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UNIVERSITY
OF TORONTO
363 A

LETTER →

KEUFFEL & ESSER CO.

DRAWING MATERIALS AND SURVEYING INSTRUMENTS. NEW YORK.

CHICAGO. ST. LOUIS. SAN FRANCISCO. MONTREAL.

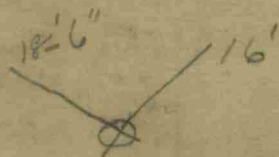
TABLES FOR EXCAVATIONS AND EMBANKMENTS.

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

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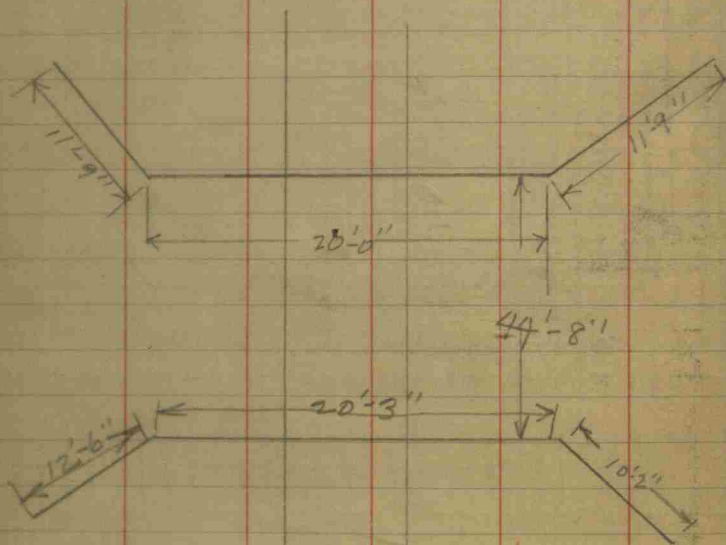
	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	
0	9.0	9.1	9.2	9.3	9.4	9.5	9.6	9.7	9.8	9.9	0
1	10.0	10.1	10.2	10.3	10.4	10.5	10.6	10.7	10.8	10.9	1
2	11.0	11.1	11.2	11.3	11.4	11.5	11.6	11.7	11.8	11.9	2
3	12.0	12.1	12.2	12.3	12.4	12.5	12.6	12.7	12.8	12.9	3
4	13.0	13.1	13.2	13.3	13.4	13.5	13.6	13.7	13.8	13.9	4
5	14.0	14.1	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.

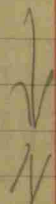


2

Road Way 14'

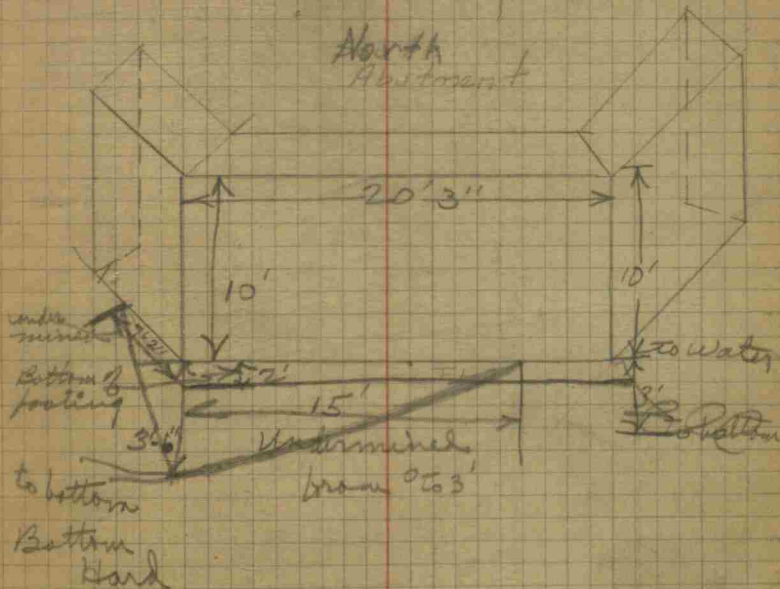


50' span

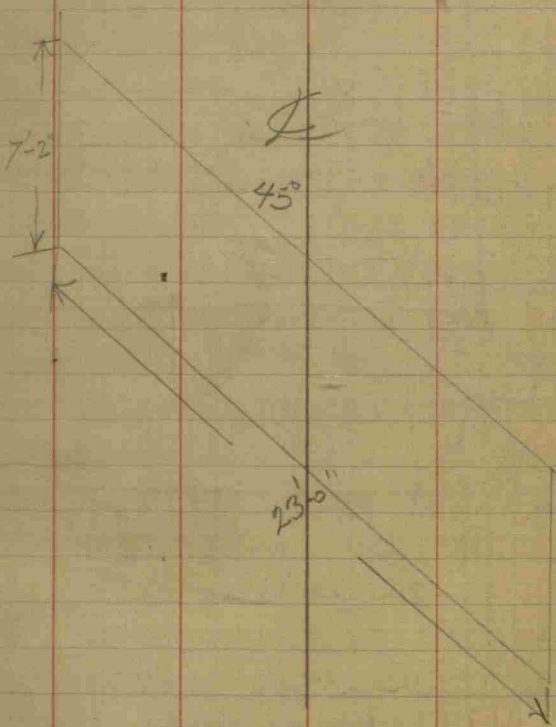


Bridge over Ross Ditch
near NE corner 2-16-2 W 3

North
Abutment

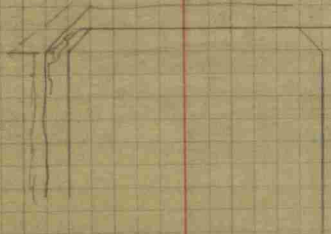


South of Winchester
Floorless Box



5
This structure has been
underpinned once.

←
W end of abutment
cracked and top slide back 4"



old brick arch south
of first structure on road
south of Winchester

a 2 1/2' span bricks falling
out of both ends and in
very bad shape can't be
repaired

Bridge in Marion Twp North of New W.
 12'-8" inside span
 the two South ~~abutments~~
 wings cracked completely loose
 from abutment
 East abutment cracked at 3 point
 both footings solid
 two ~~with~~ north wings cracked
 loose from abutments
 roadway and abutment with 11'-0"
 wing at 45° from abut.



6 1/2" Channels

2

3 4" I Beams

Spaced 4' on centers
 9' rise
 not long abutment needed.

