	Hits old channell
12+50	Def. R. 26°08'
12+50	Leave old channell for cut off
13+70	Stk - Cross Sec
14+30	Hits old channell
15+50	Leaves " "
15+50	Def R 17°05
16+50	on cut off Stk

32

478
158
6.36



18+10 Cross Channel

19+00 " "
19+50 On Cut off Stk
20+20 Cross Channel
22+00 " "
22+30 Stk " Def R — 7°25'
23+30 Hits old channel
24+0 Leaves " "

24+50 Stk Def R 9°03'
26+0 Hits old channel
27+0 Def R 32°30
29+0 Leaves old channel
29+75 Hits " "
29+75 Def L 43°47'
32+25 ~~Stk~~ Stk
33+0 Leaves old channel
34+0 Stk Cross sec
35+75 Hits old channel
38+60 Stk
40+0 Stk
42+0 Leaves old channel
43+50 Hits " "
44+10 Def R 15°00
47+0 Stk

50+25 E of N+S. Rd. is 468 feet So. of W^r mile sec 23.

77+34 E into of Drain is 10 feet No. and 75 feet West of center of sec. 23.

35. No of E Ditch

50+25	Sta	Def. R. 15°50'
51+69	Sta	Def L 10°35'
52+50	Def.	L 10°03'
53+85	Def	L 14°00'
54+40	Hdwll. with tile from No.	
	New Hdwll to be constructed	
10'	No of pipes. Hdwll which is	
	to be removed.	
56+30	Def. R. 15°33'	
58+20	Sta	
60+50	Def	R. 31°46'
62+20	Def	L 32°49'
64+70	Hit	E. & W. Rd. also ——
64+70	Def	R. 23°30'
67+0		
70+50	Def	L 9°00
71+95	Def	R. 8°06'
75+0	Sta	Cross Sec.
77+34	End	of Drain

Sta is set 12' from E Ditch

60+50
2 20

Levels: John Warnock

54.55

B.M. on Sk. Wing of Bridge EL. 53.75
Sta 9+0

Sta	3' cut	Stk	Bank	Bottom Bank	℄	Bottom Bank	Bank	welt		
0+00	48.93	49.70	48.60 [1]	44.40 [7]	44.35 [15]	44.70 [24]	46.20 [26]	47.10 [31]		
2+45	49.30	49.85	48.45 [9]	47.85 [16]	46.55 [25]	46.81 [30]	60' [50] to ℄ stream			
3+36	49.19	49.61	48.16 [7]	44.50 [10]	44.65 [15]	43.90 [29]	46.00 [31]	50.25 [34]	53.41 [40]	
4+78	48.86	49.47	48.07 [7]	46.55 [11]	45.75 [15]	45.50 [30]	49.82 [32]	49.10 [40]		
6+36	50.32	51.31			50.16 [15]			49.11 [30]		
9+05	49.25	54.55	47.00 [3]		45.50 [15]		47.06 [30]	49.80 [32]	51.00	
11+55	50.40	50.76			51.40 [15]		51.18 [30]	47' West to old channell		
12+50	50.96	51.91	49.80 [9]	46.84 [12]	47.00 [16]	46.74 [27]	49.65 [30]	50.65 [35]		
13+70	51.98	52.75	50.05 [15]	49.08 [20]		10' E. to ℄ old channell				
15+50	51.75	52.55	51.70 [5]	48.95 [8]	46.05 [15]	47.95 [30]	50.90 [35]			
16+50	52.11	52.96			51.75 [15]		51.56 [30]	90' R. to old Channell		
19+50	52.65	53.36			51.80 [15]		51.72 [30]	50' R. to O.C.		
22+30	53.25	53.92			53.20 [15]		53.08 [30]	– 70' R. To. O.C		
24+50	55.17	54.95		52.50 [10]	53.35 [15]		53.48 [30]	– 100' R. To. O.C.		
27+0	54.50	55.22	53.78 [3]	51.25 [8]	50.9[illegible] [15]	51.39 [27]	54.65 [33]	54.87 [40]		
29+75	55.75	56.38	54.80 [7]	54.00 [12]	51.2[illegible] [15]	51.22 [32]	54.78 [40]			
32+25	54.55	54.90	54.23 [3]	53.03 [7]	52.4[illegible] [15]	51.88 [30]	52.38 [35]	55.15 [40]		
34+0	56.55	57.15			56.35 [15]		56.35 [30]	45' L to O.C		
37+60	57.46	57.34	55.76 [8]	53.00 [12]	52.60 [15]	53.21 [20]	56.22 [30]			
40+0	57.35	57.36	56.36 [2]	53.20 [7]	52.9[illegible] [15]	53.60 [17]	55.91 [20]	56.95 [30]		
44+10	57.70	58.74	57.15 [4]	56.10 [9]	55.10 [15]	54.30 [25]	56.20 [28]	56.90 [35]		
47+0	57.41	58.04			57.3[illegible] [10]	57.75 [15]	55.95 [22]	55.78 [28]	54.40 [35]	54.60 [40] / 57.90-42
50+25	58.91	61.48	58.15 [3]	56.15 [10]	54.30 [15]	55.28 [25]	57.05 [30]			

Sta.	3' out	5th	Bank	Bottom Bank	℄
51+69	58.55	58.60	57.40	56.00	54.22
52+50	57.28	57.72	55.78	55.60	54.40
53+85	58.81	58.70	56.37		55.12
54+40	See next Page				
56+30	59.30	60.20	59.46	56.40	56.02
58+20	60.00	58.81	56.54	55.60	56.12
60+50	59.45	60.06	59.25	57.62	56.30
62+20	60.62	61.00	56.98	56.30	
64+70	60.74	60.41	56.92		56.90
67+70	62.44	62.35	59.40	57.50	56.75
70+50	60.85	61.48	60.18	57.78	56.95
71+95	60.87	61.20	60.19	57.70	57.05
75+0	61.45	62.48	61.04	58.40	58.20
77+34	63.15	64.10	Top 62.91 obtained	58.70	

Bottom Bank	Bank
55.70 23	58.45 30
	55.12 23
55.85 20	59.96 30
56.31 22	59.90 30
59.27 25	59.30 20
56.27 15	56.60 17
56.75 23	59.75 20
57.05 22	60.86 32
62.30 25	level
57.75 20	61.00 22
58.20 13	61.45 15
	61.50 17
	57.75 12
59.85	Top of 30" tile
59.21 FL	of 30" tile
57.60 "	" "

57.21
+ 4.32
61.86

62.91
57.21
5.70

2.50

B.M. on No. end of E. Rail of Bridge #0
Sta. 50+25
EL. 63.53

out	
30 5640	
30 60.17	
17 5915	62.14 23 Level
Level	
Level	
Level 17	
Tile (Figured)	57.60
(Read)	~~59.85~~ ~~2.60~~ ~~57.21~~

B.M.
EL. 62.88
in middle
on Hdwall
at sta 77+34

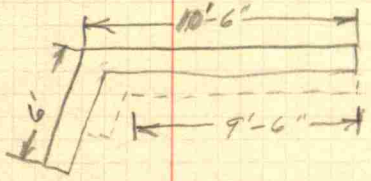
10.00
5.70
4.30

5.98.5
5.76.0
1.23

41

54+40	58.70	Top Howell.
	54.48	Fl. Tile.
	59.15	Gd. El.

