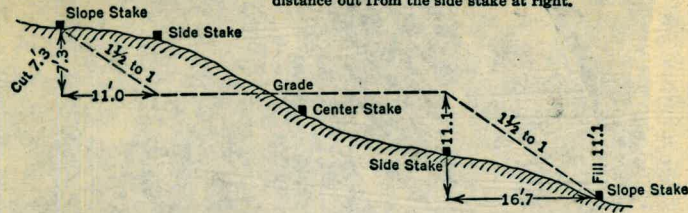


W  
500



**DISTANCES FROM SIDE STAKES FOR CROSS-SECTIONING**  
 Roadway of any Width. Side Slopes 1/2 to 1.

In the figure below: opposite 7 under "Cut or Fill", and under .3 read 11.0, the distance out from the side stake at left. Also, opposite 11 under "Cut or Fill" and under .1 read 16.7, the distance out from the side stake at right.



600  
OK

Cut or Fill	Distance out from Side or Shoulder Stake										Cut or Fill
	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	
0	0.0	0.2	0.3	0.5	0.6	0.8	0.9	1.1	1.2	1.4	0
1	1.5	1.7	1.8	2.0	2.1	2.3	2.4	2.6	2.7	2.9	1
2	3.0	3.2	3.3	3.5	3.6	3.8	3.9	4.1	4.2	4.4	2
3	4.5	4.7	4.8	5.0	5.1	5.3	5.4	5.6	5.7	5.9	3
4	6.0	6.2	6.3	6.5	6.6	6.8	6.9	7.1	7.2	7.4	4
5	7.5	7.7	7.8	8.0	8.1	8.3	8.4	8.6	8.7	8.9	5
6	9.0	9.2	9.3	9.5	9.6	9.8	9.9	10.1	10.2	10.4	6
7	10.5	10.7	10.8	11.0	11.1	11.3	11.4	11.6	11.7	11.9	7
8	12.0	12.2	12.3	12.5	12.6	12.8	12.9	13.1	13.2	13.4	8
9	13.5	13.7	13.8	14.0	14.1	14.3	14.4	14.6	14.7	14.9	9
10	15.0	15.2	15.3	15.5	15.6	15.8	15.9	16.1	16.2	16.4	10
11	16.5	16.7	16.8	17.0	17.1	17.3	17.4	17.6	17.7	17.9	11
12	18.0	18.2	18.3	18.5	18.6	18.8	18.9	19.1	19.2	19.4	12
13	19.5	19.7	19.8	20.0	20.1	20.3	20.4	20.6	20.7	20.9	13
14	21.0	21.2	21.3	21.5	21.6	21.8	21.9	22.1	22.2	22.4	14
15	22.5	22.7	22.8	23.0	23.1	23.3	23.4	23.6	23.7	23.9	15
16	24.0	24.2	24.3	24.5	24.6	24.8	24.9	25.1	25.2	25.4	16
17	25.5	25.7	25.8	26.0	26.1	26.3	26.4	26.6	26.7	26.9	17
18	27.0	27.2	27.3	27.5	27.6	27.8	27.9	28.1	28.2	28.4	18
19	28.5	28.7	28.8	29.0	29.1	29.3	29.4	29.6	29.7	29.9	19
20	30.0	30.2	30.3	30.5	30.6	30.8	30.9	31.1	31.2	31.4	20
21	31.5	31.7	31.8	32.0	32.1	32.3	32.4	32.6	32.7	32.9	21
22	33.0	33.2	33.3	33.5	33.6	33.8	33.9	34.1	34.2	34.4	22
23	34.5	34.7	34.8	35.0	35.1	35.3	35.4	35.6	35.7	35.9	23
24	36.0	36.2	36.3	36.5	36.6	36.8	36.9	37.1	37.2	37.4	24
25	37.5	37.7	37.8	38.0	38.1	38.3	38.4	38.6	38.7	38.9	25
26	39.0	39.2	39.3	39.5	39.6	39.8	39.9	40.1	40.2	40.4	26
27	40.5	40.7	40.8	41.0	41.1	41.3	41.4	41.6	41.7	41.9	27
28	42.0	42.2	42.3	42.5	42.6	42.8	42.9	43.1	43.2	43.4	28
29	43.5	43.7	43.8	44.0	44.1	44.3	44.4	44.6	44.7	44.9	29
30	45.0	45.2	45.3	45.5	45.6	45.8	45.9	46.1	46.2	46.4	30
31	46.5	46.7	46.8	47.0	47.1	47.3	47.4	47.6	47.7	47.9	31
32	48.0	48.2	48.3	48.5	48.6	48.8	48.9	49.1	49.2	49.4	32
33	49.5	49.7	49.8	50.0	50.1	50.3	50.4	50.6	50.7	50.9	33
34	51.0	51.2	51.3	51.5	51.6	51.8	51.9	52.1	52.2	52.4	34
35	52.5	52.7	52.8	53.0	53.1	53.3	53.4	53.6	53.7	53.9	35
36	54.0	54.2	54.3	54.5	54.6	54.8	54.9	55.1	55.2	55.4	36
37	55.5	55.7	55.8	56.0	56.1	56.3	56.4	56.6	56.7	56.9	37
38	57.0	57.2	57.3	57.5	57.6	57.8	57.9	58.1	58.2	58.4	38
39	58.5	58.7	58.8	59.0	59.1	59.3	59.4	59.6	59.7	59.9	39
40	60.0	60.2	60.3	60.5	60.6	60.8	60.9	61.1	61.2	61.4	40

MICROFILMED

JAN 13 1965

The paper in this book No. F363A  
 is made of 50% high grade rag stock  
 with a WATER RESISTING surface sizing.

KEUFFEL & ESSER CO., N. Y.  
 For Curve Tables see end of book.

10,939-3. ky, c. ye. cM.



## INDEX

1. Copy of Map of "Vista de Mexico" Res. Site.
2. Grid for Topo Res. Site. V. de M.
- 3-8 Levels " " " " "
- 9-19 PIPE LINE SURVEY (ALIGNMENT)
- 20-27 LEVELS ON PIPE LINE SURVEY (P. Loma to Coast Guard)
- 68-69 HARBOR DRIVE WATER MAIN TRIANGULATION
- 70 CURVE DATUM STA 181+69 - 184+89<sup>22</sup>
- 71 DETAIL OF NEW PIPELINE AT CONNECTION
- 72 SOUNDINGS AT NAVY BASE CHANNEL
- 73 TRIANGULATION - HARBOR - CONT.

## Unit #9. Peloma Stand pipe

- 1 - Copy of "Vista de Mexico" Map 1084
- 2 - Location Details, Site
- 3-8 Topography Site

## Index Unit No. 6 Harbor Pipe Line

- |   |  |   |
|---|--|---|
| p | 9-16 Alignment Notes                   | Str. 0 - 96+94  |
|   | 16-19 " "                              | 96+94 - 155 <span style="float: right;">later relocated<br/>see E.B.</span> |
|   | 20-27 Level Notes, 6' offset line only | 0+0 - 47+0  |
|   | 28-33 " " Pipe Line                    | 0+0 - 0+0-47  |
|   | 34                                     | Note on Error.  |
|   | 34-67                                  | Levels 6' offset by Pipe Line 47+0 - 210+70                                 |
|   | 68-69                                  | Triangulations to check Line, also p 73                                     |
|   | 70                                     | Curve at 181+63 - 184+83  |
|   | 71-                                    | Ties at end of Line, 210+70 to existing<br>P.L. by Coast Guard Station      |
|   | 72                                     | Record of Soundings Navy Base Channel<br>Crossing Str. 110+50 - 176+71      |
|   | 73-                                    | Additional Triangulation  |
|   | 74-                                    | Correction to stationing, Str. 96+64 -<br>210+70                            |



# Unit # 9

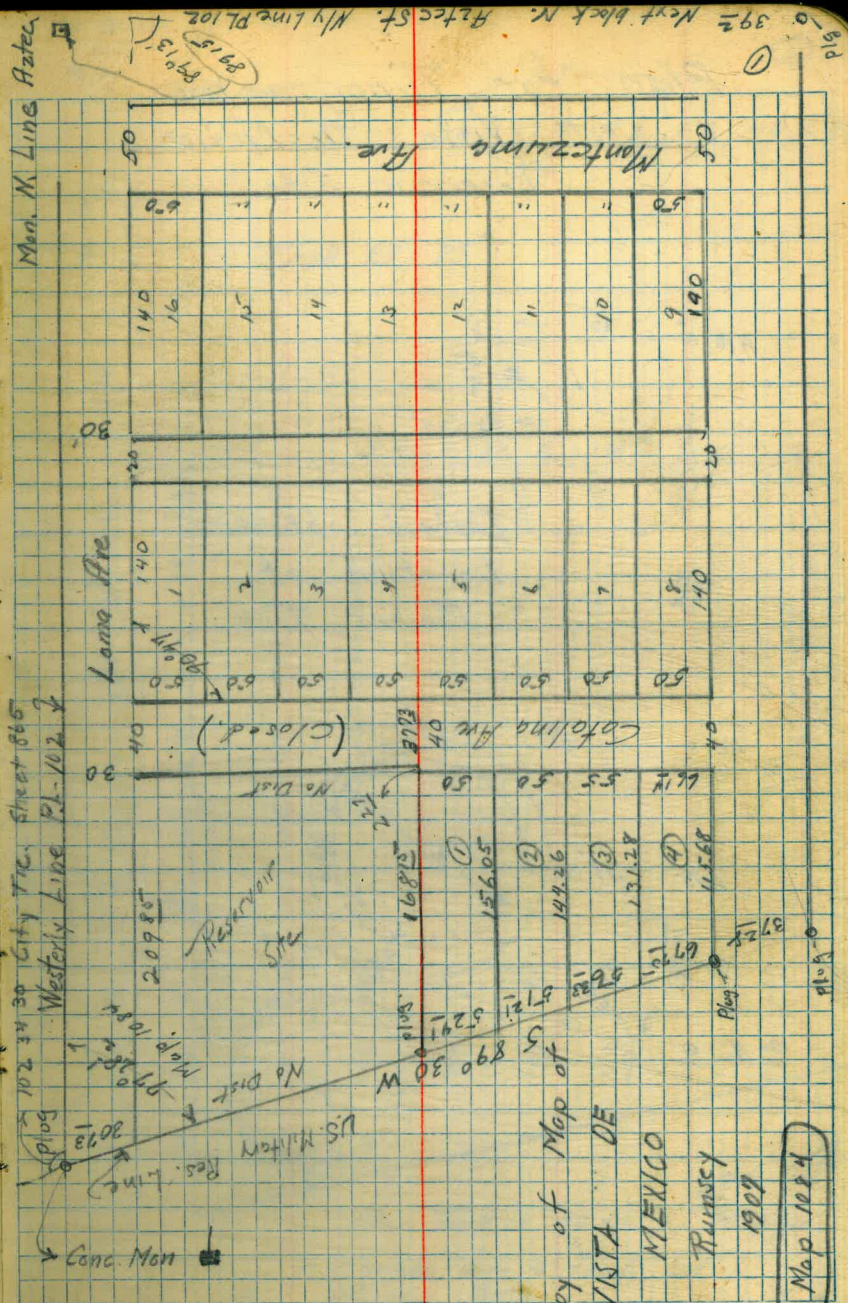
Reservoir Site - Vista de Mexico

Subd. Map No. 1084

Circumference of Present Tank = 126'

Dia = 40'

Sta	B.S.	H.I.	F.S.	Prod	Elev
T.P.#2					376.94
K	8.37	385.34			
C. 8				9.3	376.0
C 7				5.6	379.1
C 6				1.7	383.6
D 3				11.1	374.2
T.P.			7.38		377.93
π	7.11	385.07			
		385.04			
F. 6				13.6	371.4
G 6				12.5	372.5
H 6				6.0	379.0
F 2				7.2	383.8
G 2				2.1	382.9









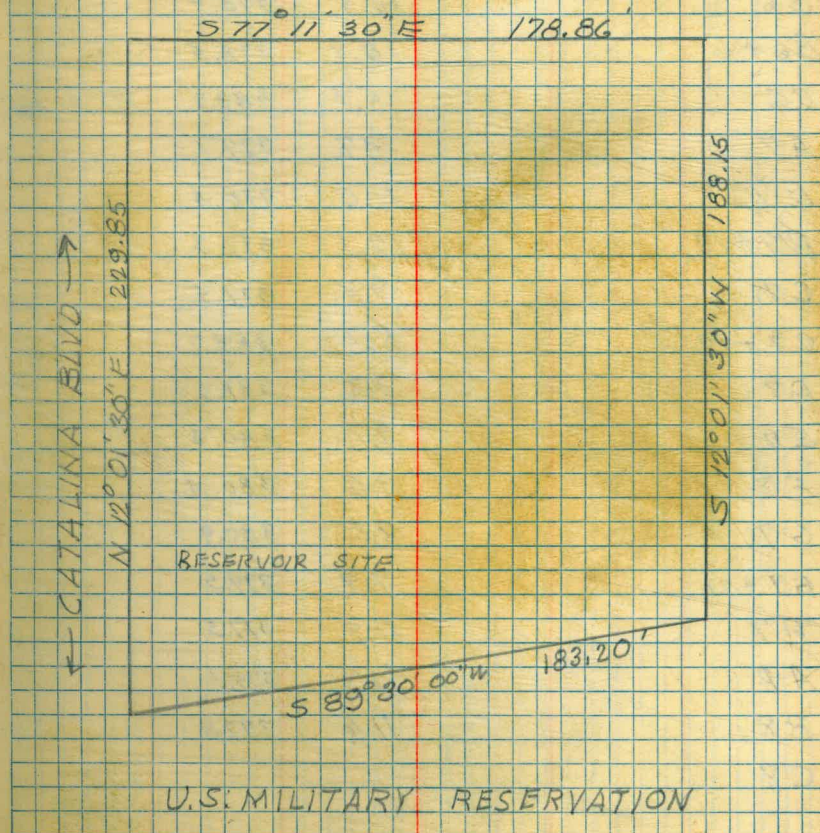
Sta	B.S.	I.Z.	F.S.	Elev.
				358.53 B.M.
T#1	8.13	366.66		
T.P.#1			0.45	366.21
T#2	11.07	377.28		
T.P.#2			0.34	376.94
T#3	12.44	389.38		
ALL $\pm$ s East of Sta.				
A1			6.7	382.7
A1+21			7.3	382.1
B1			4.6	384.8
B1+7			1.2	388.2 Conc. Base
A2			7.0	382.4
B2			7.6	381.8
B2+19			1.2	388.2
C2			1.3	388.1 Conc. Base
C2+20			1.3	388.1
A3			7.5	381.9
B3			9.1	380.3
B3+19			5.4	384.0
C3			7.2	382.2
A4			8.1	381.3
B4			9.4	380.0
B4+19			5.7	383.7
C4			7.7	381.7

Messersmith  
Melhorn

(3)

Cross-Section for Water Tank at Pt. Loma  
B.M.  $\frac{3}{4}$  I.R. Elev 358.53

NOTE: Pluses are to East  
of Point.



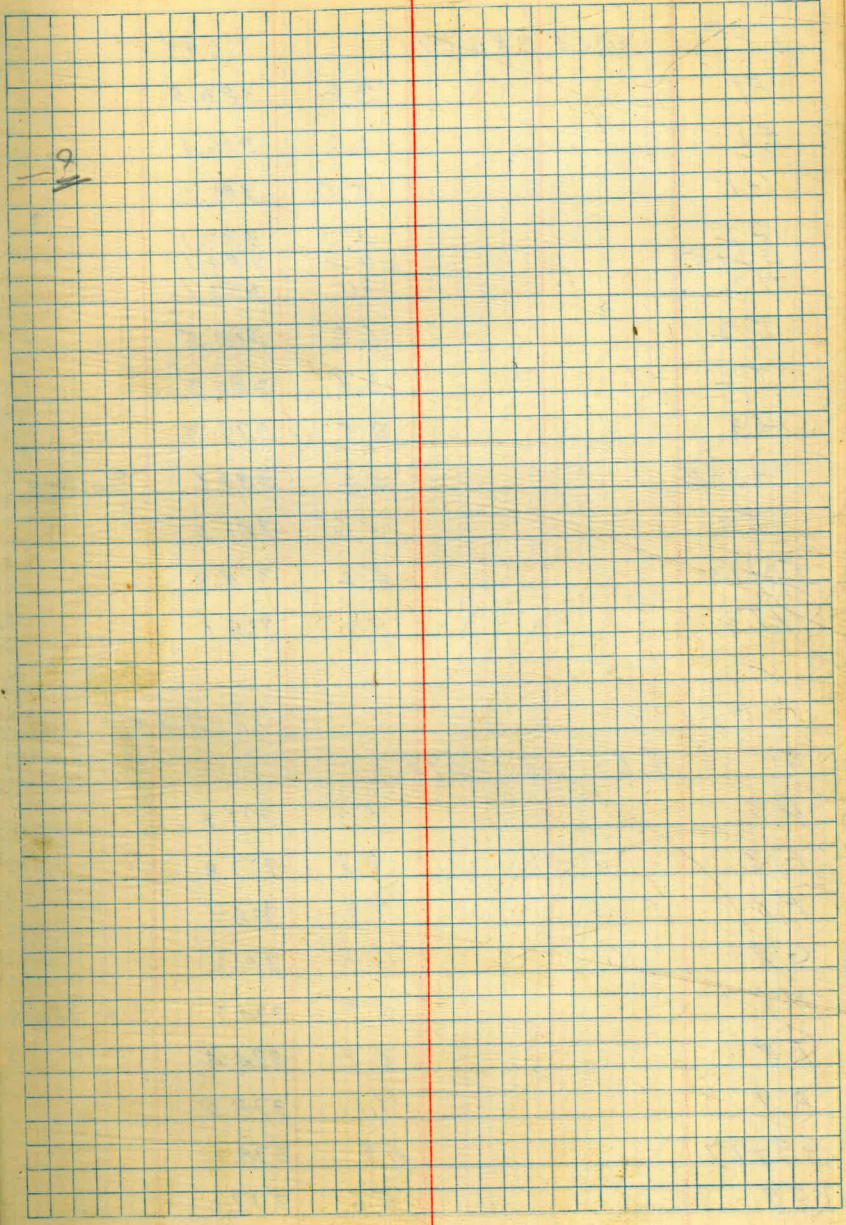


Sta	B.S.	H.I.	F.S.	Elev.
		389.38✓		
A5			8.6	380.8
B5			9.9	379.5
B5+21			5.7	383.7
C5			7.2	382.2
A6			9.1	380.3
B6			10.5	378.9
B6+6			10.9	378.5
C6			5.7	383.7
A7			9.7	379.7
B7			11.0	378.4
B7+10			12.1	377.3
C7			9.8	379.6
C7+12			5.7	383.7
D7			7.8	381.6
E7			9.1	380.3
F7			9.0	380.4
G7			8.5	380.9
G7+21			9.9	379.5
H7			11.9	377.5
A8			10.3	379.1
B8			11.6	377.8
C8				

good



Sta	BS	HI	FS	Elev.	
		389.38 ✓			
TP			12.07	377.31 ✓	
π	0.97	378.28 ✓			
C6			3.4	374.9	
D6			6.4	371.9	
E6			6.7	371.6	Toe Slope
G6			5.8	372.5	
H5			1.1	377.2	
G5			7.5	370.8	
G5+7			7.1	371.3	Toe Slope
F5			7.6	370.7	
E5			7.6	370.7	
D5			5.8	372.5	
D4			6.0	372.3	Toe Slope
E4			6.6	371.7	
F4			7.3	371.0	
G4			7.6	370.7	
G4+6			7.1	371.2	Toe Slope
H4			1.1	377.2	
G3			5.2	373.1	
F3			6.8	371.5	
E3			5.9	372.4	
E2			-0.8	379.1	





TP#2	10.15	387.09 ✓	376.94 ✓
F1		3.6	383.5
E1		1.0	386.1
G1		5.0	382.1
G2		4.0	383.1
G2+15		3.0	384.1
H2		4.0	383.1
I2		6.6	380.5
J2		6.8	380.3
H3		7.8	379.3
H3+15		3.5	383.6
			Top Bank
I3		5.6	381.5
I3+13		8.2	378.9
J3		8.0	379.1

T.P.#2			376.94 ✓
π	5.65	382.59 ✓	
D.8		5.3	377.3
F8		4.8	377.8
F.8		4.4	378.2
G8		6.0	376.6
H8		7.9	374.7
			Toe Slope
I8		8.2	374.4
A9		4.1	378.5
A9+17		4.4	378.2
B9		5.6	377.0



Sta	B <sup>+</sup> S	HI	FS	Elev.
		382.59 ✓		
C9			7.5	375.1
D9			8.1	374.5
E9			8.7	373.9
F9			9.1	373.5
A10			4.7	377.9
A10+18			5.0	377.6
B10			5.7	376.9
C10			8.1	374.5
D10			8.7	373.9
E10			9.0	373.6
F10			9.3	373.3
G10			10.0	372.6
T.P.			8.97	273.62 ✓
T	3.68	377.30 ✓		
G9			4.3	373.0
H9			4.6	372.7
I9			4.7	372.6
J9			4.8	372.5
J10			5.4	371.9
I10			5.4	371.9
H10			4.9	372.4
J8			4.1	373.2
J7			3.4	373.9
I7			1.9	375.4



Sta	BS	HI	FS	Elev	
		377.30			✓
I 7 + 7			3.6	373.7	Toe Slope
T.P.			1.79	375.51	✓
π	11.45	386.96			✓
J 6			12.1	374.9	
T 6 + 15			11.9	375.1	Toe Slope
I 6			6.6	380.4	
H 6 + 18			3.2	383.8	Top Bank
H 5 + 21			3.2	383.8	Top Bank
I 5			5.3	381.7	
I 5 + 15			10.5	376.5	Toe Slope
J 5			11.0	376.0	
J 4			9.6	377.4	
I 4 + 15			9.5	377.5	Toe Slope
I 4			4.9	382.1	
H 4 + 20			3.0	384.0	Top Bank
T.P.			10.01	376.95	✓
π	1.45	378.40			✓
T.P.			12.18	366.22	✓
π	0.38	366.60			✓
B.M.			8.05	358.55	B.M. Elev 358.53



Survey for Pipe Line From  
Pump

Unit #6

13+65<sup>66</sup> BC of Curve to Rt.