#1

April 28 36

41' span

Jones

Possible Roadway 17'

Road way 14'-0"

Bridge

3/4 part flooring possible house

West side Needs New abutment
 8' plus abutment.

Bridge #2

38'-6" span

14' Roadway

7' Rise

Bridge Needs Thrust Wings

Bridge #3

46' span

16' span

9' Rise

New Center I in Middle span 16'-2"
 16'-0" span
 NE Corner Needs New 16'-0" wing 45°

April 29, 36

Concrete flat top.

16' span

18' Roadway

abutments 27 ft long

Wings at 45° 5'-6" low

NW + SE Corners under

mined both fasting tops

out of water 1 foot

5' rise

Stream can be straightened

on a side to avoid this

Bridge not in to bad shape

10 May 5, 1936

Bucksburg Arch Bridge

straighten channel
to east and under
bridge

Retaining Wall
on N.E. Wing.

24' Long by 14' high

SW Wing

23' Long by 14' high

Harnes
Bridge

Spring town flat top
Bridge

11

16' span

7 1/2' rise

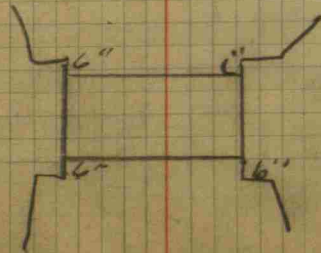
16 1/2' Roadway

floor of bridge is out
concrete on bottom has
left steel. Bridge in
very poor condition
needs new floor and
hand rails
outside width, Handrail to Handrail 18'
Handrails 8" thick

Fritsche Bridge

abutment 2' wide

Floor 1' thick



Clayton Cemetery Work
Present Bridge

16'-3"
Extend to 24' Roadway
on South
and 27' Roadway on
North

57" Rise
14'-0" Clear Span

Is on present structure
span 2'-9" Centers

New floor for whole
bridge

13

stone abutts and I beams
To be repaired.

channel Exc. 250. yds

Cartes Bridge
1 shoe on South side
4 3 shoe on North side
40 spot welds.

PA 15

17

Cullum Bridge

68" Rise

13'-6" Present Roadway

5'- Extension on East.

58' straight Wall

NE 5' wall 45° wing 4'-0"

5'-6" Extension

NW straight

50' 5'- straight with 4'-0"
wing 45° e

24' Span

Iron pipe in 4' ceiling

17

10'-40" and one bank

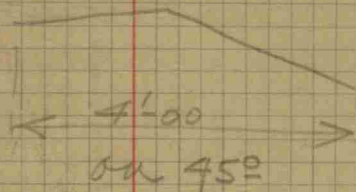
303

Bushy

NE Wing on 60²
Extended 6'-0" ~~height~~ height 5'-0"

Present Roadway 16'

add 8' Roadway to West
5'-6" Rise
10'-span



19

30

10' 40" one Band

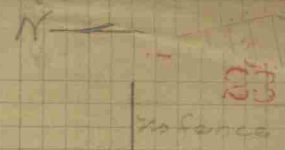
4' 29" Hazelwood

6' 29" 2 Bands

31

123

20' → 0+0



← 20' → 1+0
16' → φ + 07

2+0

↔ 16' φ + 59

3+0

fence
21'

4+0

17' φ + 06

5+0

22

25

5+0

17' ϕ 6-5

fence 21' 6+0

7+0 ϕ 17' 7+0 14' ϕ 7+0

fence 22'

fence 10' 7+72

fence 6' 8+0

fence
Cross ϕ 8+99

Five trees in group
distance from ϕ from 20' to 10'

9+46 fence 15'
@ 7+6
9+87 fence 20'
10+0

at Sta 9+66 Def. R 20°-04'

05

11.97
58
12.49

Sta. 12+49 Def. R. $14^{\circ}06'$

10+0

+21

37
Curve 26'

11+0 Curve 14'

Curve 9' 11+97
12+0

Curve 12+49 Curve 11'

← 20' ϕ + 75'

Curve 13+0 Curve 11'

Curve 14+0 Curve 11'

← 20' ϕ + 15'

Curve 15+0 Curve 11'

Sta 18+80 Def R. $24^{\circ} 44'$

1510

1519

+50 ϕ 20'

fence 21' 16+0 fence 12'

fence 21' 17+0 fence 13'

13' ϕ +20'

+25 ϕ 21'

fence 20' 18+0 fence 15'

+75 ϕ 24' 18+80 6' ϕ +75
fence 22'

fence 24' 19+0

20+0

20+895 Def E 28° 27'

Sta. 22+23 Def R, 29° 31'
also South Edge of Bridge
Length of Bridge Floor 85'
Roadway 19'

Fence from
Bridge 20' out on
both sides from
here to end
Telephone poles
on West side
and out 19 feet.

20+0

31

20+95

21+0

22+0

22+23

Fence on E
side 20' to Sta
28+0 from 29+0
to End 15'