42



THARP DRAIN

	Top of Sch	Ground above tile	Top Tile	FL. Tile.	
0+0	101.50	99.08	97.90	96.45	
1+0	101.52	99.52	97.71	96.60	8" water
2+0	101.42	99.48	97.70		8" water
3+0	101.85	100.22	97.81		6" water
4+0	102.08	100.34	98.23		
5+0	101.95	101.15	98.52		
6+0	102.75	101.40	98.70		
7+0	102.52	101.48	98.66		
8+07	102.50	100.22	98.55		
9+0	103.61	102.78	98.83		5" water
10+0	103.65	102.68	99.31		no water
11+0	102.49	102.01	99.36		
12+0	102.93	102.26	99.41		2"
13+0	103.57	102.84	99.51		3"
14+0	103.33	102.82	99.60		3" water
15+0	103.40	102.70	99.74		2" water
16+0	103.56	103.00	100.25		water backs 4" being at Top tile backs 1"
17+0	103.59	102.80	100.14		
18+0	103.93	102.97	100.29		Tile full backs 1"
19+0	104.13	103.15	100.46		
20+0	103.96	103.35	100.34		2" water
Manhole 21+06 21+0	103.41	102.75	100.40		99.28 2"
22+0	103.88	102.53	100.65		1" water
23+0	103.81	102.69	100.41		6" water

0+0 to 1+0 seems to be obstructed

9+0 – 5" water on tile.
11+18 – indication of broken tile.
~~none on~~
no water on tile at 10+0

11+18 – 99.33
Top Tile

B.M #1 on West end of concrete Hdwall. at Sta 0+0
EL. 100.00

12+0 to 13+0 indication tile is stopped

BM. #2, on Concrete base of West gate post.
Sta. 20+50 – EL. 104.37

15+0 – Tile badly cracked.
19+0 – " "

23+0 – Tile is 12" –

	Top Sth	Ground above Tile	Top Tile	Ft. Tile	
24+0	104.09	103.15	100.43		6"
25+0	103.90	103.25	100.39		10" water
26+0	104.10	103.50	100.53		10" water
27+0	104.43	104.17	100.70		10" water
28+0	104.05	103.30	100.97		10" water
29+0	103.93	103.13	101.40		
30+0	103.69	103.21	101.52		
31+0	103.89	103.25	101.60		
32+0	104.00	103.50	101.80		
33+0	104.52	104.05	101.90		
⊙ 34+0	106.00	103.20	102.00		
35+0	106.30	103.30	102.18		
36+0	107.20	104.20	102.51		
37+0	108.18	104.89	102.64		
38+0	107.41	105.20	103.18		
39+0	110.45	105.14	103.31		
40+0	110.09	105.35	103.74		
⊙ 41+0	110.52	105.80	104.30		
42+0	111.63	106.98	104.50		
43	109.32	105.85			
44	108.15	107.03			
45	107.41	107.00	105.15		
46	108.14	107.75			
47	108.51	107.95			
48	109.08	108.70	107.03		

B.M. #3 #8 on West end of S rail of culvert at Sta 44+30 EL. 109.65

Two lines of 6" tile start at above 44+0

34+0 on - is stopped up. to Sta 44+0

49

	Top Stk	Ground	Top Tile	
⊙ 49+0	110.20	109.20	107.40	
50	111.20	110.30	107.55	
51	111.60	111.00		
52	111.80	110.79	108.72	
53	112.17	111.61		
54	113.06	111.88	109.16	
⊙ 55	112.96	112.52		
56	113.00	112.20	109.58	
57	112.89	112.62		
58	113.00	112.45	110.04	
59	113.18	112.91		
60	113.17	112.82	110.36	
⊙ 61	113.45	113.20		
62		113.38	110.94	61+50
62+62			111.50	
63+0	114.35	114.35		
63+67			111.92	
64+0		114.95		
64+65			112.25	
65+0		114.50		
65+65			112.30	
66+0		114.35		
66+65			112.52	
66+88		114.92		

50

112.52
11'97.90
14.62

5/4 Kennedy

THARP DRAIN - OPEN PART

Sta.	EL.	Bottom Width	Top Width
0+0	90.65	6'	95.10
2+0	91.55	5'	97.05
4+0	92.25	3'	100.05
6+0	93.38	4'	99.45
8+0	93.45	4'	99.38
10+0	94.48	4'	100.08
12+0	95.15	5'	100.41
14+0	95.70	6'	99.20
16+0	95.60	5'	100.93
18+0	96.00	5'	99.94
20+0	96.50	6'	100.28
22+0	96.60	6'	100.58
24+0	96.60	5'	101.35
26+0	96.18	5	103.08
28+0	96.10		99.82
30+0	97.25	4'	102.35
~~32+0~~			
31+45	97.80	5'	102.00

10+48 - ℄ Foster Rd.

Should be a cut of 1 from o.w. Sta. 13+68 to 14+75

Should be cut off on West side from Sta. 19+90 to 21+0

28+0 - Thorp Tile

44+25 ℄ of E + W. Road.

8+65 is the C.B. - N.R. of W. Fence is Sta. 8+75

⊙ 102.40

B.M. on E. end of So. Rail of bridge on Foster Rd. at Sta 10+40 on Ditch. EL. 102.82

91.40 / 1.15

EL. Barnett Drain - 90.25

53

54

4" from West
10" from West
6" " "
6" from East
?→6" " "
6" " West
6" " "

South of Manhole

Sta. 27+0 is 10" from Todd and Snyder.

5" or 6" from North
4" or 5" " SW

CROSS SECTIONS ABOVE TILE THARP DRAIN.

STA	5' Back	Top sek	2'	5'	10'	(page 56)	(page 56)	(page 56)
0+0	101.04	101.42	100.81	99.70	98.60	[20'] 99.58	[30'] 101.86	
1+0	101.42	101.41	[2'] 100.55	[3'] 99.25	[6] 99.35	[11'] 100.00	[18'] 101.05	[30'] 102.00
2+0	101.39	101.30	[4'] 99.42	[10] 100.46	[20] 101.45	[30'] 102.10		
3+0	101.86	101.71	[5'] 100.62	[10'] 100.43	[20] 101.75	[30'] 102.40		
4+0	101.99	101.96	[1'] 101.45	[3'] 100.16	[12] 101.12	[20] 101.70	[30'] 102.53	
5+0	102.22	101.83	[5'] 101.28	[10'] 100.63	[12] 101.62	[20'] 102.51	[30'] 102.95	
6+0	102.84	102.62	[2] 102.06	[3] 10.0.99	[10] 101.62	[20'] 102.20	[30'] 102.88	
7+0	102.47	102.46	[3'] 101.80	[5'] 101.26	[12] 102.35	[20] 103.20	[30] 103.42	
8+07	103.38		[2'] 102.05	[6'] 100.65	[12] 102.27	[20] 103.50	[28'] 103.58	
9+0	103.60	103.57	[10'] 102.65	[15] 103.11	[25] 103.98	[30'] 104.62		
10+0	103.61	103.55	[5'] 102.70	[10] 103.12	[20] 103.98	[28] 104.95		
11+0	102.15	102.40	[5'] 101.94	[10] 102.25	[20] 102.35	[30] 102.42		
12+0	102.61	102.83	[7'] 102.22	[12] 102.09	[20] 102.51	[35] 102.95		
13+0	103.24	103.45	[5'] 102.90	[10'] 102.70	[22'] 103.18	[31'] 103.88		
14+0	102.99	103.22	[5'] 102.76	[10'] 102.82	[21'] 103.12	[28'] 103.34		
15+0	103.11	103.29	[5'] 102.68	[12'] 102.70	[20] 103.15	[30] 103.51		
16+0	103.24	103.43	[7'] 103.04	[15'] 103.06	[21'] 103.44	[30] 104.10		
17+0	103.25	103.44	[6'] 102.85	[10'] 102.90	[20] 103.91	[25'] 104.11		
18+0	103.45	103.79	[5'] 103.10	[10] 102.84	[19'] 102.38	[25'] 104.20		
19+0	103.82	104.00	[4'] 103.30	[11'] 103.50	[20] 103.8[illegible]	[26'] 104.18		
20+0	103.45	103.80	[5'] 103.31	[10'] 103.32	[20] 103.42	[25'] 103.85		
21+0	102.97	103.25	[6'] 102.69	[12] 102.80	[20] 103.45	[30] 103.79		
22+0	103.91	103.75	[4] 102.73	[10] 102.43	[17] 103.15	[25] 104.88		
23+0	104.11	103.70	[5'] 102.90	[10] 102.70	[20] 103.44	[30] 104.30		
24+0	103.75	103.95	[7'] 103.17	[12] 102.96	[21] 103.21	[28] 103.40		

top Slope sek

103.23	~~95.94~~ 95.94	14" = 1.30
~~95.94~~		12" = 1.10
7.29		10" = .90
103.67	96.18	
96.18		
7.49		
104.56	96.42	
96.42		
8.14		
104.61	96.66	
96.66		
7.95		
104.66	96.90	
96.90		
7.76		
104.53	97.14	
97.14		
7.39		
103.85	97.38	
97.38		
6.47		

B.M. #1
ON W. END
CONCRETE
HOWELL STA
0+00
EL. 100.00

0+00 – 22+25
14"

22+25 – Todd line
12"

10" on to Rd.