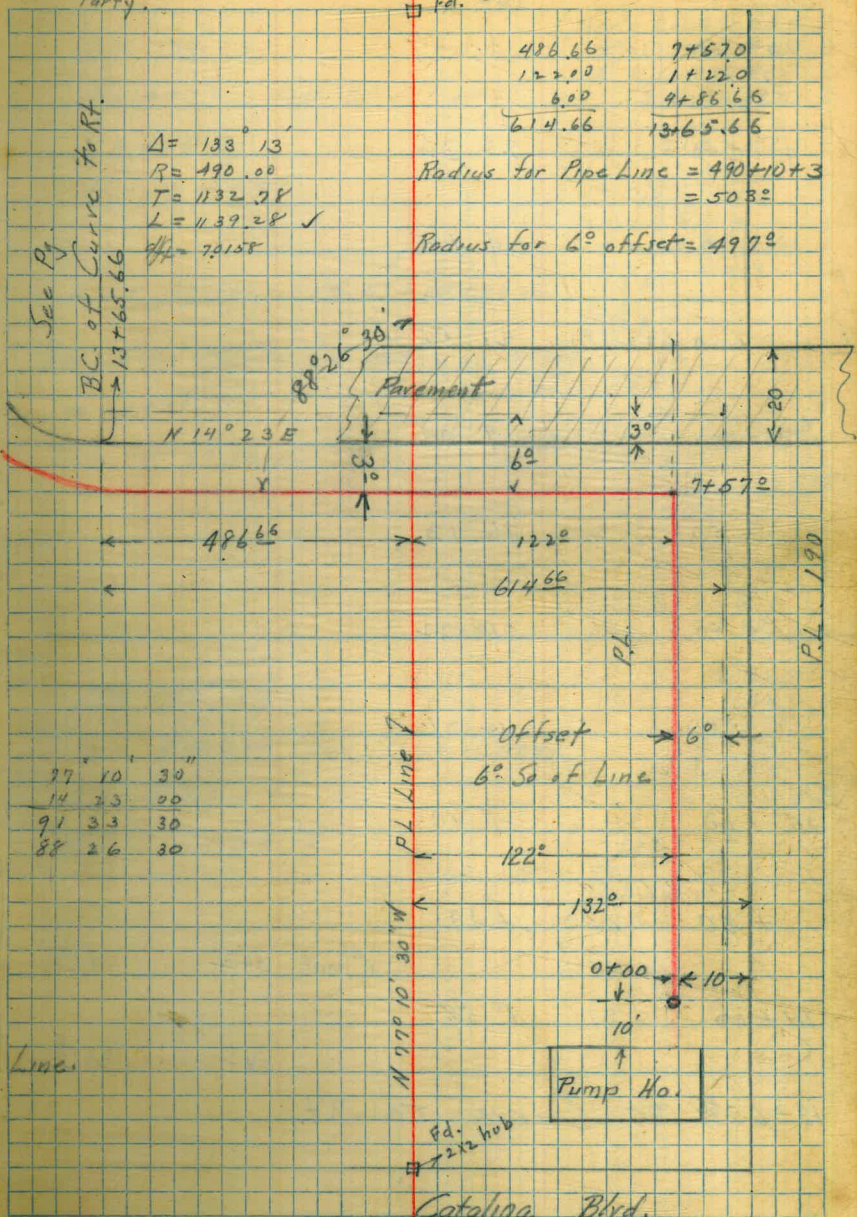
7+57<sup>0</sup> Def. 88° 26' 30" Lt.

0+00 - Point 10' E. of Pump Ho & 10' N. of Property Line.

Nov. 3, 1941.  
P.S. Barker &  
Party.

□ Fed. Conc Mon.

9.





	Def.		
19 + 00	30 27		
+ 50	27 36		
	26 36		
18 + 00	24 45		
+ 50	21 55		
17 + 00	19 04		
+ 50	16 13		
16 + 00	13 22		
+ 50	10 31		
15 + 00	7 40		
+ 50	4 49	Chord	49 98
14 + 00	1 58		49 40
		"	34 34
			33 93

13 + 65.66 BC Curve to Rt.

$\Delta = 133^\circ 13'$   
 $R = 497'$  (for 6° offset)  
 $L = 1155.6$   
 $d/H = 3.4584$

$EC = 137.6566 + 1155.57 = 25 + 21.23$   
 Length 50' Chords =  $2 \times 497' \times \sin \frac{50 \times 58}{2}$   
 $= .4998$

Def. for 19.92 =

$120^\circ = 2.0943951$   
 $13^\circ = .2268928$   
 $13' = .0037815$   
 $2.3250694$   
 $2.3251$   
 $497$   
 $1627.57$   
 $2092.59$   
 $930.04$   
 $1155.5747$   
 $1365.66$   
 $2521.23$   
 $133$   
 $60$   
 $7780$   
 $13$   
 $11556$

$7793.6$  (6.9168)  
 $69336$   
 $105940$  37.584  
 $104004$  50.45  
 $17360$   
 $11356$  20 53'  
 $78040$   
 $69336$   
 $77040$

$2.3251$   
 $503$   
 $69753$   
 $1162050$   
 $1169.5253$   
 $1365.66$   
 $2535.18$

$\Delta = 133^\circ 13'$   
 $R = 503'$  for Pipe Line  
 $L = 1169.52$   
 $EC = 25 + 35.18$



EC.  $+3518$   $66^{\circ}36'30''$

25 + 00 64.35

+ 50 61.45

24 + 00 58.54

+ 50 56.05

23 + 00 53.14

+ 50 50.24 50.24

22 + 00 47.33 47.33

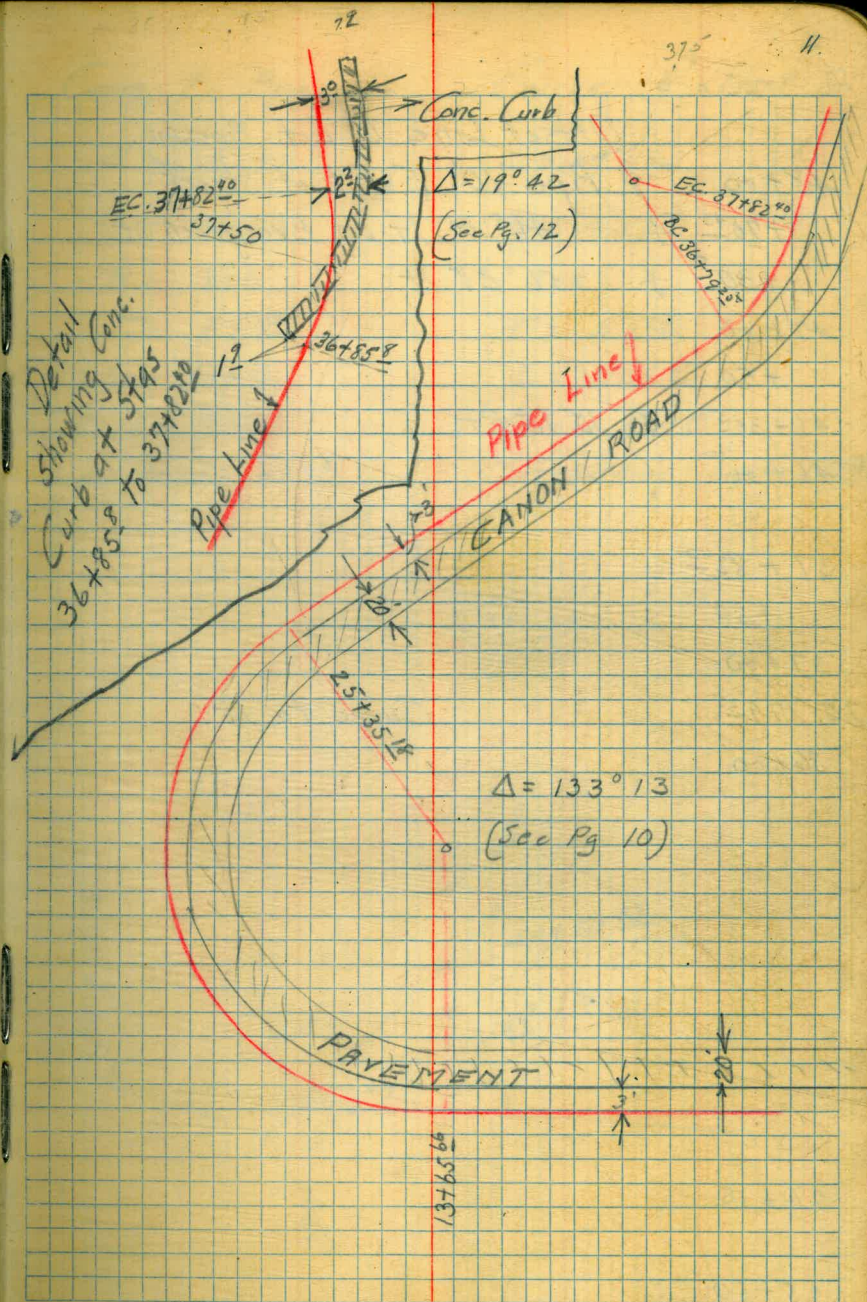
+ 50 44.41 44.41

21 + 00 41.51 41.51

+ 50 39.00 39.00

20 + 00 36.09 36.09

19 + 50 33.18 33.18





Offset Line 6' East Pipeline.  
 & Pipe 10' East of Street

48+00		
+70 <sup>93</sup>	✕	46° 00' Lt on Evergreen St
+30 <sup>2</sup>	✕	56° 28' Lt
47+00		
+50		96 80.5
46+30 <sup>5</sup>	✕	10° 15' Rt.
46+00		47 27.0

37+82<sup>40</sup>  
 +50  
 37+00  
 B.C. 79<sup>25</sup>  
 36+00

Curve to Lt.

26+00

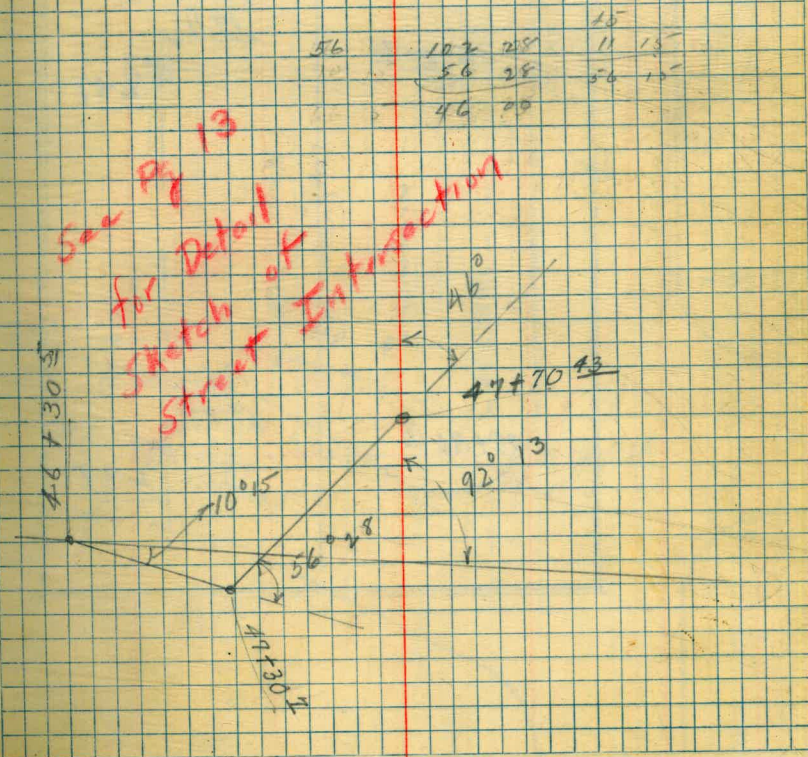
25+50

Curve & Pipe

$\Delta = 19^\circ 42'$   
 $\frac{\Delta}{2} = 9^\circ 51'$   
 $TR = 308$   
 $T = 52.09$   
 $L = 103.18$   
 $d/H = 5.730$   
 50 Chord = 49.94

Curve 6' offset So.

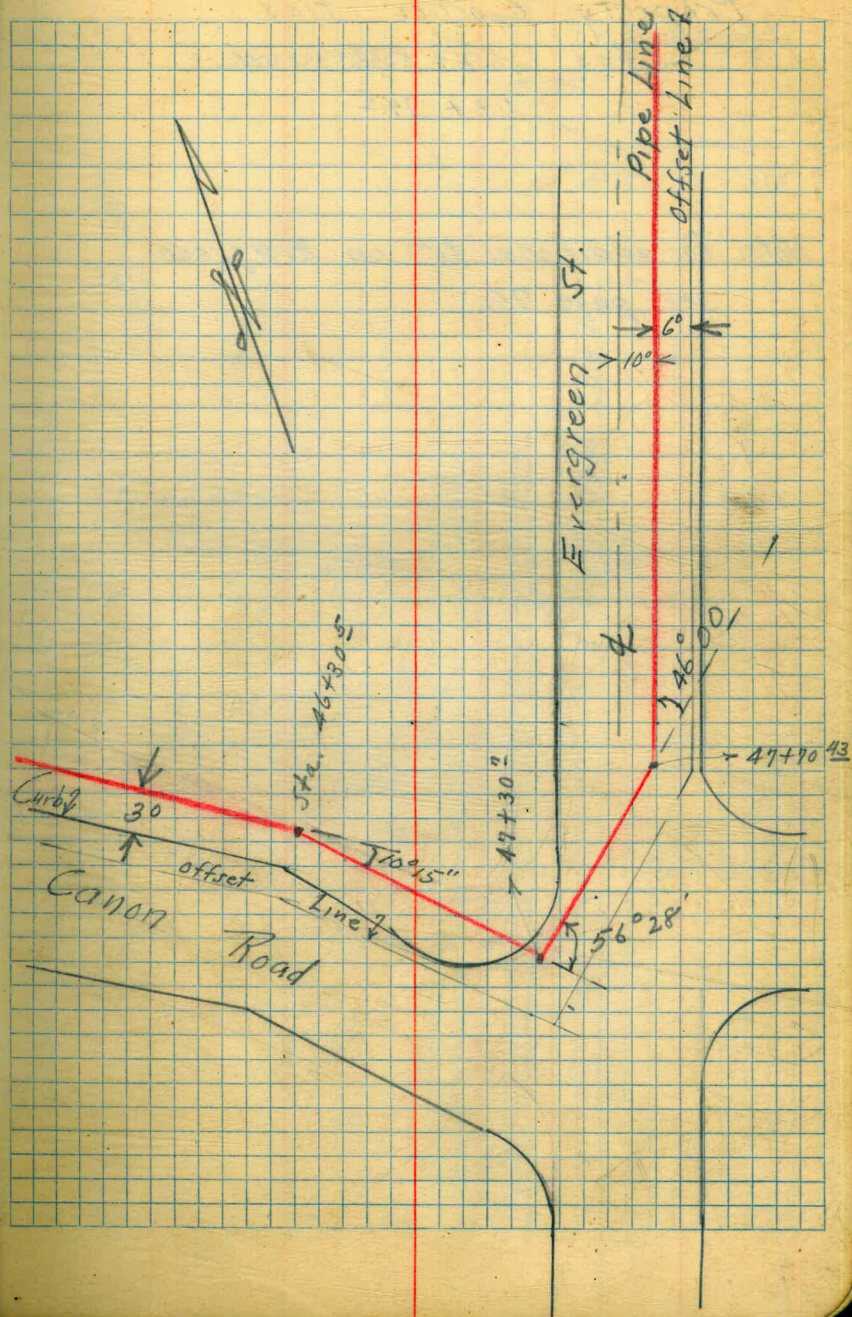
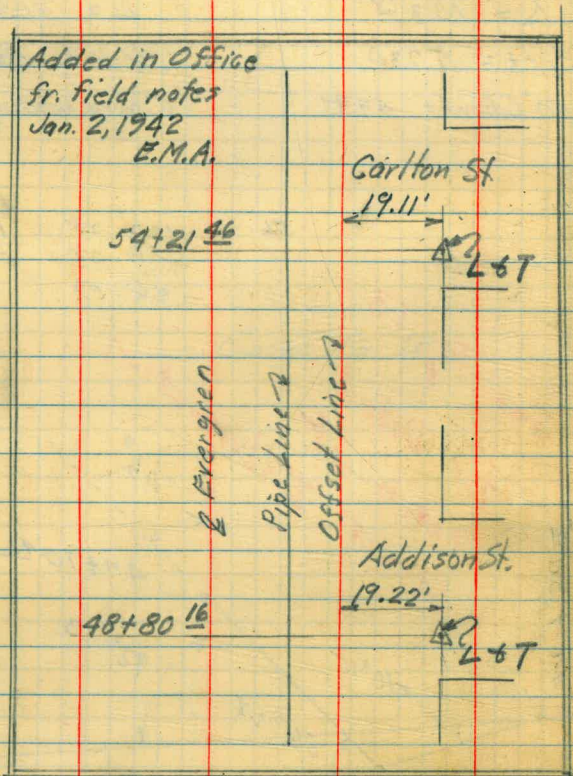
$\Delta = 19^\circ 42'$   
 $\frac{\Delta}{2} = 9^\circ 51'$   
 $306.9$   
 $T = 53.13$   
 $L = 105.20$   
 $d/H = 5.615$   
 Corresponding Chord = 50.94





# INTERSECTION AT

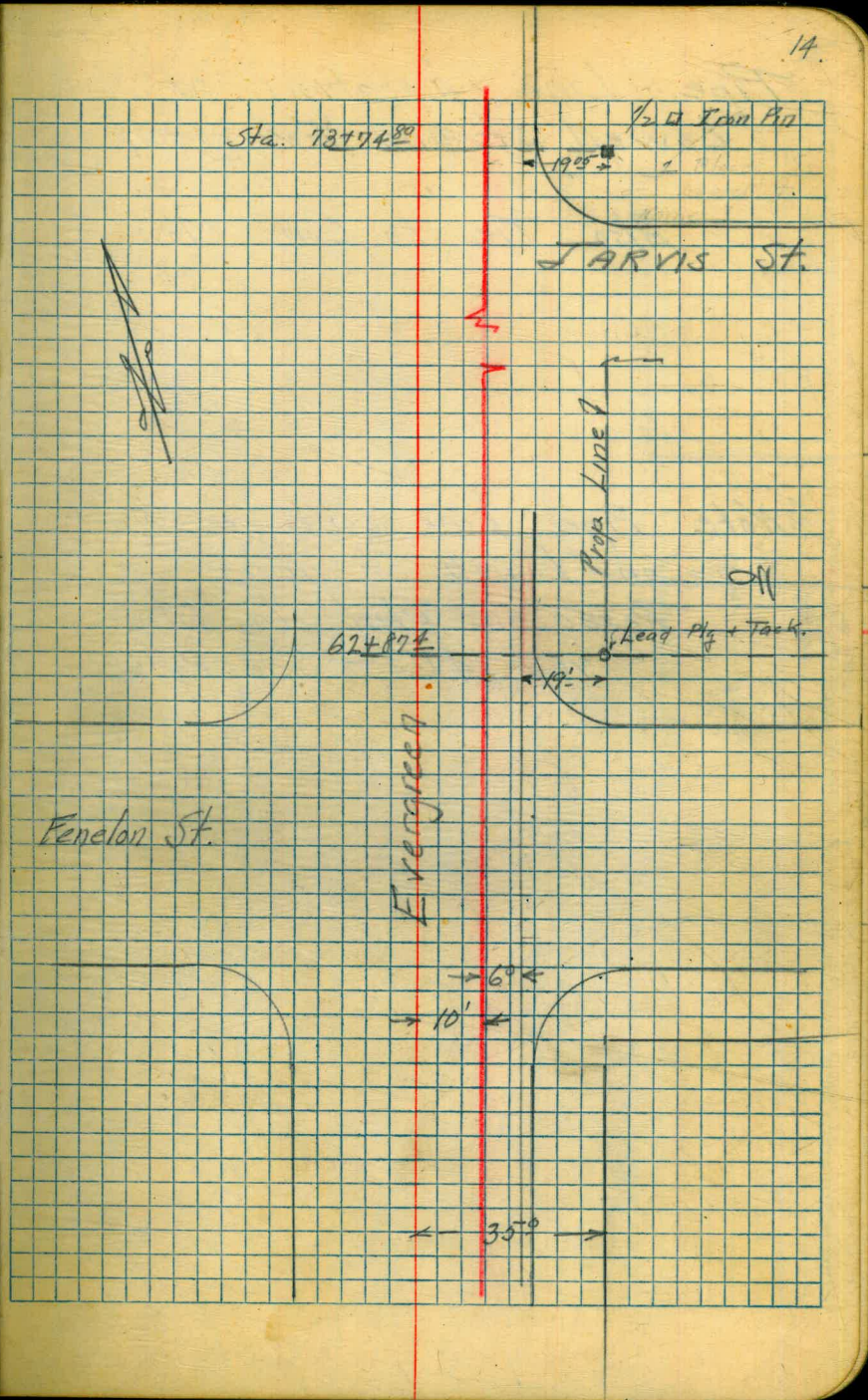
## CANON ROAD & EVERGREEN ST.