25+0

36

+ T - BM
4.44 109.44 100.00

0+0

~~1+0~~

20 BM #1 E.L. 100.00 Nail
30 in North Side of Telephone
40 pole Sta 0+0 on South
50 side of Road

6+0

9.79 94.65
5.33 99.98

3+0

4+0

5+0

6+0

7+0

7-72

8+0

37

98.99
-3 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

96.79
-3 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

94.97
-3 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

93.48
-3 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

92.94
-3 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

92.78
-3 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

92.56
-3 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

92.54
-3 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

93.18
-3 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

93.78
-3 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

+ T - BM

99.98

8+49

..93 99.05

8.15 107.20

BM #2 E/105.70 on Concrete Post W. Side Franklins Drive

8+0

9+0

9+66

9+87

11.50 117.20

105.70

0.96 116.24

6.86 123.10

8+49

9+0

9+66

97.51

20 27 50 58
2.47 5.46 5.65 7.60

101.95 99.38

-10
525 7.82

20 96.96 96.40
107.18 40 65
0.02 10.24 10.80

101.30 79.78 100.45
42 46 70
5.90 7.42 6.75

101.07 102.10 101.90
41 51 80
6.13 5.10 5.30

117.23
-40
3.87

118.15
-20
4.95

117.28 118.82 115.03
-10 34
5.84 9.25 8.07

3+0 + λ - BM

123.10

9+87

6.86 116.24

0.41 116.65

10+24

105.70

1.44 107.14

10+21

11+0

11+97

13+0

14+0

15+0

6.25 105.27

16+0

8.12 99.02

11

115.11 116.04 115.39 113.77
-10 0 20 40
7.49 7.06 7.71 9.35

106.10 106.15 104.75
6 0 20
10.55 10.50 11.90

103.67 101.94 102.54
40 55 76
3.47 5.20 4.60

171.99
4.74 5.15 5.65 7.44 6.93 7.20
20 36 39 41 61

99.34
-4 0 12 15 16 23 38 39 41
7.107 7.66 7.15 8.35 7.80 7.81 8.56 8.409.46

98.78
-4 0 10 14 24 36 39 40
10.60 10.65 9.92 8.90 8.36 9.47 9.60 9.10

98.24
-4 0 11 12 14 25 37 39 40
10.20 10.23 9.75 10.20 9.47 8.90 9.18 9.89 9.95

97.74
-5 0 10 12 14 25 37 39 40
9.00 9.20 9.30 9.60 8.95 8.00 8.50 9.49 8.95

99.47
-4 0 9 10 12 23 35 38
7.95 7.43 7.19 7.45 6.50 5.80 5.90 6.90

sta

+

T

-

BM

42

105.27

17+0

18+0

19+00

20+0

21+0

22+23

on Bridge floor

BM #3 on SW ^{corner} Bridge apartment
Sta 22+23 El 102.22

24+0

2.34

104.56

102.22

25+0

26+0

43

99.85

-10	0	13	23	33	34	40
8.00	7.90	5.87	5.72	5.38	6.26	5.50

102.12

9	7	22	32	35	38	40
2.37	3.35	3.15	3.26	5.93	2.70	2.70

Distances measured from N. corner

100.47

-3	0	1	3	6	20	30	35	40
5.94	5.80	5.75	6.05	5.68	4.90	5.35	7.44	7.80

99.92

-3	0	4	9	12	26	40	43	45
6.96	7.00	7.10	7.55	6.60	5.85	6.10	6.70	7.35

99.82

-20	-10	-7	-4	0	16	29	36
8.40	7.76	8.00	6.72	6.40	5.45	6.80	8.90

101.72

West edge	East edge
3.55	3.61

-4	0	9	22	37	40	42
9.37	8.77	6.43	5.76	7.04	7.90	8.00

-8	0	22	35	37	40	43
11.15	7.65	6.96	7.69	8.70	8.79	8.60

-8	0	11	22	35	37	42
10.05	8.67	7.20	7.00	7.35	8.52	8.30

205

30+0 T A - BM 44
 6.35 104.56 7.05 97.57

31+0

32+0

1.64 103.86 102.22

33+0

34+0

31+0

32+0

33+0

34+0

BM #A on Nail in
 fencepost at Sta 31+50 on
 East Side of Road E.L. 101.07

45

-3 11K
 6.15 5.90 5.95 6.62 7.10 7.05

-3 11K
 6.30 6.10 5.90 6.51 7.29 6.98

-3 11K
 5.85 5.91 5.57 5.70 7.15 5.70

-3 11K
 4.36 4.45 3.98 4.50 6.00 4.60

-3 11K
 3.21 2.96 2.71 3.50 5.10 2.96

1.60

1.56

9-26

- $\bar{\lambda}$ + BM

112.27 10.05 102.22

17+50

18+0

18+15

18+80

New Finals

17+50

114.71 12.19 102.22

18+0

18+15

18+80

1.16

120.27 7.02 113.25

18+15

9-27 F

101.22 101.93

20'N 50'N

11.05 10.34

109.45 107.05

30'N 35'N

7.82 5.22

110.27

51'N

2.00

102.94

105.39

109.45

111.97

20'N

29'N

56'N

47'N

9.31

6.88

2.82

0.30

100.88

102.62

20'N

49'N

11.39

9.65

⊕

102.65

104.52

110.10

111.44

102.11

20.5

30.5

5.42

6.2

12.30

11.76

10.09

4.31

2.97

102.01

102.55

109.78

12.20

21.5

4.25

11.86

9.63

116.30

117.84

7.5

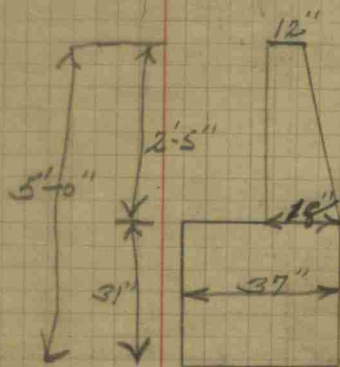
3.57

8.0

2.33

Wing 25" ^{deep} ~~wide~~ } 37" wide
 Abutment 40" ^{deep} ~~wide~~

Wing 25" deep & 37" wide
 abutments 40" deep 37" wide
 from top of footing to top of
 impervious 2'6" width 12"



$$\begin{array}{r} 40 \\ 25 \\ \hline 265 \\ 35 \end{array}$$

$$\begin{array}{r} 37 \\ 25 \\ \hline 262 \\ 31 \\ \hline 4.72 \\ 2.72 \\ \hline 2.5 \end{array}$$

$$\begin{array}{r} 37 \\ 18 \\ \hline 255 \\ 27.5 \end{array}$$

for w. half

30

$$3.08 \times 2.58 \times \frac{22.25}{27} = 6.55 \quad 30'-3'' \text{ long}$$

$$1.25 \times 2.25 \times \frac{2.42}{27} = 2.5 \quad \text{E half}$$

$$8 \times 2.5 \times \frac{2.58}{27} = 1.92$$

$$1.25 \times 8 \times \frac{2.42}{27} = .89$$

$$\begin{array}{r} 11.86 \\ 30.25 \times 1.2 \times 2 = 21.75 \\ \hline 27 \quad 14.61 \end{array}$$

Runs from 37" wide
 su footing to 18" wide
 in 8 feet.