B.M. #2
ON CONC. BASE
OF W. GATE
POST
STA. 20+50
EL. 104.37

104.32

57

	5' Back	Top of stk.					
25+0	103.35	103.74	(5') 103.23	(11) 103.29	(21) 103.36	(30') 103.60	
26+0	103.70	103.92	(4) 103.39	(9') 103.48	(20) 103.68	(29) 103.75	
27+0	103.95	104.30	(6) 104.00	(11') 103.97	(21') 103.95	103.81 (30)	
28+0	103.65	103.90	(6) 103.36	(12) 103.29	(20) 103.50	103.90 (25)	
29+0	103.42	—	(21') 103.20	(7) 103.09	(11) 102.95	103.84 (17)	(26) 103.53
30+0	103.25	103.49	(5) 103.20	(10) 103.03	(20) 103.15	103.14 (29)	
31+0	103.41	103.69	(4) 103.35	(11) 103.15	(21) 103.05	102.95 (30)	
32+0	103.58	103.82	(5) 103.50	(10) 103.32	(20) 103.05	102.80 (30)	
33+0	103.90	104.49	(6) 104.07	(11) 104.03	(21) 104.25	104.18 (27)	
33+55	104.07	(2') 104.11	(10') 104.17	(20) 104.05	(25) 103.95		

E+W-Fence is 33+88'

EL. So. Rail of track - 111.77
FL. N. end R.R. Culvert - 98.60
Top of S. end R.R. Culvert - 101.54
FL. S. end R.R. Culvert - 98.50

8+13 S end of culvert.
8+29 S. Rail
8+34 N. Rail
8+52 N. end Culvert

58

34" ① 105.05

~~top~~ slope stk.

10441 9762
9762
6.79

2.92

35
1½
36½

52
13
39

2-11
101.54
2.93
98.61

101.54
3.04
98.50

5	EL	EL Grader	Cut.
2+0	101.69	9479	6.90
4+0	102.30	9498	7.32
6+0	[illegible]	95.22	7.32

60

Sta	Sta.	grade	cut.
28+0	104.07	9786	6.21
29+0	10389	9798	6.00
31+0	10399	9822	5.77
33+0	104.81	9846	6.35
33+55	104.56	9852	6.04

Eads Drain.

31+45 End of clean out on ~~Hap~~ ditch contract

	Bd W	Top W	
32+0	4'	15'	
33+0	4'	15'	Deg R.
34+0	3½'	16'	
35+0	4'	17'	
36+0	4'	17'	
37+0	4'	17'	Deg L
38+0	4'	16	
38+19	cut off beg.		
38+59	20'	N. of old channel	
39+00	5	18'	cut off ends.
40+0	4	15	
41+0	8	18	
42+0	8'	20	
42+40	no stake - Deg L		
43+0	4'	16'	
44+0	3½'	16'	
45+0	4'	16'	
45+99	E. Rd Fence		
46+0			
46+14	℄ N+S Rd.		
47+0			

46+14

12' Span - 3' Rise
40° Skew

46+14
Andersons SE corner
420 feet So. of ~~ditch~~
center of bridge

cut off from 46+60
to 50+0 gain 13'
Sta 48+0 is 45' N. of old ch

60+60 leave old channel
~~60+80 back in old channel~~
61+0 back in old ch
61+30 } Cut Bg.
62+0 }

74+06 ℄ N & S Rd.

93+30 E & W ℄ of section
101+73 So R. of W. of RR.
101+73 Def L 95°
106+37 So side tracks
Def R 85° under RR.
106+38 So end Cast Iron Sewer
106+74 No. end cast Iron Sewer
106+94 Def L 85°
107+98 N & S. Fence
111+0 Def R
120+0 Def R 95°
123+05 End of Ditch

74+06
Conc Bridge 22'-0" Rdwy

74+06 — 10' N from Cyril Leathers SE corner to center of Bridge

9113

2

Sta	Top Stk	Gd at Stake	Ditch Bot.	Bot. Width	Shoulder Width	Top W.
31+45						
32+0	103.65	102.96	97.35	3	8	18
33+0	103.60	102.78	97.33	4	7	16
34+0	103.54	102.75	97.50	3	8	16
35+0	102.70	102.90	97.80	2	8	15
36+0	103.96	103.1+	97.90	2	8	16
37+0	103.64	102.80	97.95	3	8	17
38+0	103.04	102.2+	98.00	3	8	16
39+0	103.56	102.69	98.25	3	8	16
40+0	102.06	101.9+	98.40	3	8	16
41+0	103.00	102.70	98.81	2	10	19
42+0	102.43	101.90	99.05	2	10	19
43+0	104.07	103.3+	99.03	2	7	16
44+0	104.08	103.29	98.96	3	8	16
45+0	104.40	103.6+	99.25	3	8	16
46+0	103.48	102.95	100.10			
47+0	104.53	103.76	103.60	30' from ℄		
48+0	104.30	103.48	103.4+			
49+0	103.81	103.00	103.26	30' from ℄		
50+0	104.16	103.45	100.33	3	7	13
51+0	105.37	104.55	100.00	3	8	22
52+0	105.39	104.58	100.1+	3	8	21
53+0	105.51	104.84	100.47	3	6	20
54+0	105.99	105.33	100.57	3	8	24
55+0	105.7+	104.95	101.05	3	6	22

B.M. ℄ at 0+0 on Thalweg drain on W. end of Hdwall
El. 100.00

B.M. Bridge Sta 46+14 on S. end of West Rail of ℄ Conc. Bridge
El 106.38

	Top Stk	Std @ stk	Ditch Bottom	Bot W	Shoulder W	Top W
56+0	10619	10549	10099	2	6	22
57	10683	10610	10170	2	5	22
58	10799	10709	101.75	2	4	22
59	10678	10595	101.57	2	5	19
60	10678	10620	101.75	2	6	22
60+60	5. Bank 10630	edge Stk 106.15	10218	cut 15' ins	s stk.	
61+0	10643	10684	102.32	2	6	20
61+30	N. Bank 10640	6' cut. 106.30	102.50			
62+0	10857	10766	102.65	3	6	22
63+0	10778	10722	10230	4	6	20
64+0	10768	10704	10257	4	5	22
65+0	10856	10772	10262	3	6	20
66+0	10855	10766	10240	4	6	20
67+0	10931	10845	10300	4	6	21
68+0	10820	10740	10320	3	6	20
69+0	10725	10646	10289	3	5	18
70+0	10945	10879	10325	3	5	17
71+0	10876	10809	10352	3	5	18
72+0	10949	10880	10380	2	7	18
73+0	10940	10845	10422	2	4	17
74+0	no Stake					
75+0	10976	10906	10480	2	6	20
76+0	11059	10993	10490	2	6	20
77+0	11054	10967	10503	2	5	21
78+0	11102	11042	10500	2	5	20

12 3 40 77 38 44 33 14

B.M. on So. end on West rail of conc. bridge at Sta 74+06 El 110.67

	Top of Slk	Gd @ Slk	Ditch Bot	Bot W.	Shoulder W	Top W
79+0	11187	11070	10519	2	4	20
80+0	11165	11070	10575	2	5	22
81+0	11156	11055	10577	2	4	22
82+0	11070	11032	10632	2	10	30
83+0	11166	11101	10644	2	6	22
84+0	11252	11194	10652	2	5	20
85+0	11243	11185	10670	2	8	22
86+0	11165	11180	10668	2	7	22
87+0	11316	11262	10728	2	7	30
88+0	11400	11339	10740	2	6	24
89+0	11363	11303	10748	2	5	22
90+0	11471	11410	10750	2	4	20
91+0	11473	11408	10790	2	5	22
92+0	11405	11354	10835	2	7	22
93+0	11406	11355	10848	2	7	24
94+0	11445	11378	10840	3	5	20
95+0	11421	11361	10838	3	5	20
96+0	11506	11431	10830	3	5	20
97+0	11545	11485	10829	2	4	20
98+0	11476	11400	10880	2	4	22
99+0	11487	11418	10860			
100+0	11542	11462	10895	2	5	20
101+0	11480	11415	109.00	2	4	18
102+0	11461	11415	10900	2	4	18
103+0	11546	11489	110.56	2	4	20

at Sta 101+80

109.25 - 12"

