

BK. 60 Dr. 12A

OFFICE OF COUNTY ENGINEER
RAMSEY CO. MINN.

Plan & Bridge Survey
Proj. 49-51

East Shore Drive

From Sta. 8+25 To Sta. 12+50

Road Acc't. No.

Date Filed. 5-31-49

File

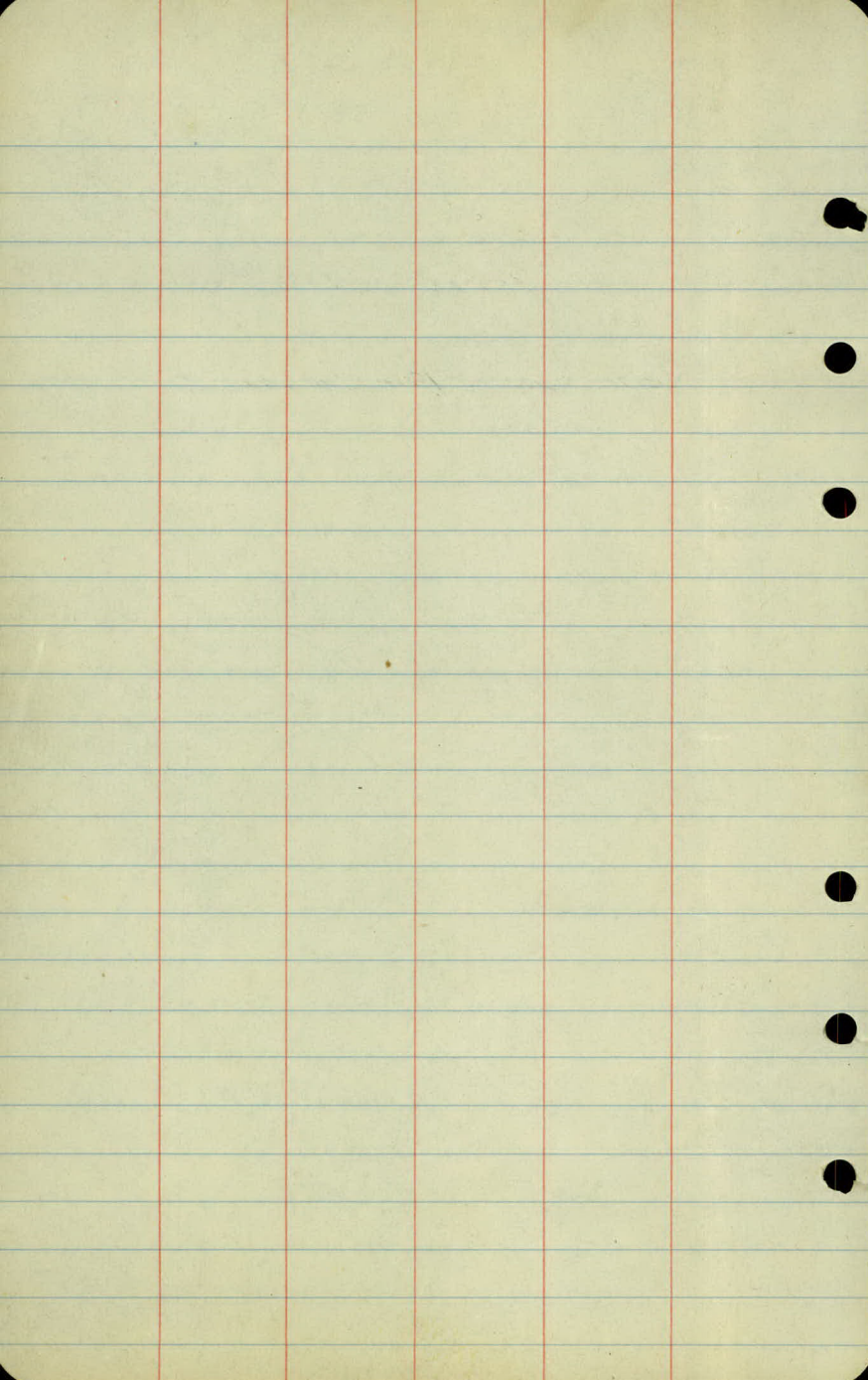
Part 2.
BRIDGE SURVEY

at Keller Canal Ent. to Lake Phalen

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Jan. 6-7, 1949

Rec 1/10/49



1
Alignment

Same data as 1940 survey

Sta	Point	Δ Lt.	Δ Rt.
12 + 68.91	PT.		$\Delta - 41.34'$
13 + 79.87			D - 20° - 18° -
12 + 70.26	P.I.		T - 189.28
			L - 207.83
11 + 60.95	P.C.		R - 237.94
11 + 48.95			

10 + 68.45 P.O.T. = N. Face of Abutment

10 + 44.47 = P.O.T. = E of Bridge

10 + 00.43 P.O.T. = S. Face of Abutment

9 + 93.49	PT.	$\Delta - 15^{\circ} 10'$
		D - 10° -
9 + 18.19	P.I.	T - 76.37
		L - 151.67
8 + 41.82	P.C.	R - 573.69

乞

APP

~~East Shore Drive~~

Nail

~~50.59° 0 P.P.~~

$$P.T. = 12178.75$$

$\Delta = 26053'$
 $D = 140'$
 $L = 19202'$
 $P = 91023'$

~~P.C. = 11460-98~~

$$P.C. = 10 + 86.73$$

1 N.W. Cor. Truss

Nail

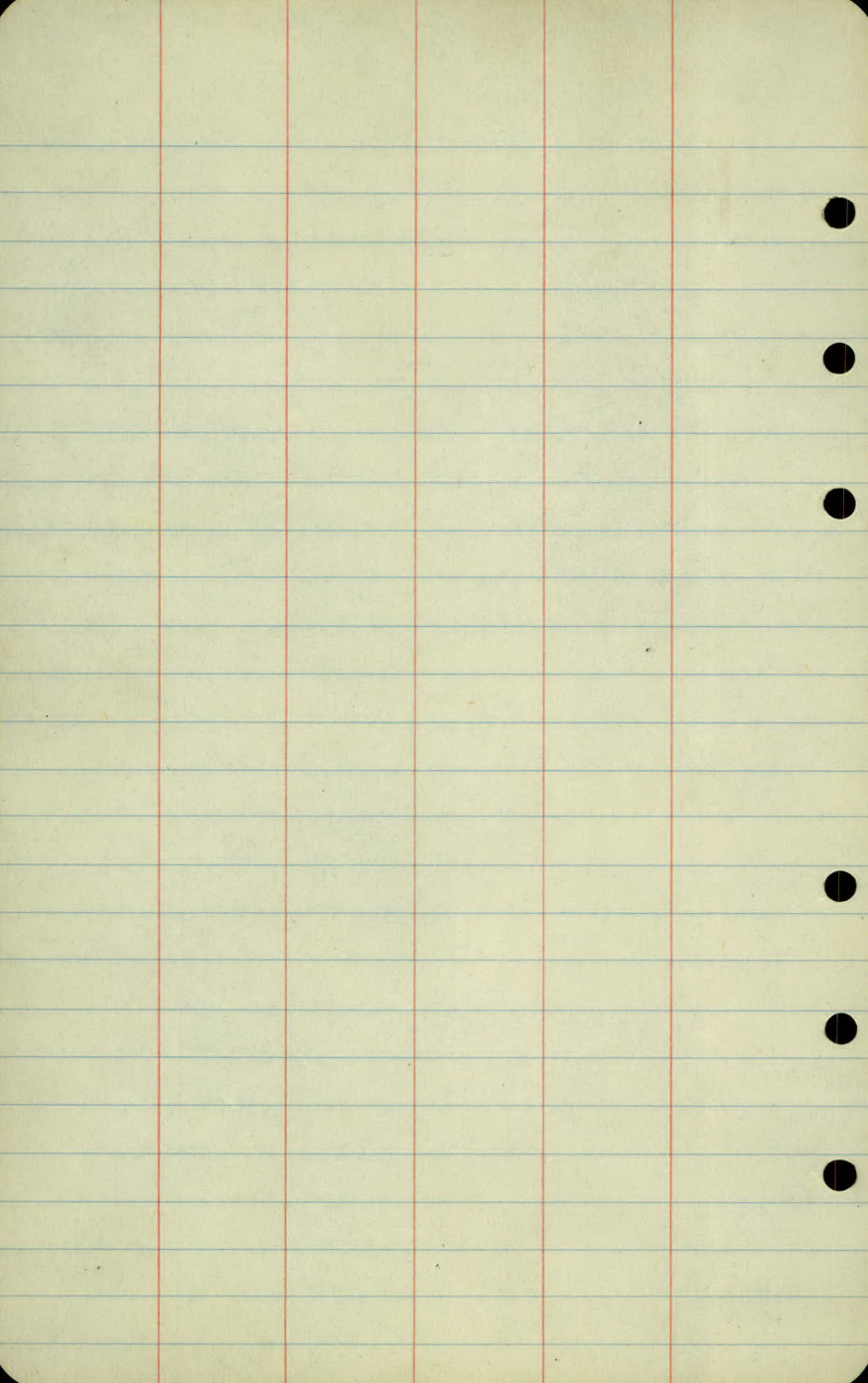
S.W. Cor. Truss

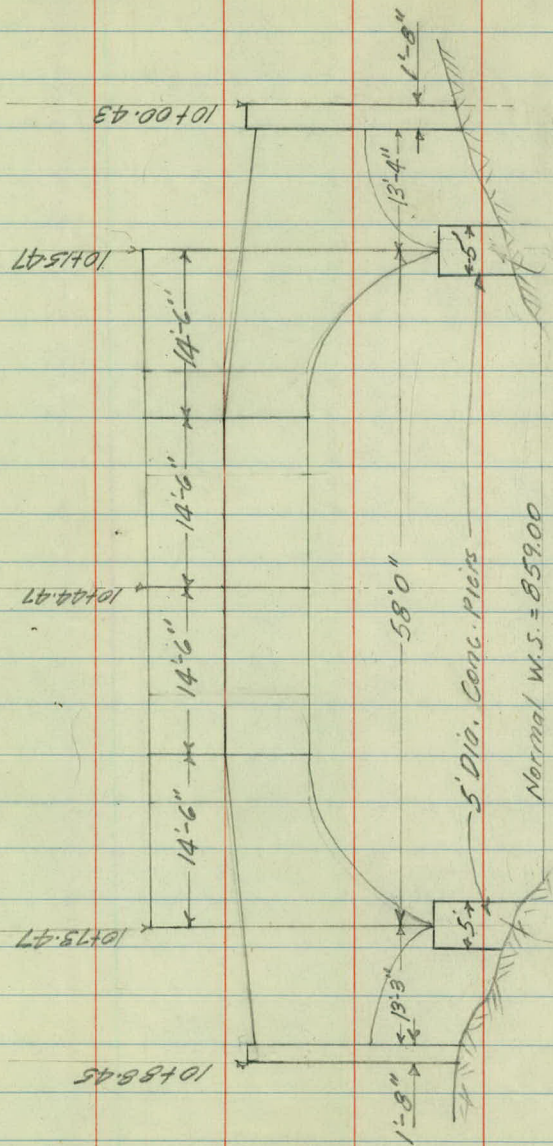
O.P.F.

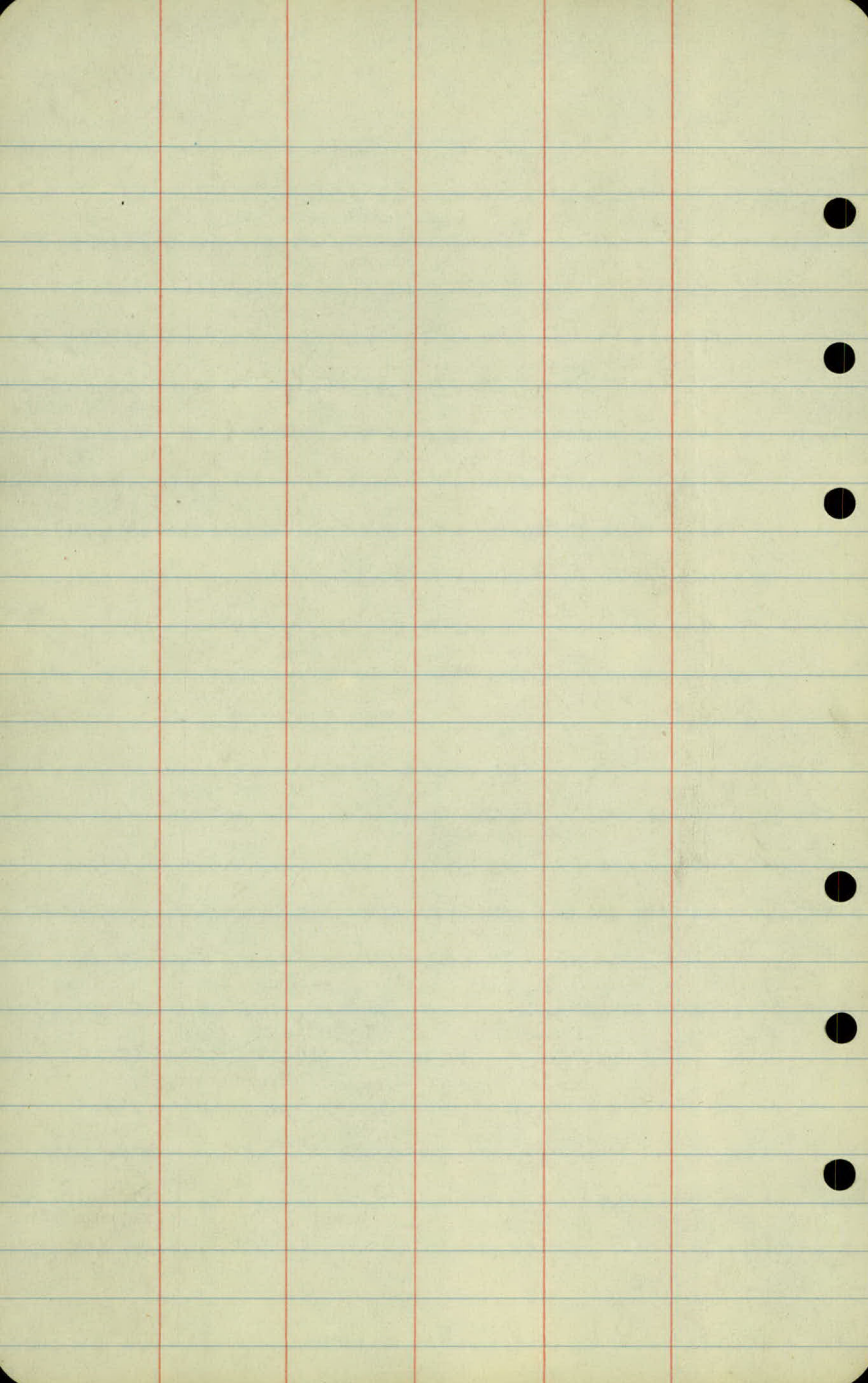
10.92

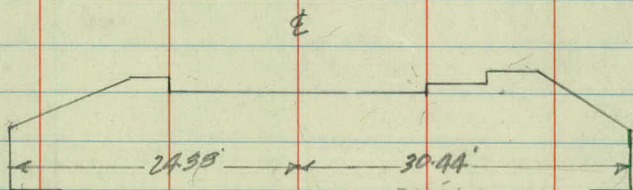
56.58 P.F.