155

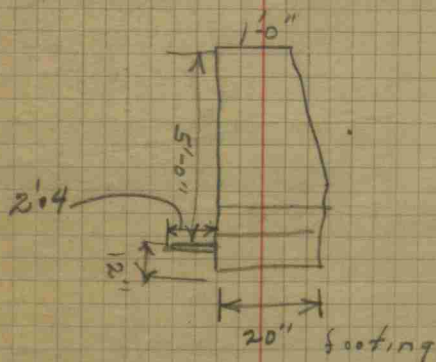
W^m Hart Drain

51

1 L. Tile

8.03

Headwall 10' 9" Long



179 ft of 12" tile

8 ft dirt

- 2 Peckes pipe 6" fittings

$$6.5 \times \frac{4}{3} \times 2.25 = 19.5$$

$$\begin{array}{r} 26.0 \\ 226 \\ \hline 13.00 \\ 520 \\ 520 \\ \hline 3 \overline{) 58.500} \quad 19.5 \\ \underline{328} \\ 27 \\ \underline{27} \\ 15 \end{array}$$

$$2.5 \times \frac{4}{3} \times 2.5 = 8.33$$

$$\begin{array}{r} 10.0 \\ 2.5 \\ \hline 3 \overline{) 25.0} \quad 8.3 \\ \underline{24} \\ 10 \end{array}$$

$$\begin{array}{r} 275.42 \\ 118. \\ 15. \\ 48. \\ \hline \end{array}$$

$$\begin{array}{r} 452.42 \\ 229. \\ \hline \end{array}$$

$$227.42$$

$$19.50$$

$$8.33$$

$$\hline 27.83$$

$$9.90$$

$$\hline 250470$$

$$25047$$

$$\hline 2734170$$

M. Tile Drain

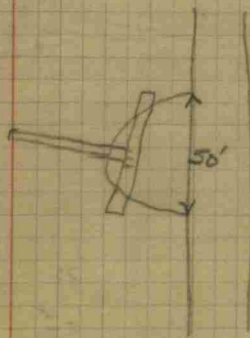
Headwall

18' Long, orig.
 6'-6" High
 36' Length
 2'-6" Footings
 square

Change to 36' Long

35 Bars $\frac{3}{4}$ " - 7'-6"

5 Bars $\frac{3}{4}$ " - 35'-6"



9.56

-	∇	+	BM
	107.02	1.32	105.70

	104.37	4.37	100.00
--	--------	------	--------

1+0

2+0

3+0

4+0

5+0

6+0

7+0

107.02
3.68
<hr/>
103.34
100.48
<hr/>
2.86

96.87
7.50

95.72
7.65

93.65
10.72

93.25
11.12

92.79
11.58

92.72
11.65

93.15
11.22

99.56

93

700.48

14.2

106.5

142

6.15

710

852

9230

9760

9680

9600

9600

9600

9635

9742

7.11

.73

1.12

2.35

2.75

3.21

3.63

4.27

9.57

100.50

T	+	BKA
106.15	0.45	105.70

102.47	2.47	100.00
--------	------	--------

113.22	7.52	105.70
--------	------	--------

109.11	3.41	105.70
--------	------	--------

8+49
9+0
9+66

cut		
1.06	99.55	
3.35	100.26	
3.06	101.20	

100.61
8.50
103.61
6.50
104.126
4.85

96.00

102.47
8.05
94.42

102.47
8.05
94.42
97.42

102.47
6.95

97.52
1.28

96.35
94.67
102.47
7.80

94.67

96.00
94.82
1.18

102.47
7.65

94.82

113.22
3.73

109.49
99.155
90.94

105.70
7.52
119.22 50

106.15
98.84
7.31

106.15
99.95
6.20

106.15
5.95

100.20
98.84

1.36

96.00

102.146
7.31

113.22
99.55
13.67
94.65

6. 96.75

7. 97.42

7.72 99.44

60

A	F	BM
106.62	0.92	105.70

106.37	0.67	105.70
--------	------	--------

106.37

107.20

5.17

4.53

.87

61

1	97.60
2	96.80
3	96.20
4	96.00
5	96.00
6	96.35
7	97.42
8	98.89

9+6 101.20

106.62

2.90

98.72

96.72

Fill 2.00

98.72

97.42

8+0

1.30

Hgt

7.10

106.37

7.60

98.97

106.62

10.55

96.07

.30

Fill

6+0

106.62

11.15

95.47

5+0

.53

Fill

106.62

11.55

95.07

4+0

96.00

5.27

93.91

.78

Fill

106.62

11.40

95.223+0

96.00

95.22

.78

Fill

62

\bar{A} + BM
 109.90 4.20 105.70

9+0

8+49

9+0

9+66

9+87

10+21

~~11+0~~

11+0

0.50

121.82 12.42

9+87

9+66

9+0

8+99

1.09.40

5

2

N

63

^{97.84}
 ✓ 14 21.15
 12.11 11.80 17 20 31 36
 12.41 10.20 9.49 6.85
⁴¹
 8.65

✓ 22
 11.52 10.86 17 23 32
 11.27 7.83 7.82

✓ 27
 10.32 9.80 17 26 35
 10.65 7.61 8.71

⁴¹ 36
 8.45 8.37 8.51 17 18 20 26 34
 9.79 8.16 9.24 4.15 3.64


✓ 37
 8.10 8.57 6 20 22 23 32
 8.58 9.24 8.74 8.49 4.69
⁴²
 4.34

✓ 46
 7.97 8.56 16 20 21 23 32
 9.10 10.04 9.15 8.26 5.03
⁴⁶ 62
 4.16 3.60

24 13
 9.85 9.38 9.65 22 26 33 42
 9.79 10.36 7.19 7.60

55 79
 8.94 9.93
 55 80
 5.85 7.33
 58 75
 1.53 8.76
 4.5 66
 10.02 7.75

11.80



 Built 1881

Centering String Bridge

Center + 1/2 inch
 5" depth - 2 3/4" width

Double truss stiffener on each end



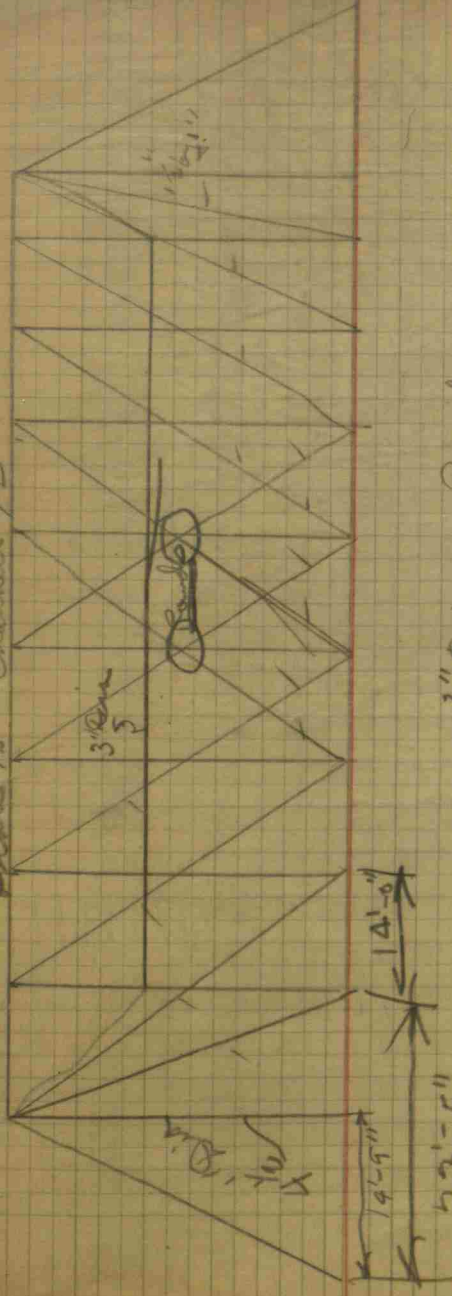
all members built up members

Rise to top of super structure
25'-9"