R.R → 110.70 - culvert

95	Top Stk	Gd @ Stk	Ditch Bot	Bot W	Shoulder W	Top W
104+0	11603	11550	109.50	3	3	20
105+0	11625	11568	10940	3	5	19
106+0	11575	11494	10995	2	4	18
107+0	11556	11501	109.95	2	5	16
108+0	11520	11462	11000	1	4	18
109+0	11522	11494	11020	2	3	17
110+0	11557	11506	11028	2	3	18
111+0	11632	11585	11065	2	4	18
112+0	11650	11608	11105	2	3	18
113+0	11631	11573	11135	2	3	18
114+0	11651	11600	111.48	2	3	16
115+0	11705	11638	11140	2	4	16
116+0	11724	11658	11138	2	4	16
117+0	11750	11694	11156	2	3	16
118+0	11750	11673	11170	3	4	16
119+0	11739	11680	11180	2	4	16
120+0	11748	11678	11200	2	3	16
121+0	11771	11711	11235	2	3	14
122+0	11763	11691	11246	2	4	12
123+0	11669	11600	11230	2	4	12

96

109.38
R.R. culvert
Sta 106+

109.40 - 10" Tile
from West
Sta 106+

7 l. tile at
head of ditch
111.90

Sta	Grd. @ Sta			
102+00	11630	11569		
103+00	11384	11342	11266	bad
104+00	11451	11418	11300	11305
105+00	11515	11475	11247	11480
106+00	11515	11445	11280	11435

102+00 So. end R.R. culvert
102+24 No " " "

105.14 top of Stk for
98.52 Hwd'll.
6.62 to top of footing

5.62 to ~~top of~~ flow line of tile
6.62' to top of footing

8.12 Cut to Bot of footing

6.62 to top of footing
1'.62 to top of Hwdll.

5.62 to flow line of Tile

Sta	Stk
44+0	108.15
44+50	107.50
45+0	106.97
45+50	107.68
46+0	108.07
46+50	108.49
47+0	108.50
47+50	108.81

	~~Stk~~ S+K
48+0	~~Stk~~ 109.03
48+50	109.34
49+0	109.99
+50	110.90
50	110.76
~~+50~~	~~[illegible]~~
51+0	111.60
+50	112.24
52	111.98
+50	112.02
53	112.01
+50	112.34
54	112.84
+50	112.73
55	112.93
+50	112.90
56	112.79
+50	112.65
57	112.70
~~+50~~	
58	113.20
+50	113.42
59	113.30
+50	113.37
60	113.60
+50	113.86

112.50

108.07
4.67
112.74

4.89
108.49
113.38
11 [illegible]
64

4.70
108.50
113.20

18

1.83
109.03
(18) 113.86
62
24

4.81
108.81
113.62
11 30
92

109.34
4.94
114.28
113.86
24

~~61~~ +
50 114.46

~~62~~ +
50 114.86

63 + 114.84
50 115.49

64 + 115.45
50 115.53

65 + 114.97
50 115.03

66 + 114.92
50 115.57
+
50 115.53

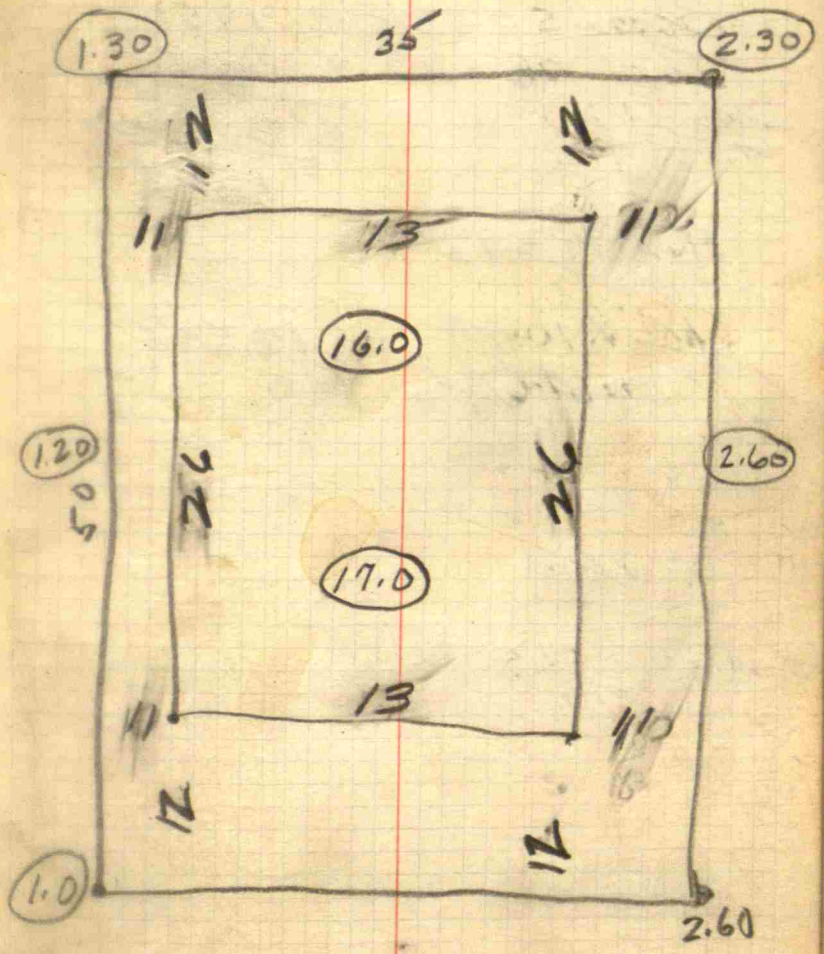
5

4.89

643

44+0	108.15
43+50	108.68
43+0	109.26
42+50	111.36
42+0	111.70
41+50	111.60
41+00	110.58
40+50	111.20
40+00	110.08
39+50	111.12
39+0	110.48
38+50	109.38
38+0	107.58
37+50	108.13
37+0	108.20
36+50	107.59
36+0	107.18
35+50	106.96
35+0	106.30
34+50	
34+0	106.00

Boone Gravel 104



105

Boone Gravel

Base 50 x 35 = 1750
Top 26 x 113 = 338

2 | 2088
1044

Ave H = 12'

12 x 1044 = 12528
= 464 Cu yds

106

Tucker Gravel

Ave H = 12.5' - 4 = 8.5

Base 44 × 90 = 3960
Top 66 × 20 = 1320

2 | 5280
2640

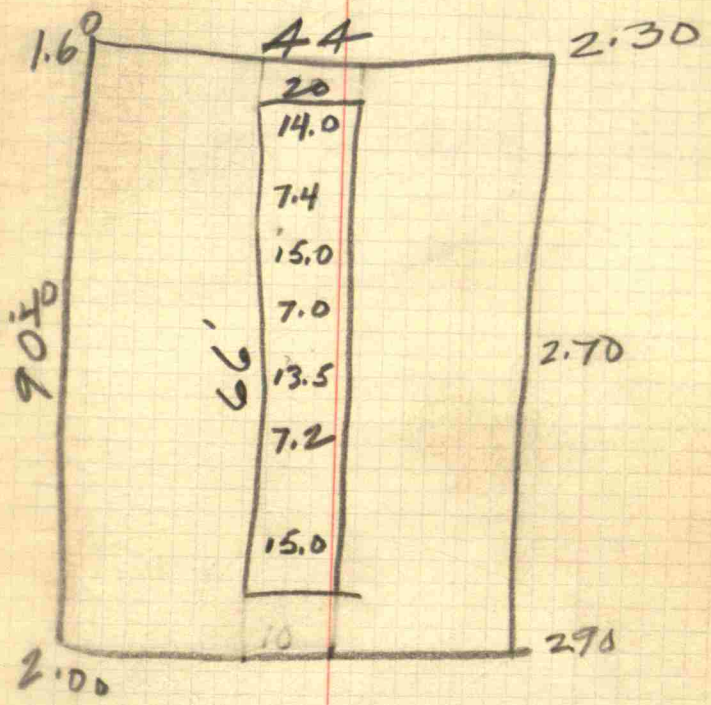
2640 × 8.5 = 22440
= 831 Cu yds

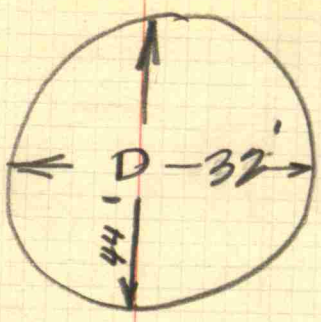
4 Cones
Method = 684 " "

Base 19'
H-12.3

2 | 15'1'5

Ave 758 Cu yds




D = 32'
44'

119.