Property Corner ties  
Stas 62+87.4 and  
73+74.8

Note: For additional ties on Evergreen  
see page 75.

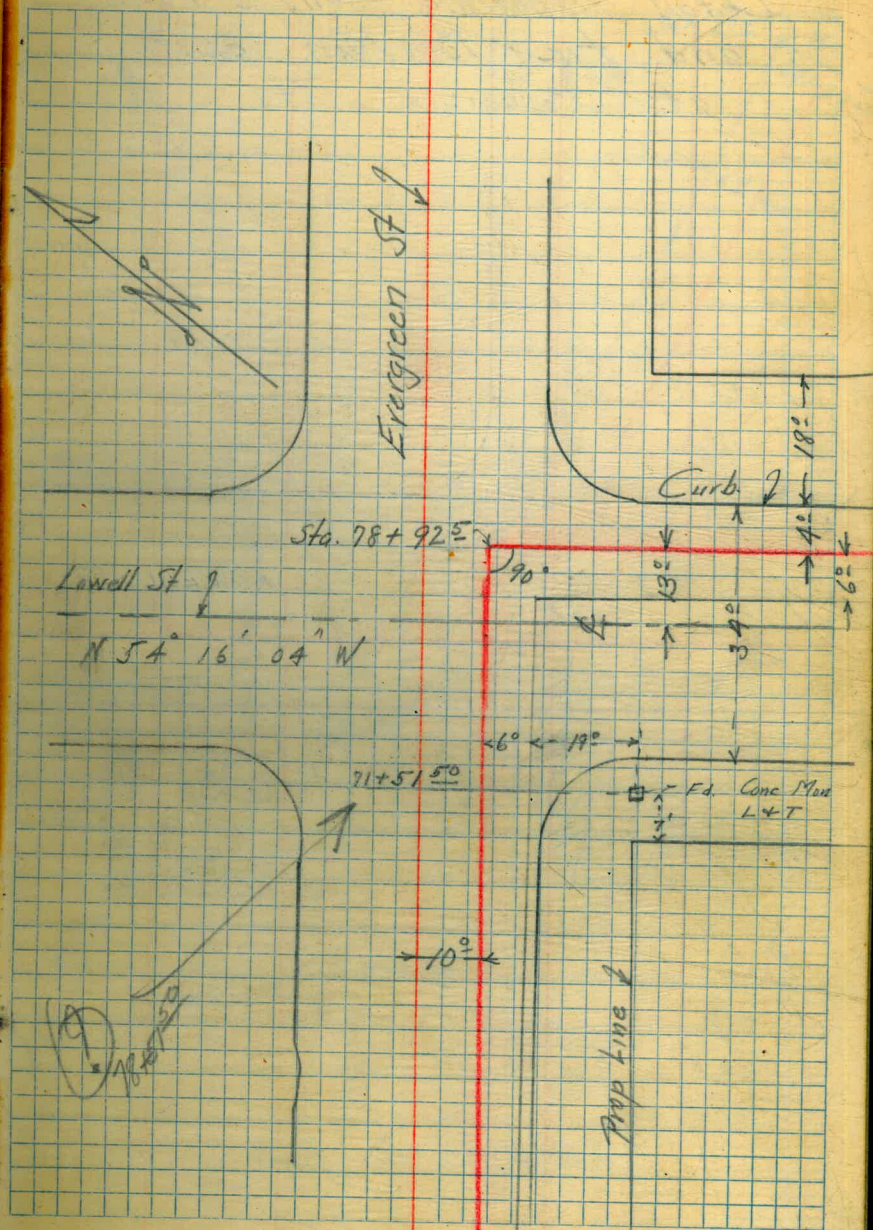




Pipe Line Location at  
Lowell St and Evergreen

Also Tie to Conc. Man.

Note Pipe Line continues East  
on Lowell St. across  
Rosecrans Blvd to Sta  
96+74.22 - See Pg 16.



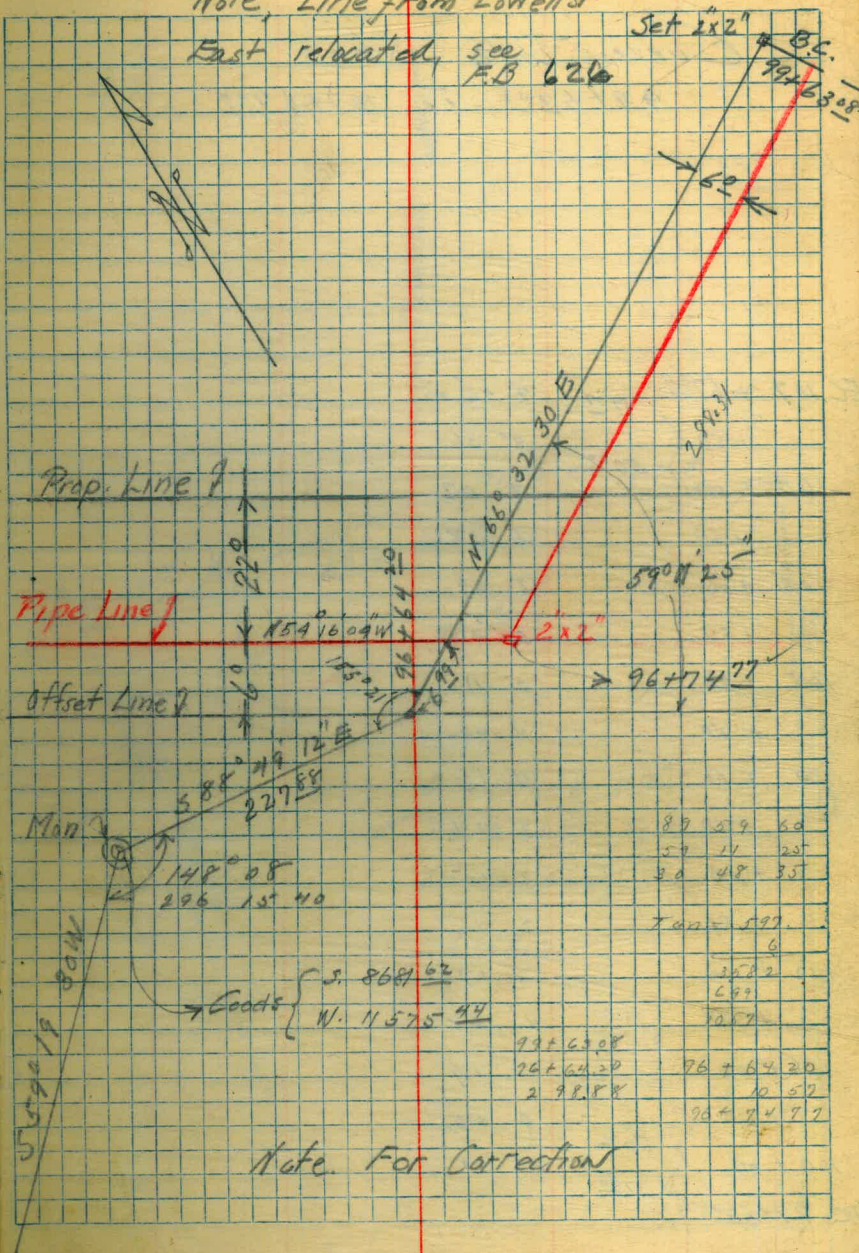


Detail Showing Angle Point  
and tie to Mon. East  
at Rosecrans St.

Rosecrans St.

LOWELL ST.

Note, Line from Lowell St  
East relocated, see  
F.B. 626



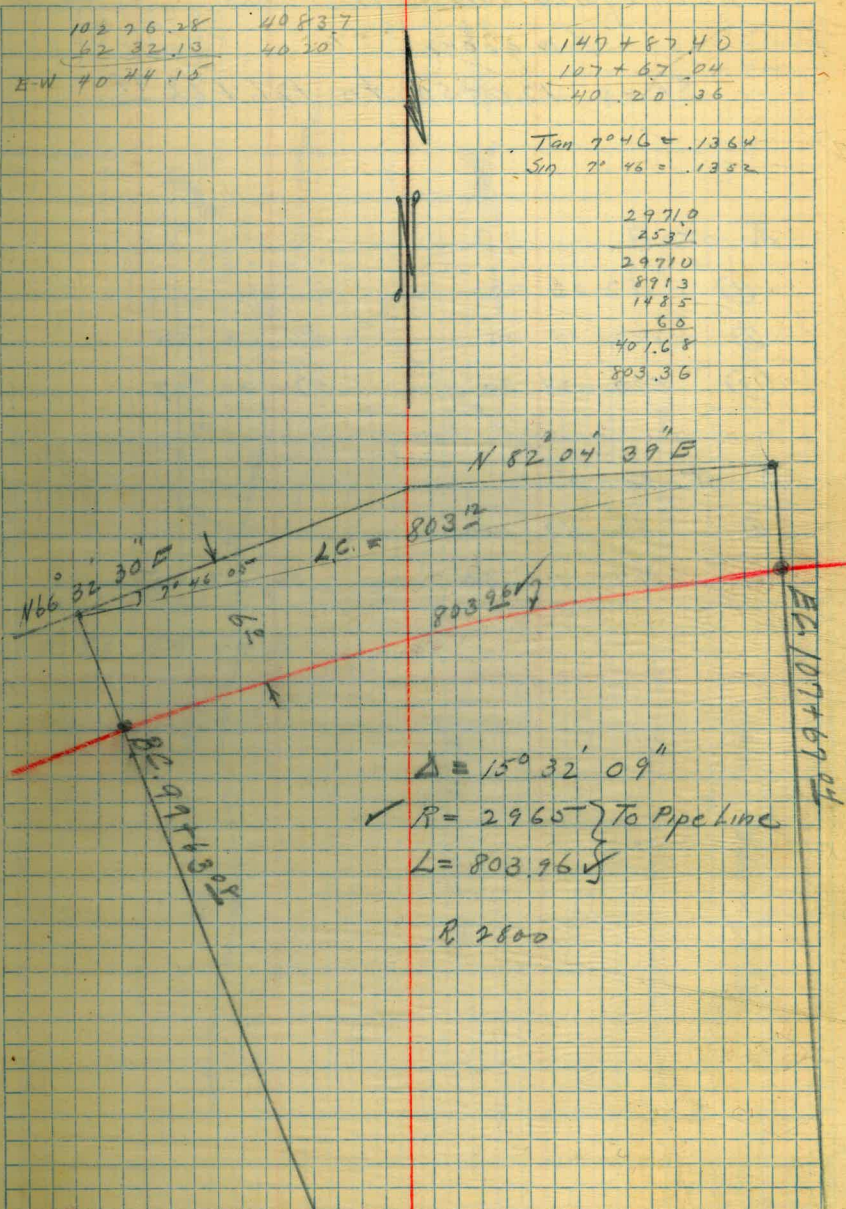
Note For Corrections



# Curve Data Stags

99+63.08 To 107+67.04

EC. 107 + 67.04	17°02'	7° 46' 05"
+ 50	50°	7° 36'
107 + 00		7° 07'
+ 50		6 38
106 + 00		6 09
+ 50		5 40
105 + 00		5 11
+ 50		4 42
104 + 00		4 13
+ 50		3 44
103 + 00		3 15
+ 50		2 46
102 + 00		2 17
+ 50		1 48
101 + 00		1° 19'
+ 50		0° 50'
100 + 00	50°	0° 21'
BC. 99+63.08	37°	





Triangulation across  
Lagoons  
Stas. 120+50 to 126+66.94

$\pi$  at B

①	57 03 00	
②	342 15 00	57 02 30
⑩	570 24 30	57 02 27
		32 57 45
		70 04 12

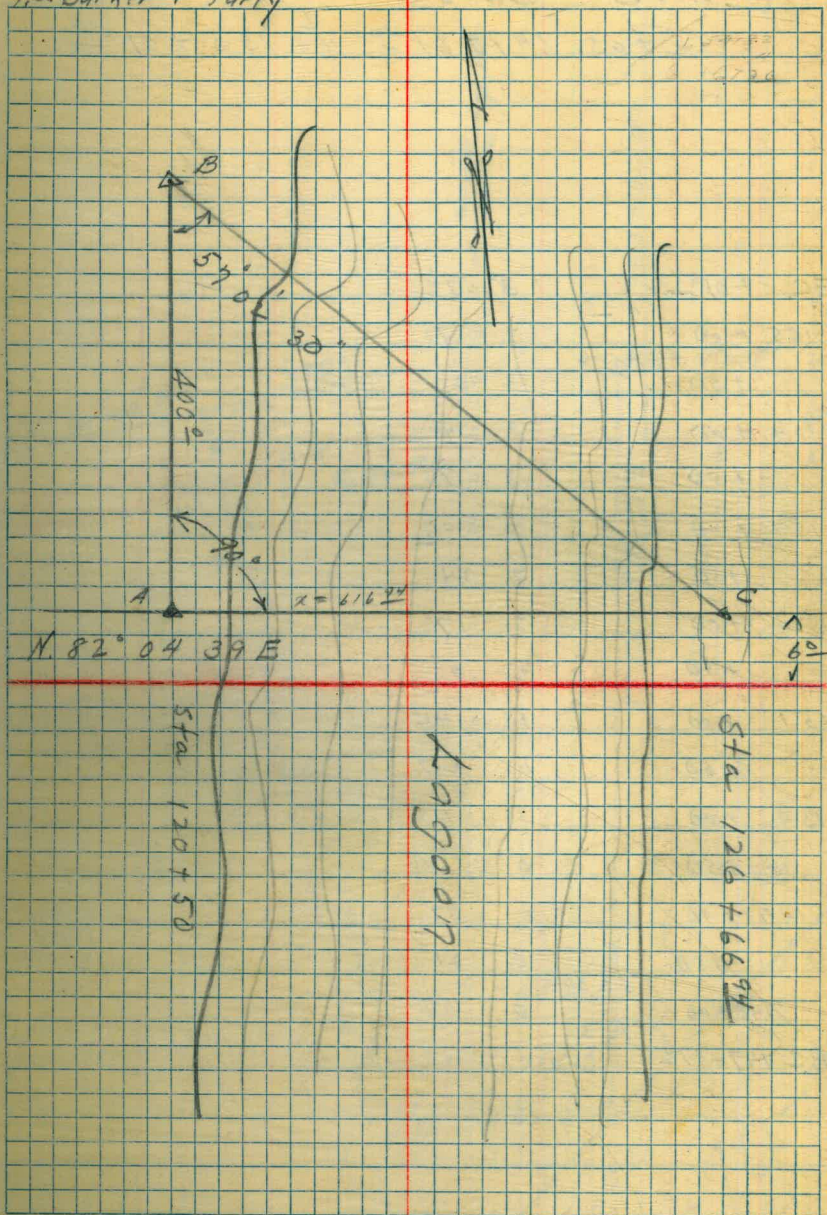
$\pi$  at C

①	32 57 30	
⑥	197 46 30	32 57 45

Nov. 7, 1941.

18.

P.S. Barker + Party





# Curve Data

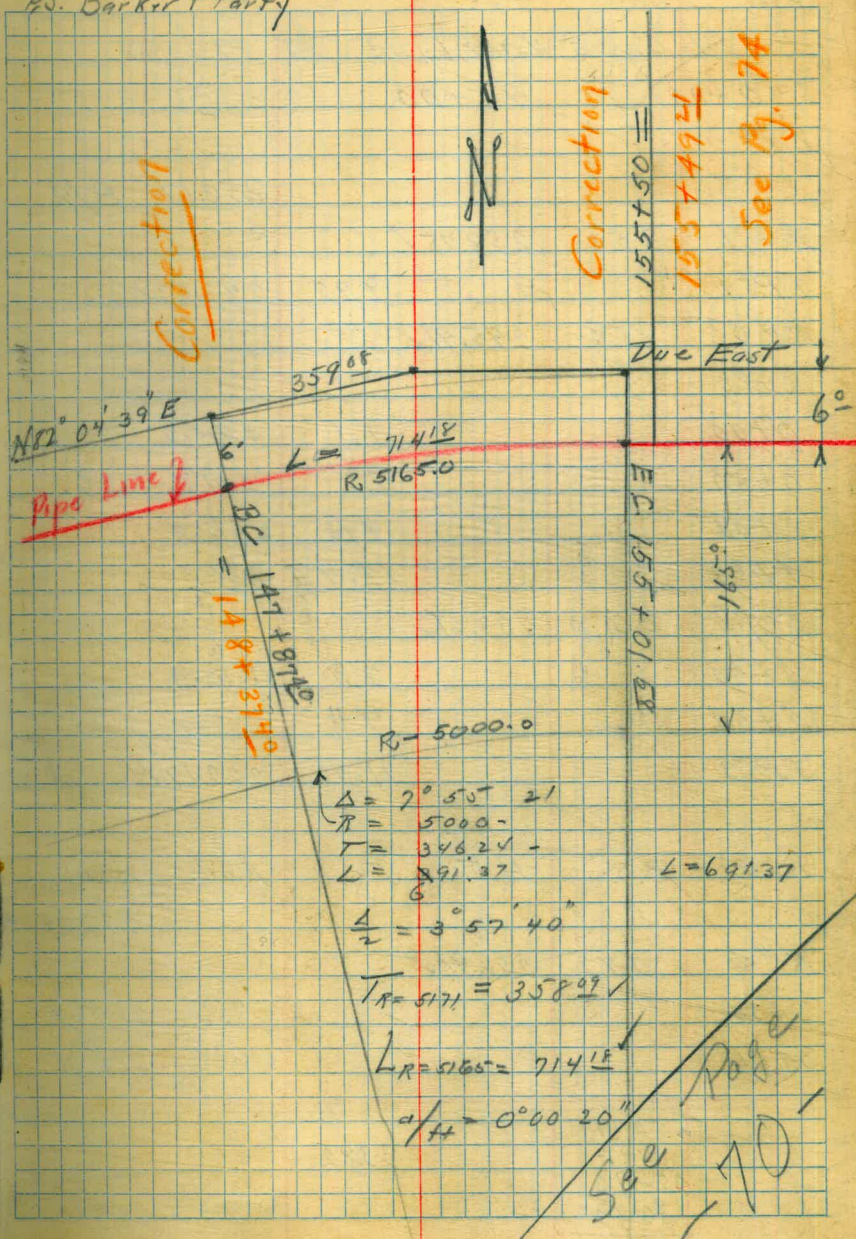
Stas. 147+87<sup>40</sup> to 155+01<sup>58</sup>

EC +01 <sup>58</sup>	1.58	3° 57' $\frac{1}{2}$
155 + 00		3 57
+50	50.06	3 40 $\frac{1}{2}$
154 + 00		3 24
+50		3 07
153 + 00		2 50 $\frac{1}{2}$
+50		2 34
152 + 00		2 17
+50		2 0 $\frac{1}{2}$
151 + 00		1° 44
+50		1 27
150 + 00		1 11
+50		0 54
149 + 00		0 37 $\frac{1}{2}$
+50		0 21
148 + 00	50.06	0 04
BC 147+87 <sup>40</sup>		12.60

Nov. 10-41

19.