Bridge Stringers
I - 7'-4"

side runners 1" square double with lumps

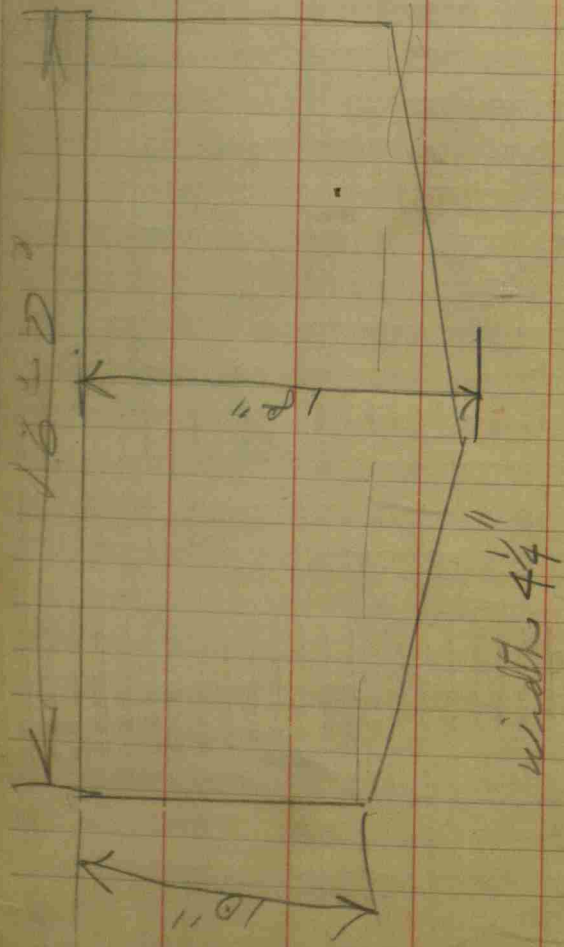
Plate 1/8" Channel 7 1/2



3" Dia. round
I Beams 5" by 5 3/4"

and beams 2-7" channels and one plate 1 1/4"

Over

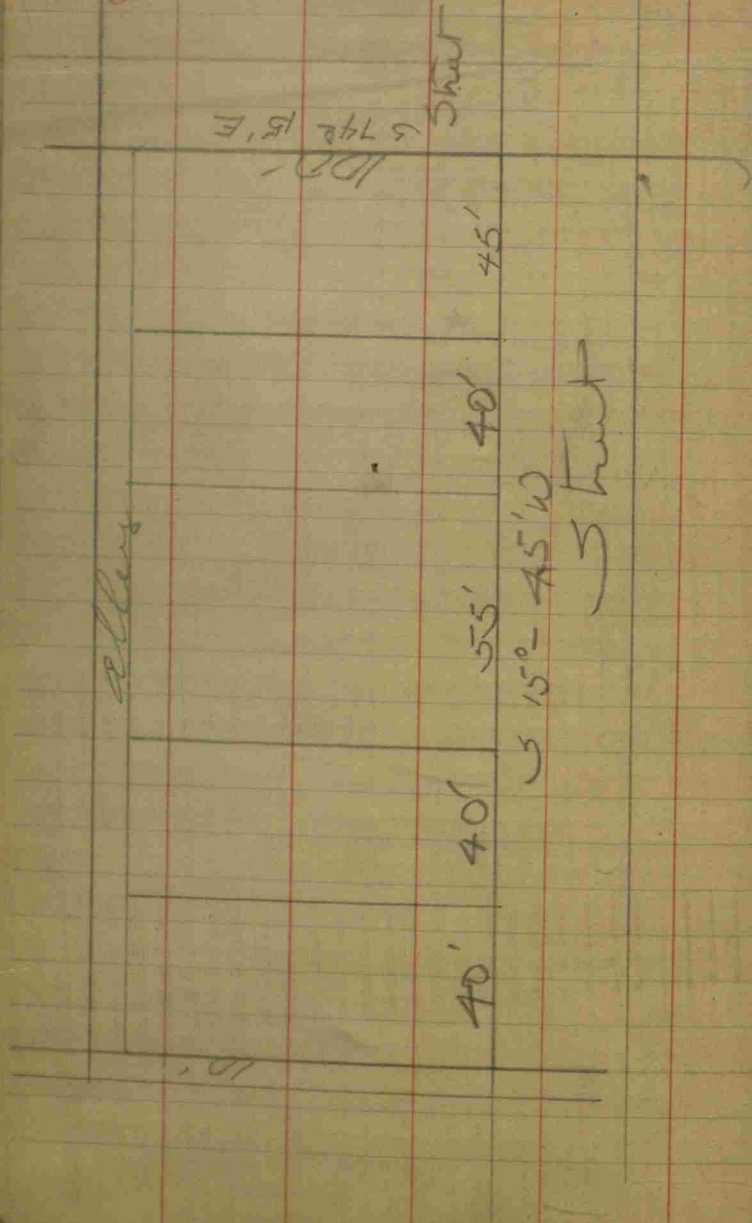


Bottom Cross and $\frac{1}{2}$ Spine

Road stringers 7" - 4"