Shower

Height – 7'-1¼" outside
4'-2" wide
4'-2" deep.

Cell

43½" wide
Deep 6'6¼"

8'-1" to ℄ cell E & W.
Door. 24" wide

Total – 28'-1¼" length.
1'-7"

14' 11¾ W to W. edge door

OFF. Floor 4½"

68
5 8¾ / 120
11
9

Door 6'-9½ × 27"

Hanger 55" floor to hanger
4 3½
1 5
" 21¼ " " "

6'-7¾" cel to S. wall

L on S. wall 9'8½" tall

133

C. F. Davis

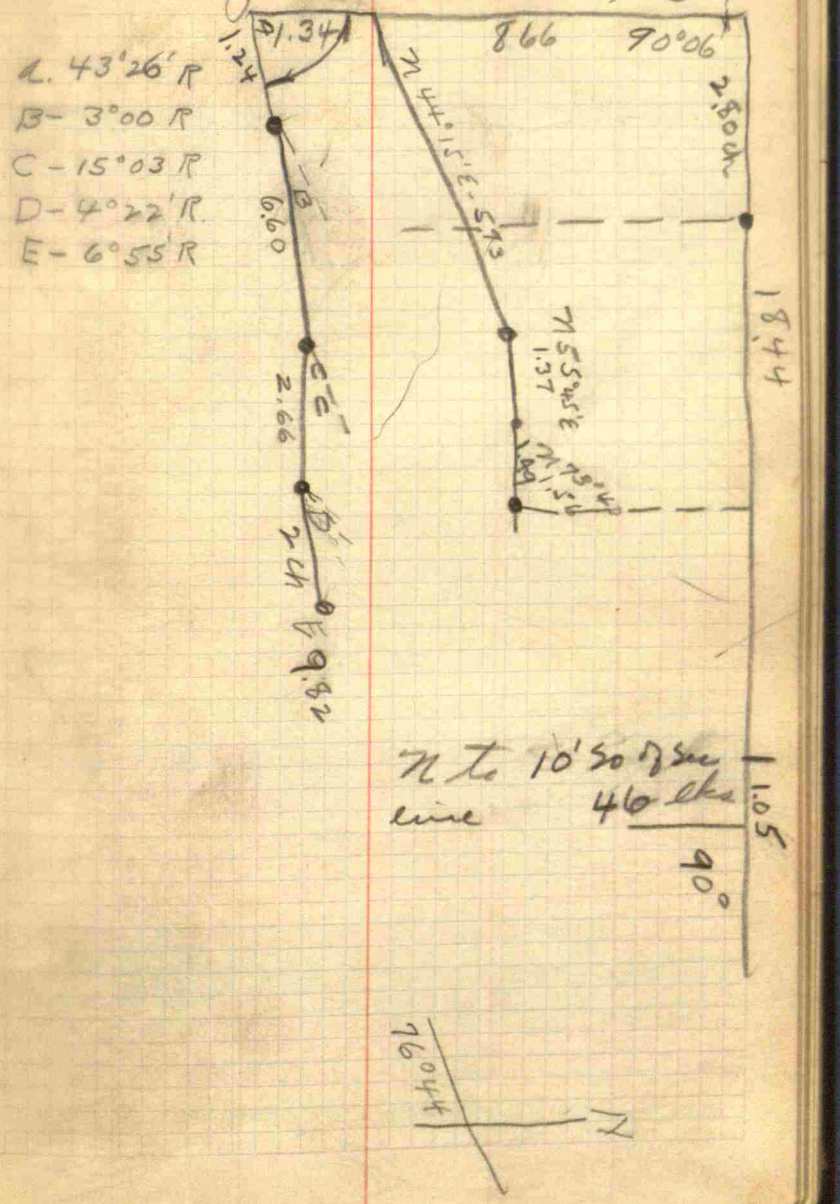
Survey

134

At NE NW - 10 - 15 - 12

Beg at a pt 10' So. of NW cor. of said qu. qu. thence So. 7.66 ch to E Rockville Rd. thence along said E N 44° 15 E 5.93 ch. - N 55° 45 E 1.37 ch. thence N 73° 40 E 1.56 ch. thence N 56° 05' E 1.19 ch. thence N 85° 05' E - 1.18 ch thence N 75° 10' E 9.92 ch to a pt in center road which is 10' So. of N line of said qu qu. thence W. on a line 10' South of & parallel to North line 18.44 ch

5.43 a.



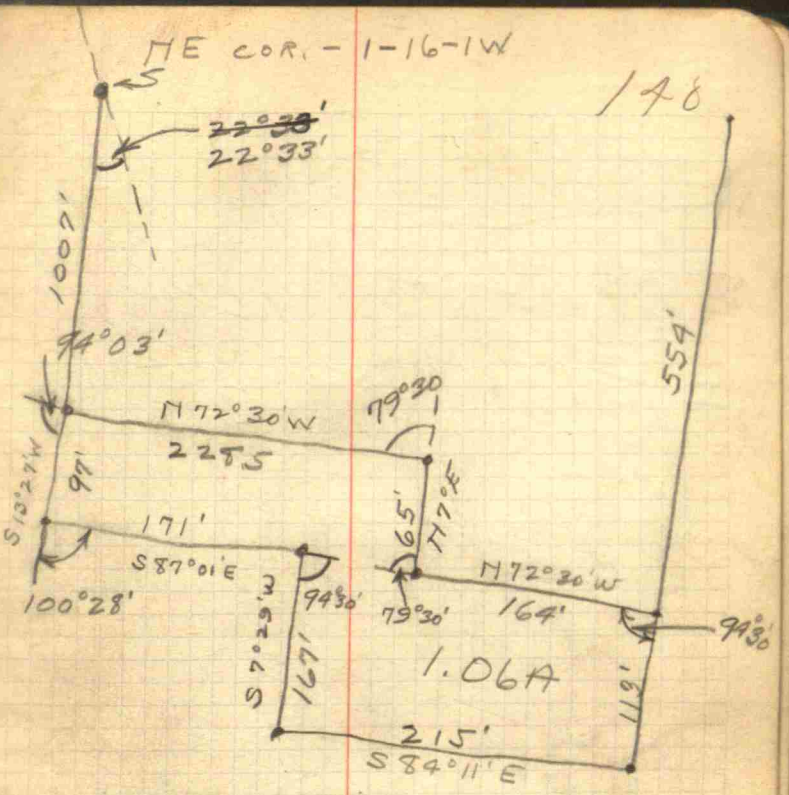
5545
4415
1130

7340
5545
1755

7N 100
55 45
17 55

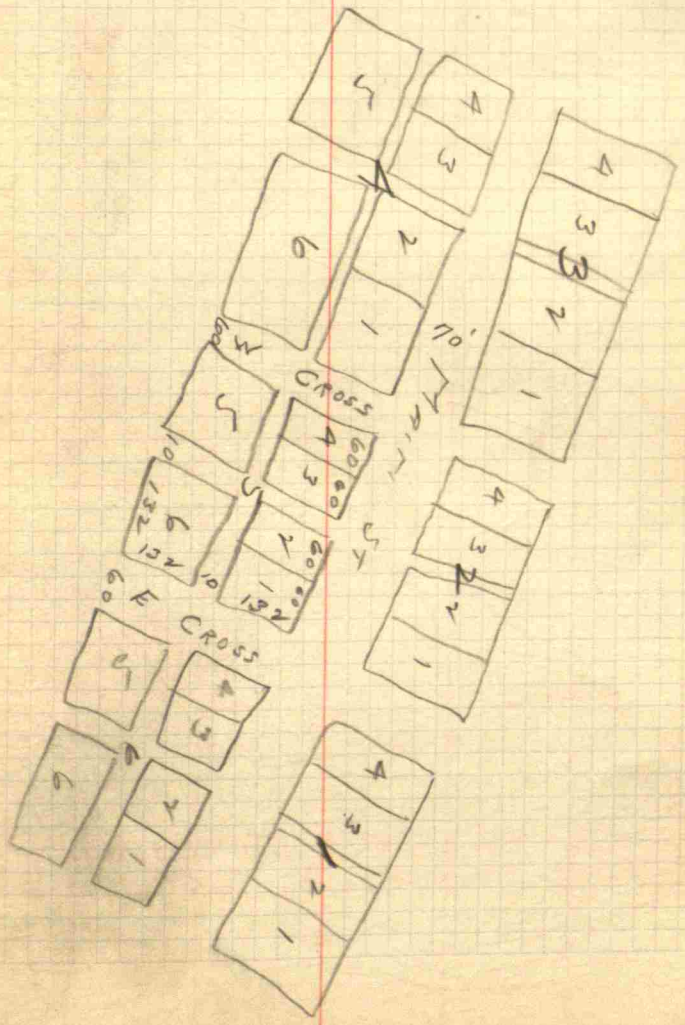
139

E. W. SAWYER SURVEY
PITTSBORO, IND.



141.