$$\begin{array}{r} 37.44 \\ 31.01 \\ \hline 6.43 \\ 24.57 \\ \hline 08 \end{array}$$





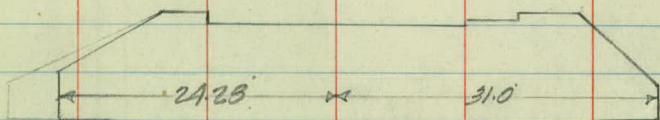




Abutment at sta. 10+00.43

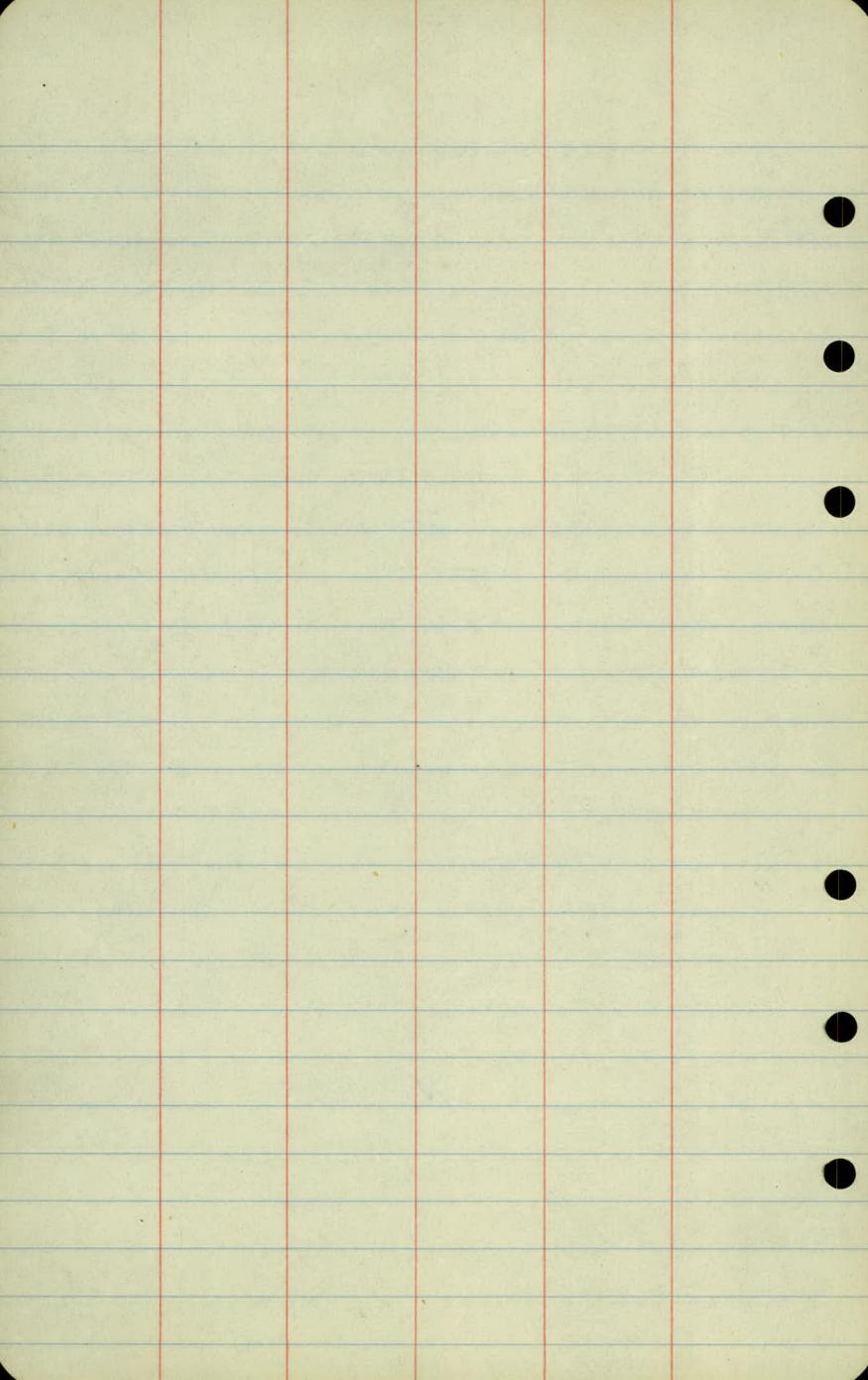
24.33
30.44
54.8

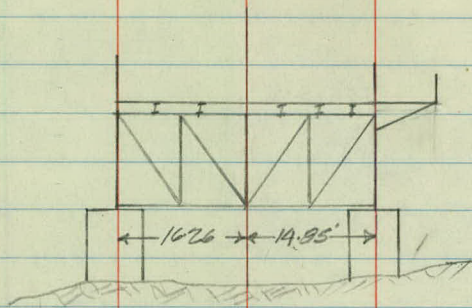
So.



Abutment at sta. 10+88.45

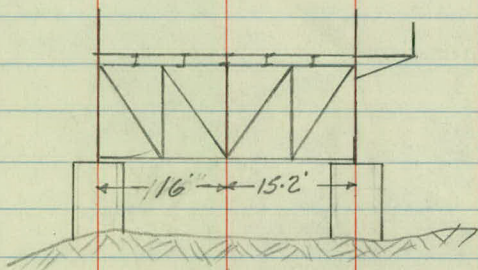
No.



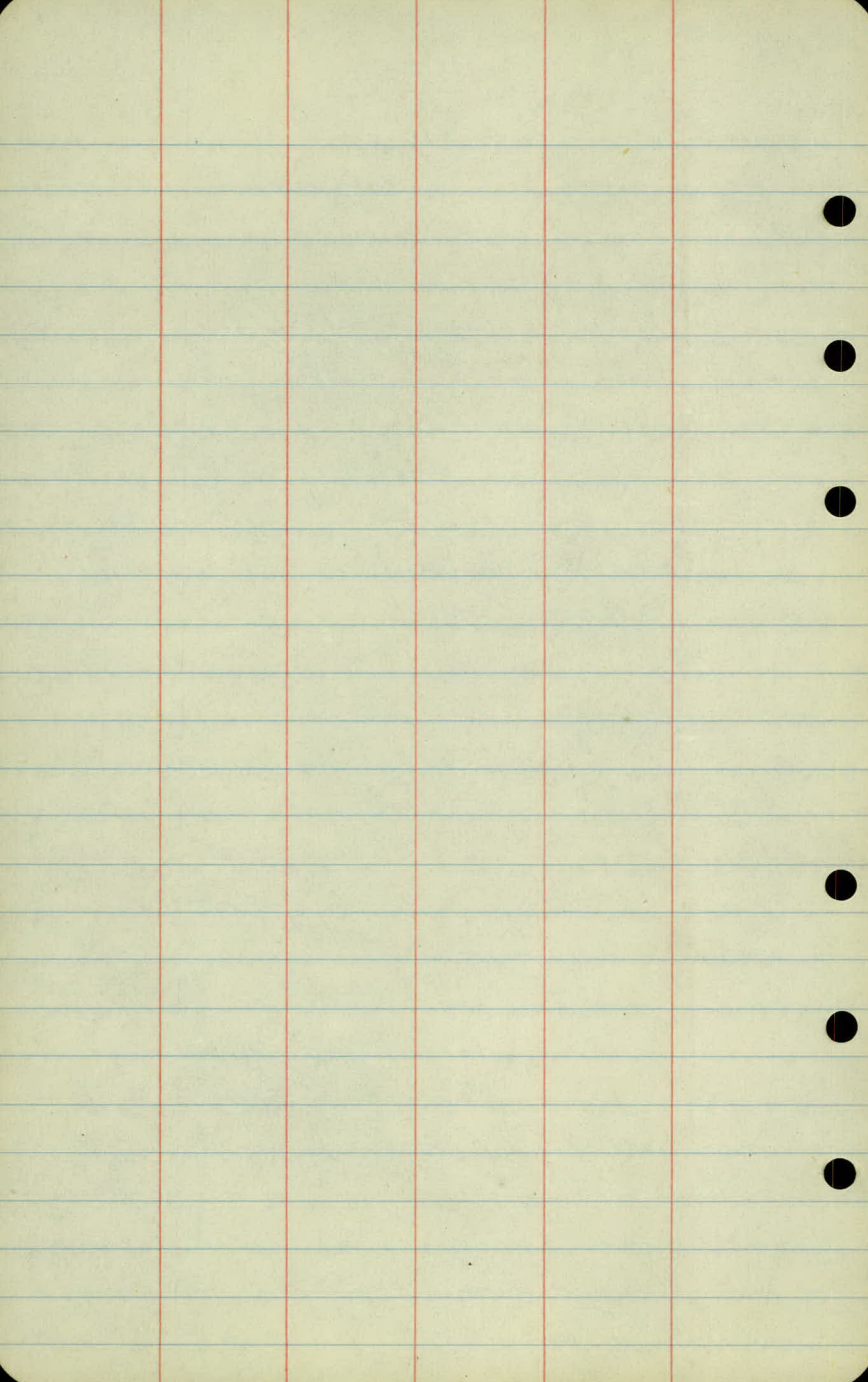


Section thru sta. 10+15.47

$$\begin{array}{r} 16.26 \\ 14.85 \\ \hline 31.11 \end{array}$$



Section thru sta. 10+73.47



1-7-47

5

Topography
East Shore Drive

For additional topog. see 1940 Plan Survey

13

18' SW-22' Lake-40'

+24-18" Elm-31'

12

17.2 SW-21' Lake-51'

+78-24" Elm-30'

16 SW-20' Lake-51'

+99-24" Elm-25'

+22-PP-24'

+20-Lake-50'

11 Lake-44'

17.0' 158 SW-20' Lake-42'

+99-12" Willow-37

+86-Wheel Guard-14.2-14.2

+80-Tree-23'

See Plans for Bridge Details

+107-Wheel Guard-14.9-13.7

+101-24" Willow-60

10 Lake-65

17

155 SW-21' Lake-52'

+83-PP-25'

+92-15" Willow-32'

+84-4-15" Willows-29'

Lake-122

16.8

15.2 SW-20' Lake-51'

9

16.3

15.9 SW-20 Lake-54'

54

+85-10" Elm-23'

+75-PP-34

16.4

15.7 SW-20' Lake-52'

+45-8" Elm-23'

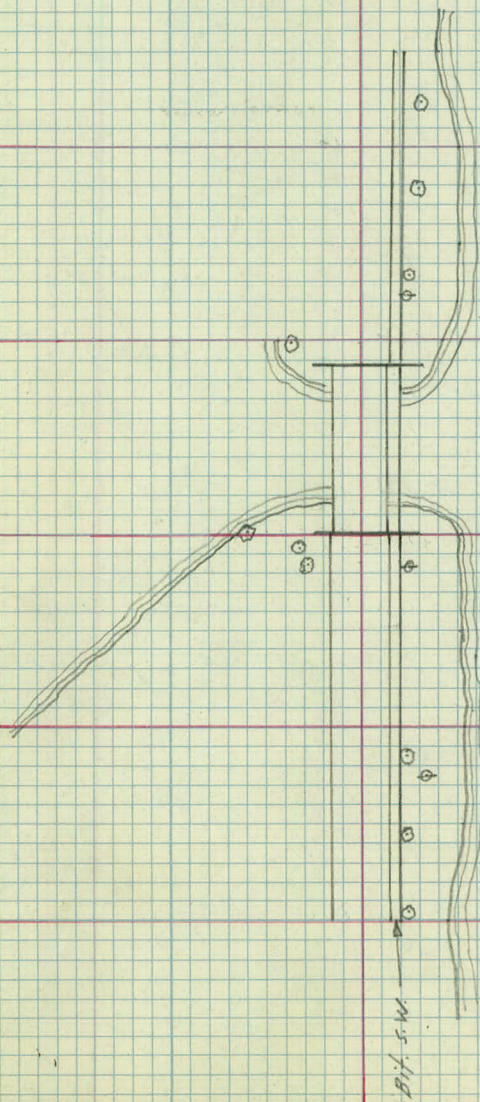
8

16.4

+104-8" Elm-24'

15.7 Bl. Top SW-20' Lake-44

7



Topography

Keller Parkway

14 W.E. - 41' 16 16

W.E. - 49' 16

13 W.E. - 50 16

+67-18" Quail Willow - 25'

W.E. - 47' 16'

+36-15" Willow - 38'

+22-3-20" Willows - 35-32'

12 W.E. - 51' 16'

16'

+25 W.E. - 47'