9 Road stringers

Spaced on 18" centers

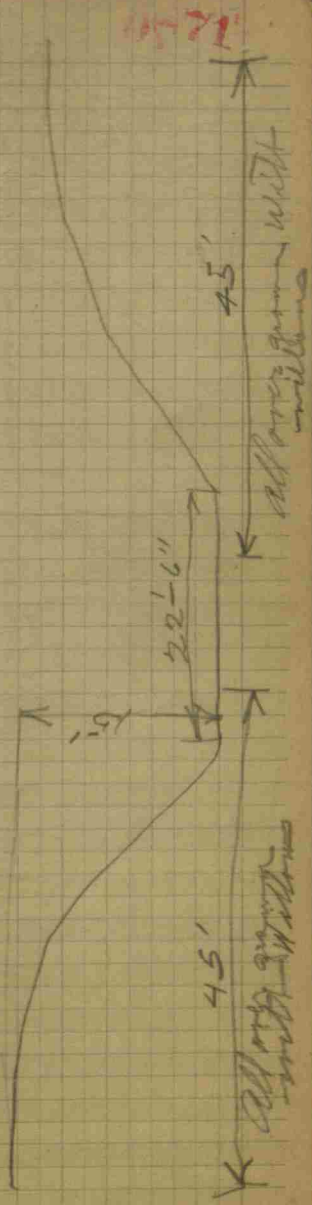


Wm E + Johanna
Thompson add to
Town of Brunswick

Shut

0-50

Typical Cross-section on Mud Bank
Head and 1550 ft from Outlet



Saltus File #9
Near Brunswick

E

591

75

0

+25

+30

+35

+41

+44

+47

+52

+55

+61

+65

+70

+75

+83

+89

+93

+96

+01

+06

+13

+20

+27

+32

+36

+51

W

76

	+	△	-	BM
0+0	177	101.77		100.00
+25				
+30				
+35				
+41				
+44				
+47				
+52				
+55				
+61				
+65				
+70				
+75				
+83				
+89				
+93				
+96				
1+01				
1+05				
1+13				
1+20				
1+27				
1+32				
1+36				
1+51				

BM in
Tree on
East side
Elev. 100.00

Station	ℓ	
97.76	2.2	
97.01	4.60	97.17
96.57		
97.18		
96.82		
97.25		
96.57	1.5	
97.20	5.20	96.57
96.58	3.5	
97.19	5.10	96.67
96.75	4.5	
97.05	6.19	96.58
96.97	4.5	
97.86	9.70	97.07
97.07	2.0	
97.0	4.58	97.19
97.07	1.6	
97.70	4.68	97.09
97.75	2.5	
97.47	1.58	97.19
97.47	3.5	
97.30	4.21	97.56
97.56	3.5	
97.21	4.00	97.77
97.46	4.5	
97.31	4.18	97.59
97.63	5.0	
97.14	4.13	97.64
97.62	6.6	
97.15	9.00	97.77
97.19	6.5	
97.52	4.07	97.62
97.42	5.5	
97.35	4.03	97.74
97.59	3.1	
97.18	4.10	97.67
97.32	1.0	
97.45	4.39	97.39
97.63		
97.14		
97.49		
97.28		
97.41		
97.36		
97.42		
97.35		
97.32		
97.45		
96.97		
97.80		

77

29
4.62

	+	∓	-	BM
		101.77	0.30	101.77 101.77
25	+0.65	112.42		
30	+4.96	117.17	0.21	112.21
35				
41				
44				
47				
52				
55				
61				
65				
70				
75				
83				
89				
93				
96				
101				
105				
+13				
+20				
+27				
+32				
+36				
+57				

129' out.

115.23
 113.03
 9.14
 1576
 1.41
 114.75
 3.42
 114.10
 3.07
 112.06
 5.11
 111.50
 2.67
 112.67
 4.50
 114.62
 2.53
 111.67
 5.50
 113.47
 3.70
 110.69
 6.48
 113.50
 5.67
 109.82
 7.65
 112.53
 7.64
 109.70
 7.47
 112.45
 2.72
 113.06
 5.11
 113.43
 1.74
 112.77
 4.40
 114.92
 2.25
 112.20
 4.37
 113.40
 8.77

2-80

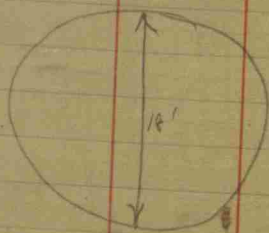
-	T	+	BM
	106.92	1.92	100.00

2 0.00

3 1.51

9 Conical piles 18' Dia

Pile



Perp. height 5'

slant height 10'

W. side pile 58' out 91

5.43	}	101.92
6.21		ave. 5.82
		96.10

	5.35	ground
Churnage	0.35	top

82

McDonnell Life
Barrow Gut.

83

6.70

Total

2.68

4.02

1.70

2.10

1.70

2.75

1.61

1.90

1.24

2.32

2.18

5.51

3.60

E. Pavement

87

4.73

25

4.98

4.79

25

4.99

7.91 top sewer

alley 4.80

5.95

4.60

25

4.85

4.65

25

4.90 STR

90
Shumate Drain.

	-	∇	+	BM	Ne corner of NEWING
		101.46	1.46	100.00	
0+0					
1+0					
2+0					

April 16, 1938
Armstrong
Newman
Creech

5th 6th

	7'	12'	18'	22'	28'	35'	50'	60'
	3.52	3.85	4.12	4.58	4.85	5.85	1.93	3.62
97.94	97.61	100.34	92.89	2.01	92.61	99.53	97.84	97.36
	5.38	5.65	3.63	2.03	10.21	9.75	5.03	6.33
96.08	95.81	97.83	92.43	91.25	91.71	96.43	95.13	95.11
	10.33	10.55	10.02	60.69				
	91.13	90.91	91.44	90.77				
							13.95+	
							87.51	

Flow line at outlet

92 Skumate Drain.

N. corner of
NE Wing.

- π + BM
102.00 2.00 100.00

Flowline at upper end 12.15'
89.85

A

5' 4' 5' 6'
3.36 3.30 3.45 4.78 3.06 2.56
98.64 98.80 98.55 97.22 98.94 99.44

B

60'
3.28 4.33 5.22
98.02 97.67 96.12

C

41' 60' 70'
5.73 6.03 7.18 3.92 3.60
96.27 95.97 94.82 98.08 98.90

D

5' 19' 60'
5.14 6.54 6.00 4.35 4.72
96.86 96.46 96.00 97.65 97.22

E

3' 10' 60'
7.72 7.78 7.97 10.93 10.45
94.23 94.02 94.03 91.07 91.55

7.72

94.28

97.16 2.88

E+50

60'
8.18 9.29 6.93
88.98 87.87 90.73

Flow line at out lot 10.15'
87.01

April 16, 1938
Armstrong
Newman
Oreoch.