P.S. Barker + Party





~~11/4/41~~

Sta. B.S. HI F.S. Elev.  
 Profile (offset) Water Line AT Pt. Loma  
 0+00 To 45+00

250.17 B.M.

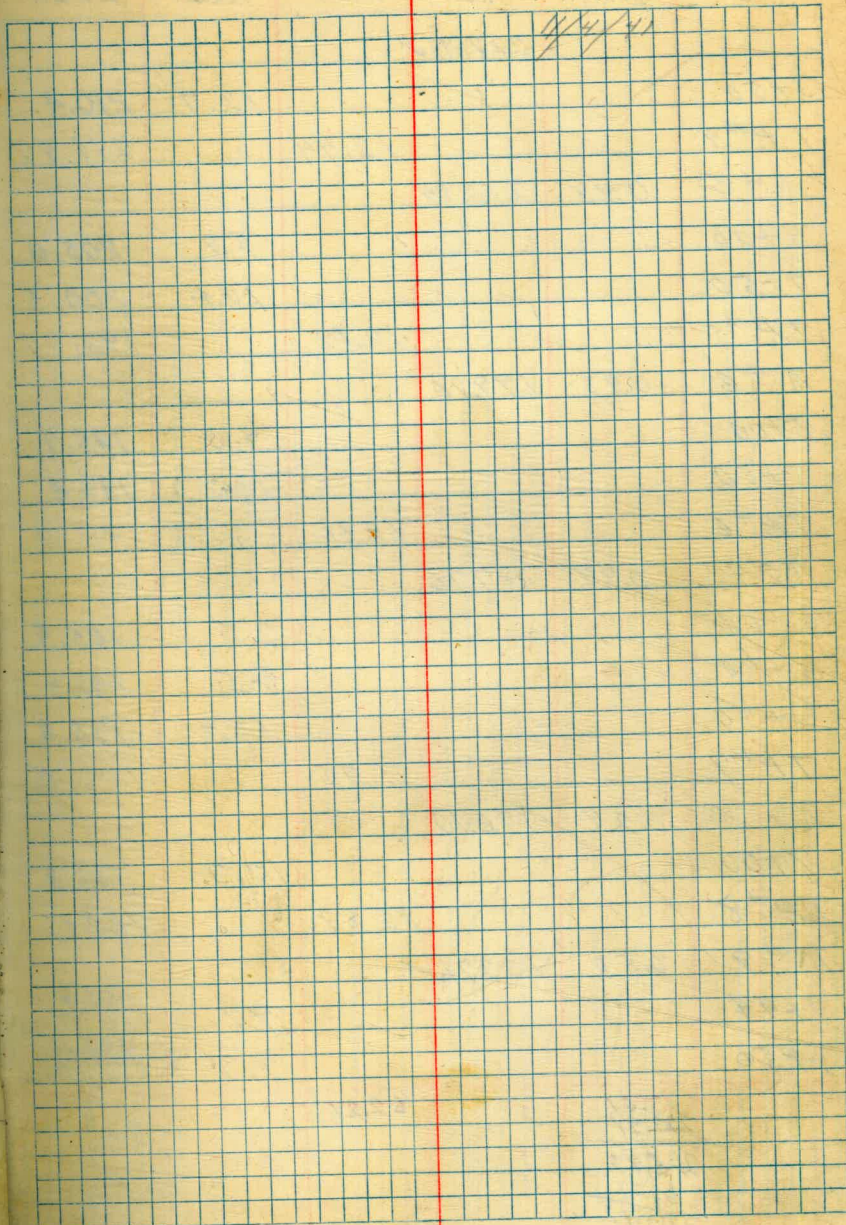
π #1 3.58 253.75 ✓  
 T.P.#1 9.92 243.83 ✓  
 π #2 1.58 245.41 ✓

0+00 1.1 244.3  
 0+50 4.2 241.2  
 1+00 8.6 236.8  
 T.P.#2 12.48 232.93 ✓

π #3 0.68 233.61 ✓  
 1+50 2.7 230.9  
 2+00 9.7 223.9 ✓  
 T.P.#3 11.42 222.19 ✓

Sta. B.S. HI F.S. Rod. Elev.  
 π #4 0.72 222.91 ✓  
 2+50 3.2 219.7  
 3+00 6.8 216.1

250.17  
 6.56 33.82  
 256.73  
 33.82  
 222.91



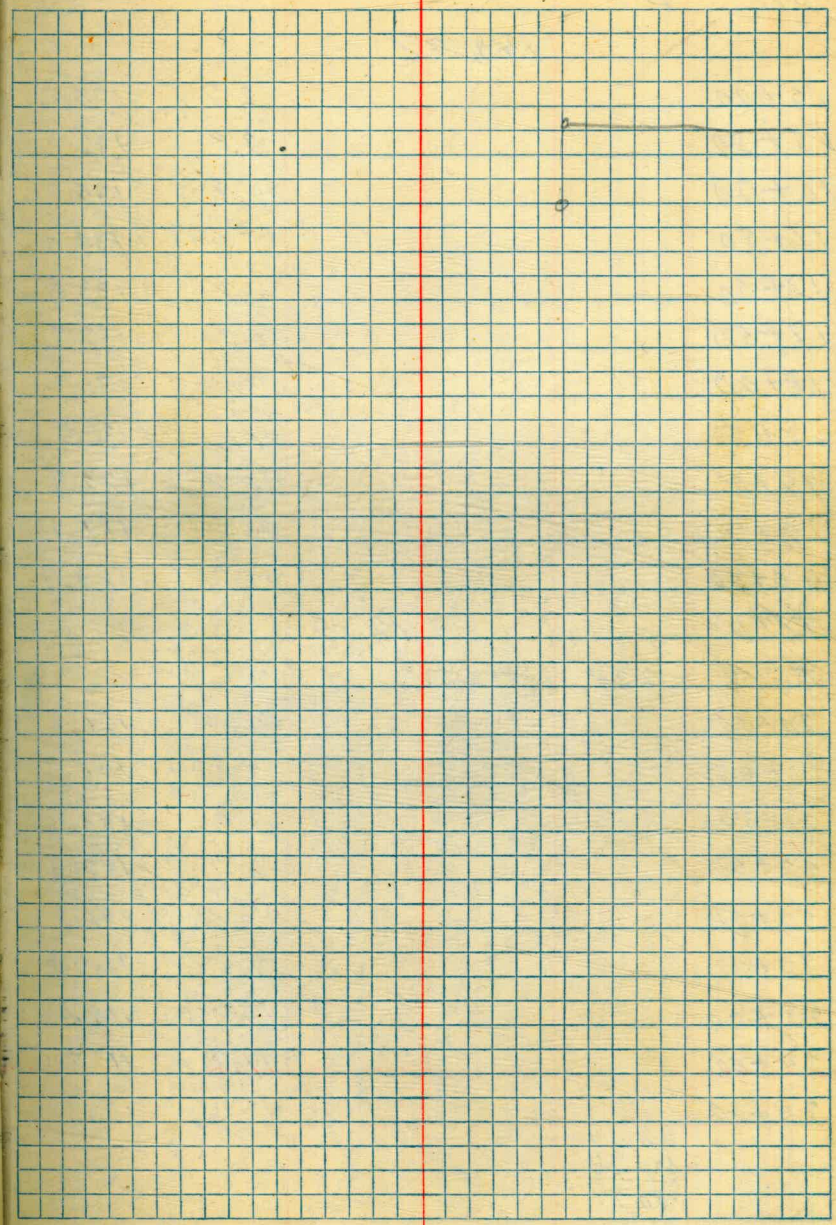


Sta	B.S.	H.I.	F.S.	Rod	Elev.
		222.91 ✓			
3+50				12.7	210.4
T.P.#4			12.44		210.47
π#5	0.47	210.94			
4+00				5.9	205.0
4+50				10.4	200.5
T.P.#5			12.17		198.77
π#6	0.93	199.70			
5+00				4.0	195.7
5+50				10.3	189.4
T.P.#6			12.81		186.89
π#7	0.87	187.76			
6+00				2.5	185.3
6+20				4.5	183.3
6+50				12.4	175.4
T.P.#7			11.90		175.86
π#8	0.24	176.10			
7+00				13.3	162.8
T.P.#8			12.89		163.21
π#9	0.50	163.71 ✓			
7+44				9.1	154.6 Toe Slope
7+50				7.3	154.4 Edge Road
	3.01		62.21		
	222.91				
	225.92				
	62.21				
	163.71				

156.4



Sta	B.S.	H.I.	F.S.	Rod	Elev.
		163.71✓			
7+57				7.2	156.5
8+00				9.1	154.6
8+50				11.3	152.4
9+00				13.1	150.6
T.P.#9			12.71		151.00
π #10	0.77	151.77			
9+50				2.9	148.9
10+00				4.3	147.5
10+50				5.4	146.4
11+00				6.5	145.3
11+50				7.5	144.0
12+00				8.5	143.3
12+50				9.6	142.2
13+00				10.5	141.3
13+50				11.2	140.6
B.C. 13+65.66				11.5	140.3
T.P.#10			11.45		140.32
π #11	0.35	140.67✓			
14+00				0.9	139.8
14+50				1.8	138.9
	1.12		24.16		
	163.71				
	164.83				
	24.16				
	140.67				

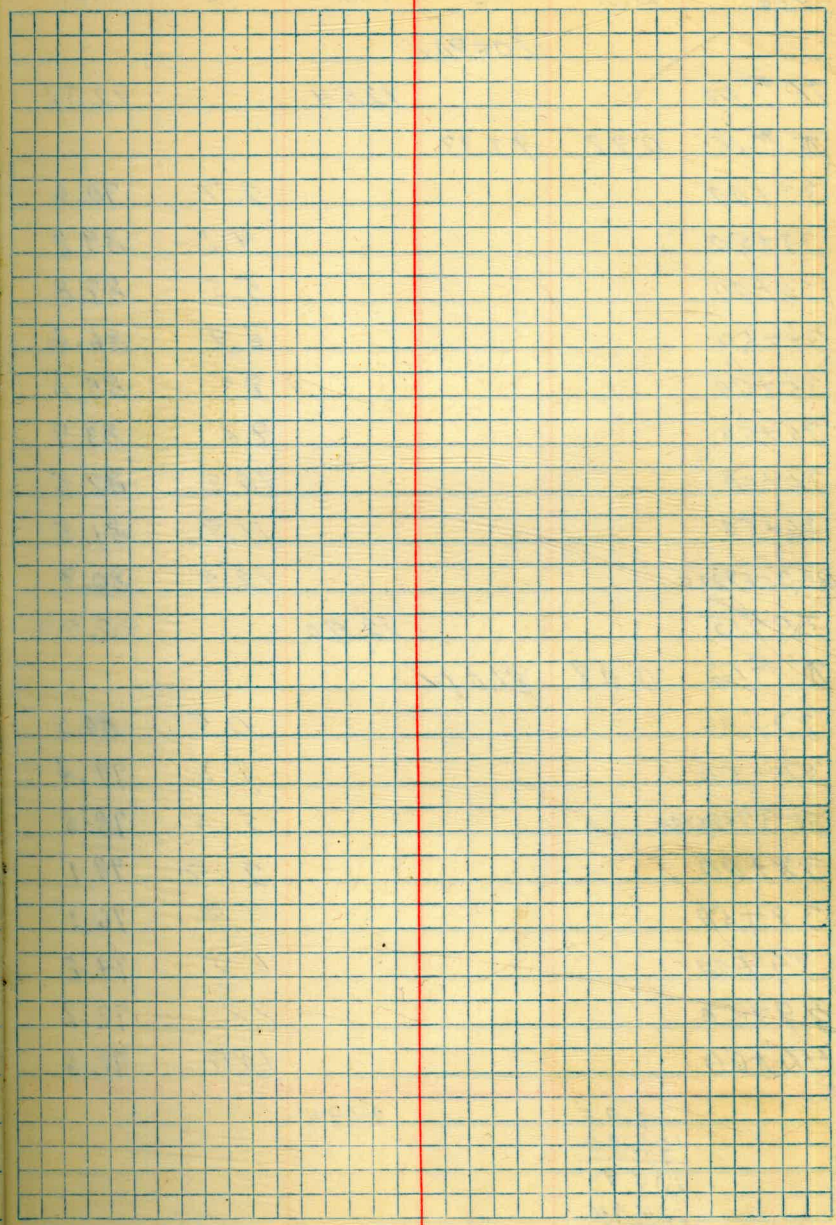




Sta	B.S.	H.I.	F.S.	Rod	Elev.
		140.67 ✓			
15+00				2.7	138.0
15+50				3.8	136.9
16+00				4.8	135.9
16+50				5.9	134.8
17+00				6.9	133.8
17+50				8.0	132.7
18+00				9.0	131.7
18+50				10.0	130.7
19+00				10.9	129.8
19+50				12.0	128.7
20+00				13.0	127.7
T.P.#11			12.15		128.52
A#12	0.24	128.76 ✓			
20+50				2.4	126.4
21+00				3.6	125.2
21+50				4.9	123.9
22+00				6.3	122.5
22+50				7.6	121.2
23+00				9.0	119.8
23+50				10.4	118.4
24+00				11.8	117.8
24+50				13.2	115.6
	0.24		12.15		
	140.67				
	140.91				
	12.15				
	128.76				



Sta.	B.S.	H.I.	F.S.	Rod	Elev.
		128.76✓			
TP#12			12.65		116.11
W#13	0.35	116.46			
25+00				2.4	114.1
EC-25+35.28				3.6	112.9
25+50				4.1	112.4
26+00				5.8	110.7
26+50				7.3	109.2
27+00				8.8	107.7
27+50				10.7	106.3
28+00				11.7	104.8
28+50				13.1	103.4
TP#13			12.63		103.83
W#14	1.07	104.90✓			
29+00				2.9	102.0
29+50				4.3	100.6
30+00				5.8	99.1
30+50				7.2	97.7
31+00				8.6	96.3
31+50				10.0	94.0
32+00				11.4	93.5
32+50				12.8	92.1
	1.42		25.28		
	128.76				
	130.18				
	25.28				
	104.90				





Sta.	B.S.	H.I.	F.S.	Rod	Elev.
		109.90 ✓			
TP #14			12.54		92.36
TP #15	0.97	93.33			
33+00				2.7	90.6
33+50				4.1	89.2
34+00				5.5	87.8
34+50				6.9	86.6
35+00				8.3	85.0
35+50				9.6	83.7
36+00				10.8	82.5
36+50				11.8	81.5
BC 36+72.25				12.4	80.9
TP #15			12.40		80.93
TP #16	0.08	81.01 ✓			
37+00				0.5	80.5
37+50				1.6	79.4
EC 37+82.30				2.4	78.6
38+00				2.9	78.1
38+50				4.9	76.1
39+00				6.8	74.2
39+50				8.8	72.2
40+00				10.7	71.6
	1.05		24.94		
	104.90				
	105.95				
	24.94				
	81.01				



Sta	B.S.	H.I.	F.S.	Rod	Elev.
		81.01✓			
40+50				12.6	
T.P.#16			12.62		68.39
π #17	0.35	68.74			
41+00				2.2	
41+50				3.6	
42+00				4.8	
42+50				6.1	
43+00				7.3	
43+50				8.7	
44+00				10.0	
44+50				11.2	
45+00				12.8	55.9
T.P.#17			12.84		55.90
π #18	2.34	58.24✓			
45+50②				4.3	43.9
" ②				3.2	55.0
46+00②				6.7	
" ②				5.5	52.7
46+50②				8.3	
" ②				7.4	50.8
47+00②				9.2	
" ②				8.3	49.9
	2.09		25.46		
	81.01				
	85.70				
	25.46				
	58.24				



Sta	B.S.	H.I.	F.S.	Rod	Elev.
		58.24✓			
T.P.# 18			12.39		45.85✓

T.P.#18 = Elev. 45.85

Lead Plug to N.W. Curb  
on Evergreen St & Canon St.



Profile of Water Line At Pt. Loma

Sta.	B.S.	HI	F.S.	Red.	Elev.
B.M.					250.17 ✓
TP#1	3.76	253.93			
TP#1			8.85		245.08
TP#2	0.60	245.68			
0+00				1.3	244.4
+50				3.3	242.4
1+00				5.1	240.6
TP#2			12.29		233.39
TP#3	0.06	233.45			
1+50				2.6	230.8
2+00				9.7	223.7
TP#3			12.24		221.21
TP#4	0.56	221.77			
2+50				2.3	219.5
3+00				5.9	215.9
3+50				11.7	210.1
TP#4			12.69		209.08
TP#5	0.28	209.36 ✓			
4+00				4.3	205.1
4+50				8.8	200.6
			46.07		
	5.26				
	250.17				
	255.43				
	46.07				
	209.36				

Messersmith

28

φ Melhorn

11/5/41

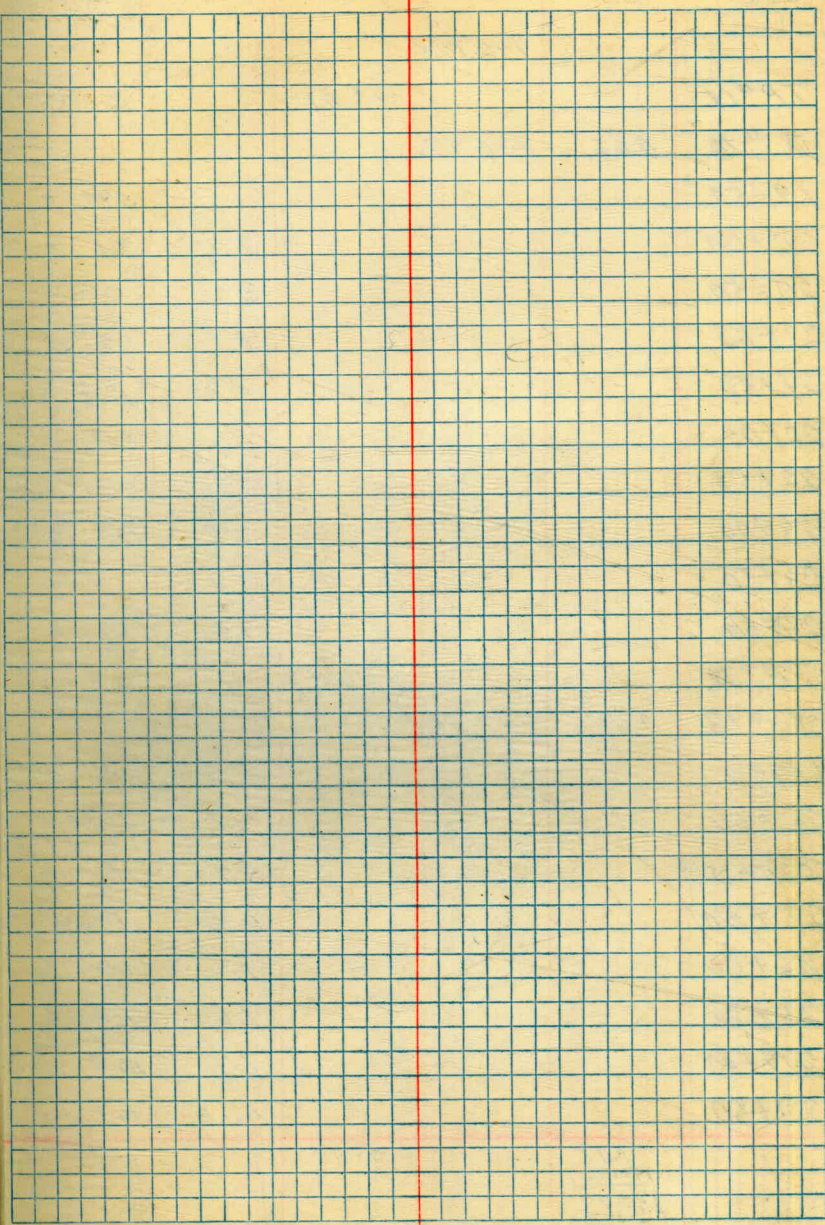
← THIS is an error, see rough check page 78  
see also bend on offset, p 20



Sta.	B.S.	HI	F.S.	Rod	Elev.
		209.36 ✓			
T.P.#5			12.19		197.17
π #6	0.68	197.85			
5+00				2.0	195.8
5+50				8.5	189.3
6+00				12.3	185.5
T.P.#6			11.90		185.95
π #7	0.55	186.50			
6+50				11.4	175.1
T.P.#7			12.47		174.03
π #8	0.10	174.13			
7+00				11.6	162.5
T.P.#8			11.90		162.23
π #9	1.43	163.66			
7+44				9.3	154.4 Toe Slope
7+50				7.3	156.4
7+57				7.2	156.5
8+00				9.3	154.4
8+50				11.4	152.3
T.P.#9			12.79		150.87
π #10	1.13	152.00 ✓			
9+00				1.6	150.4
9+50				3.3	148.7 ✓
	3.89		61.25		
	209.36				
	213.25				
	61.25				
	152.00				



Sta.	B.S.	HI	F.S.	Rod	Elev.
		152.00✓			
10+00				4.7	147.3
10+50				5.8	146.2
11+00				6.9	145.1
11+50				7.9	144.1
12+00				9.0	143.0
12+50				10.0	142.0
13+00				10.8	141.2
13+50				11.3	140.7
PC 13+65.66				11.5	140.5
T.P. # 90			11.84		140.16
PI # 11	2.66	142.82✓			
14+00				2.7	140.1
14+50				3.5	139.3
15+00				4.4	138.4
15+50				5.4	137.4
16+00				6.4	136.4
16+50				7.5	135.3
17+00				8.5	134.3
17+50				9.6	133.2
18+00				10.6	132.2
18+50				11.7	131.1
19+00				12.6	130.2
	2.66		11.84		
	<del>152.00</del>				
	154.66				
	11.84				
	142.82				