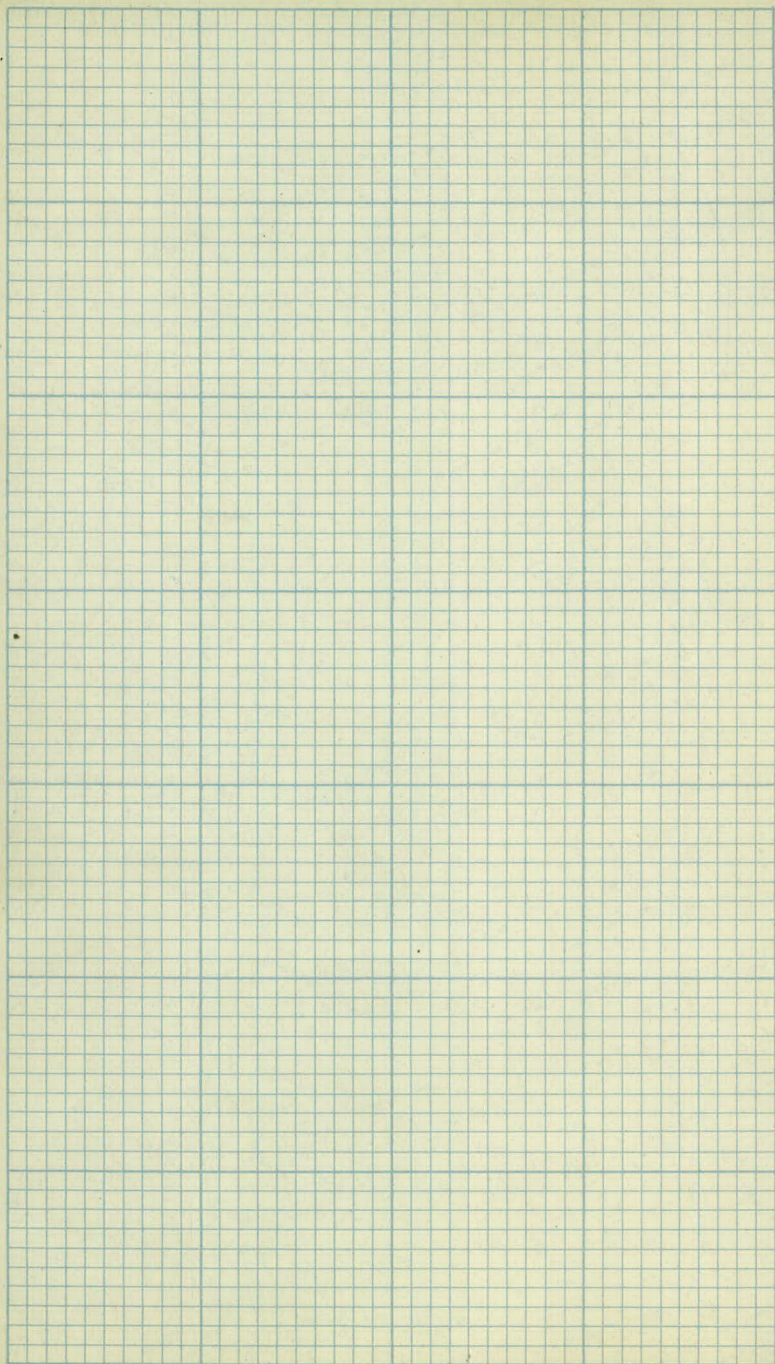
+20 16" Willow - 43'

+16

11

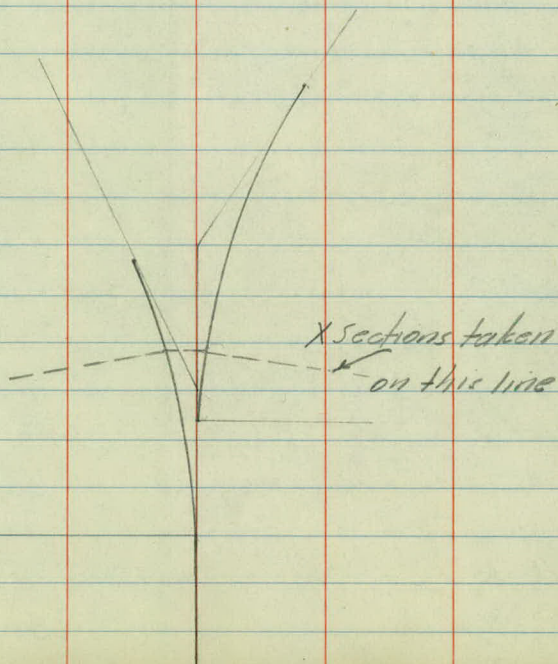
10





X Sections

For additional levels and X sections
see 1940 Plan Survey.



Sta.	+	-	Elev.
B.M.	1.25	872.69 ✓ 872.69	871.44 <u>971.44</u>

8			64.85 ✓
---	--	--	---------

+42			65.41 ✓
-----	--	--	---------

+75			66.26 ✓
-----	--	--	---------

9			67.12 ✓
---	--	--	---------

+25			68.18 ✓
-----	--	--	---------

+50			69.45 ✓
-----	--	--	---------

+75			70.74 ✓
-----	--	--	---------

10 +00.43			72.25 ✓
-----------	--	--	---------

L E R

Spt in Arc Light Pole at sta 9184

64.48 64.71 64.78
118 115 84 821 793 7.84 791 7.8 7.7 85 9.0 138 ✓
50 32 19 16 10 10 15 22 23 37 46

64.95 65.32 65.37 65.52
122 126 118 79 774 797 7.28 732 7.1 7.71 7.7 89 138 ✓
50 38 22 16 10 10 15 23 28 42 52

65.90 66.05 66.14 66.25
130 117 85 70 689 664 643 655 644 62 68 82 9.2 138 ✓
50 38 29 20 16 5 10 10 15 21 27 38 49 57

66.56 66.88 66.97 67.15
132 127 84 63 613 581 557 572 554 54 5.8 89 138 ✓
50 43 30 22 16 10 10 16 24 29 45 54

67.67 67.97 68.00 68.05
127 7.0 50 502 472 451 469 464 44 49 59 123 136 ✓
50 32 21 17 10 10 15 20 29 36 44 50

69.03 69.18 69.26 69.28
106 64 36 366 351 324 343 341 32 37 53 136 ✓
50 35 22 17 10 10 15 21 26 37 51

70.45 70.65 70.62 70.60
97 73 31 21 224 204 1.95 207 209 21 36 54 137 ✓
50 37 23 19 14 5 10 10 15 24 30 41 52

72.31 72.29 72.60 72.52
98 54 12 038 044 091 009 017 07 430 137 ✓
50 25 20 17 10 15 21 25 31 50

Sta	+	π	-	Elev.
		872.69 972.69		
10+00.43				72.25 X

T.P.	for below bridge	13.36	859.33. 959.33
B.M.	4.03	1.25	871.44. 971.44
10+29.97		1.19	

+44.47	1.18	74.29
--------	------	-------

+58.97	1.18	74.29
--------	------	-------

+88.45		72.26
--------	--	-------

+88.45		72.26
--------	--	-------

19.8	16.7	134	47	293	303	321	315	33	64	105	150	165	17.0	
50	37	33	16.6	16.6	146	153	13	18	27	30	25 36	50		
				15	15						30			
				72.54	72.44	72.32								

Stk.	+	π	-	E/cv
		875.47 97547		

11				71.47
----	--	--	--	-------

	+25			69.84
--	-----	--	--	-------

	+50			68.02
--	-----	--	--	-------

	+75			66.42
--	-----	--	--	-------

12				65.39
----	--	--	--	-------

	+25			64.85
--	-----	--	--	-------

	+50			64.50
--	-----	--	--	-------

Profile Levels Keller Pkwy

13			11.79	63.68
----	--	--	-------	-------

L

E

R

✓

186 184 114 44 43 40 40 40 42 40 64 116 135 184 173
50 43 36 19 17 10 10 16 21 29 34 39 44 50

69.62

69.62

2 Kellerer play

69.74

69.59

✓

188 138 97 59 585 585 563 563 573 589 58 87 122 161
50 45 35 23 18 12 08 10 158 21 32 45 50

68.04

67.85

67.81

✓

163 145 116 79 76 75 743 745 762 766 76 95 110 143 163
54 51 43 27 215 14 4 10 173 295 27 37 44 47

66.25

66.23

66.42

66.42

✓

166 145 124 107 94 922 924 905 905 905 90 88 102 116 163
61 57 50 36 31 26 197 97 10 157 22 27 38 47

64.88

65.17

65.27

65.39

✓

166 152 126 108 1068 1059 103 1009 102 1008 100 113 122 137 166
68 65 46 39 345 283 183 10 17 24 29 38 43 48

63.90

64.12

64.43

64.85

64.81

✓

166 154 135 116 1157 1135 1104 1062 1062 1066 105 128 166
74 59 52 48 41 31 10 173 24 38 42

63.60

63.75

64.08

64.39

64.43

64.34

✓

166 147 135 117 1187 1172 1139 1108 1097 1104 1113 110 128 166
90 88 75 66 63 562 462 23 10 18 25 34 39

Sta	+	π	-	Elev.
-----	---	-------	---	-------

		975.47		
		975.47		

13	+50			
----	-----	--	--	--

			11.81	
--	--	--	-------	--

				63.66
--	--	--	--	-------

14				
----	--	--	--	--

			11.88	
--	--	--	-------	--

				63.59
--	--	--	--	-------

	+50			
--	-----	--	--	--

			11.78	
--	--	--	-------	--

				63.69
--	--	--	--	-------

15				
----	--	--	--	--

L

E

E

20
1
Har
Her

Xsections under bridge

T.P.	567	865.00, 965.00	859.33 (959.33)
------	-----	-------------------	--------------------

10	+02.5		64.8
----	-------	--	------

	+15.47		60.3
--	--------	--	------

	+13.47		59.4
--	--------	--	------

	+86.5		64.4
--	-------	--	------

BM	0.00	864.89	64.89
----	------	--------	-------

10	+28		6.2	58.7
----	-----	--	-----	------

	+35		7.5	57.4
--	-----	--	-----	------

	+41		9.4	55.5
--	-----	--	-----	------

	+47		11.4	53.5
--	-----	--	------	------

	+54		10.8	54.1
--	-----	--	------	------

	+62		8.3	56.6
--	-----	--	-----	------

65 = W.S. 58.4

1-7-49

14

L

E

R

6.2 31 2.0 H.4 0.2 +1.7 6.0 = W.S.
6.3 59 50 28 30.3 50

Top Gang.

PICR

6.4.85

0.15 6.1 49 45 4.9 4.7 4.8 4.4 3.9 4.1
16.26 41 38 12.76 13.76 12.35 18.35 34 44

Top Gang.

PICR

6.4.85

0.11
14.85

6.4.77

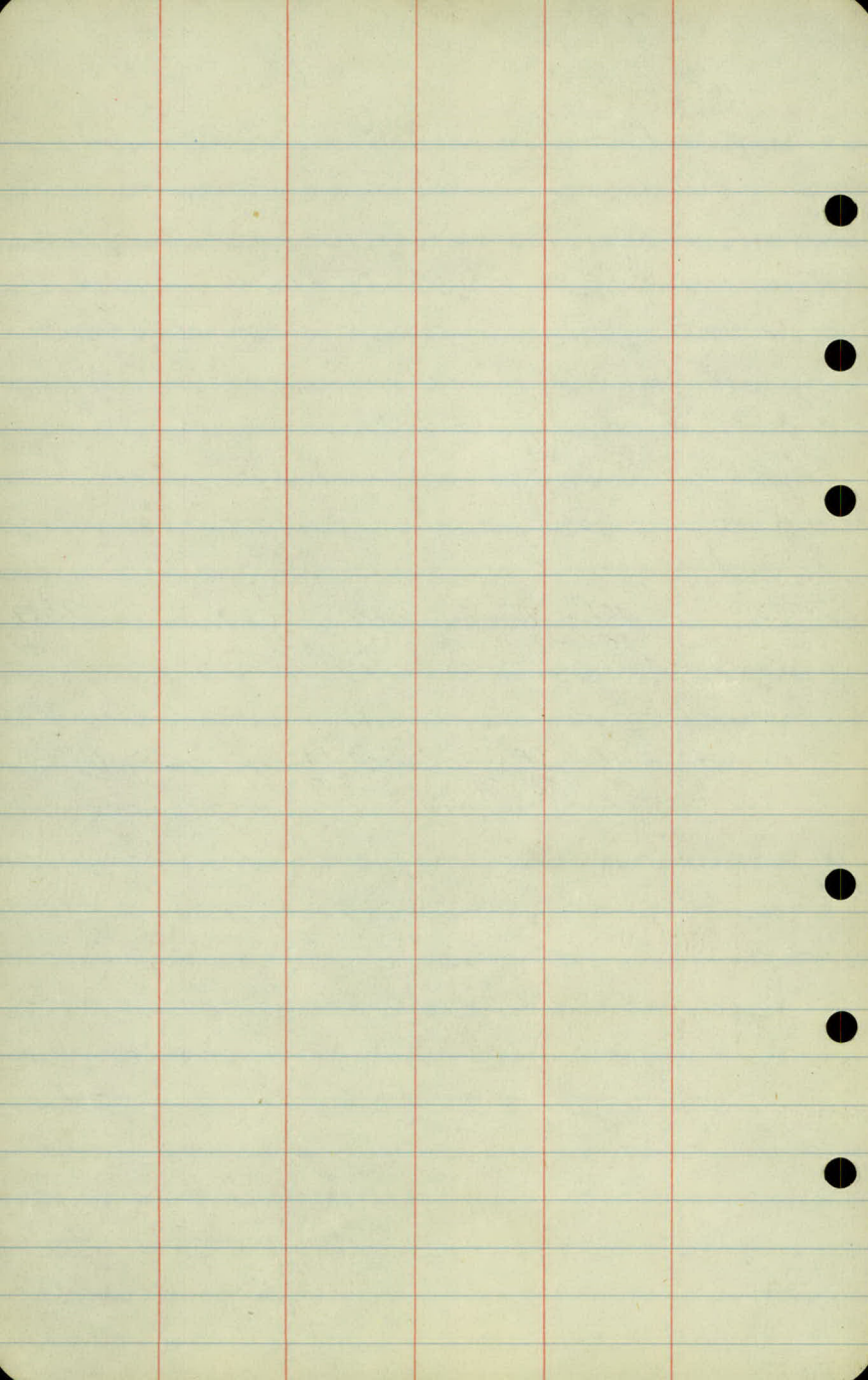
0.23
16.26

10.1 7.0 6.6 5.6 5.8 6.0 7.5
40 10.76 13.76 12.35 17.35 32

W.F.