142



145	Top Stk	Gut @ Stk	℄	S. line Street	5' so
0+0	17.08	16.90	17.30	19.52	20.90
0+50	17.14	16.95	17.75	21.23	23.00
1+0	~~16.65~~	15.65	16.34	17.74	17.94
1+25		~~℄ So.~~	17.56		
1+50	15.05	14.45	16.00	18.40	18.50
2+0	15.12	14.59	17.15	19.40	19.60
2+50	13.56	13.42	14.08	15.16	15.55
2+57	N. curb int.	12.75		S. curb 2-	13.11

Conc. at back of intersection

17.35	16.50

Private Drive South

15.14

146

BM on arrow on 7 inch Plug at Sta 0+0

EL. 20.00

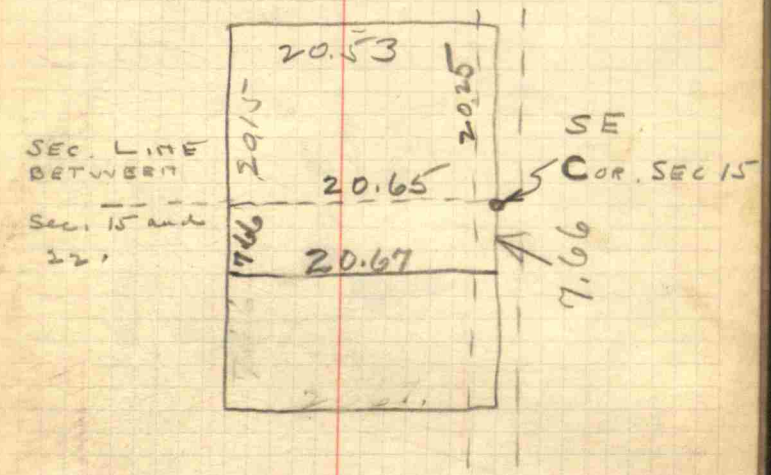
Elem Ste

between 3rd + Wash.

149

FRANK JESSUP

150



151

Sec 13-14-1E, 152

153

No Gutter	So. edge Pavt	Side walk		
5.61	6.00	5.65	5.50	5.50
5.71	6.06		5.56	5.60
5.81	6.19	5.86	5.69	5.70
5.86	6.25		5.76	5.76

Pavt	curb
5.83	5.85 ✓
5.83	5.87 ✓
5.85	5.79 ✓
5.83	5.76 ✓
5.82	5.73 ✓
5.80	5.70

25

$80\overline{)2400.}$ 154

240

$65\overline{).250}$

195

55

$\frac{65}{2}$

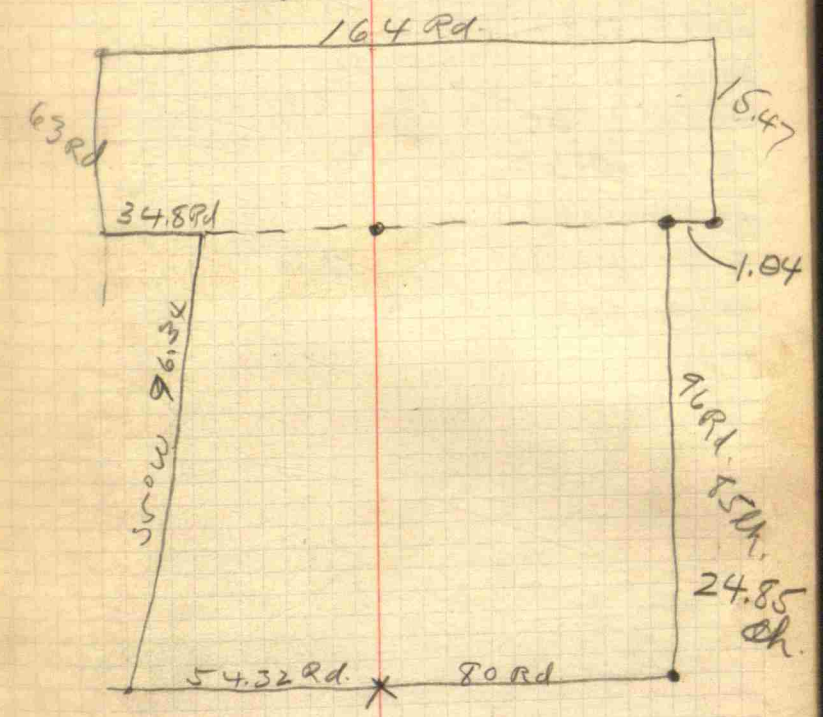
260

155 Hadley
11 – 14 – 2 E W

60 Rd E of 5th mile stone
Lime stone Rock 12 x 16 x 4 – 5 3/4 = 3.27

24
99
56

Alice Mallard
from Leka Hadley



24.85
15.47
40.32

Ted Harrison Tilt

157

	T+Tilt	Stk	
23+85	11.54		10.75
23+0		14.59	
22+0	11.37	15.66	
21+0	11.20		
20+0	11.00		
19+0	10.60		
18+0	10.27		
17+0	10.18		10.18
16+0	10.00		

158

5280
8.5
26400
42240
448800

1162

Natural Trigonometrical Ratios.