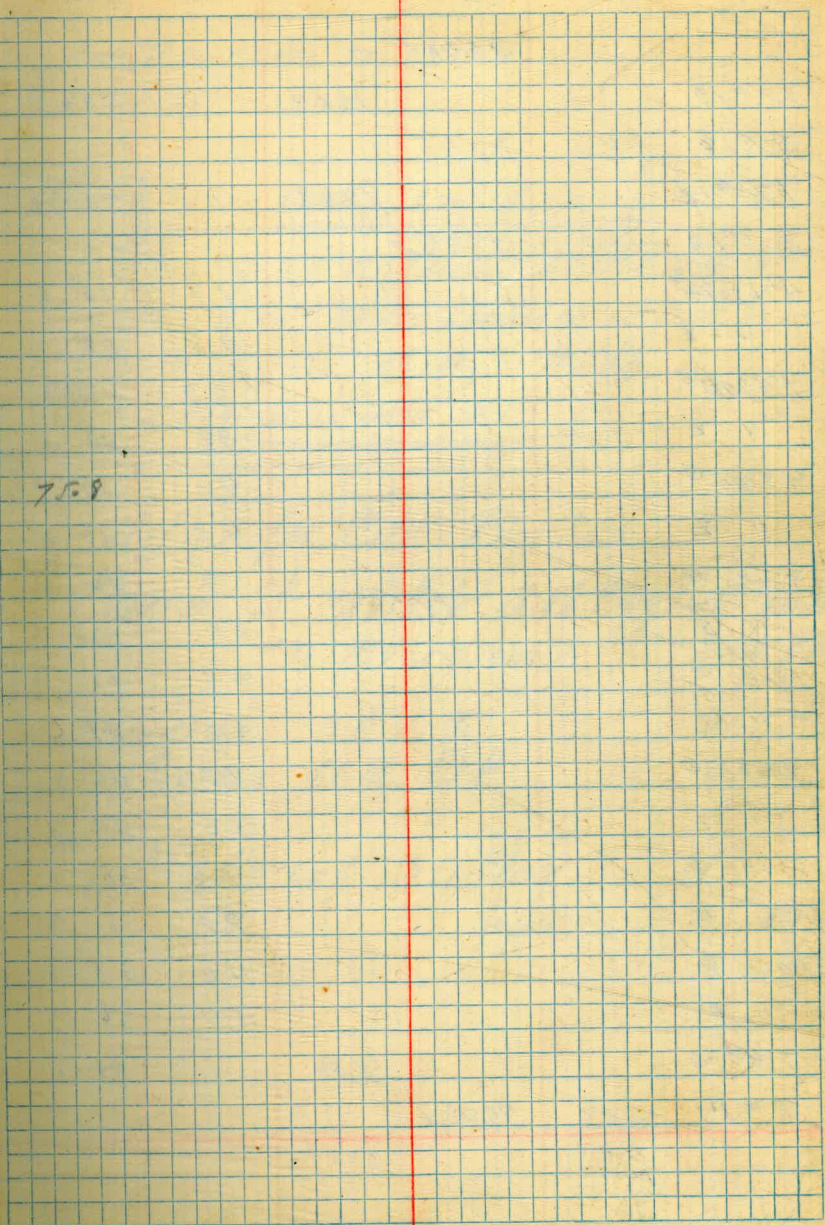
Sta.	B.S.	H.I.	F.S.	Rod.	Elev.
		142.82 ✓			
T.P. #11			13.01		129.81
π #12	0.66	130.47 ✓			
19+50				1.5	129.0
20+00				2.4	128.1
20+50				3.7	126.8
21+00				4.9	125.6
21+50				6.3	124.2
22+00				7.6	122.9
22+50				8.9	121.6
23+00				10.3	120.2
23+50				11.7	118.8
24+00				13.2	117.3
T.P. #12			12.44		118.03
π #13	0.45	118.48 ✓			
24+50				2.5	116.0
25+00				4.1	114.4
EC 25+35.25				5.4	113.1
25+50				6.0	112.5
26+00				7.8	110.7
26+50				9.6	108.9
27+00				11.2	107.3
27+50				12.6	105.9 ✓
	1.11		25.45		
	142.82				
	143.93				
	25.45				
	118.48				



S.T.	B.S.	H.I.	F.S.	Red.	Elev.
		118.48✓			
T.P.#13			12.65		105.83
π #14	0.30	106.13✓			
28+00				1.8	104.3
28+50				3.1	103.0
29+00				4.5	101.6
29+50				6.0	100.1
30+00				7.4	98.7
30+50				8.7	97.4
31+00				10.2	95.9
31+50				11.6	94.5
32+00				13.0	93.1
T.P.#14			13.00		93.13
π #15	0.92	94.05✓			
32+50				2.4	91.6
33+00				3.7	90.3
33+50				5.2	88.8
34+00				6.6	87.4
34+50				8.0	86.0
35+00				9.4	84.6
35+50				10.7	83.3
36+00				11.9	82.1
36+50				12.9	81.1✓
	1.22		25.65		
	118.48				
	119.70				
	25.65				
	94.05				



Sta.	B.S.	H.I.	F.S.	Red.	Elev.
		94.05 ✓			
TP #15			12.90		81.15
A #16	1.55	82.70 ✓			
B.C. 36+79.25				2.2	80.5
37+00				2.6	80.1
37+50				3.4	79.3
E.C. 37+82.40				3.4	79.3
38+00				3.9	78.8
38+50				5.8	76.9
39+00				7.7	75.0
39+50				9.5	73.2
40+00				11.5	71.2
TP #16			12.65		70.05
A #17	0.83	70.88 ✓			
40+50				1.7	69.2
41+00				3.6	67.3
41+50				5.0	65.9
42+00				6.2	64.7
42+50				7.4	63.5
43+00				8.6	62.3
43+50				10.0	60.9
44+00				11.2	59.7
44+50				12.6	58.3
	2.38		25.55		✓
	94.05				
	96.43				
	25.55				
	70.88				



75.9



Sta.	B.S.	H.I.	F.S.	Red	Elev.
		70.88 ✓			
T.P. #17			12.63		58.25
π #18	0.20	58.45			
T.P. #18			12.88		46.40
π #19	1.25	47.65 ✓			
47+30.22 <sup>⊙</sup>			1.9		45.6
" ⊘			0.8		46.9
47+70.22 <sup>⊙</sup>			3.9		43.8
" ⊘			3.6		44.1
48+00 <sup>⊙</sup>			4.6		43.1
" ⊘			4.3		43.4
48+50 <sup>⊙</sup>			5.7		42.0
" ⊘			5.4		42.3
49+00 <sup>⊙</sup>			6.3		41.4
" ⊘			6.1		41.6
49+50 <sup>⊙</sup>			7.7		40.0
" ⊘			7.5		40.2
50+00 <sup>⊙</sup>			9.6		38.1
" ⊘			9.4		38.3
50+50 <sup>⊙</sup>			11.6		36.1
" ⊘			11.4		36.3
T.P. #19			12.30		35.35
π #20	0.55	35.90 ✓			
	2.00		37.91		
	70.88				
	72.88				
	37.81				
	35.07				

Red Starts 45+50 to 47+30.22  
on page 26

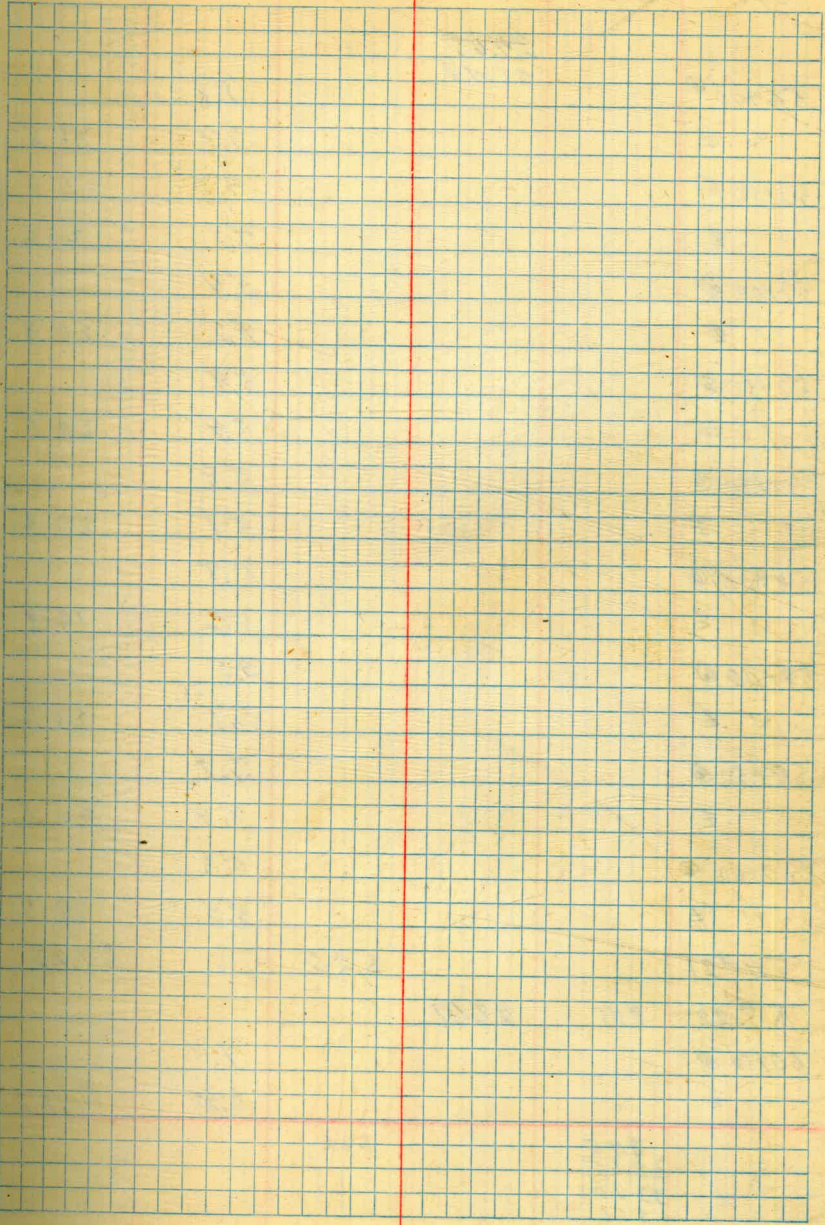
T.P. #18 = Elev. 45.57      Lead Plug  $\frac{9}{-}$

Note  
Elev. of T.P. 18 found 45.57, true City  
Datum Elev. 46.00. Lordman corrects from  
this print & uses 46.40, OK (P)  
neglecting error 0.1

Notes for City Branches  
Cannon St. & Willow N.W. Plug Curb 61.20  
S.M. Evergreen 49.51  
Evergreen N.E. C.T. 31.75  
Byron N.E. B.P. 31.79  
R. & Lowell S.M. Plug  
Curb 25.296



Sta.	B.S.	H.I.	F.S.	Rod	Elev.
		<del>35.07</del>			
		35.90 ✓			
51+00 @				1.9	
" ♀				1.7	34.2
51+50 @				3.4	32.5
" ♀				3.2	32.7
52+00 @				4.4	31.5
" ♀				4.2	31.7
52+50 @				6.1	29.8
" ♀				5.9	30.0
53+00 @				7.8	
" ♀				7.5	28.4
53+50 @				9.4	
" ♀				9.1	26.8
54+00 @ -				10.9	
" ♀				10.7	25.2
54+50 @				11.2	49.0
" ♀				11.0	24.9
55+00 @				11.7	
" ♀				11.8	24.1
T.P. #20			11.67		24.23
π #21	1.25	25.48			
55+50 @				2.3	
" ♀				2.5	23.0
	1.25		11.67		
	35.62				
	36.32				
	11.67				
	24.65				





Sta.	B.S.	HI	F.S.	Red.	Elev.
		<del>24.65</del> 25.48			
56+00 @				3.8	
" ±				3.7	21.8
56+50 @				4.7	
" ±				4.9	20.6
57+00 @				5.4	
" ±				5.2	20.3
57+50 @				5.4	
" ±				5.4	20.1
58+00 @				5.8	
" ±				5.1	20.4
58+50 @				5.8	
" ±				5.6	19.9
59+00 @				5.5	
" ±				5.3	20.2
59+50 @				5.7	
" ±				4.9	20.6
60+00 @				5.3	
" ±				5.0	20.5
TP #21			5.26		20.22
TP #22	8.95	28.67			
60+50 @				7.4	
" ±				6.8	18.7
	8.95		5.26		
	<del>24.65</del>				
	33.10				
	<del>5.26</del>				
	27.84				







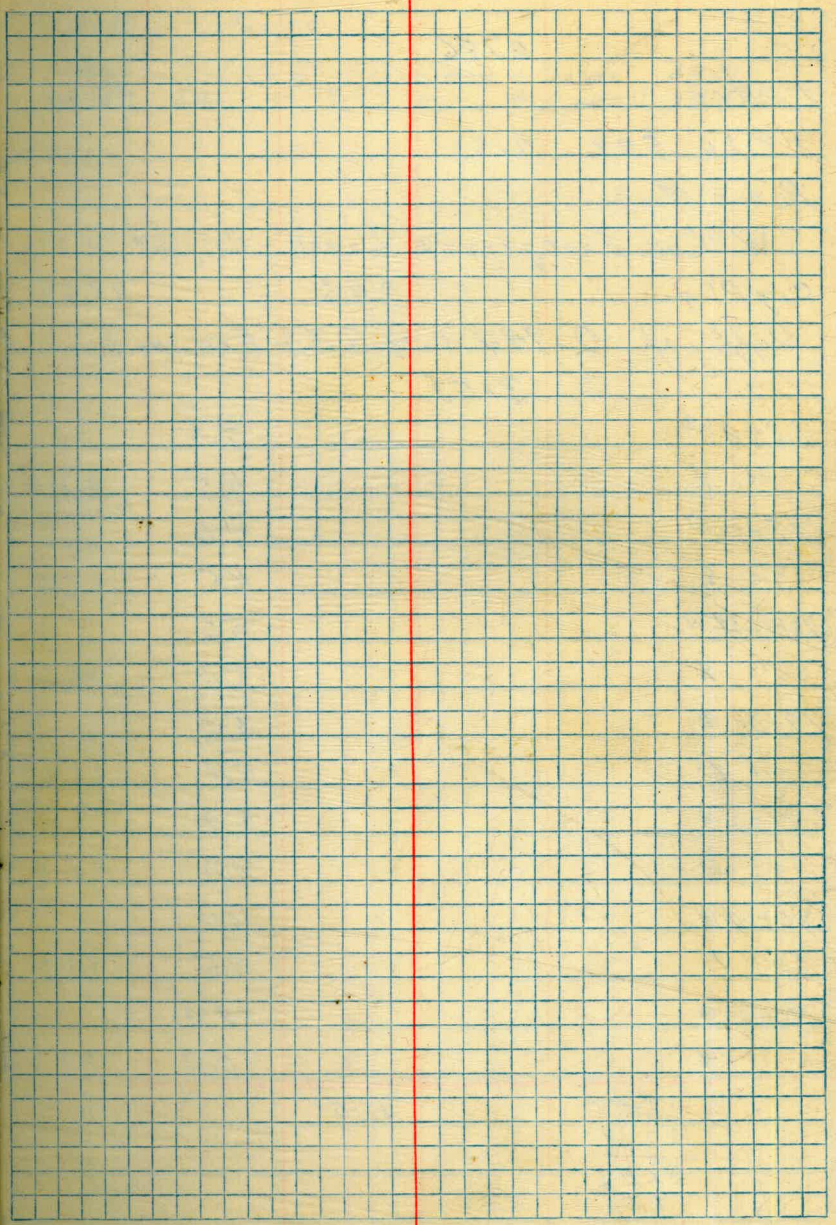




Sta.	B.S.	HI	F.S.	Red	Elev.
		29.94			
70+50 <sup>o</sup>				4.0	
" ♀				3.7	26.2
71+00 <sup>o</sup>				4.1	
" ♀				3.8	26.1
71+50 <sup>o</sup>				3.8	
" ♀				3.5	26.4
72+00 <sup>o</sup>				3.9	
" ♀				3.7	26.2
72+50 <sup>o</sup>				5.4	
" ♀				5.2	24.7
73+00 <sup>o</sup>				5.8	
" ♀				5.6	24.3 Edge Cut
73+20 <sup>o</sup>				6.1	
" ♀				5.9	Edge Cut 24.0
73+30 <sup>o</sup>				9.5	Bottom cut
" ♀				9.2	20.7 Bottom cut
Concrete cut-off wall 12' east of (♀)					
				9.30	20.6
T.P. # 24			9.30		20.64
T # 25	7.32	27.96			
	7.32		9.30		
	29.11				
	36.43				
	9.30				
	27.13				



Sta	B.S.	HI.	F.S.	Rod.	Elev.
		27.96			
73+35 @		28.00		4.3	Edge cur
" ±				3.9	Edge cur 24.1
74+50 @				4.7	
" ±				4.4	23.6
73+74 @				5.2	
" ±				5.3	22.7
74+00 @				6.1	
" ±				6.2	21.8
74+50 @				7.9	
" ±				7.9	20.1
75+00 @				7.9	
" ±				7.8	20.2
75+50 @				7.1	
" ±				6.7	21.3
76+00 @				5.7	
" ±				5.5	22.5
76+50 @				4.0	
" ±				3.8	24.2
77+00 @				2.8	
" ±				2.4	25.6
77+50 @				1.5	
" ±				1.3	26.7





Sta.	B.S.	I.I.	F.S.	Rod	Elev.
		27.96			
TP # 25			1.72		26.24

A # 26 5.29 31.53

Bench Mark.

S.W. Cor. Evergreen & Lowell - City BM 25.296

City Plug 2.46 28.24

Diff. of 2.944 City B.M. & Field work  
31.53

78+00 <sup>o</sup>				4.8	
" 2				4.5	27.0
78+50 <sup>o</sup>				4.6	
" 2				4.5	27.0
78+86.52 <sup>o</sup>				5.2	
" 2				5.0	26.5
79+00 <sup>o</sup>				5.2	
" 2				5.4	26.1
79+50 <sup>o</sup>				6.9	
" 2				7.0	24.5
80+00 <sup>o</sup>				8.4	
" 2				8.5	23.0
80+50 <sup>o</sup>				10.0	
" 2				10.0	21.5

5.29

27.13

32.42

1.72

30.70

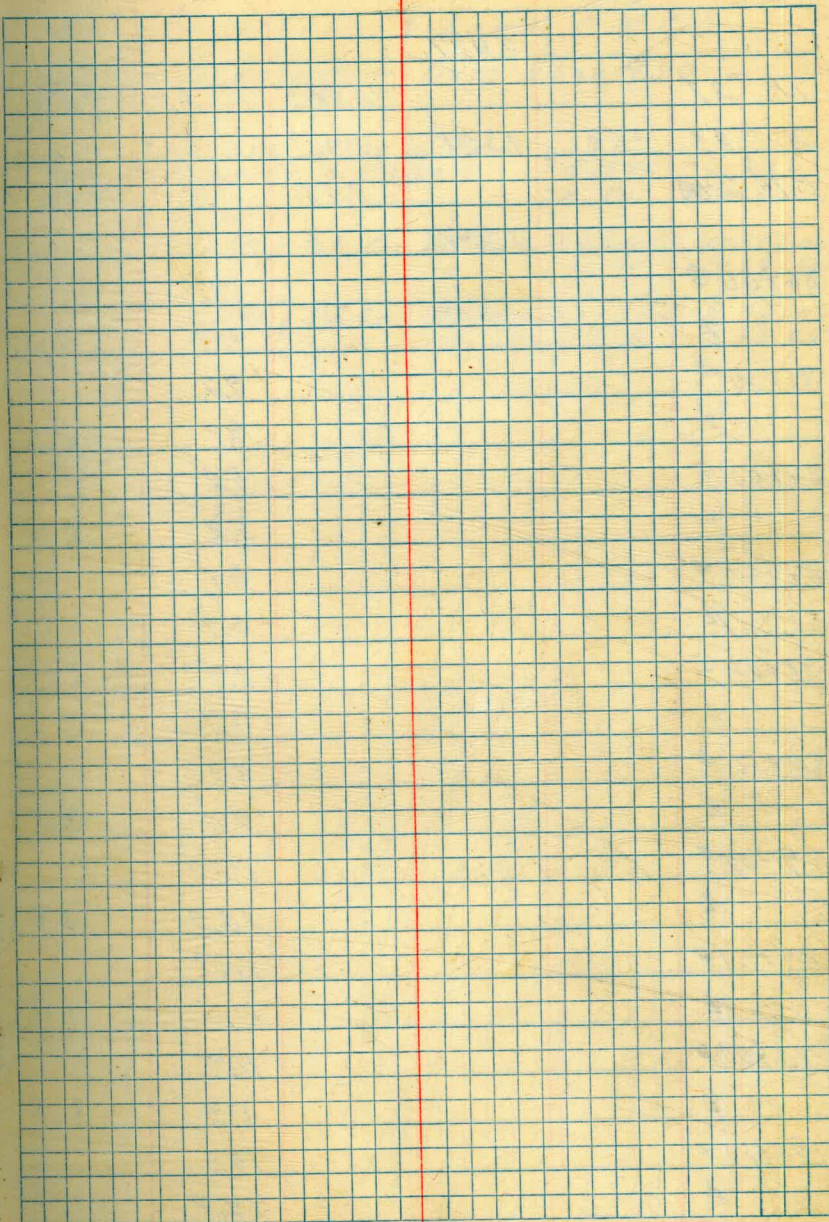
1.72

Bench Marks

Plug - S.W. Cor. Evergreen & Canon 49.51  
S.E. " " & Lowell 25.296



Sta.	B.S.	HI.	F.S.	Rod.	Elev.
		3.153			
81+00 @				11.4	
" ♀				11.5	20.0
81+50 @				12.7	
" ♀				12.9	18.6
T.P.#26			12.58		18.95
ℵ #27	2.02	20.97			
82+00 @				3.4	
" ♀				3.6	17.4
82+50 @				4.4	
" ♀				4.6	16.4
83+00 @				5.7	
" ♀				5.9	15.1
83+50 @				6.8	
" ♀				7.0	14.0
84+00 @				8.0	
" ♀				8.1	12.9
84+50 @				9.2	
" ♀				9.3	11.7
85+00 @				10.4	
" ♀				10.4	10.6
85+50 @				11.7	
" ♀				11.6	10.4





S <sub>7a</sub>	B.S.	HI.	F.S.	Rod.	Elev.
		20.97			
T.P. #27			11.18		9.79
π #28	3.62	13.41			
B.M. 24A			3.08		10.33
		13.41			
86+00 @				4.5	
" ♀				4.5	8.9
86+50 @				4.2	
" ♀				4.1	9.3
87+00 @				5.2	
" ♀				5.2	8.2
87+50 @				6.1	
" ♀				6.4	7.0
88+00 @				7.4	
" ♀				7.7	5.7
88+50 @				8.7	
" ♀				9.0	4.4
89+00 @				10.0	
" ♀				10.3	3.1
89+50 @				11.3	
" ♀				11.5	1.9
90+00 @				11.9	
" ♀				11.9	1.5
90+50 @				12.9	
" ♀				12.9	1.5

3.62 23.76  
20.14 11.18  
23.76 12.58

11.18

B.M. 24A Rosecrans & Lowell N.W. Cor.