600

150

750

14

3000

750

10500

150

600

90.000

45

P130

BM on arrow on fire plug
E.L. 75.60

BM on end of E. Rail
of bridge
E.L. 49.96

+	∓	-	BM
7.94	57.90		49.96
		0.13	57.77
11.15	68.90		
		0.33	68.57
12.33	80.90		

29+0

30+0

31+0

32+0

33+0

4.16 85.05 80.89

8.07 76.98 ^{state} BM

BM on fire plug
75.40
5.50

31

5+K

6.81

6.00

5.14

330

12.5'
6.75

12.5'
6.05

12.5'
5.37

12.5'
4.50

12.5'
3.47

4
10.15

4
6.50

4
4.03

4
1.98

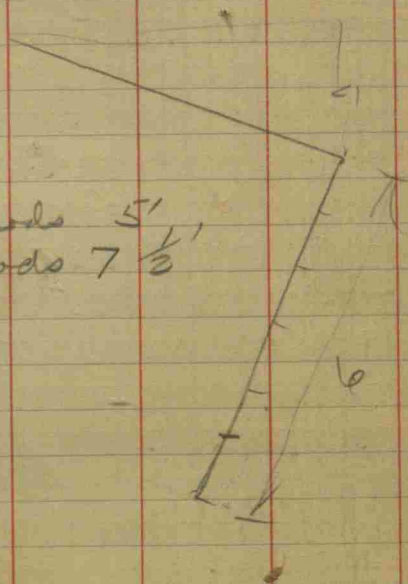
4
0.01

in walnut in Pan Camps Lot.

139

Jones Bridge

$\frac{1}{2} \phi$ } 6 rods 5'
 4 rods 7 $\frac{1}{2}$ '



$\frac{1.5}{2.5}$
 $\frac{2.5}{4.0}$

$$\frac{4' \times 6 \times 2}{27} = \frac{48}{27} = 1.78$$

$$\frac{25 \times 2 \times 6}{27} = \frac{30}{27} = \frac{1.11}{2.89}$$

Extra concrete
in added
wing

minus
quant. $\frac{5 \times 4 \times 1.5}{27} = \frac{3}{27} = \frac{1}{9} = .11$

$$2.89 - .11 = 2.78 \text{ Cuyds}$$

Concrete to be added
to total for bridge

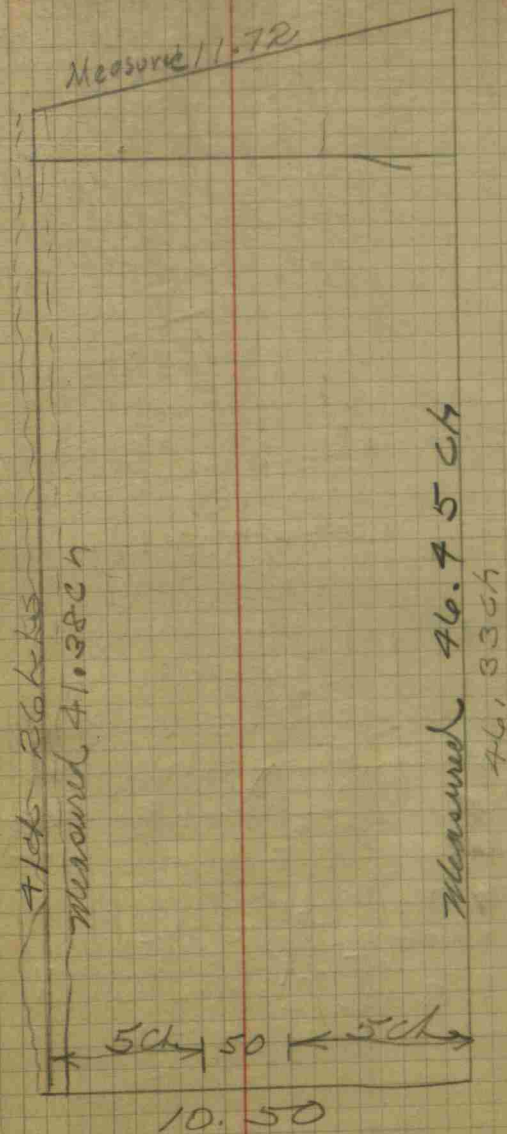
136

Jones Bridge
 26" Wide
 20" Deep

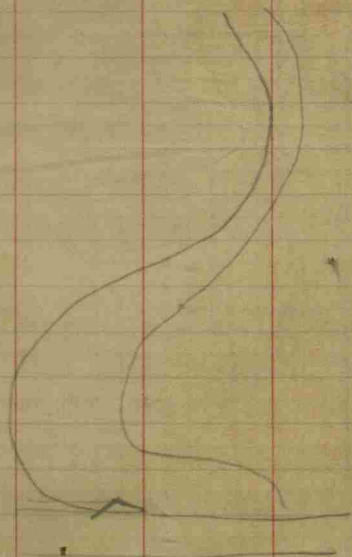
1' high
 21" wide

37" on slant
 12" wide at top

1' ~~width~~ deep on wing



5.4



- Oct 1 Brunsberg + Hazelwood Rd. 62 mi
 2 Days Tom Julian
- Oct 2 Brunsberg + Hazelwood Rd. 32 mi
- 3 Bruns Plain field + Hazelwood 47 mi
 Tom Julian 1 Day
- 5 Hazelwood bridge + Brunsberg 99 mi
- 6 Hazelwood bridge 18 mi
- 7 Mahoning tile + Hazelwood bridge 49 mi
- 8 Tom Julian
- 9 Mahoning tile 33 mi
- 9 Cemetery (Hinton, Brunsberg) 52 mi
 Tom Julian
- 10 Mahoning tile 27 mi
- 11
- 12 Mahoning tile 37 mi
- 13 Mahoning tile 37 mi
- 14 working pit Mahoning tile 37 mi
- 15 Working pit Mahoning tile 37 mi
 Tom Julian

139

Jones Bridge

July 6 - Admits 12 bags
 July 8 - Concrete $\frac{51 \text{ bags}}{43}$

- Sept 18 H. Nicholson 12 1/2 North West
 Survey Louisiana Falls
 Tom Julian 4 Day Time $\frac{2.20}{2.00}$ Bush Bridge 18 mi
 $\frac{5}{4.20}$ Potters Run 4 mi
- Sept 19 Bridge + Hazelwood 23 mi
- Sept 20 South County Rdo 56 mi
- Sept 22 Hazelwood + South Co Rdo 76 mi
- 23 Hazelwood bridge 18 mi
- 24 on Co. Banks + Bush Bridge 18 mi
- 25 " " " "
- 26 Mud Bank + Co. Banks + Bush Bridge 35
 Tom Julian 2 Day
- 27
- 28 Hazelwood Rd + Co. Banks 25 mi
- 29
- 30 on Co. Banks + Hazelwood Rd 32 mi