18.4.77
6.4.85
0.19
14.85

6.0 2.8 0.0 0.6 +0.6 4.5 6.0
36 32 245 26 31 36



SOUNDINGS
UNDER PHALEN CREEK BRIDGE

East Shore Drive

Hole #1 12' N of SW Pier

1' ice + 2' water

0-7 push

7-9 6 blows

9-12.5 20 blows

12.5-13 10 "

13-16.5 80 "

16.5-17 20 "

17-18 45 "

18-18.1 6

18.1-18.2 6

18.2-18.3 7

18.3-18.4 7 blows

Hole #2 27' North of SE Pier

1-3 Push

3-4 6 blows

4-14 Push

14-16 18 blows

16-17 20 "

17-18 20 "

18-19 16 "

19-20 18 "

20-21 19 "

21-22 20 "

22-23 19 "

23-24 21 "

24-25 21 blows

25-26 22 "

26-27 21 "

27-28 30 "

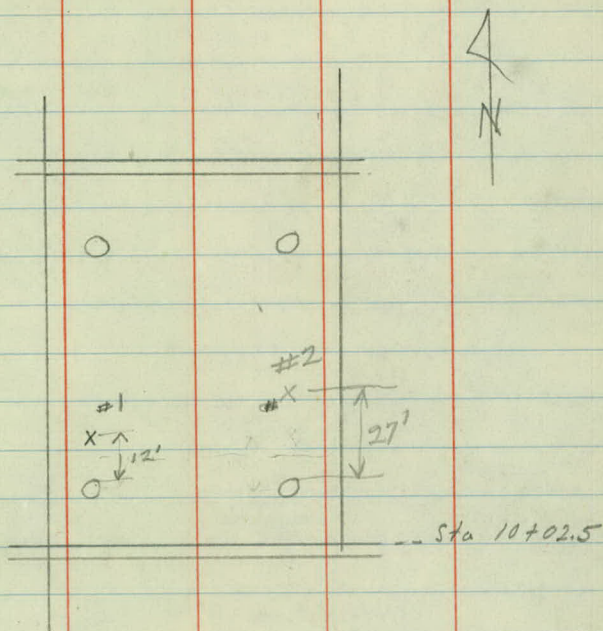
28-28.5 15 "

28.5-29 12 "

29-29.5 14 "

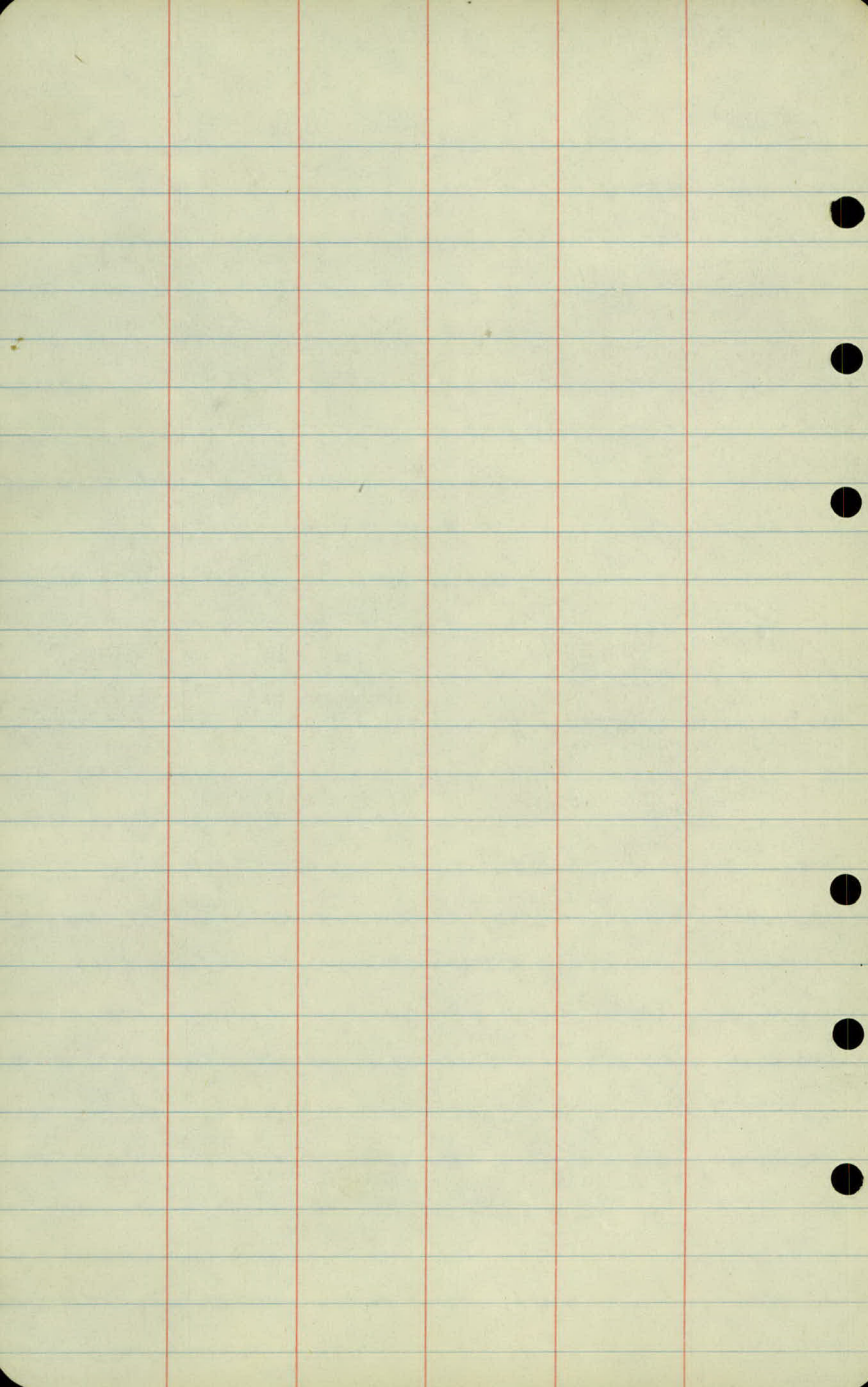
29.5-30 13 "

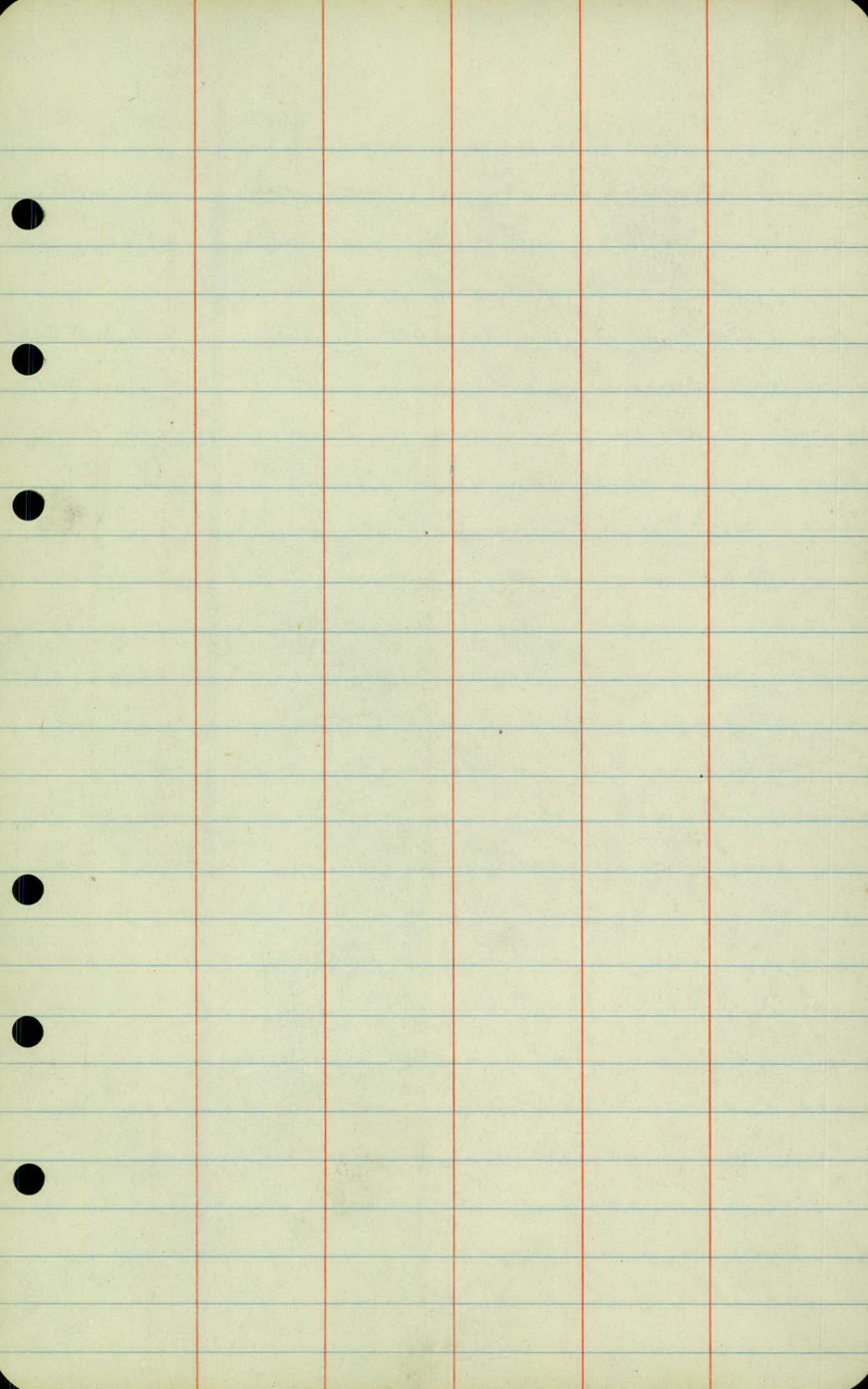
2/18/49
GB
AM
MB BC



Note: For hole #2 we were
unable to penetrate Frozen
Sand Wash from 10 to 27 N
of SE Pier

B.





STA

B/durs

SIDE

W-SIDE BRIDGE WATER

6.5

Water 10-6.5 00.0

6.5-16.5 Push

16.5-20' 25

20'-24' 107

24-25 67

25'-25.5 35

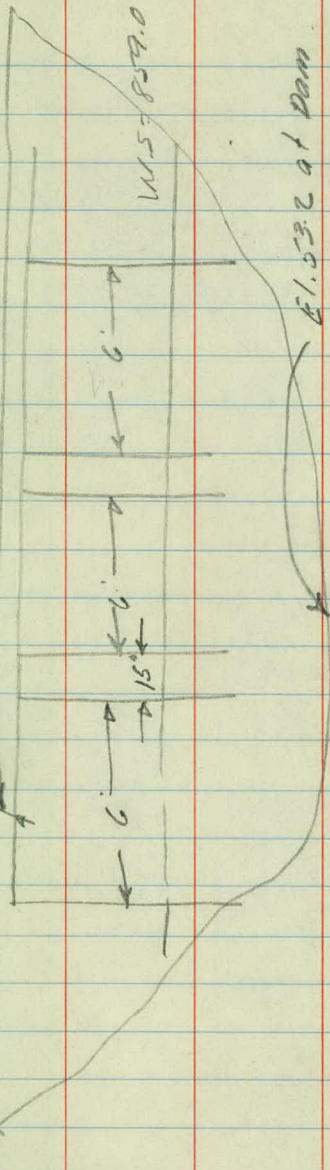
$$\begin{array}{r} 62.91 \\ - 9.50 \\ \hline 53.41 \end{array}$$

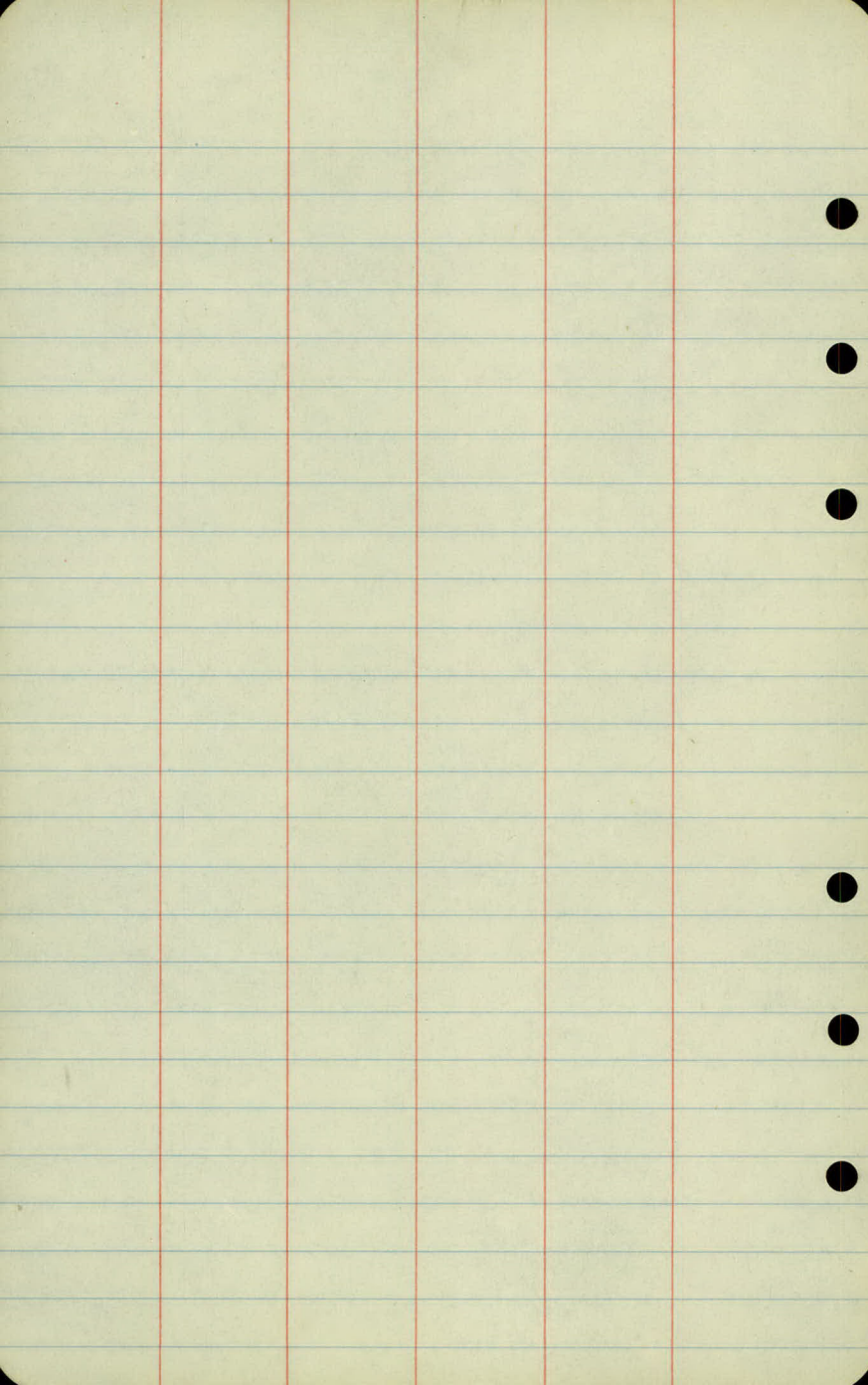
El = 54.4 - 10' Upstream

El = 53.5 10' Downstream

B.M. = 86296

± 9"





EAST SHORE DRIVE

Additional X Sections

Sta 6+00 thru 8+00

Rec. 2/18/49

STA	+	Δ	-	Elev
BM	4.18	869.03		864.85
6+00				63.25
+25				63.25
+50				63.40
+75				63.55
7+00				63.72
+25				63.91
+50				64.21
+75				64.55
BM	4.18	864.85		

2/17/49

G.B.
A.M.
M.B.
B.C.