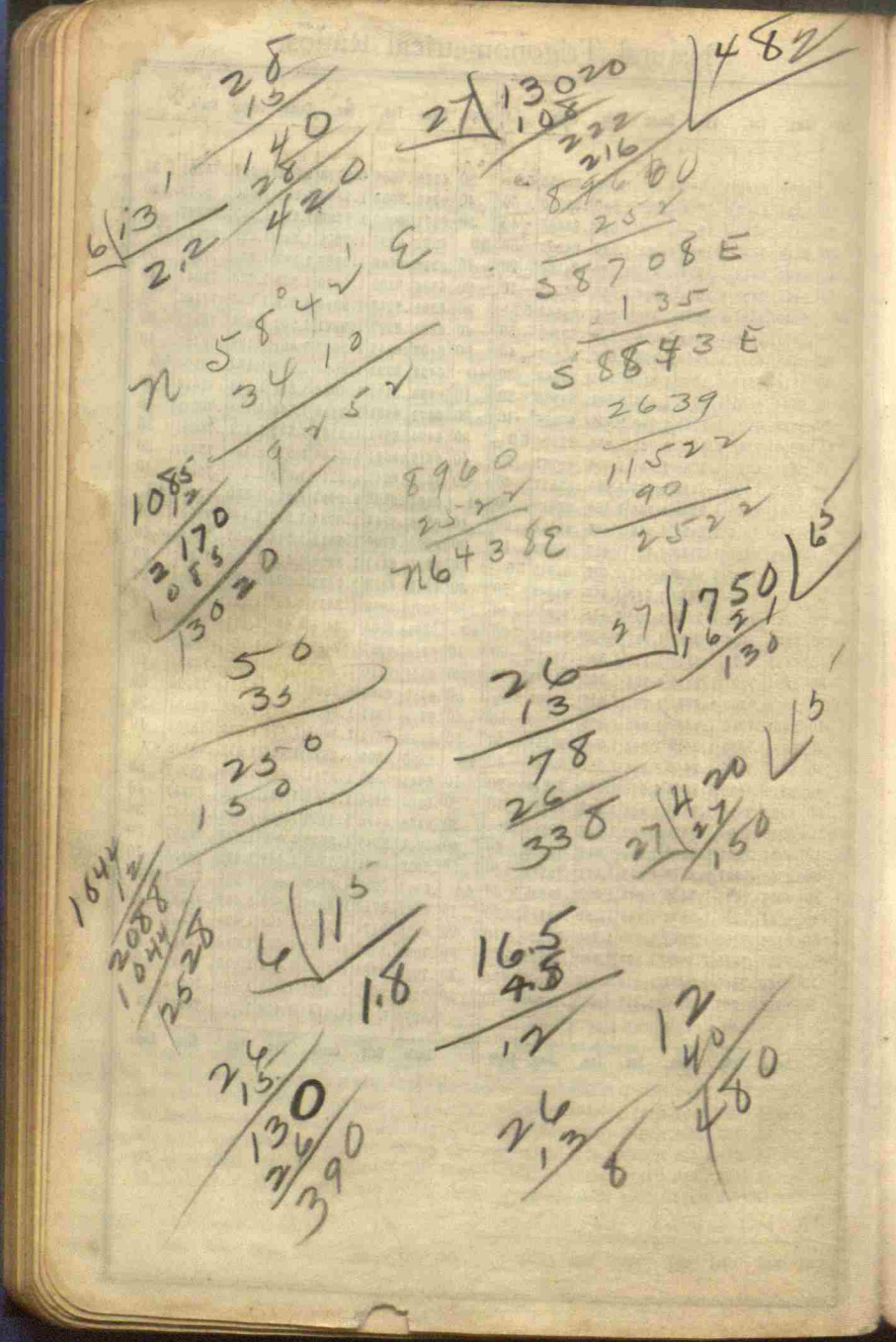
Angle.	Sine.	Tan.	Sec.	Cosec.	Cotg.	Cosin.	
0	0	0	1.	∝	∝	1.	90
10	.0029	.0029		343.8	343.8	I.	50
20	.0058	.0058		171.9	171.9	.99998	40
30	.0087	.0087		114.6	114.6	.99996	30
40	.0116	.0116	1.0001	85.94	85.94	.99993	20
50	.0145	.0145	1.0001	68.76	68.75	.99989	10
1	.0175	.0175	1.0002	57.30	57.29	.99985	89
10	.0204	.0204	1.0002	49.11	49.10	.99979	50
20	.0233	.0233	1.0003	42.98	42.96	.99973	40
30	.0262	.0262	1.0003	38.20	38.19	.99966	30
40	.0291	.0291	1.0004	34.38	34.37	.99958	20
50	.0320	.0320	1.0005	31.26	31.24	.99949	10
2	.0349	.0349	1.0006	28.65	28.64	.99939	88
10	.0378	.0378	1.0007	26.45	26.43	.99929	50
20	.0407	.0407	1.0008	24.56	24.54	.99917	40
30	.0436	.0437	1.0010	22.93	22.90	.99905	30
40	.0465	.0466	1.0011	21.49	21.47	.99892	20
50	.0494	.0495	1.0012	20.23	20.21	.99878	10
3	.0523	.0524	1.0014	19.11	19.08	.99863	87
10	.0552	.0553	1.0015	18.10	18.07	.99847	50
20	.0581	.0582	1.0017	17.20	17.17	.99831	40
30	.0610	.0612	1.0019	16.38	16.35	.99813	30
40	.0640	.0641	1.0020	15.64	15.60	.99795	20
50	.0669	.0670	1.0022	14.96	14.92	.99776	10
4	.0698	.0699	1.0024	14.34	14.30	.99756	86
10	.0727	.0729	1.0027	13.76	13.73	.99736	50
20	.0756	.0758	1.0029	13.23	13.20	.99714	40
30	.0785	.0787	1.0031	12.75	12.71	.99692	30
40	.0814	.0816	1.0033	12.29	12.25	.99668	20
50	.0843	.0846	1.0036	11.87	11.83	.99644	10
5	.0872	.0875	1.0038	11.47	11.43	.99619	85
10	.0901	.0904	1.0041	11.10	11.06	.99594	50
20	.0929	.0934	1.0043	10.76	10.71	.99567	40
30	.0958	.0963	1.0046	10.43	10.39	.99540	30
40	.0987	.0992	1.0049	10.13	10.08	.99511	20
50	.1016	.1022	1.0052	9.839	9.788	.99482	10
6	.1045	.1051	1.0055	9.567	9.514	.99452	84
10	.1074	.1080	1.0058	9.309	9.255	.99421	50
20	.1103	.1110	1.0061	9.065	9.010	.99390	40
30	.1132	.1139	1.0065	8.834	8.777	.99357	30
40	.1161	.1169	1.0068	8.614	8.556	.99324	20
50	.1190	.1198	1.0072	8.405	8.345	.99290	10
7	.1219	.1228	1.0075	8.206	8.144	.99255	83
10	.1248	.1257	1.0079	8.016	7.953	.99219	50
20	.1276	.1287	1.0082	7.834	7.770	.99182	40
30	.1305	.1317	1.0086	7.661	7.596	.99144	30
40	.1334	.1346	1.0090	7.496	7.429	.99106	20
50	.1363	.1376	1.0094	7.337	7.269	.99067	10
							82
	Cosin.	Cotg.	Cosec.	Sec.	Tan.	Sine.	Angle.

Angle.	Sine.	Tan.	Sec.	Cosec.	Cotg.	Cosin.	
8	.1392	.1405	1.0098	7.185	7.115	.99027	82
10	.1421	.1435	1.0102	7.040	6.968	.98986	50
20	.1449	.1465	1.0107	6.900	6.827	.98944	40
30	.1478	.1495	1.0111	6.766	6.691	.98902	30
40	.1507	.1524	1.0115	6.636	6.561	.98858	20
50	.1536	.1554	1.0120	6.512	6.435	.98814	10
9	.1564	.1584	1.0125	6.394	6.314	.98769	81
10	.1593	.1614	1.0129	6.277	6.197	.98723	50
20	.1622	.1644	1.0134	6.166	6.084	.98676	40
30	.1650	.1673	1.0139	6.059	5.976	.98629	30
40	.1679	.1703	1.0144	5.955	5.871	.98580	20
50	.1708	.1733	1.0149	5.855	5.769	.98531	10
10	.1736	.1763	1.0154	5.759	5.671	.98481	80
10	.1765	.1793	1.0160	5.665	5.576	.98430	50
20	.1794	.1823	1.0165	5.575	5.485	.98378	40
30	.1822	.1853	1.0170	5.488	5.396	.98325	30
40	.1851	.1883	1.0176	5.403	5.309	.98272	20
50	.1880	.1914	1.0181	5.320	5.226	.98218	10
11	.1908	.1944	1.0187	5.241	5.145	.98163	79
10	.1937	.1974	1.0193	5.164	5.066	.98107	50
20	.1965	.2004	1.0199	5.089	4.989	.98050	40
30	.1994	.2035	1.0205	5.016	4.915	.97992	30
40	.2022	.2065	1.0211	4.945	4.843	.97934	20
50	.2051	.2095	1.0217	4.877	4.773	.97875	10
12	.2079	.2126	1.0223	4.810	4.705	.97815	78
10	.2108	.2156	1.0230	4.745	4.638	.97754	50
20	.2136	.2186	1.0236	4.682	4.574	.97692	40
30	.2164	.2217	1.0243	4.620	4.511	.97630	30
40	.2193	.2247	1.0249	4.560	4.449	.97566	20
50	.2221	.2278	1.0256	4.502	4.390	.97502	10
13	.2250	.2309	1.0263	4.445	4.331	.97437	77
10	.2278	.2339	1.0270	4.390	4.275	.97371	50
20	.2306	.2370	1.0277	4.336	4.219	.97304	40
30	.2334	.2401	1.0284	4.284	4.165	.97237	30
40	.2363	.2432	1.0291	4.232	4.113	.97169	20
50	.2391	.2462	1.0299	4.182	4.061	.97100	10
14	.2419	.2493	1.0306	4.133	4.011	.97030	76
10	.2447	.2524	1.0314	4.086	3.962	.96959	50
20	.2476	.2555	1.0321	4.039	3.914	.96887	40
30	.2504	.2586	1.0329	3.994	3.867	.96815	30
40	.2532	.2617	1.0337	3.949	3.821	.96742	20
50	.2560	.2648	1.0345	3.906	3.776	.96667	10
15	.2588	.2679	1.0353	3.864	3.732	.96593	75
10	.2616	.2711	1.0361	3.822	3.689	.96517	50
20	.2644	.2742	1.0369	3.782	3.647	.96440	40
30	.2672	.2773	1.0377	3.742	3.606	.96363	30
40	.2700	.2805	1.0386	3.703	3.566	.96285	20
50	.2728	.2836	1.0394	3.665	3.526	.96206	10
							74
	Cosin.	Cotg.	Cosec.	Sec.	Tan.	Sine.	Angle.