2170

Aug 18 Edmonson Bridge 14
 19 Edmonson " 14
 20 Edmonson " 14
 21 Edmonson Bridge 14
 22 Edmonson Bridge 14
 24 " " 14
 25 Office Plainfield + Cartersburg Rd 6m
 26 Office on claims
 27 Hart Ditch + Edmonson Bridge 56
 28 Bushy Bridge 18 mi
 29 Lusty Bridge 18 mi
 30 Sunday
 31 Bushy bridge 18 mi

Sept 1 Bushy bridge 18 mi
 2 Bushy bridge + Cartersburg Rd 19 mi
 3 Bushy bridge 7 hr. Town Str 19 mi
 4 Cartersburg Rd + Bushy bridge 31 mi
 5 " " " 31 mi
 7 " " " 31 mi
 8 " " " 31 mi
 9 walls + surrounding Survey Tom Julian (all day) 32 mi
 10 Cartersburg Rd + Bushy Bridge 60 mi
 Tom Julian 5 hrs 2 call for pit
 11 " " " 4 31 mi
 12 " " " " 14 mi
 13 " " " " 11 mi
 14 " " " " 11 mi
 15 " " " " 11 mi
 16 " " " " 11 mi
 17 Bushy Bridge 18 mi

2171

Cassarea Sagrada
 U.S.P.

Rhamnus Purshiana
 Contains Alcohol 22.70

Standard 1cc represents 1 Gram
 of the dried bark Cathartica

Average dose 15 min (1cc)

Pilly

35
 92
 152
 300
 31.50

July 24 Middle Lump. Brown Top
Fritche Bridge Cartersburg Rd
Clayton, Stillsville. 12.2 mi

July 25 Hart Ditch, Fritche bridge,
Liberty Twp. Roads 6.2 miles

July 27 Hart Ditch Fritche Bridge
Ballard Branch pit 9.5 mi³

July 28 Ballard pit Fritche Bridge
Plainfield Turnpy for town 8.3 mi

29 Fritche bridge 2 mi

July 30 Fritche Bridge Ballard pit
4.2 mi.

July 31 Fritche Bridge 2.1 mi.

Aug 1 Fritche Bridge M.C. 3.8 mi

Aug 3 M.C. + Fritche 3.8 mi

4 M.C. Bridge Ballard pit 4.0 mi

5 M.C. Bridge + ~~Mallory~~ Ditch 1.6 mi⁴

6 " " 1.6 mi

7 " " 1.6 mi

8 M.C. Fritche + Edmansdown 3.8 mi

10 Edmansdown + Ballard pit. 3.6 mi

11 " " 1.4 mi

12 " " 1.4 mi

13 " " 1.4 mi

14 " + Ballard pit 3.8 mi

15 " " 1.4 mi

17 " M.C. 1.8 mi

Natural Trigonometrical Ratios.

Angle.	Sine.	Tan.	Sec.	Cosec.	Cotg.	Cosin.	Angle.	Sine.	Tan.	Sec.	Cosec.	Cotg.	Cosin.
0°	0	0	1.	∞	∞	1.	90°	1.	∞	∞	0	0	0
10	.1736	.3090	1.0519	1.0174	1.7364	.9848	80	.1736	.3090	1.0519	1.0174	1.7364	.9848
20	.3420	.6745	1.1034	1.0642	3.4202	.9397	70	.3420	.6745	1.1034	1.0642	3.4202	.9397
30	.5000	1.0000	1.1547	1.1547	∞	.8660	60	.5000	1.0000	1.1547	1.1547	∞	.8660
40	.6428	1.3270	1.2399	1.2399	1.7663	.7660	50	.6428	1.3270	1.2399	1.2399	1.7663	.7660
50	.7660	1.6583	1.3270	1.3270	2.2399	.6428	40	.7660	1.6583	1.3270	1.3270	2.2399	.6428
60	.8660	1.7321	1.5000	1.5000	2.5981	.5000	30	.8660	1.7321	1.5000	1.5000	2.5981	.5000
70	.9397	2.7475	1.9613	1.9613	3.4202	.3420	20	.9397	2.7475	1.9613	1.9613	3.4202	.3420
80	.9848	5.7534	3.4202	3.4202	∞	.1736	10	.9848	5.7534	3.4202	3.4202	∞	.1736

Peoria R.R.
Michigan Central Car
557758

Coal D 29731 Exp.
July 2, 1936

Min Car, Cement.

Note Farmer says we
need at least a 10 ft wing
on N.W. corner of Jones
bridge. July 2, 1936

128
107
96
40
41
14
5
52
520
2675

Moffet Bridge - 3

25 }
26 }
27 }

miles 34 mi per
10 days

29 Moffet + Osborne Bridge
52 miles

30 " " 52 mi.

July 1 Below Bldg. Jones Bldg #1
96 mi. Smith Bldg. Moffet Bldg
Carthage survey
Mable Lights

July 1 Jones bridge + ... 45 mi.
July 2 Arno + Jones bridge
and after travel 45 mi

July 3 Jones bridge + Moffet
Bridges 41 mi

July 4 Jones Bridges 17 mi
5 hours

July 6 Jones Bridge 17 mi

July 7 Jones + Moffet Bridge 41 mi

July 8 Jones Bridge 33 mi

Travel for Jones Bridge

87	29
16	14
462	116
47	29
1332	406
406	
38	
172.5	
8690	57
3476	29
93450	116
	6
	696
	2.5
	3480
	1392
	17400

July 9. Jones Bridge
 looked at gravel for sand
 & Moffet Bridge 44 mi.
 10 hrs

July 10 Jones Bridge
 10 hrs 17 mi

July 11 Jones Bridge
 12 hrs 17 mi

July 13 Jones, Smith and trip to Ludwigsfels
 10 hrs 57 mi

July 14 Jones + Smiths bridge 17 mi

July 15 Ritzel Ditch, Jones Bridge 17 mi.

July 16. Smiths Bridge Cartersburg Rd
 35 mi 8

July 17 Smiths Bridge 20 mi

July 18 Smiths bridge + Cartersburg road
 30 miles

July 20 Smith Bridge + Cartersburg Rd
 75 miles 2 hrs

DISTANCES FROM CENTER OF ROADWAY FOR CROSS-SECTIONING.
 ROADWAY 14 FEET WIDE. SIDE SLOPES 1 1/4 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.

July 21 Hart Ditch Ross Bridge
 46 mi 10

July 22 Hart Ditch Ross Bridge
 46 mi 10

July 23 Two trips to Frisco Bridge
 Hart Ditch 66 mi 10

MADE IN GERMANY.