L+

Q

R+

570 8100

$\frac{45}{50} \frac{45}{30} \frac{5.2}{23} \frac{5.98}{12} \frac{5.78}{20} \frac{5.95}{11} \frac{5.9}{21} \frac{5.8}{27} \frac{9.7}{34}$ S Line
63.05

$\frac{2.4}{50} \frac{3.9}{30} \frac{4.6}{22} \frac{5.98}{13} \frac{5.78}{11} \frac{5.90}{21} \frac{5.8}{27} \frac{10.1}{37}$ S Line
63.13

$\frac{2.5}{50} \frac{3.9}{32} \frac{4.4}{24} \frac{5.88}{13} \frac{5.63}{11} \frac{5.74}{19} \frac{5.7}{30} \frac{10.0}{37}$ S Line
63.15

$\frac{1.00}{60} \frac{3.1}{50} \frac{4.6}{32} \frac{4.7}{22} \frac{5.67}{13} \frac{5.48}{11} \frac{5.57}{20} \frac{6.1}{31} \frac{10.0}{38}$ S Line
63.36

$\frac{00}{60} \frac{3.7}{50} \frac{3.8}{28} \frac{5.1}{22} \frac{5.49}{14} \frac{5.31}{11} \frac{5.41}{19} \frac{5.3}{28} \frac{5.1}{28} \frac{10.0}{38}$ S Line
63.54

$\frac{00}{58} \frac{4.1}{50} \frac{5.3}{36} \frac{5.5}{27} \frac{5.33}{14} \frac{5.12}{11} \frac{5.23}{19} \frac{5.05}{29} \frac{5.0}{29} \frac{10.0}{41}$ S Line
63.70

$\frac{1.5}{60} \frac{5.0}{50} \frac{6.2}{37} \frac{5.3}{19} \frac{5.00}{12} \frac{4.82}{15.5} \frac{5.07}{16} \frac{4.84}{19} \frac{4.79}{37} \frac{4.7}{37} \frac{9.7}{42}$ S Line
64.03

75

$\frac{6.5}{60} \frac{7.5}{50} \frac{6.7}{28} \frac{4.5}{22} \frac{4.60}{11} \frac{4.48}{15.5} \frac{4.48}{20} \frac{4.3}{36} \frac{5.8}{36} \frac{10.1}{46}$ S Line
64.43

Sta	+	π	-	Elev
BM	0.41	865.26		864.85
10+28				58.9
+ 35				57.4
+ 41				55.6
+ 47				53.5 ✓
+ 54				54.2
+ 62				56.7
BM			0.41	864.85

3

41

£

尺六

Top 5 W Pier (Pound) Under Bridge

9.8
—
50

$$\begin{array}{r} 56.0 \\ 9.3 \\ \hline 25 \end{array}$$

6.4

69.7
C.O
25

58 ✓
71 ✓
50

$$\frac{12.6}{50}$$
$$\frac{12.3}{25}$$

7.9

$$\frac{6.2}{25}$$

Q.8 ✓

$$\begin{array}{r} 13.7 \\ \hline 50 \end{array}$$
$$\frac{13.5}{25}$$

9.7

$$\begin{array}{r} 6.3 \\ \hline 25 \end{array}$$
$$\frac{9.9}{50} \checkmark$$
$$\frac{14.5}{50}$$
$$\frac{14.2}{25}$$

11.8

$$\begin{array}{r} 6.4 \\ \hline 7.5 \end{array}$$

11.6 ✓

$$\begin{array}{r} 14.9 \\ \hline .50 \end{array}$$
$$\begin{array}{r} 13.5 \\ \hline 25 \end{array}$$

11.1

$$\begin{array}{r} 8.2 \\ 25 \end{array}$$

11.6? open W
50 ✓

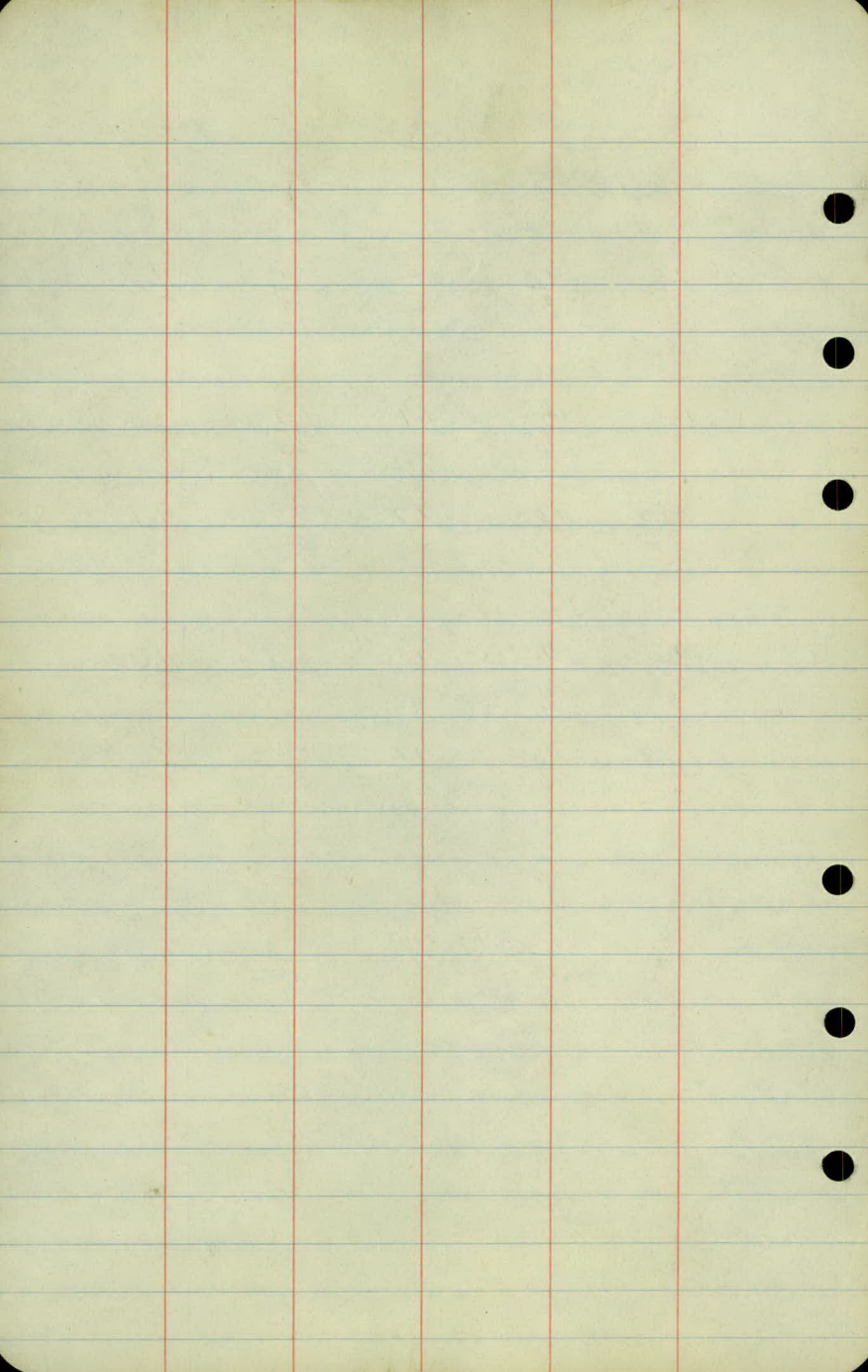
$$\begin{array}{r} 15.0 \\ \hline 51 \end{array}$$
$$\begin{array}{r} 11.2 \\ \hline 25 \end{array}$$

86

$$\begin{array}{r} 9.3 \\ \hline 25 \end{array}$$

1167 thin loc
50 ✓

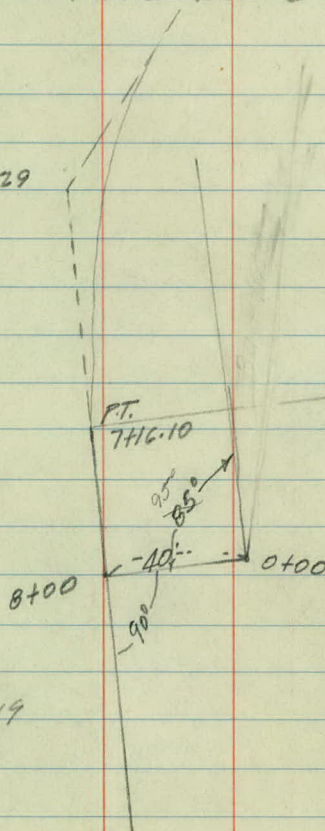
2/7/49



Borrow Pit - X Sections

East Shore Drive

P.I. = 6+13.29



Rec 4/6/49
S.C.

Sta	+	π	-	Elev
B.M.	6.57	878.01		(871.44)

0 +35

62.0

+50

63.2

+75

64.7

1

65.3

+25

66.0

+50

66.1

+70

66.2

4-5-49

L

E

F

Spk in Arc Light P at sta. 9+84

Edge Gutter

+34-18"0 = 19'

64.0	62.2	62.0	68.0	71.5	71.5	66.9
140	158	160	100	65	65	11.1
27	6		27	44	50	70

✓

$$+64 = \frac{18"0}{20.5}$$

63.9	63.7	63.2	63.2	63.6	74.2	76.6	78.4
141	143	148	148	144	3.8	1.4	4.6
23	17	13		3	33	50	70

✓

63.6	63.6	64.7	64.8	79.3	79.2	76.4	74.4	72.6
144	144	133	132	+13	+1.2	1.6	3.6	5.4
31	21		4	40	69	90	105	120

63.6	64.1	65.3	65.8	74.2	1404 = $\frac{18"0}{72.0}$	79.1	79.4	70.2
144	139	127	122	3.8	27.4	+1.0	3.6	7.8
32.5	25		5	26	32	44	68	100

63.3	64.4	66.0	66.4	143 = $\frac{4-5"0 \text{ oaks}}{58.0}$	79.1	79.4	70.2
147	136	120	116	5.9	+1.5	2.0	4.8
32.4	26		7	24	48	79	100

63.2	64.5	66.1	67.7	74.4	73.3	70.2
148	135	119	103	3.6	4.7	7.8
32	23		16	41	77	100

63.2	64.4	66.2	67.7	68.9	68.7	69.6
148	136	118	103	9.1	9.3	9.4
29.5	23		26	34	50	76

No lower than this shot

Sta.	+	π	-	Elev
------	---	-------	---	------

874.01

1 +84

65.4

2

62.7

T.P.

13.2

864.81

864.83

L	E	R
---	---	---

check @ sta 8400

Sta

+

π

-

Elev

Keller Parkway
Curve.

Sta PT 4

✓

3	+78.75	PT	13°26.5'	
	+75		13°11'	
	+50		11°26'	
	+25		9°41'	A = 26°53'
12			7°56'	D = 14°00'
	+84.86	PI	26.53'	T = 98°13'
	+75		6°11'	L = 192.02
	+50		4°26'	R = 410.28
	+25		2°41'	
11			0°56'	
10	+86.73	PC	0°00'	

$$\begin{array}{r} 181 \\ 58 \\ \hline 123 \end{array}$$

48.48 24" Elm.