{ B.M. 24A = Elev. 10.33 } - Ours Elev. 9.50  
{ " " = " 9.26 }

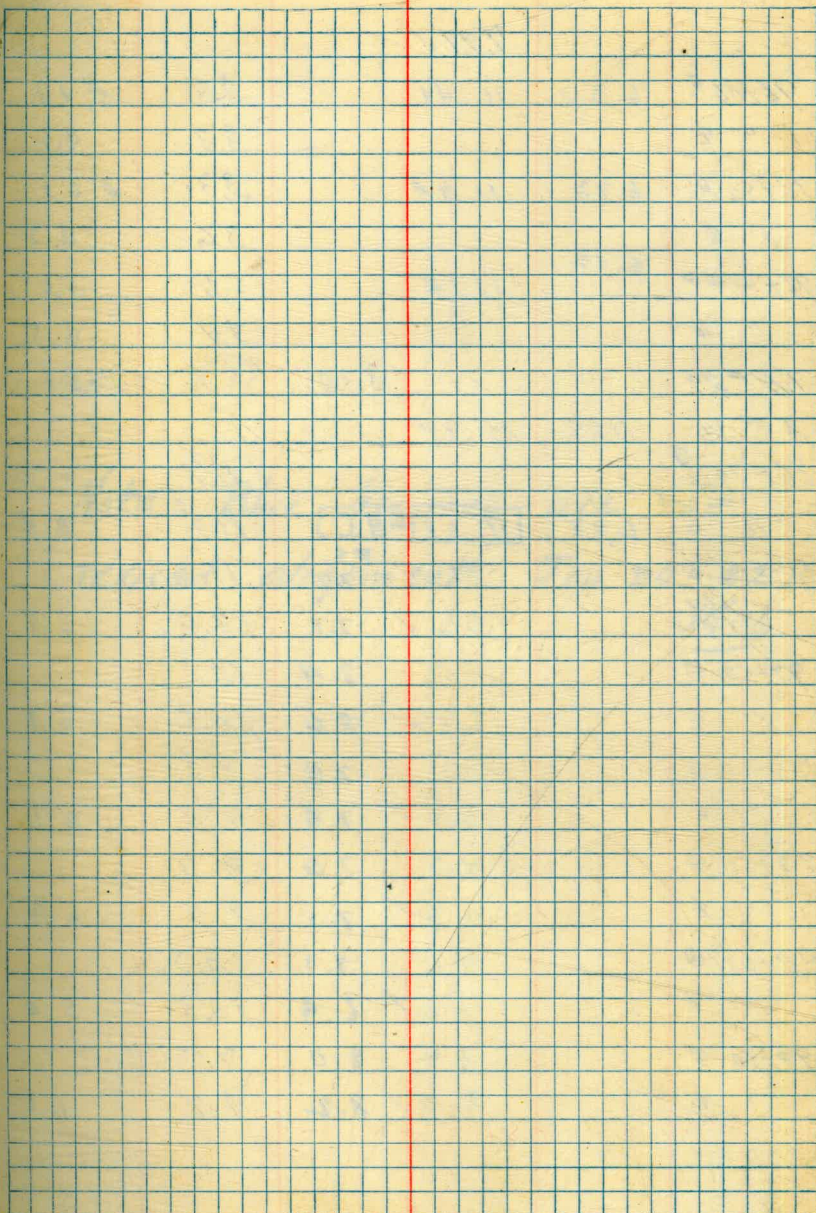
South East Cor. Plug in curb  
B.M. Evergreen & Lowell 25.296 City  
" " " 24.51 East

Plug S.E. Cor. B.M. Locust & Lowell 15.059 City  
" " " 14.29 East

Plug S.W. Cor. B.M. Rosecrans & Lowell 8.063 City  
" " " 8.60 East



Sta	B.S.	I.Z.	F.S.	Red.	Elev
		13.91			
TP #28			10.69		2.72
TP #29	5.19	7.91			
91+00 @				7.9	
" ±				8.2	-0.3
91+50 @				8.2	
" ±				8.6	-0.7
92+00 @				8.3	
" ±				8.4	-0.5
92+50 @				8.1	
" ±				8.5	-0.6
93+00 @				8.0	
" ±				8.2	-0.3
93+50 @				8.2	
" ±				8.5	-0.6
94+00 @				7.8	
" ±				7.7	+0.2
94+50 @				6.4	
" ±				6.8	1.1
95+00 @				4.1	
" ±				4.1	3.8
95+50 @				3.0	
" ±				3.2	4.7
	5.19		10.69		
	12.58				
	17.77				
	10.69				
	7.08				





Sta.	B.S.	HT.	F.S.	Rad.	Elev.
		7.91 ✓			
96+00	6.30	11.41		2.8	5.11
"				3.3	4.6
96+50	6.73	11.34		3.3	4.61
"				3.6	4.3
96+64.20	6.17	11.18		2.9	5.01
"				3.4	4.5
T.P. #29			3.30		4.61 ✓
T.P. #30	11.28	15.89			
96+74.2				11.7	
"	6.98	11.38 → HT		11.5	4.4
97+00		3.7	F.S. 7.7	11.6	
"		3.6 ✓	7.8	12.0	3.9
97+50		3.0	8.4	10.1	
"		2.8 ✓	8.6	10.5	5.4
98+00		3.5	7.9	9.3	
"		3.5 ✓	7.9	9.8	6.1
98+50		4.0	7.0	9.3	
"		4.3 ✓	7.1	9.5	6.4
99+00		4.3	7.1	10.3	
"		5.0 ✓	6.4	10.5	5.4
99+50		3.4	8.0	9.7	
"		3.2 ✓	8.2	9.8	6.1

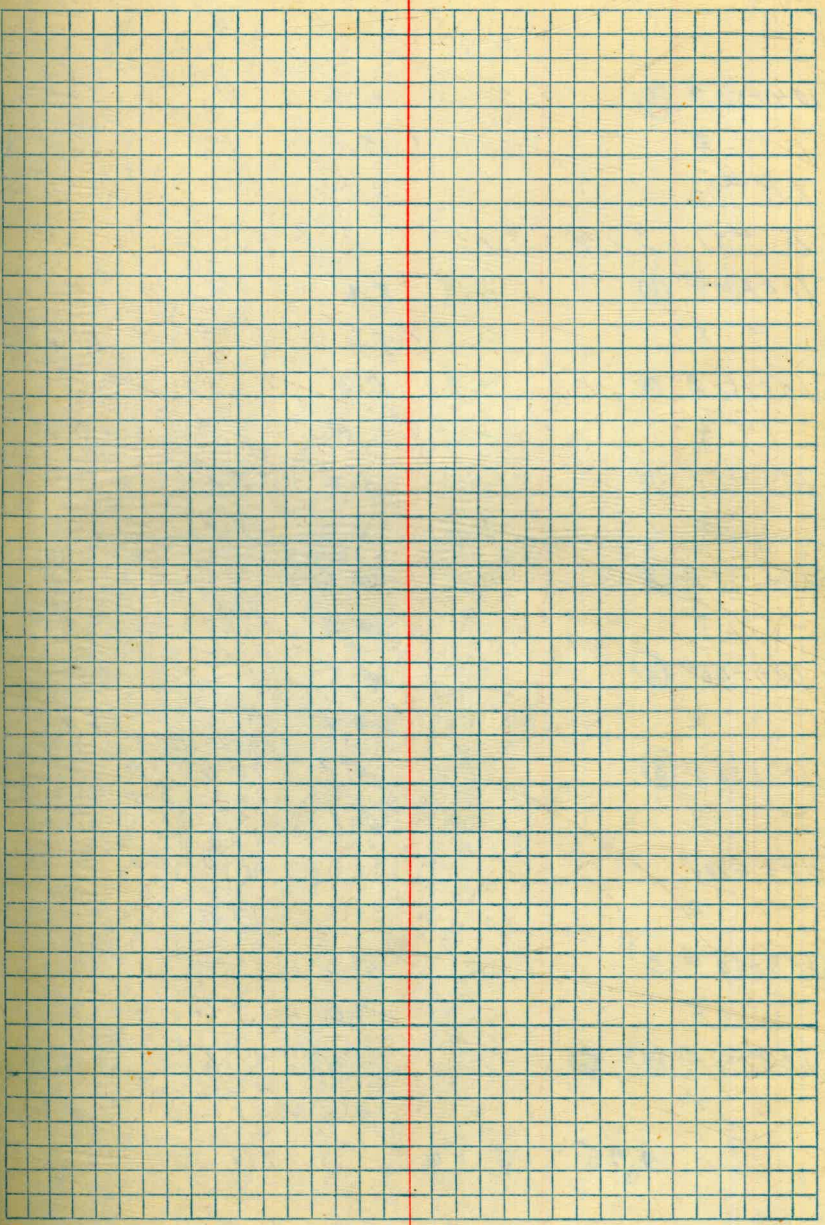
Corrected (D)

Note: Blue figures are for  
revised alignment. Jan 30-42.

RS03



Sta	B.S.	H.I.	F.S.	Rod.	Elev.
		15.89			
BC. 99+63.05				3.1	12.79
" ♀				5.2	10.7
100+00		HE 4 11.38	8.1	14.6	Bottom Ditch
" ♀		3.3 3.3 ✓	8.1	15.2	Bottom Ditch 0.7 edge Ditch
<del>100+12</del>	100+50	4.4	7.0	8.6	
" ♀	"	4.3 ✓	7.1	8.9	edge Ditch 7.0
100+50	101+00	4.2	7.2	9.5	
" ♀	"	4.0 ✓	7.4	9.5	6.4
101+00				9.4	
" ♀				9.8	6.1
101+50		3.3	8.1	9.9	
" ♀		3.2 ✓	8.2	10.0	5.9
102+00		3.3	8.1	10.7	
" ♀		3.2 ✓	8.2	10.5	5.4
102+50		3.9	7.5	10.0	
" ♀		3.8 ✓	7.6	10.0	5.9
103+00		4.0	7.4	10.4	
" ♀		3.9 ✓	7.5	10.6	5.3
103+50		3.7	7.7	10.7	
" ♀		3.5 ✓	7.9	10.6	5.3
104+00				10.5	
" ♀				10.2	5.7
103+76.4	(8)	3.6 ✓	7.8		
♀		11.38	8.0	3.4	T.P.
○	5.96	10.12		-ROD 7.22	4.16





Sta.	B.S.	H.I.	F.S.	Red.	Elck.
104+00		HI = 10.12	6.3	3.8	
" ②			6.5	3.6	
		15.89			
104+50 ②		5.2	4.9	9.7	
" ②		5.1	5.0	9.8	6.1
T.P. #30			9.72		6.17
T. #31	3.74	9.91			
105+00 ②		4.9	5.2	5.1	
" ②		4.5	5.6	5.3	4.6
105+50 ②		4.8	5.3	6.0	
" ②		4.7	5.4	6.1	3.8
106+00 ②		4.9	5.2	4.9	
" ②		4.9	5.2	4.9	5.0
106+50 ②		4.5	5.6	4.5	
" ②		5.8	4.3	4.9	5.0
107+00 ②		5.3	4.8	5.3	
" ②		5.2	4.9	5.1	4.8
107+50 ②		5.0	5.1	5.5	
" ②		5.0	5.1	5.7	4.2
EC 107+67.28			5.5		
" ②			5.8		4.1
108+00 ②		4.8	5.3	5.3	
" ②		5.1	5.0	5.6	4.3
108+50 ②			5.48	5.6	4.64
" ②		4.6	5.50	5.7	4.2
	4.75	9.39			

47

HI 10.12

106+30	El	4.6	5.5
106+40	Top BK	1.0	9.1
Drainage Ditch Parallel to Lowell St.			
106+56	Bot	7.2	2.9
106+70	Bot	7.1	3.0
106+77	Top BK	3.2	6.9
106+80		4.9	5.2



Sta.	B.S.	9.39 H.I.	F.S.	Rod	Elem
		9.91			
109+00	⊙	4.6	4.8	5.9	
"	±	4.9	4.5	6.0	3.9
109+50	⊙	4.7	4.7	5.8	
"	±	4.7	4.7	6.0	3.9
110+00	⊙	4.3	5.1	4.6	
"	±	4.3	5.1	4.9	5.0
110+50	⊙	4.3	5.1	4.9	
"	±	3.9	5.5	5.1	4.8
111+00	⊙	4.7	4.7	5.7	
"	±	4.5	4.9	5.6	4.3
111+50	⊙	4.8	4.6	5.2	
"	±	4.6	4.8	5.4	4.5
112+00	⊙	5.0	4.4	5.0	
"	±	4.9	4.5	5.0	4.9
112+50	⊙	4.2	5.2	6.3	
"	±	4.3	5.1	6.2	3.7
113+00	⊙	3.4	6.0	6.0	
"	±	3.3	6.1	6.2	3.7
113+50	⊙	3.6	5.8	5.2	
"	±	3.5	5.9	5.3	4.6
114+00	⊙	3.3	6.1	6.0	
"	±	3.1	6.3	5.9	4.0
⊙	4.73	8.01	6.11	3.28	



Sta.	B.S.	H.I.	F.S.	Rod	Elev.
		8.01			
		9.91			
114+50	ⓑ	4.4	3.6	6.6	
"	±	4.3	3.7	6.7	3.2
115+00	ⓑ	4.0	4.0	6.5	4
"	±	4.0	4.0	6.6	3.3
115+50	ⓑ	3.4	4.6	6.6	
"	±	3.9	4.1	6.7	3.2
TP#31			4.22		5.69
TP#32	1.35	7.04			
116+00	ⓑ	4.4	3.6	3.4	
"	±	3.8	4.2	3.7	3.3
116+50	ⓑ	3.0	5.0	3.8	
"	±	3.2	4.8	3.6	3.4
117+00	ⓑ	3.7	4.3	3.8	
"	±	3.4	4.6	4.2	3.8
117+50	ⓑ	3.3	4.7	5.3	
"	±	3.2	4.8	5.4	1.6
118+00	ⓑ	2.9	5.1	5.3	
"	±	2.9	5.1	5.4	1.6
118+50	ⓑ	2.7	5.3	5.2	
"	±	2.7	5.3	5.3	1.7
119+00	ⓑ	3.7	4.3	5.7	
"	±	3.5	4.5	5.8	1.2
+50	ⓑ	3.5	4.5		
+50	±	3.7	4.3		
ⓐ	3.74	6.29	5.46		2.55

## Revised Alignment

49

	B.S.	F.S.	Rod	Elev.
120+00	ⓑ		3.7	2.6
+00			3.7	2.6 ✓
120+50			4.7	1.6
+50			4.6	1.7 ✓
121+00	ⓑ		4.3	2.0
+00			4.3	2.0 ✓
121+50			4.7	1.4
+50			4.6	1.7 ✓
122+00			4.4	1.9
+00			4.2	1.8 ✓
122+50			4.0	2.3
+50			4.7	1.6 ✓
123+00			3.8	1.5
+00			3.9	1.4 ✓
123+50	ⓑ		4.8	1.5
+50	±		4.7	1.6 ✓
124+00	ⓑ		5.3	1.0
+00	±		5.3	1.0 ✓
+06	±		5.3	1.0 ✓
+13	±		3.5	2.8 ✓
+16	±	Top Bk.	3.7	2.6 ✓
+20			6.8	-2.5 ✓
+30			7.5	-1.2 ✓
+40			8.7	-2.4 ✓
+50	ⓑ		9.1	-2.8
+50	±		10.0	-3.7 ✓
			185	4.44

(Old 126+66<sup>94</sup> Top Bank)



Sta	B.S.	I.Z.	F.S.	Rad.	Elev.
		7.04			
119+50 <sup>o</sup>				5.0	
" ♀				5.1	1.9
120+00 <sup>o</sup>				4.7	2.34
" ♀				4.8	2.2
120+50 <sup>o</sup>				5.8	1.2
" ♀				6.0	1.0
TP #32			3.97		3.07
Lap 000	120+50	To 126+10			
TP #32		(See P. 72 for Soundings)			3.07
#33	2.68	5.25			
126+10 <sup>o</sup>	126+46 <sup>94</sup>			10.2	Water edge -4.4
" ♀	126+46 <sup>94</sup>			10.2	Water edge -4.4
126+25 <sup>o</sup>	126+61 <sup>94</sup>			8.0	
" ♀	126+61 <sup>94</sup>			8.0	-2.2
126+30 <sup>o</sup>	126+66 <sup>94</sup>			1.8	Tape Dike
" ♀	126+66 <sup>94</sup>			1.7	Tape (4.1)
126+34 <sup>o</sup>	126+70 <sup>94</sup>			1.6	
" ♀	126+70 <sup>94</sup>			1.5	4.3
126+41 <sup>o</sup>	126+87 <sup>94</sup>			3.9	
" ♀	126+87 <sup>94</sup>			4.1	1.7
126+66 <sup>o</sup>	127+00			3.3	(2.45)
" ♀	127+00			3.4	2.4

Corrected  
Stationing

Elevs. by hand level Nov 15<sup>th</sup>  
Melhorn observer.

HI = 5.9

	Rad.	Elev.
120+50	4.5	1.1
121+00	5.25	0.6
+04	5.15	0.7
+05	3.40	2.6
+14	3.50	2.4
+19	2.00	-1.1
+34	8.10	-2.2
+64	11.80	-6.0

Mean  
High  
Tide

3.9

A = (or A<sup>94</sup>) See Pg 49 Bottom



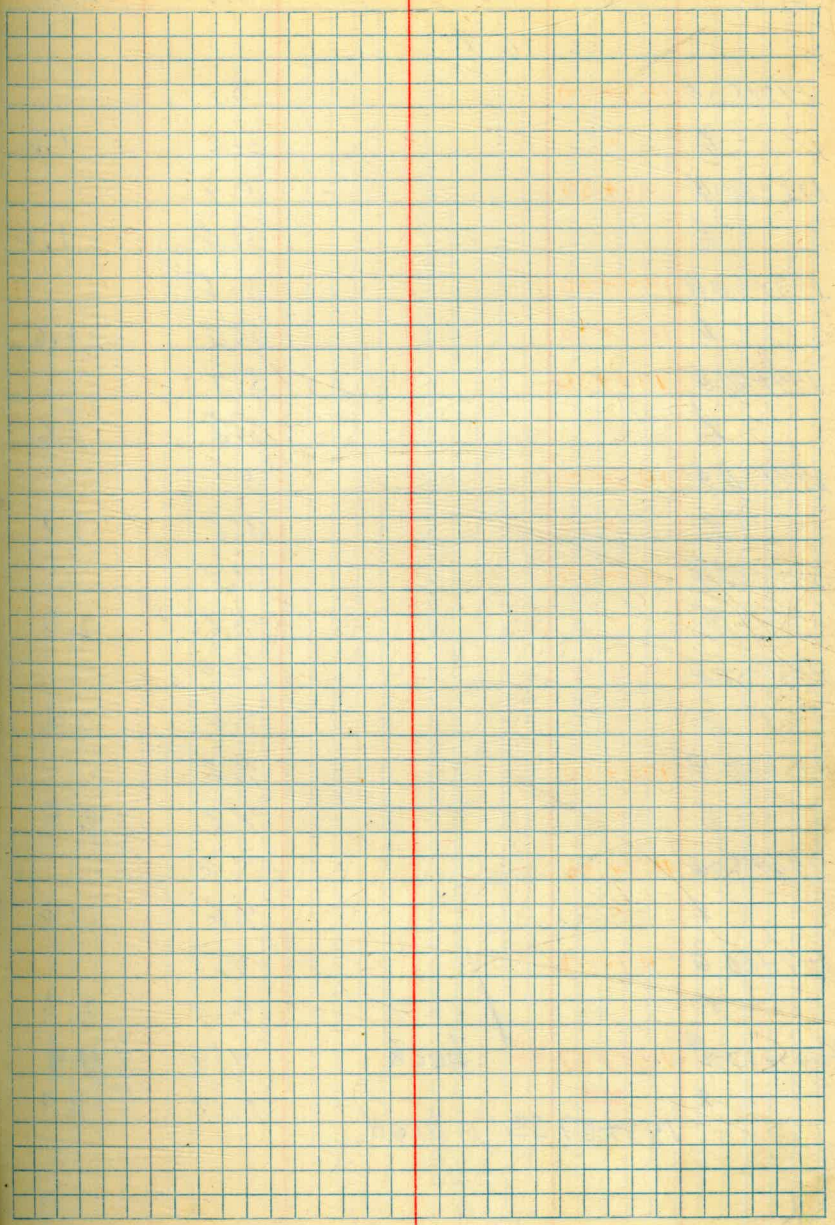
Sta	BS	HI	F.S.	Red	Elev.
		5.75			
127+00 @	127+50			2.6	
" ♀	"			2.6	3.2
127+50 @	128+00			2.5	
" ♀	"			2.7	3.1
128+00 @	128+50			2.4	
" ♀	"			2.5	3.3
128+50 @	129+00			3.0	
" ♀	"			3.0	2.8
129+00 @	129+50			2.8	
" ♀	"			2.8	3.0
129+50 @	130+00			2.2	
" ♀	"			2.3	3.5
130+00 @	130+50			2.9	
" ♀	"			3.2	2.6
T.P. + 33			2.96		2.79
T. # 34	3.37	6.16			
130+50 @	131+00			4.1	
" ♀	"			4.2	2.0
131+00 @	+50			4.5	
" ♀	"			4.4	1.8
131+50 @	132+00			4.8	
" ♀	"			4.9	1.3