Angle.	Sine.	Tan.	Sec.	Cosec.	Cotg.	Cosin.	
0 ′							
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	1.0466	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.	
0 ′							
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.

Angle.	Sine.	Tan.	Sec.	Cosec.	Cotg.	Cosin.	
0 ′							
32	.5299	.6249	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	.5745	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	1.2466	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
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	1.3636	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	1.3788	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.



M CENTER OF ROADWAY FOR CROSS-SECTIONING.

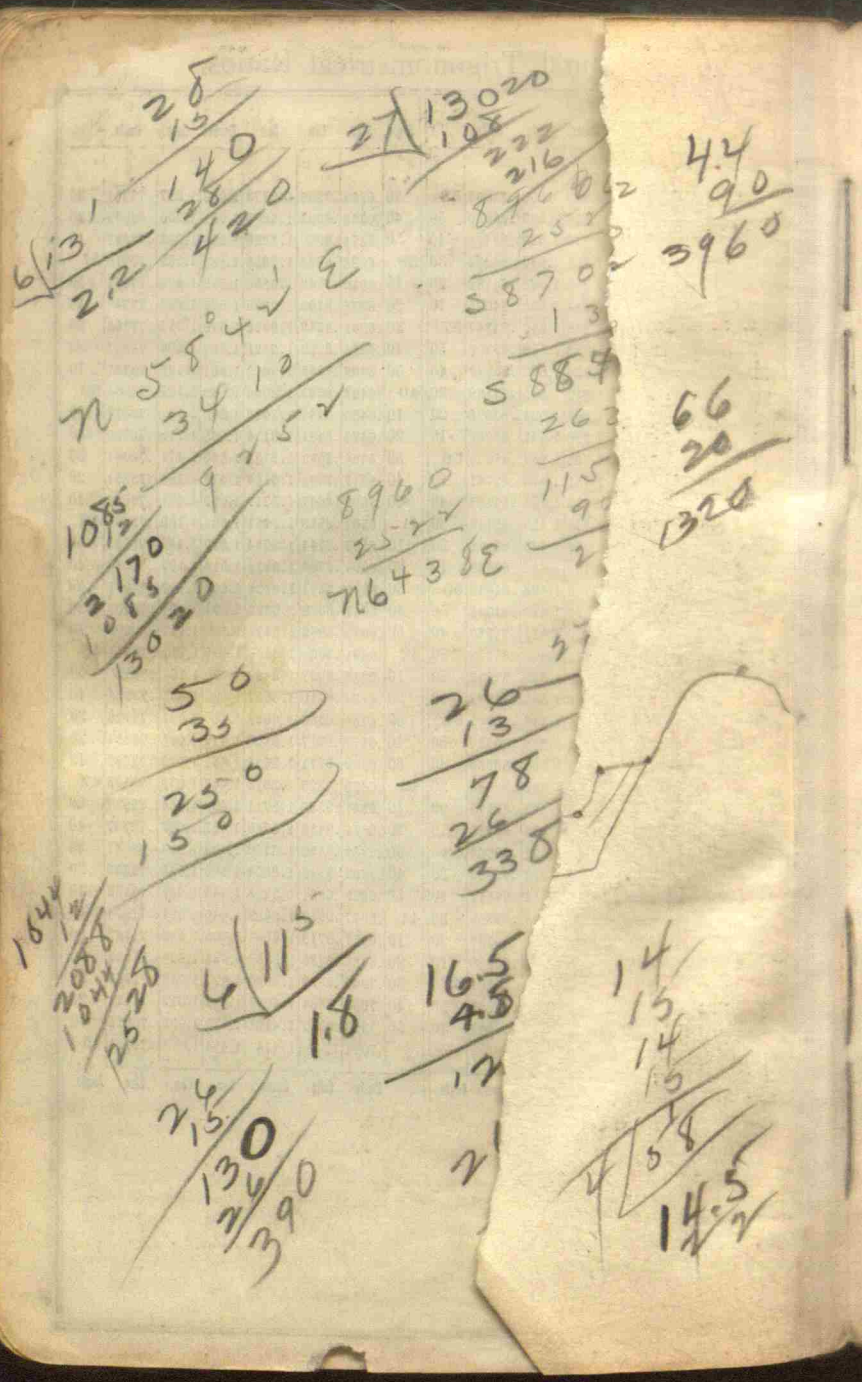
OADWAY 14 FEET WIDE. SIDE SLOPES 1½ TO 1.

FOR SINGLE TRACK EMBANKMENT.

.2	.3	.4	.5	.6	.7	.8	.9	
7.3	7.5	7.6	7.8	7.9	8.1	8.2	8.4	0
8.8	9.0	9.1	9.3	9.4	9.6	9.7	9.9	1
10.3	10.5	10.6	10.8	10.9	11.1	11.2	11.4	2
11.8	12.0	12.1	12.3	12.4	12.6	12.7	12.9	3
13.3	13.5	13.6	13.8	13.9	14.1	14.2	14.4	4
14.8	15.0	15.1	15.3	15.4	15.6	15.7	15.9	5
16.3	16.5	16.6	16.8	16.9	17.1	17.2	17.4	6
17.8	18.0	18.1	18.3	18.4	18.6	18.7	18.9	7
19.3	19.5	19.6	19.8	19.9	20.1	20.2	20.4	8
20.8	21.0	21.1	21.3	21.4	21.6	21.7	21.9	9
22.3	22.5	22.6	22.8	22.9	23.1	23.2	23.4	10
23.8	24.0	24.1	24.3	24.4	24.6	24.7	24.9	11
25.3	25.5	25.6	25.8	25.9	26.1	26.2	26.4	12
26.8	27.0	27.1	27.3	27.4	27.6	27.7	27.9	13
	28.5	28.6	28.8	28.9	29.1	29.2	29.4	14
	30.0	30.1	30.3	30.4	30.6	30.7	30.9	15
	31.5	31.6	31.8	31.9	32.1	32.2	32.4	16
	33.0	33.1	33.3	33.4	33.6	33.7	33.9	17
	34.5	34.6	34.8	34.9	35.1	35.2	35.4	18
	36.0	36.1	36.3	36.4	36.6	36.7	36.9	19
	37.5	37.6	37.8	37.9	38.1	38.2	38.4	20
	39.0	39.1	39.3	39.4	39.6	39.7	39.9	21
	40.5	40.6	40.8	40.9	41.1	41.2	41.4	22
	42.0	42.1	42.3	42.4	42.6	42.7	42.9	23
	43.5	43.6	43.8	43.9	44.1	44.2	44.4	24
	45.0	45.1	45.3	45.4	45.6	45.7	45.9	25
	46.5	46.6	46.8	46.9	47.1	47.2	47.4	26
	48.0	48.1	48.3	48.4	48.6	48.7	48.9	27
	49.5	49.6	49.8	49.9	50.1	50.2	50.4	28
		51.1	51.3	51.4	51.6	51.7	51.9	29
		52.6	52.8	52.9	53.1	53.2	53.4	30
		54.1	54.3	54.4	54.6	54.7	54.9	31
		55.6	55.8	55.9	56.1	56.2	56.4	32
		57.1	57.3	57.4	57.6	57.7	57.9	33
		58.6	58.8	58.9	59.1	59.2	59.4	34
		60.1	60.3	60.4	60.6	60.7	60.9	35
		61.6	61.8	61.9	62.1	62.2	62.4	36

en A. Hall, M. Am. Soc. C. E.

MADE IN GERMANY.



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.

MADE IN GERMANY.