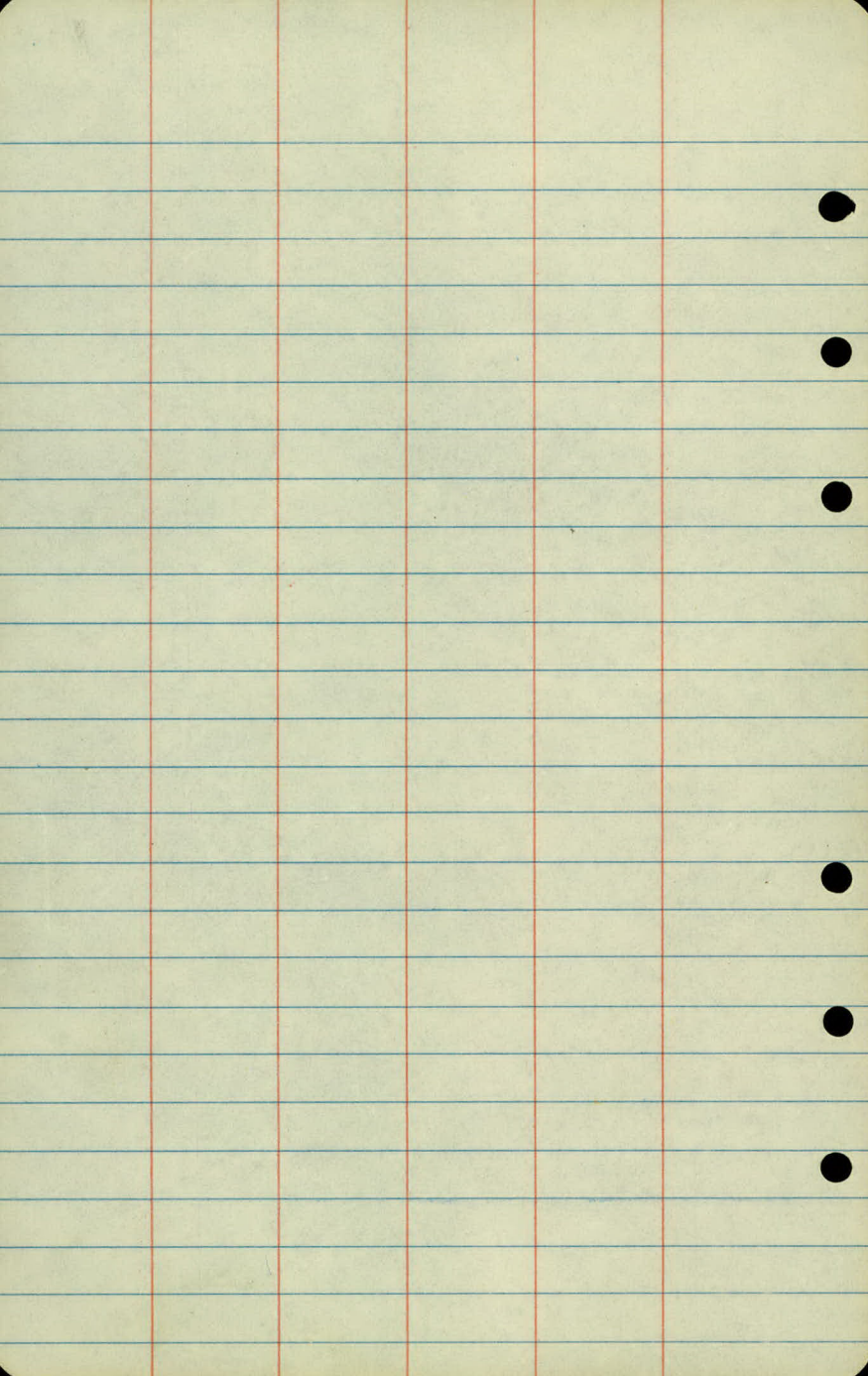
30.90 24" Elm.

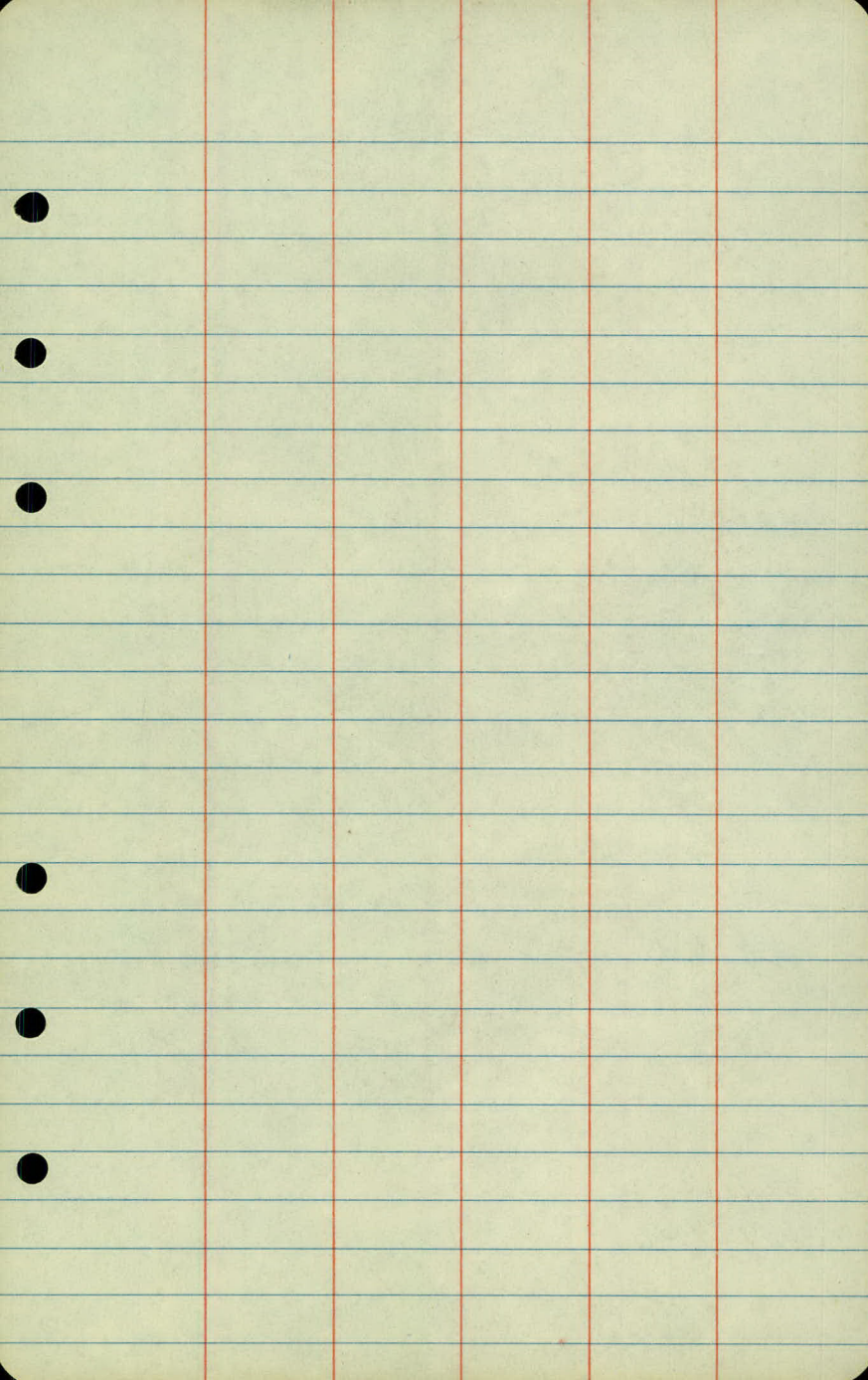
56.29

56.74

11

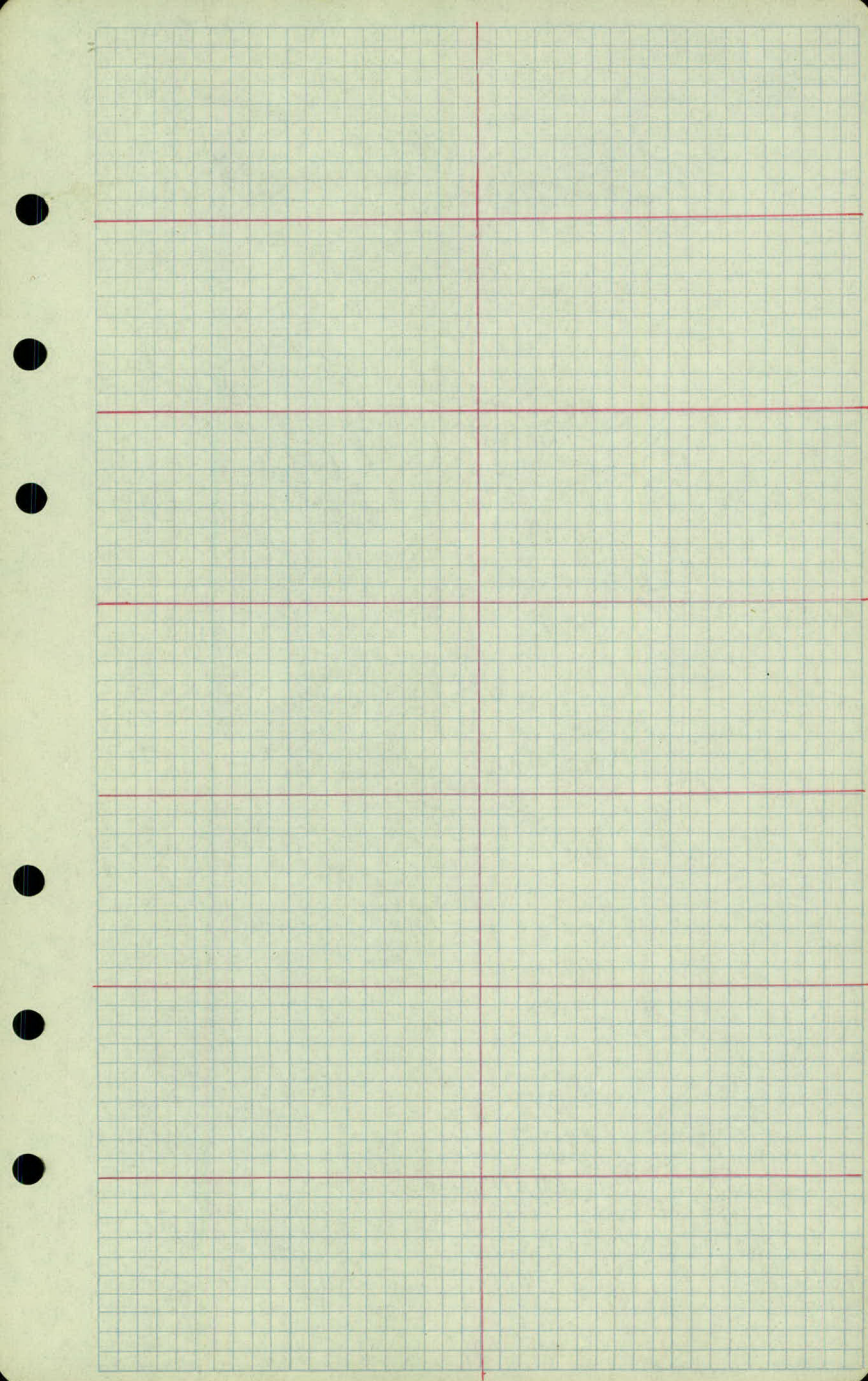
11





New Curve - E Shore Drive

Sta	PT	ALT	Δ RT
+79.87	PT		20° 47'
+75			20.207
+50			18° 05.7
+25			15 30.7
13			13° 35.7 Δ = 41° 34'
+75			11° 20.7 D = 18° 00'
+70.26	PI		T 121.31
+50			9° 05.7 L 230.92
+25			6° 50.7 R 319.62
12			4° 35.7
+75			2° 20.7'
11 + 50			0° 05.7'
11 + 48.95	PC	0° 00'	0° 00'