St <sub>2</sub>	B.S.	HI	F.S.	Rod	Elev.
		6.16			
132+00 <sup>0</sup>	132+50			5.1	
" ♀	"			5.1	1.1
132+50 <sup>0</sup>	133+00			4.9	
" ♀	"			5.0	1.2
133+00 <sup>0</sup>	133+50			4.7	
" ♀	"			4.7	1.5
133+50 <sup>0</sup>	134+00			4.6	
" ♀	"			4.6	1.6
134+00 <sup>0</sup>	134+50			4.7	
" ♀	"			4.7	1.5
134+50 <sup>0</sup>	135+00			4.7	
" ♀	"			4.7	1.5
135+00 <sup>0</sup>	+50			4.6	
" ♀	"			4.4	1.8
135+50 <sup>0</sup>	136+00			4.4	
" ♀	"			4.4	1.8
136+00 <sup>0</sup>	+50			4.6	
" ♀	"			4.6	1.6
136+50 <sup>0</sup>	137+00			4.9	
" ♀	"			4.8	1.4
137+00 <sup>0</sup>	+50			4.9	
" ♀	"			4.9	1.3



Sta	B.S.	H.I.	F.S.	Rod	Elev.
		6.16			
137+50 @	138+00			5.0	
" ♀	+00			5.0	1.2
138+00 @	+50			4.5	
" ♀	"			4.5	1.7
138+50 @	139+00			4.6	
" ♀	"			4.6	1.6
139+00 @	139+50			4.9	
" ♀	"			4.8	1.4
139+50 @	140+00			5.3	
" ♀	"			5.5	0.7
140+00 @	140+50			5.1	
" ♀	"			5.1	1.1
TP #34	1		5.08		1.08
#35	5.73	6.81			
140+50 @	141+00			5.5	
" ♀	"			5.6	1.2
141+00 @	141+50			5.4	
" ♀	"			5.5	1.3
141+50 @	142+00			5.5	
" ♀	"			5.6	1.2
142+00 @	142+50			5.3	
" ♀	"			5.3	1.5





Sta	B.S.	I.I.	F.S.	Red	Elev.
		6.81			
1427500	143+00			5.1	
" ♀	"			5.2	1.6
1437000	143+50			5.4	
" ♀	"			5.6	1.2
1437500	144+00			5.5	
" ♀	144+00			5.2	1.6
1447000	144+50			5.4	
" ♀	"			5.2	1.6
1447500	145+00			5.1	
" ♀	+00			5.0	1.8
1457000	145+50			4.7	
" ♀	"			4.8	2.0
1457500	146+00			4.4	
" ♀	"			4.4	2.4
1467000	146+50			4.2	
" ♀	"			4.3	2.5
1467500	147+00			4.6	
" ♀	"			4.6	2.2
1477000	147+50			4.7	
" ♀	"			4.8	2.0
BC 1477870	148+37 <sup>40</sup>			4.9	1.9
" ♀	<u>1477870</u>			4.9	1.9
	1477870 <sup>40</sup> ahead.				



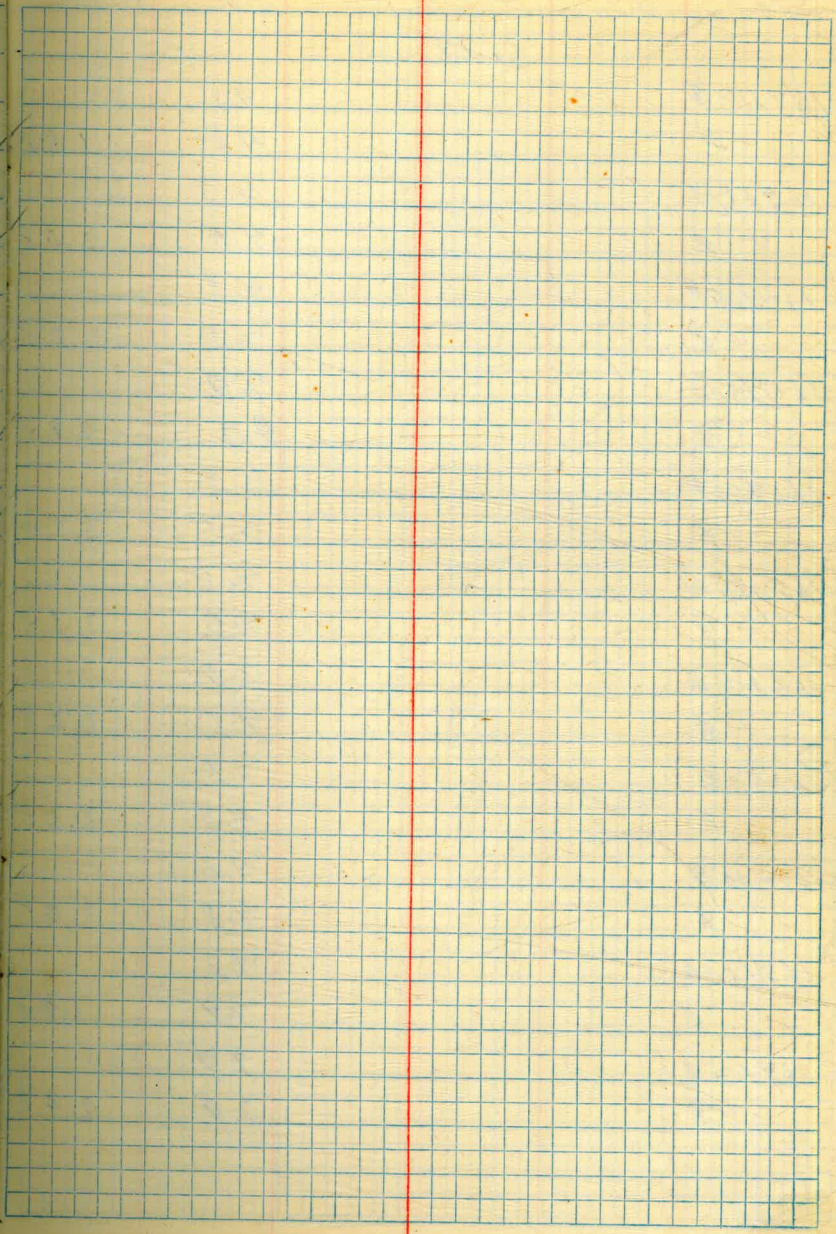
Sta	B.S.	I.T.	F.S.	Rod	Elev
		6.81			
148+00 <sup>o</sup>				4.8	
" 2				4.9	1.9 ✓
148+50 <sup>o</sup>				4.4	2.4
" 2				4.5	2.3 ✓
149+00 <sup>o</sup>				4.1	2.7
" 2				4.3	2.5 ✓
149+50 <sup>o</sup>				3.9	2.9 ✓
" 2				4.0	2.8 ✓
150+00 <sup>o</sup>				4.3	2.5
" 2				4.3	2.5 ✓
150+50 <sup>o</sup>				4.7	
" 2				4.6	2.2 ✓
151+00 <sup>o</sup>				4.7	
" 2				4.8	2.0 ✓
T.P.#35			4.62		2.19
#36	5.02	7.21			
151+50 <sup>o</sup>				5.2	2.0
" 2				5.1	2.1 ✓
152+00 <sup>o</sup>				5.0	
" 2				5.0	2.2 ✓
152+50 <sup>o</sup>				5.1	2.1
" 2				5.2	2.0 ✓



Sta	B.S.	H.I.	F.S.	Rod	Elev
		7.21			
153700 <sup>o</sup>				5.3	
" 2				5.3	1.9 ✓
153750 <sup>o</sup>				6.0	
" 2				6.1	1.1 ✓
154100 <sup>o</sup>				5.9	
" 2				6.0	1.2 ✓
154450 <sup>o</sup>				5.2	
" 2				5.3	1.9 ✓
155700 <sup>o</sup>				5.6	
" 2				5.6	1.6 ✓
FC 155701.5 <sup>o</sup>				5.6	
" 2				5.6	1.6
155750 <sup>o</sup>				4.8	
" 2				4.8	2.4 ✓
156100 <sup>o</sup>				4.4	
" 2				4.3	2.9 ✓
156450 <sup>o</sup>				3.6	
" 2				3.7	3.5 ✓
157100 <sup>o</sup>				3.1	
" 2				3.1	4.1 ✓
157450 <sup>o</sup>				4.0	
" 2				4.1	3.1 ✓



Sta	B.S.	HI	F.S.	Rod	Elev.
		7.21			
158+00@				4.3	
" ♀				4.3	2.9 ✓
158+50@				4.2	
" ♀				4.2	3.0 ✓
T.P.#36			4.32		2.89
T.#37	3.40	6.29			
159+00@				3.4	
" ♀				3.3	3.0 ✓
159+50@				3.4	
" ♀				3.4	2.9 ✓
160+00@				3.7	
" ♀				3.8	2.5 ✓
160+50@				3.7	
" ♀				3.7	2.6 ✓
161+00@				4.1	
" ♀				4.1	2.2 ✓
161+50@				4.1	
" ♀				4.0	2.3 ✓
162+00@				4.3	
" ♀				4.4	1.9 ✓
162+50@				4.3	
" ♀				4.3	2.0 ✓





Sta.	B.S.	HI	F.S.	Rod	Elev.
		6.29			
163+00 @				4.5	
" ♀				4.5	1.8 ✓
163+50 @				4.3	
" ♀				4.3	2.0 ✓
164+00 @				4.2	
" ♀				4.2	2.0 ✓
164+50 @				4.2	
" ♀				4.0	2.3 ✓
165+00 @				4.3	
" ♀				4.2	2.1 ✓
165+50 @				4.2	
" ♀				4.2	2.1 ✓
166+00 @				3.9	
" ♀				4.1	2.2 ✓
166+50 @				4.2	
" ♀				4.0	2.3 ✓
167+00 @				4.2	
" ♀				4.3	2.0 ✓
167+50 @				4.3	
" ♀				4.4	1.9 ✓
168+00 @				3.9	
" ♀				3.9	2.4 ✓



Sta.	B.S.	H.I.	F.S.	Rod	Elev.
		6.29			
168450@				3.7	
" ♀				3.9	2.4 ✓
169400@				3.3	
" ♀				3.4	2.9 ✓
T.P.#37			3.37		2.92
A#38	5.05	7.97			
169450@				5.1	
" ♀				5.2	2.8 ✓
170400@				4.9	
" ♀				5.1	2.9 ✓
170450@				4.8	
" ♀				4.9	3.1 ✓
171400@				4.8	
" ♀				4.9	3.1 ✓
171450@				4.7	
" ♀				4.8	3.2 ✓
172400@				4.7	
" ♀				4.9	3.1 ✓
172450@				4.8	
" ♀				4.9	3.1 ✓
173400@				4.9	
" ♀				5.0	3.0 ✓



Sta.	B.S.	Ht.	F.S.	Rod	Elek.
		7.97			
173+50 <sup>0</sup>				4.5	
" 2				4.6	3.4 ✓
174+00 <sup>0</sup>				4.7	
" 2				4.8	3.2 ✓
174+50 <sup>0</sup>				4.7	
" 2				4.8	3.2 ✓
175+00 <sup>0</sup>				4.6	
" 2				4.6	3.4 ✓
175+50 <sup>0</sup>				4.7	
" 2				4.8	3.2 ✓
176+00 <sup>0</sup>				4.8	
" 2				5.0	3.0 ✓
176+50 <sup>0</sup>				4.4	
" 2				4.5	3.5 ✓
177+00 <sup>0</sup>				4.1	
" 2				4.2	3.8 ✓
177+50 <sup>0</sup>				3.6	
" 2				3.6	4.4 ✓
178+00 <sup>0</sup>				4.0	
" 2				4.1	3.9 ✓
TP #38			3.97		4.00
#39	4.19	8.19			



Sta	B.S.	H.I.	I.S.	Rod	Elev.
		8.19			
178+50 @				4.8	
" ♀				5.0	3.2 ✓
179+00 @				4.0	
" ♀				4.9	3.3 ✓
179+50 @				3.7	
" ♀				3.5	4.7 ✓
180+00 @				4.1	
" ♀				4.2	4.0 ✓
180+50 @				4.3	
" ♀				4.2	4.0 ✓
181+00 @				4.1	
" ♀				4.3	3.9 ✓
181+50 @				4.4	
" ♀				4.5	3.7 ✓
BC 181+64 @				4.6	
" ♀				4.7	3.5 ✓
182+00 @				4.7	
" ♀				4.9	3.3 ✓
182+50 @				4.9	
" ♀				5.0	3.2 ✓
183+00 @				4.8	
" ♀				4.8	3.4 ✓



Sta.	B.S.	H.T.	F.S.	Red.	Elev.
		8.19			
183750 <sup>⊙</sup>				5.0	
" $\phi$				5.5	2.7 ✓
184700 <sup>⊙</sup>				5.4	
" $\phi$				5.6	2.6 ✓
184450 <sup>⊙</sup>				5.7	
" $\phi$				5.8	2.4 ✓
ES 184484 <sup>⊙</sup> 22				5.8	
" $\phi$				6.0	2.2 ✓
185700 <sup>⊙</sup>				5.7	
" $\phi$				5.9	2.3 ✓
185750 <sup>⊙</sup>				5.6	
" $\phi$				5.8	2.4 ✓
186700 <sup>⊙</sup>				5.7	
" $\phi$				5.8	2.4 ✓
186750 <sup>⊙</sup>				5.3	
" $\phi$				5.4	2.8 ✓
187700 <sup>⊙</sup>				5.4	
" $\phi$				5.4	2.8 ✓
187750 <sup>⊙</sup>				4.9	
" $\phi$				5.0	3.2 ✓
T.P. #39			4.33		3.86
T #40	5.85	9.71			



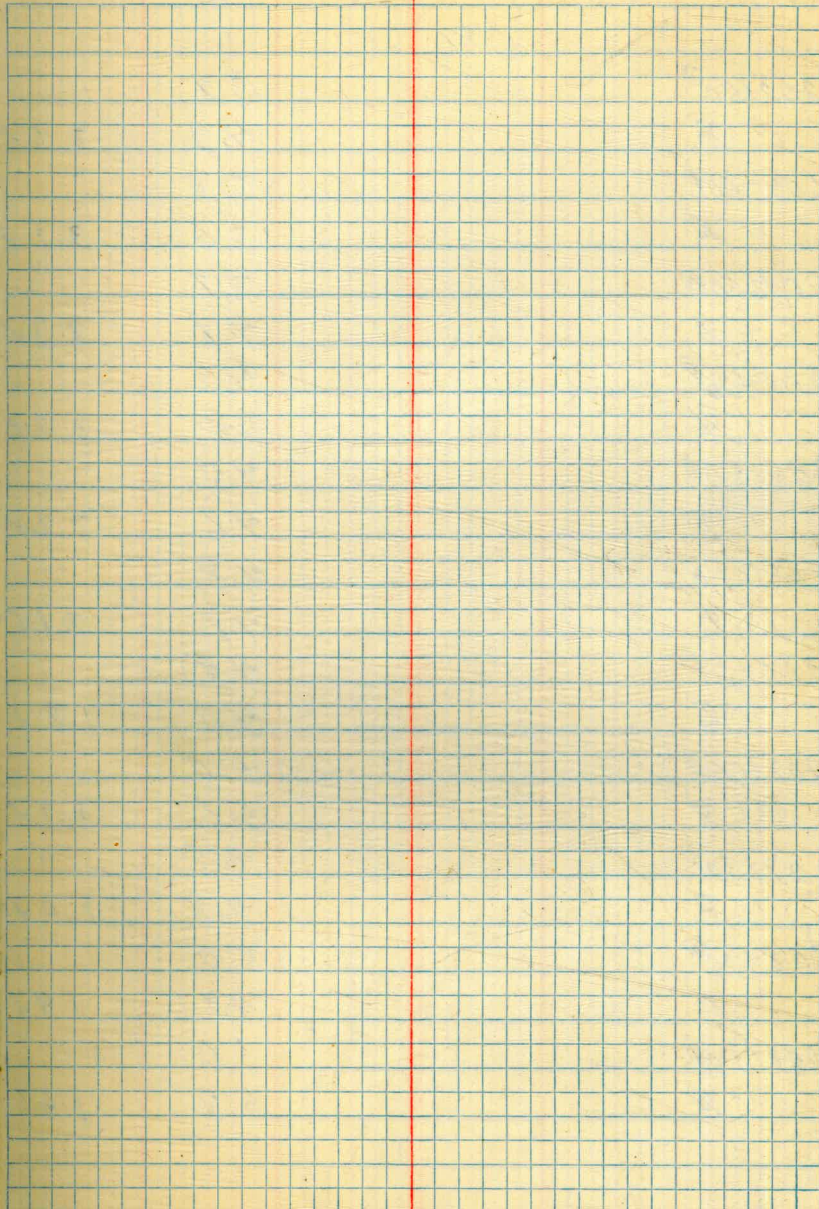
Sta	B.S	HI	F.S	Rad	Elev.
		9.71			
188+00 <sup>o</sup>				5.8	
" ♀				6.0	3.7 ✓
188+50 <sup>o</sup>				5.6	
" ♀				5.7	4.0 ✓
189+00 <sup>o</sup>				5.1	
" ♀				5.3	4.4 ✓
189+50 <sup>o</sup>				5.0	
" ♀				5.1	4.6 ✓
190+00 <sup>o</sup>				5.0	
" ♀				5.0	4.7 ✓
190+50 <sup>o</sup>				5.3	
" ♀				5.4	4.3 ✓
191+00 <sup>o</sup>				5.4	
" ♀				5.4	4.3 ✓
191+50 <sup>o</sup>				5.3	
" ♀				5.5	4.2 ✓
192+00 <sup>o</sup>				4.9	
" ♀				5.0	4.7 ✓
192+50 <sup>o</sup>				4.6	
" ♀				4.8	4.9 ✓
193+00 <sup>o</sup>				4.8	
" ♀				4.9	4.8 ✓



Sta.	B.S.	H.I.	F.S.	Red	Elev
		9.71			
1937500				5.6	
" 2				5.5	4.2 ✓
1947000				6.1	
" 2				6.1	3.6 ✓
1947500				5.9	
" 2				6.1	3.6 ✓
1957000				6.2	
" 2				6.4	3.3 ✓
1967500				5.9	
" 2				6.1	3.6 ✓
1967000				5.9	
" 2				5.4	4.3 ✓
1967500				5.7	
" 2				5.8	3.9 ✓
1977000				5.9	
" 2				6.0	3.7 ✓
1977500				6.3	
" 2				6.2	3.1 ✓
1987000				6.4	
" 2				6.3	3.4 ✓
TP # 40			6.40		3.31
TP # 41	469	8.00			



Sta.	B.S.	HI.	F.S.	Rod	Elev.
		8.00			
198750 <sup>0</sup>				4.6	
" ♀				5.0	3.0 ✓
199700 <sup>0</sup>				4.7	
" ♀				4.7	3.3 ✓
199750 <sup>0</sup>				4.9	
" ♀				4.6	3.4 ✓
200700 <sup>0</sup>				4.9	
" ♀				4.8	3.2 ✓
200750 <sup>0</sup>				4.9	
" ♀				5.2	2.8 ✓
201700 <sup>0</sup>				5.2	
" ♀				5.8	2.2 ✓
201750 <sup>0</sup>				5.3	
" ♀				5.2	2.8 ✓
202700 <sup>0</sup>				4.9	
" ♀				5.0	3.0 ✓
T.P. #41			4.93		3.07
π #42	3.74	6.81			
202750 <sup>0</sup>				3.2	
" ♀				3.4	3.4 ✓
203700 <sup>0</sup>				3.8	
" ♀				3.4	3.4 ✓





Sta.	B.S.	H <sub>Z</sub>	F.S.	Rod	Elev.
		6.81			
203750 <sup>o</sup>				3.7	
" ♀				4.2	2.6 ✓
204700 <sup>o</sup>				3.8	
" ♀				3.6	3.2 ✓
204750 <sup>o</sup>				4.1	
" ♀				4.1	2.7 ✓
205700 <sup>o</sup>				4.3	
" ♀				4.5	2.3 ✓
205750 <sup>o</sup>				4.5	
" ♀				4.6	2.2 ✓
206700 <sup>o</sup>				4.8	
" ♀				4.7	2.1 ✓
206750 <sup>o</sup>				4.9	
" ♀				5.0	1.8 ✓
207700 <sup>o</sup>				5.0	
" ♀				5.1	1.7 ✓
207750 <sup>o</sup>				4.8	
" ♀				4.8	2.0 ✓
208700 <sup>o</sup>				5.0	
" ♀				4.9	1.9 ✓
208750 <sup>o</sup>				5.0	
" ♀				5.2	1.6 ✓



Sta.	B.S.	I.I.	F.S.	Rod	Elev.
		6.81			
209400 <sup>0</sup>				5.5	
" 2				5.4	1.4 ✓
2094500				5.7	
" 2				5.9	0.9 ✓
210400 <sup>0</sup>				5.6	
" 2				5.7	1.1 ✓
210450 <sup>0</sup>				5.2	
" 2				5.5	1.3 ✓
T.P.#42			5.24		157
A #43	5.50	7.07			
RC 210420.23				5.5	
" 2				5.6	1.5 ✓
Hub end 16' c/cip. existing				8.07	-1.0
T.P.#43			3.95		3.12
T.P.#43 = S.W. Cor. of fence of Ryan Factory					
B.M.					12.60
Deff.					9.48