$$BM = 865.00$$

$$+ 1.61$$

$$866.61$$

$$854.92 = \text{elev. top floor}$$

$$11.69 = \text{Gr. Rod.}$$

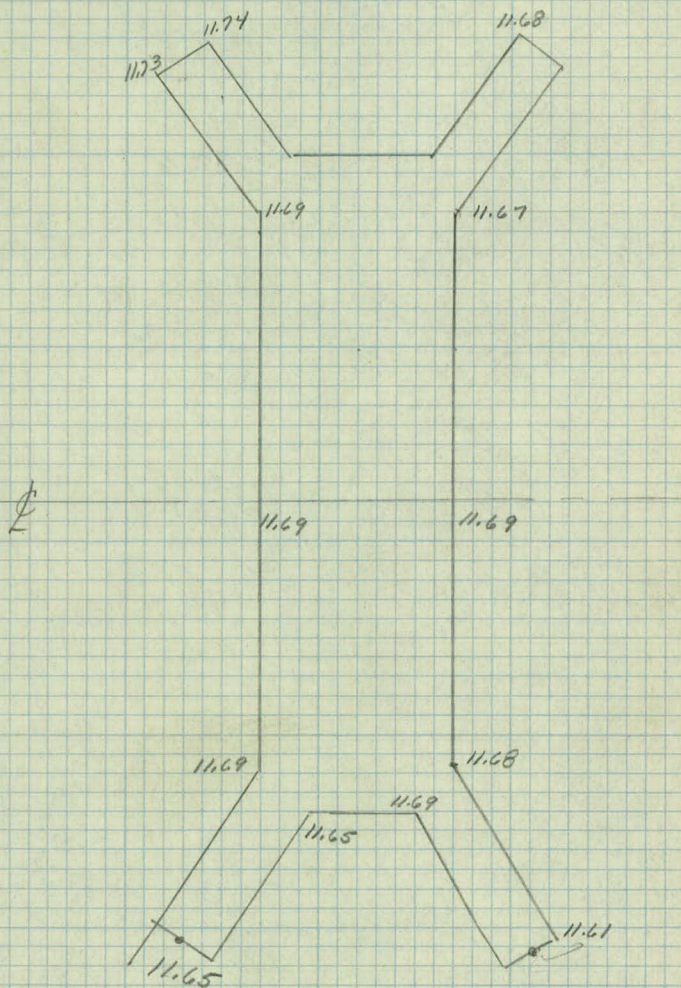
9-9-49

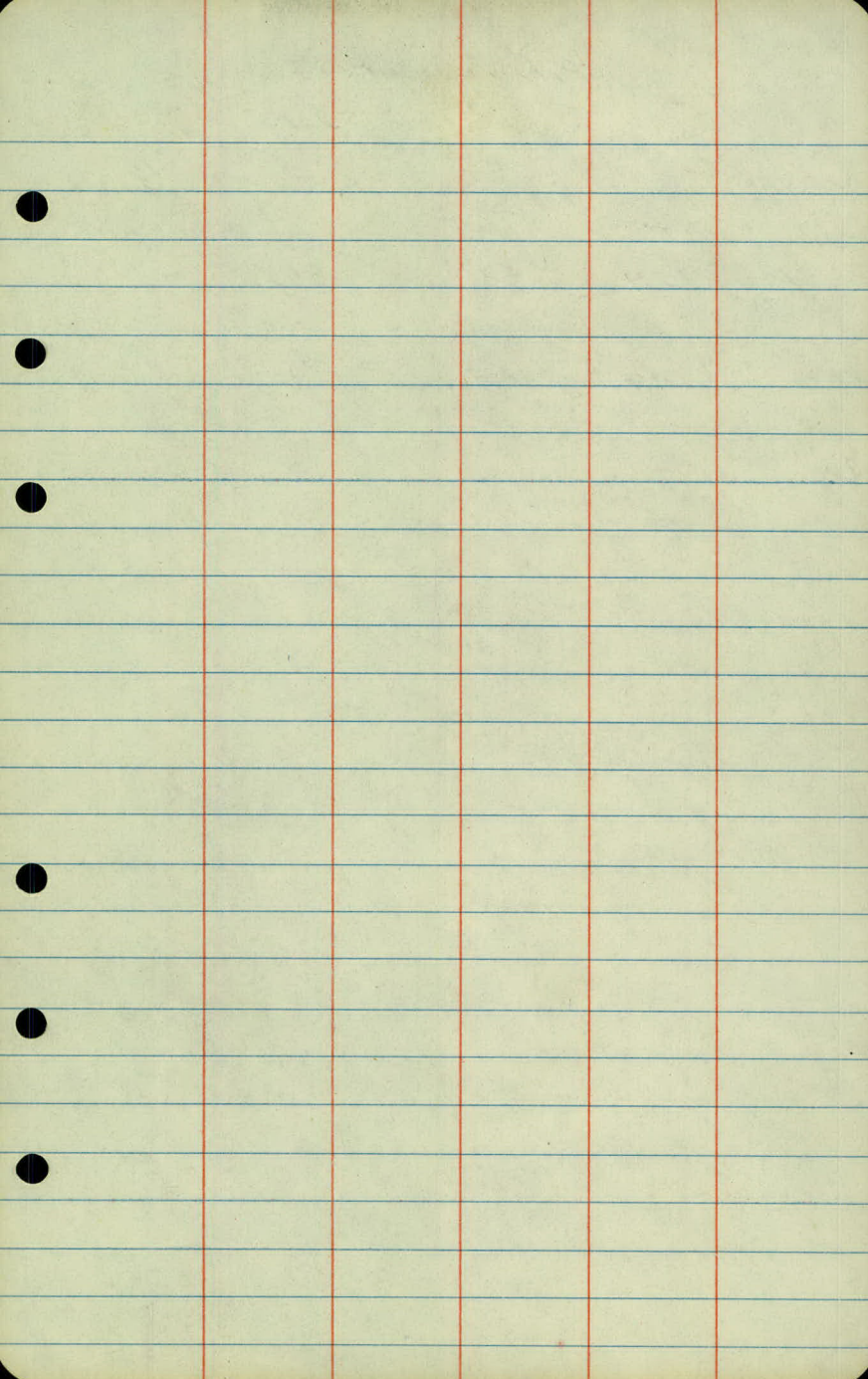
GB

AM

MB

B.C.





Piling Cutoff
elev. 852.92

Gr.

Sta	+	π	-	Elev.
BM	4.54	862.54		865.00

elev. = piling Cutoff.			852.92	852.92
------------------------	--	--	--------	--------

Top. Culvert				863.75
--------------	--	--	--	--------

~~79.54~~
~~52.92~~
~~16.62~~

~~69.54~~
~~63.75~~
~~5.79~~

8-22-49
GB
AM
MB
BC.

GR

R.

C

16.62

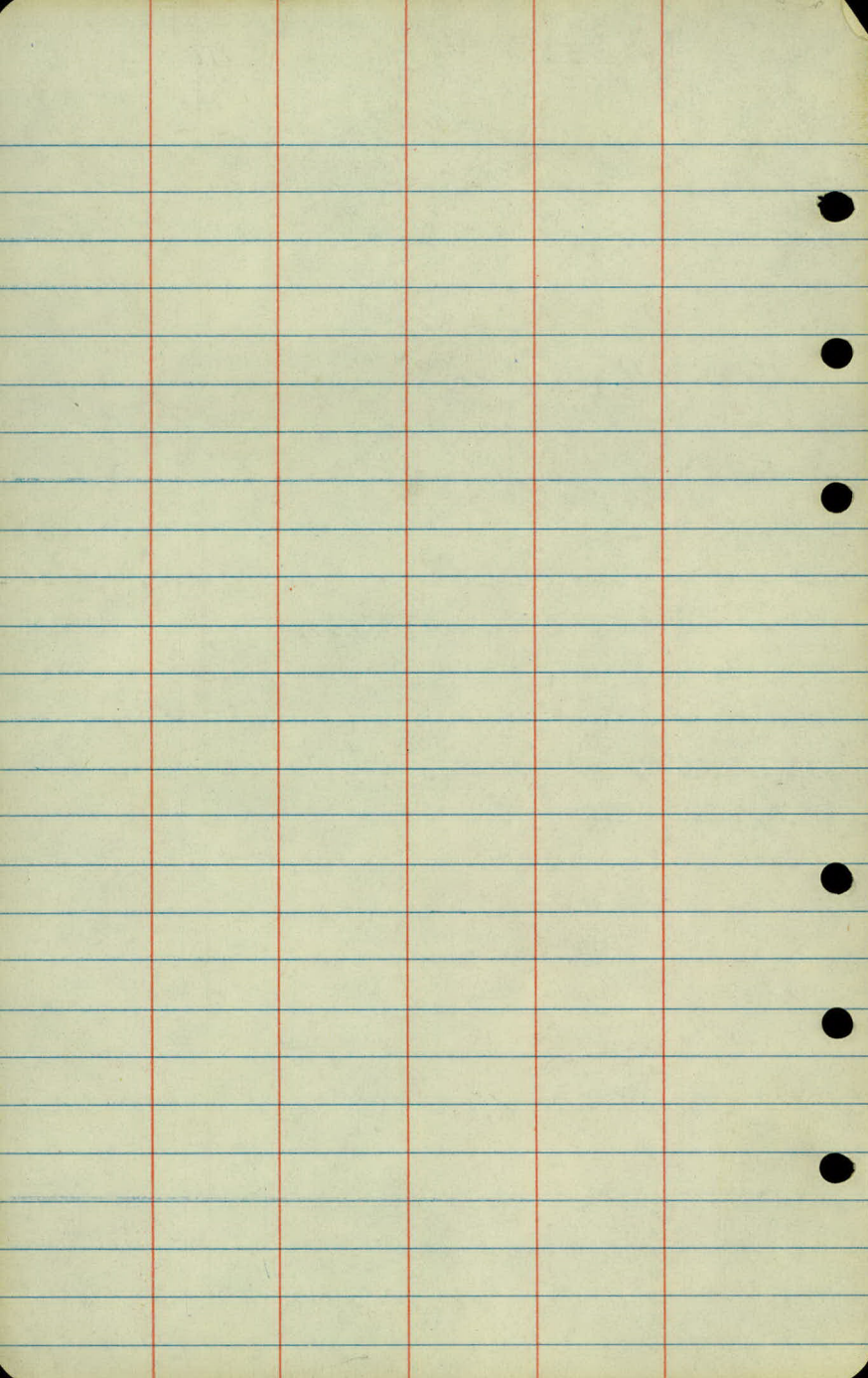
11.62

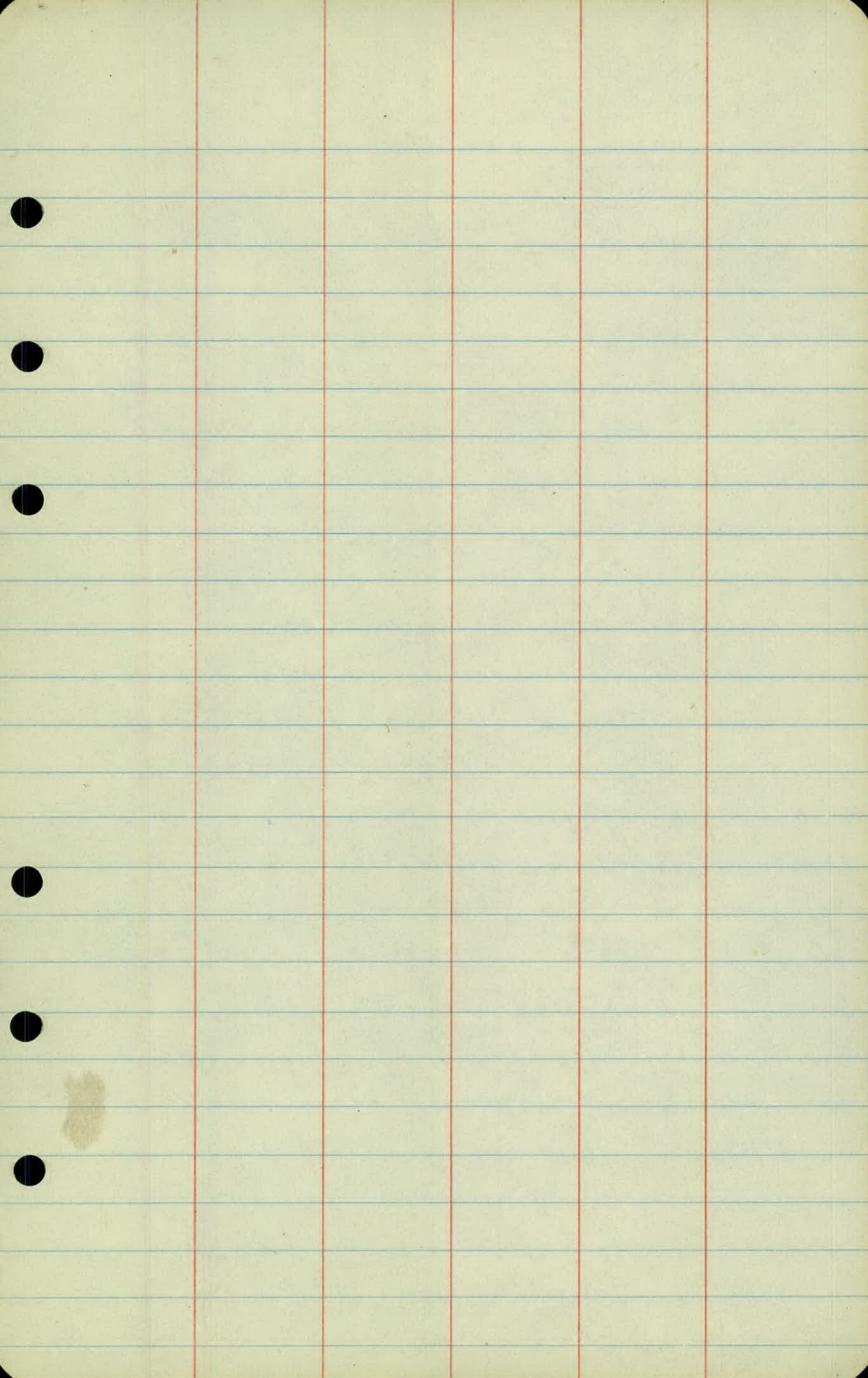
5.00

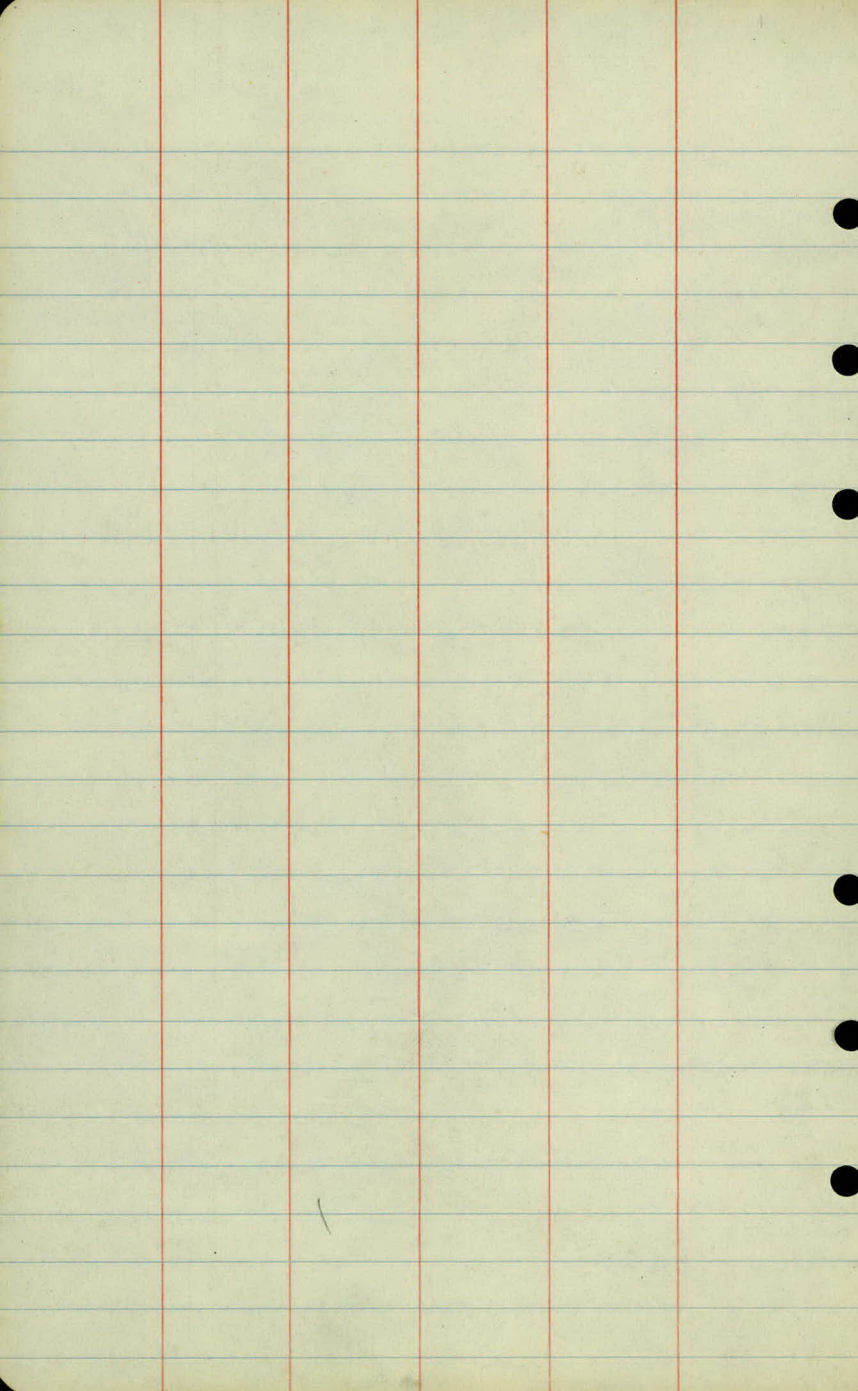
5.79.

5.79

0.00







East Shore Drive

± Grades
Prelim. Grading

-0.58

Gutter

Sub. G. R.

G. R.

Sta P. G. P. G. R.

B. M. 3.87 868.87 865.00

8+25 65.18

8+41.82 65.39

8+50

+75 65.70 3.17

9 65.84 3.03

+25 65.90 2.97

+50 65.91 2.96

+75 65.82 3.05

L+

£

R+

303

3.17

303

303

2.97

2.97

2.97

2.96

2.96

2.96

305

305

305

10 65.70 3.17

+28 65.57 3.30

+54 65.44 3.43

+73 65.35 3.52

11 65.22 3.65

+25 65.10 3.77

+50 64.98 3.88

+75 64.86 4.01

465
- 58
57.23

Lt.

C

Rt

3.17

3.17

3.17

3.65

3.77

3.88

12 64.74 4.13

+25 64.62 4.25

+50 64.50 4.37

55.00

NZ

63.84

PI = 12+70.26

275.8

74.88
+ 69.04

63.20

56.76

50.32

43.88

37.44

31.01

24.57

18.13

11.69

5.84

0.00

A = 10+29.3

Piling to be cut
@ ENU 852.92

28.79
89.44

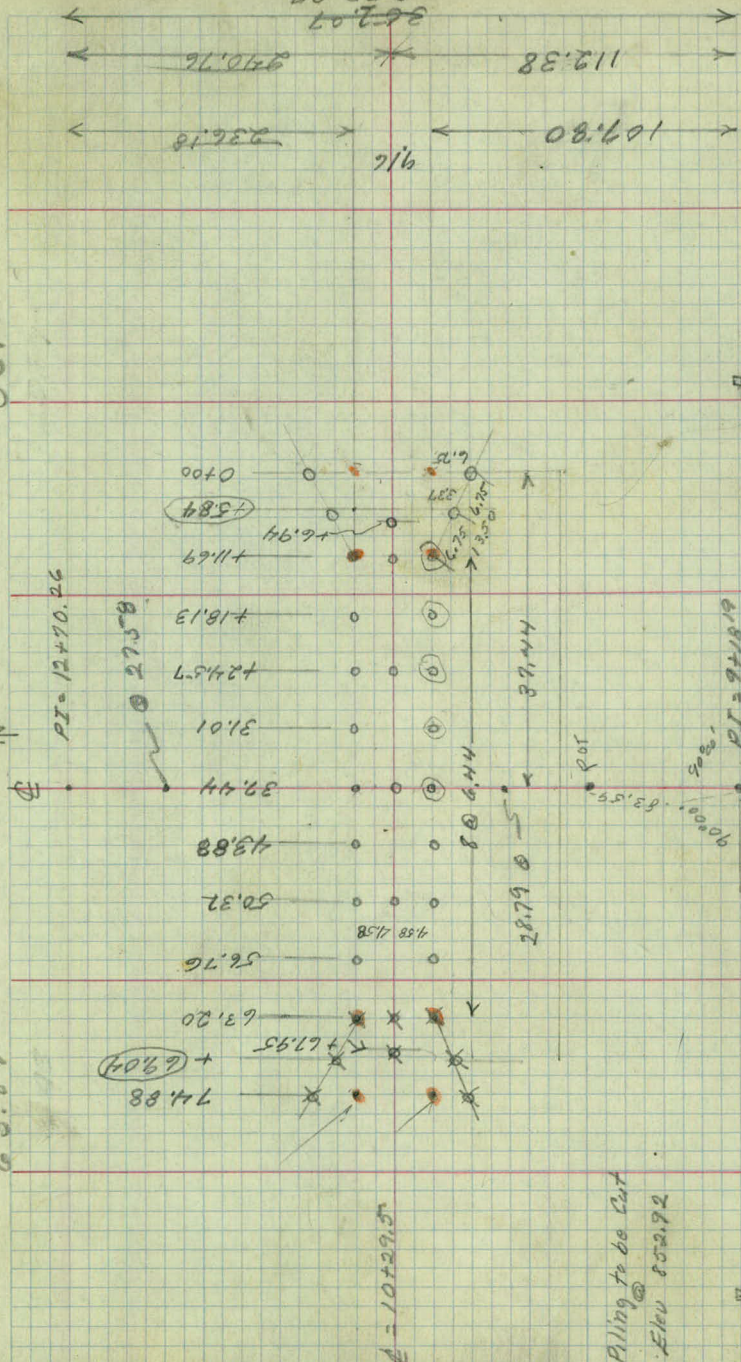
205

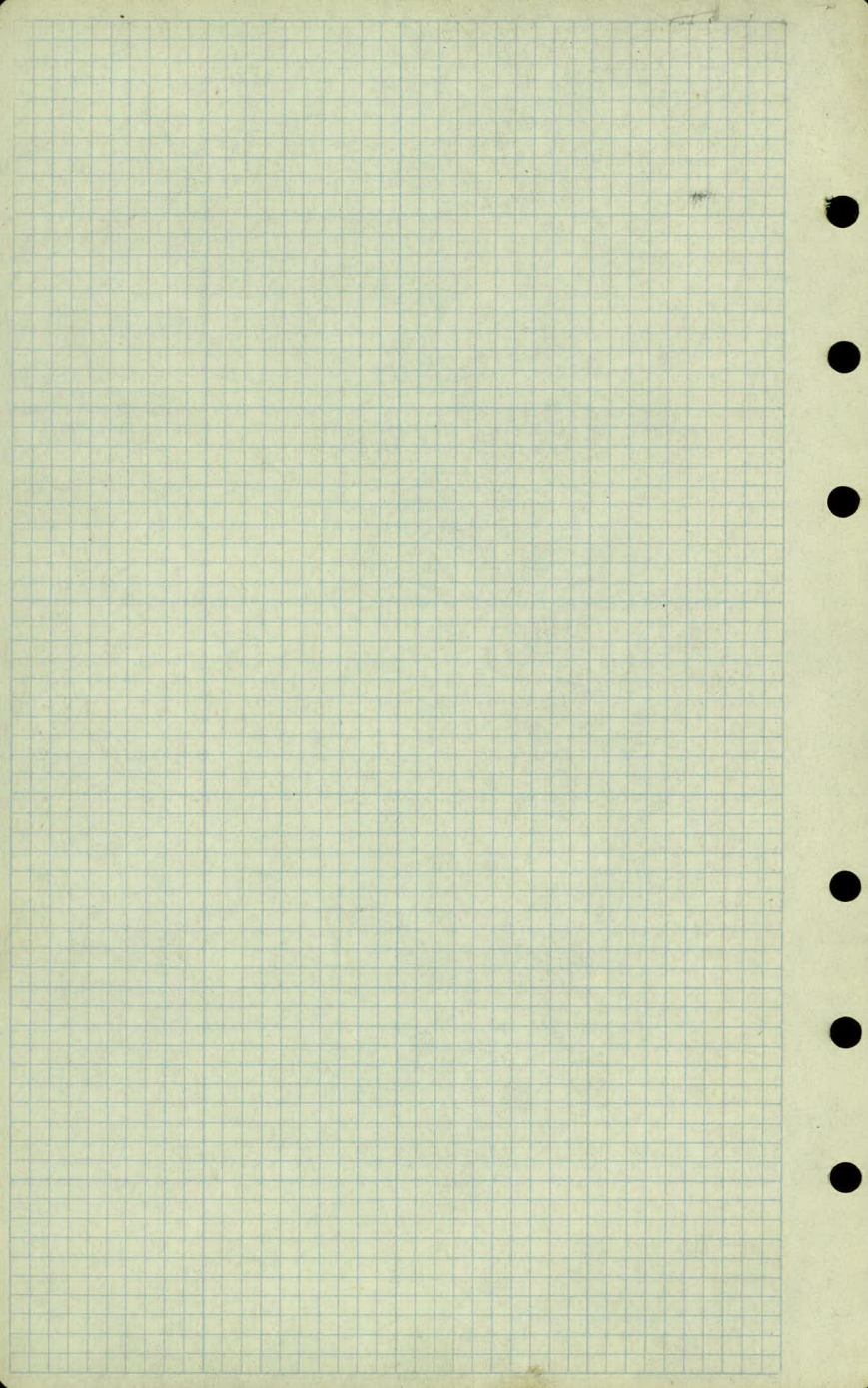
90000
90000
PI = 9+18.19

70'

43'

107.80
91.07
87.207
112.38
91.07
87.207
91.07
87.207





New Ties to
existing
Alignment

7-27-49

G.B.

M.B.

B.C.

Sta Pt LL+ LR+

12+68.81 PT

12+70.26 PI

11+60.93 PC

10+44.47 POT = ϕ existing Bridge

9+93.49 PT

$\Delta = 15^{\circ}10'$

$D = 10^{\circ}$

9+18.19 PI

$15^{\circ}10' \text{ Rt}$

$T = 76.37$

$L = 151.67$

8+41.82 PC

$R = 573.69$

8+00 POT

7+16.10 PT

$\Delta = 29^{\circ}32'$

$D = 14^{\circ}$

6+13.29 PI $29^{\circ}32'$

$T = 108.14$

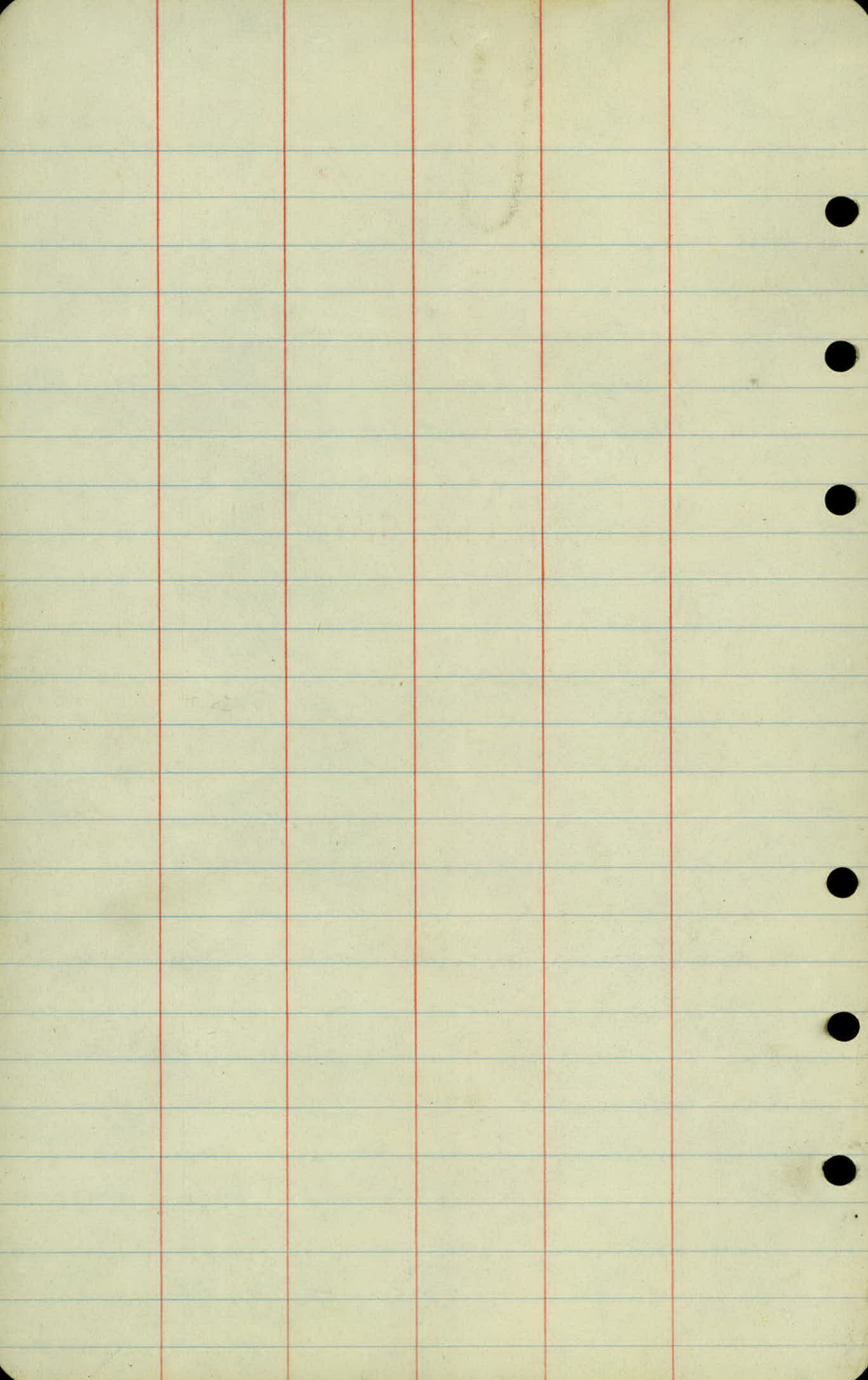
$L = 210.95$

5+05.15 PC

$R = 410.275$

0.52.08
 50.59 PP
 63.95
 18" Quad
 Willow

70.82 PP
 56.58 PP
 76.85
 4" Willow 101.45
 22.79
 49.07
 8" Elm
 6" Elm
 10" Elm
 37.81
 9.74 8" Elm
 nail in pare.



1

Bench Levels

BM's for Bridge Constr.
at
East Shore Drive

7-29-49

G.B.

R.C.

J.F.

Sta	+	π	-	Elev
B.M	0.50	871.94		871.44

B.M			6.94	865. ⁰⁰
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B.M			6.94	865. ⁰⁰
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Elev. for cutting exist
piers & Abutments.

B.M.	3.96	868.96		865. ⁰⁰
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Top SE Abutment			4.09	64.87 (864. ⁸⁹)
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Cut Line Piers & Abut.			5.21	863.75
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7-29-49

2

Spk in Arc Light Pole rt @ Sta 9+84

Spk in Tele. P. 25' Rt @ Sta 7+65

Boat Spk in 18" Elm 31' Rt @ Sta 12+24

8-2-49

GB	BC
AM	MB

Spk in 18" Elm 31' Rt @ Sta 12+24