HARBOR DRIVE WATER MAIN TRIANGULATION TIES

$\Sigma$  at A  $\times$  BAC

①	37-37-30	
②	225-48-30	37-38-05
⑩	376-20-00	37-38-00
⑫	451-36	37-38-00

$\Sigma$  at A  $\times$  CAR

①	104-21-00	
②	626-06-00	104-21-00
⑩	1043-29-30	104-20-54
⑫	1252-11-30	104-20-55

Vert.  $\angle$  to C =  $0^{\circ}46'$

Vert.  $\angle$  to R =  $2^{\circ}50'$

$\Sigma$  at B  $\times$  RBC

①	67-00'-30"	
②	402-05'	67-00-50
⑩	670-09-40"	67-00-58
⑫	804-11-30	67-00-58

$\Sigma$  at B"  $\times$  ABC + ABR

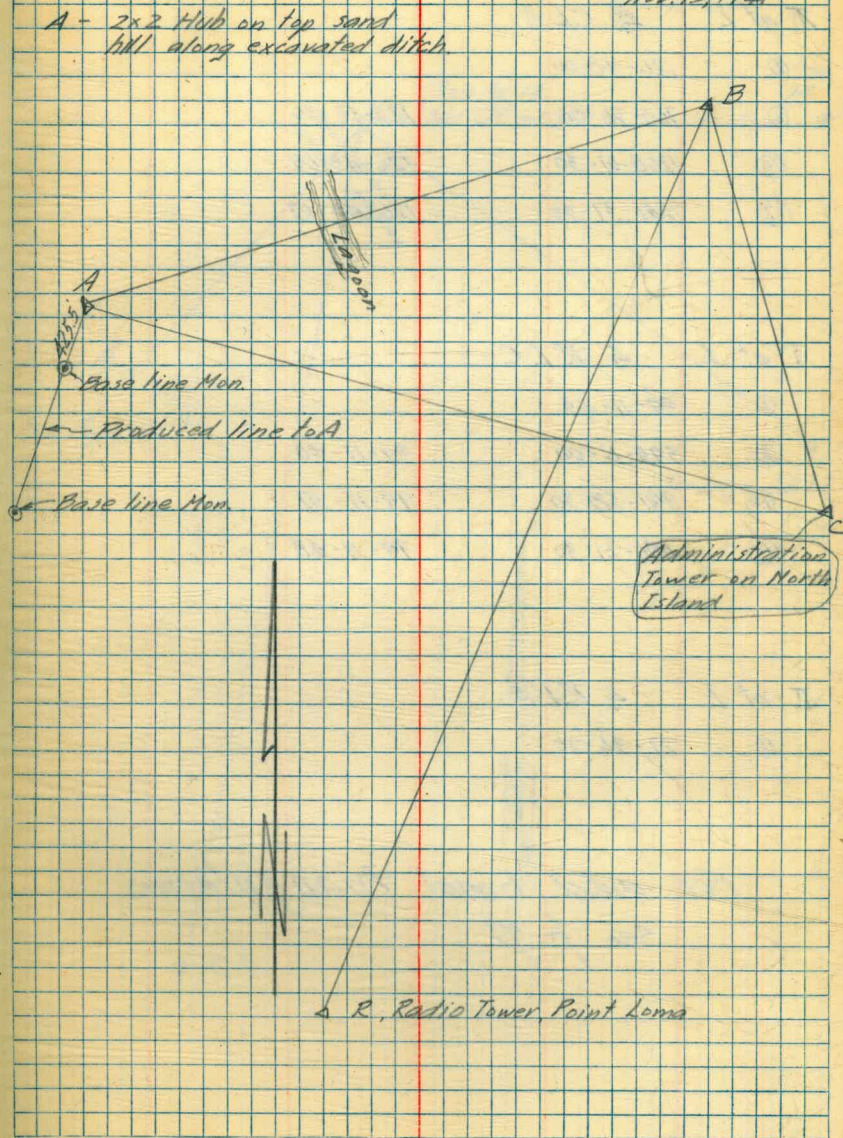
①	88° 07' 30"	
②	528° 44' 30"	88° 07' 25"
⑩	881° 14' 30"	88° 07' 37"
⑫	1057° 30' 00"	88° 07' 20"

$\Sigma$  ABR ① =  $21^{\circ}06'30''$

② =  $126^{\circ}39'00''$

DUST & SAND PREVENTED  
COMPLETION OF THIS ANGLE AND

P.S. Barker & Party  
Cloudy - Cool  
Litz # 5389  
Nov. 15, 1941





$\pi$  at L     $\Delta$  CLA

①	126-48-00	
⑥	760-50-00	126-48-30
⑩	1268-01-30	126-48-09
⑫	1541-37-30	126-48-07

$\pi$  at L     $\Delta$  RLC

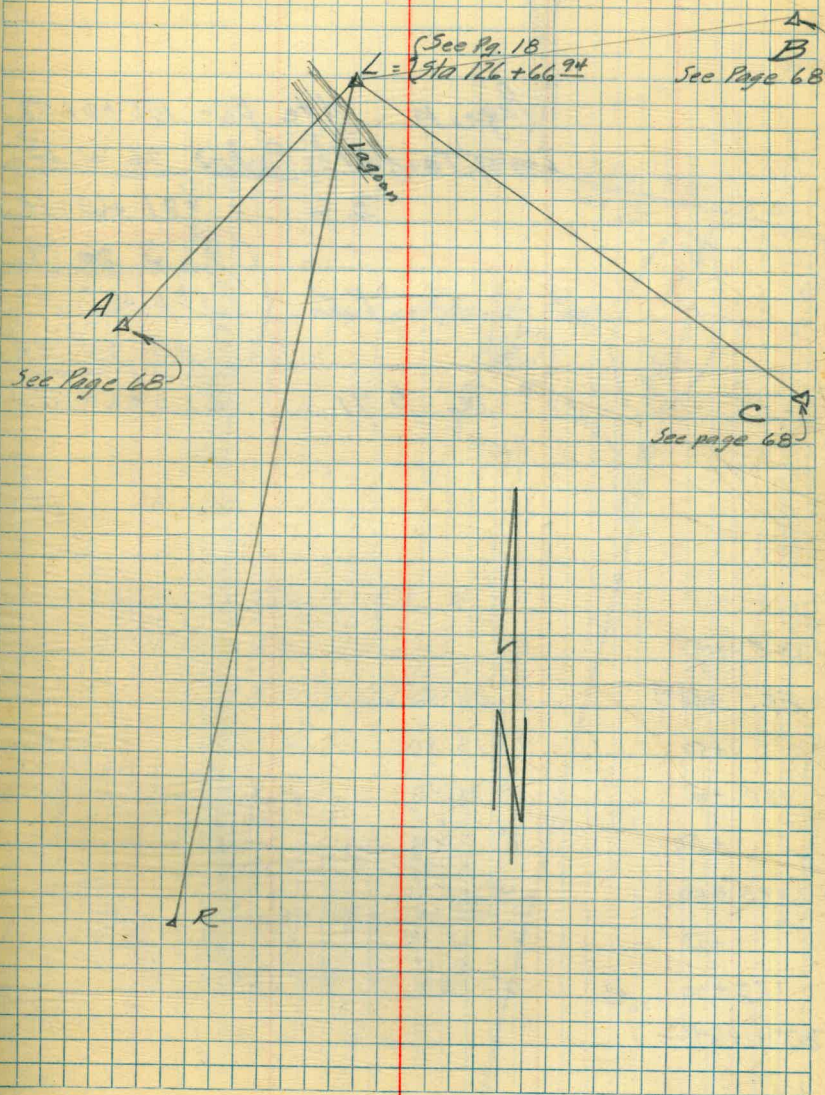
①	99-11-45	
⑥	595-11-00	99-11-50
⑩	991-58-30	99-11-51
⑫	1190-21-30	99-11-48

$\pi$  at L     $\Delta$  RLA

①	27-36-30	
---	----------	--

For additional triangulation  
see p. 73

P.S. Barker & Party  
Windy 32 Seal  
Litz #5389  
Nov. 17, 1941





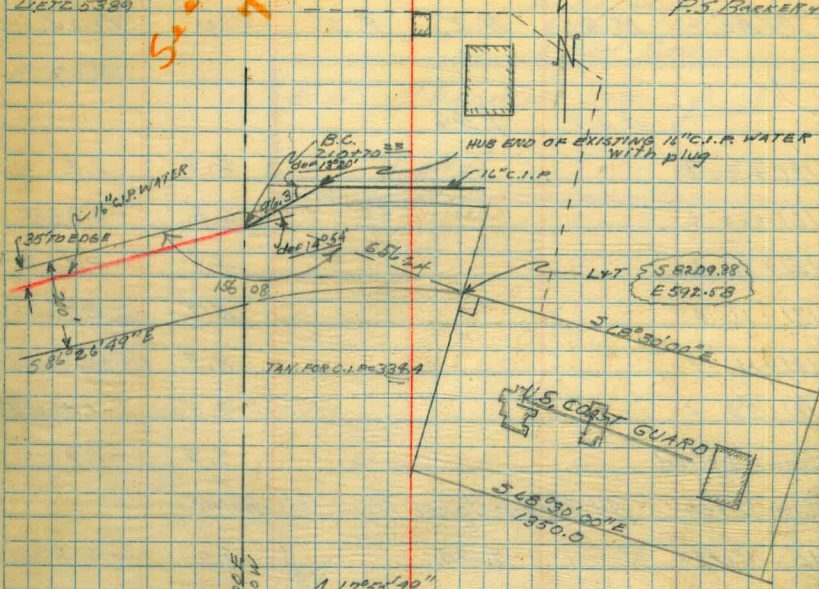




CLOUDY-COOL  
# L1ETC 2389

52° 07' 14"

Nov. 13, 1941  
P.S. BARRETT # 4711



$A = 17^{\circ} 53' 49''$   
 $R = 1948.59$   
 $T = 307.90$   
 $L = 609.44$

DETAIL OF NEW LINE AT CONNECTION

210 + 70 = 280



SOUNDINGS AT NAVY BASE CHANNEL

STA.	B.S.	H.I.	F.S.	ROD	ELEV.
					3.07
	4.49	7.56			
120+50 &				6.3	1.2
121+00 &				6.8	0.8
121+04 &				4.9	2.7
121+11 &				4.9	2.7
121+15 &				8.5	-0.9
121+23 &				9.0	-1.4
Same Water Level				9.5	-1.9

At 121+08 All stadia taken from this point.

+42' = 121+50	-1.44	Measured below water level	5.0	-6.4
+92' = 122+00			15.5	-16.9
+142' = 122+50			22.8	-24.2
+192' = 123+00			21.8	-23.2
+242' = 123+50			21.9	-23.3
+292' = 124+00			21.9	-23.3
+342' = 124+50			20.8	-22.2
+392' = 125+00			18.0	-19.4
+442' = 125+50			11.4	-12.8
+492' = 126+00			7.0	-8.4

+563' = 126+71 to 2x2 hub on East bank.

Nov. 18  
 At Whitlock  
 & Eric Melhorn  
 & Phil Barker, Jr.

For Alignment note, p. 18  
 " Level p. 50

BM # 32

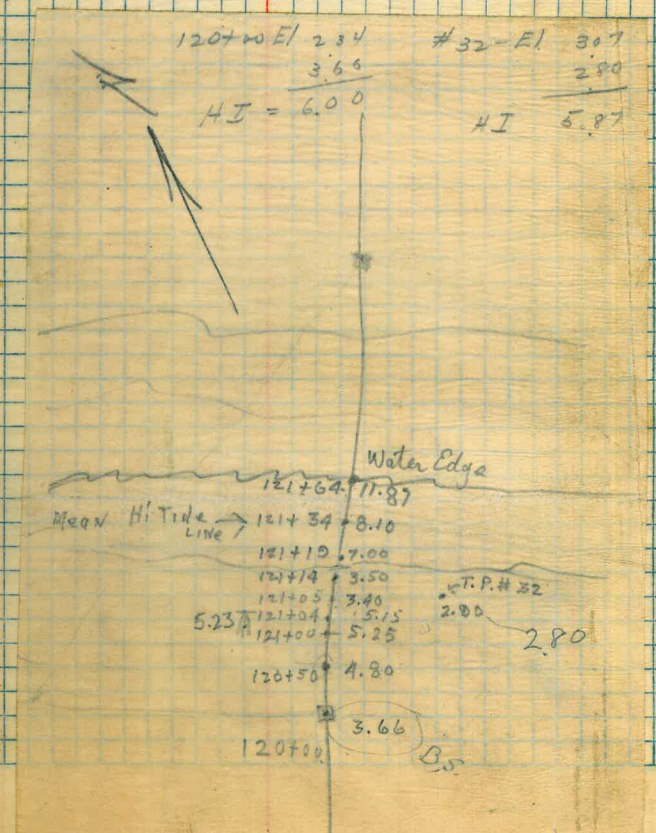
Toe

Top

& Top Dike

Toe Dike

Water Edge - 9:00 AM.





\* FROM "B" to ADMINISTRATION BLDG to "A" EXTENDED

- ① 88° 07' 30"
- ② 528° 44' 30"      88 07 25
- ③ 881° 14' 30"      88 07 27
- ④ 1057° 30' 00"      88 07 20

\* R B R

- ① 21° 06' 30"
- ② 42° 12' 30"
- ③ 63° 19' 30"
- ④ 84° 25' 30"      21° 06' 22"
- ⑤ 105° 32' 30"      21° 06' 30"
- ⑥ 126° 39' 00"      21° 06' 30"

For previous triangulation  
see pp 68-69

22  
 4, 90  
 8  
 10



Corrected Stationing between  
Stas.  $96+64^{20}$  and  $210+70^{23}$

$$\begin{array}{r} 96+64^{20} \\ = \\ 96+64^{20} \end{array}$$

$$\begin{array}{r} \text{B.C. } 99+63^{08} \\ = \\ 99+63^{08} \end{array}$$

$$\begin{array}{r} \text{E.C. } 107+67^{04} \\ = \\ 107+67^{04} \end{array}$$

$$\begin{array}{r} 120+50 \text{ Triangulation Pk} \\ = \end{array}$$

$$120+50$$

$$126+66^{94}$$

$$126+66^{94}$$

$$147+87^{90}$$

$$148+37^{40}$$

Plus correction of 50'

$$155+01^{58}$$

$$155+01^{58}$$

$$155+50$$

$$155+49^{21}$$

Minus correction of 0<sup>89</sup>

$$181+64^{09}$$

$$181+64^{09}$$

$$184+84^{29}$$

$$184+84^{29}$$

$$210+70^{23}$$

$$210+70^{23}$$

Corrected figures in orange

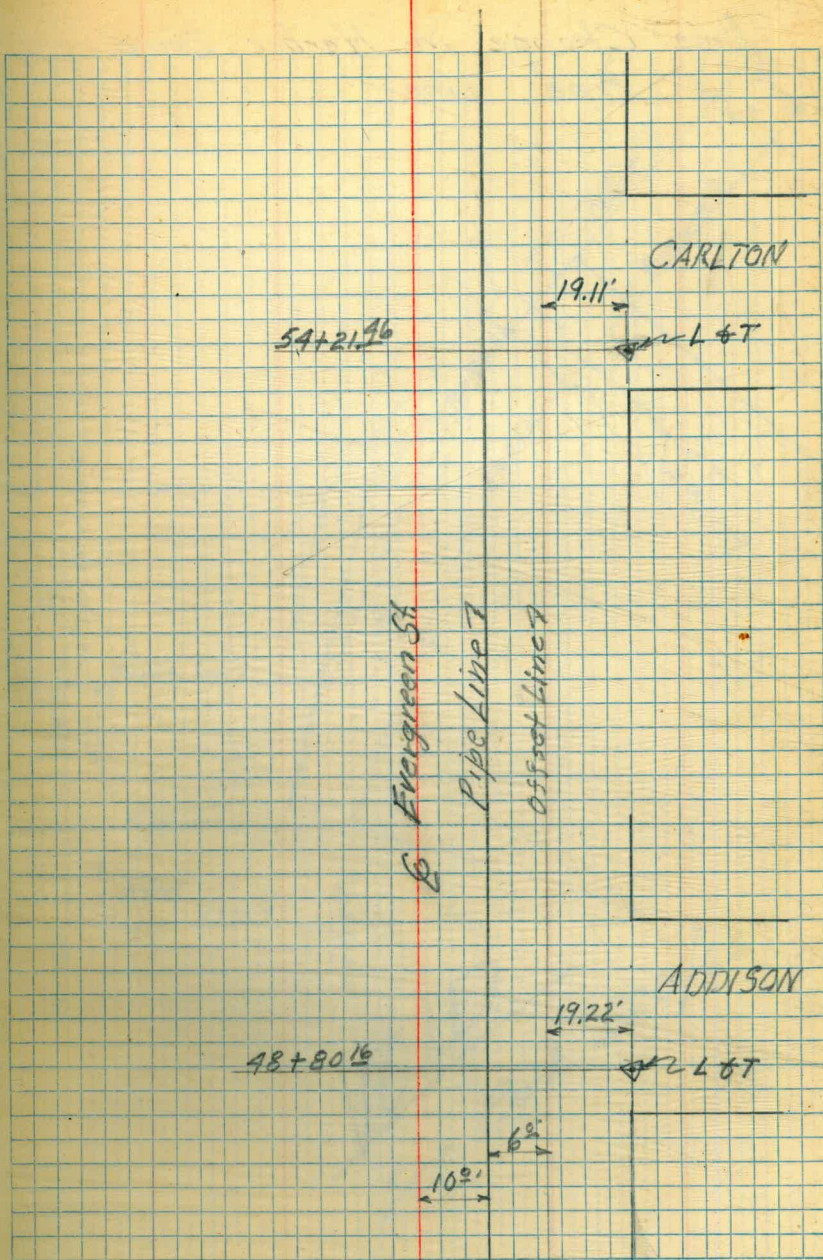
63° 18'



Additional ties on Evergreen St.

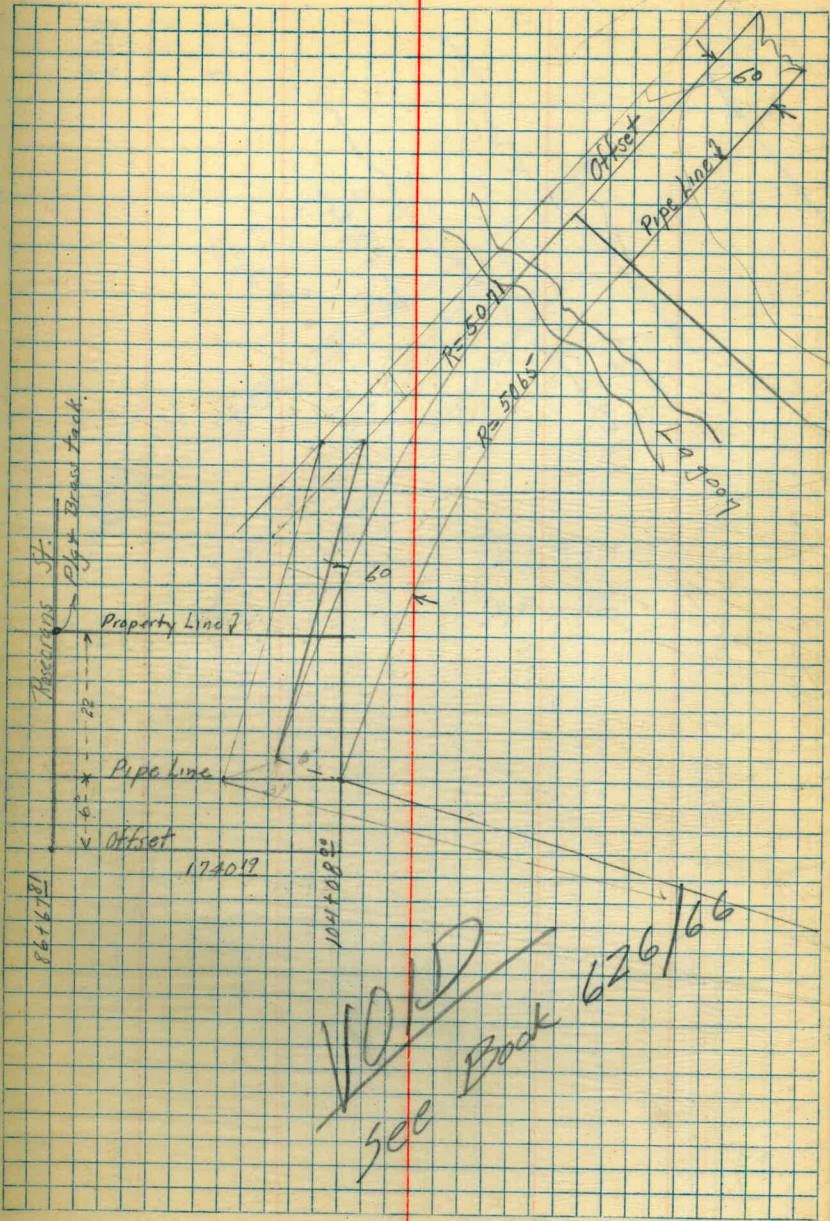
Note: These ties were copied into  
this book fr. field notes Jan. 2, 1942

E.M.A



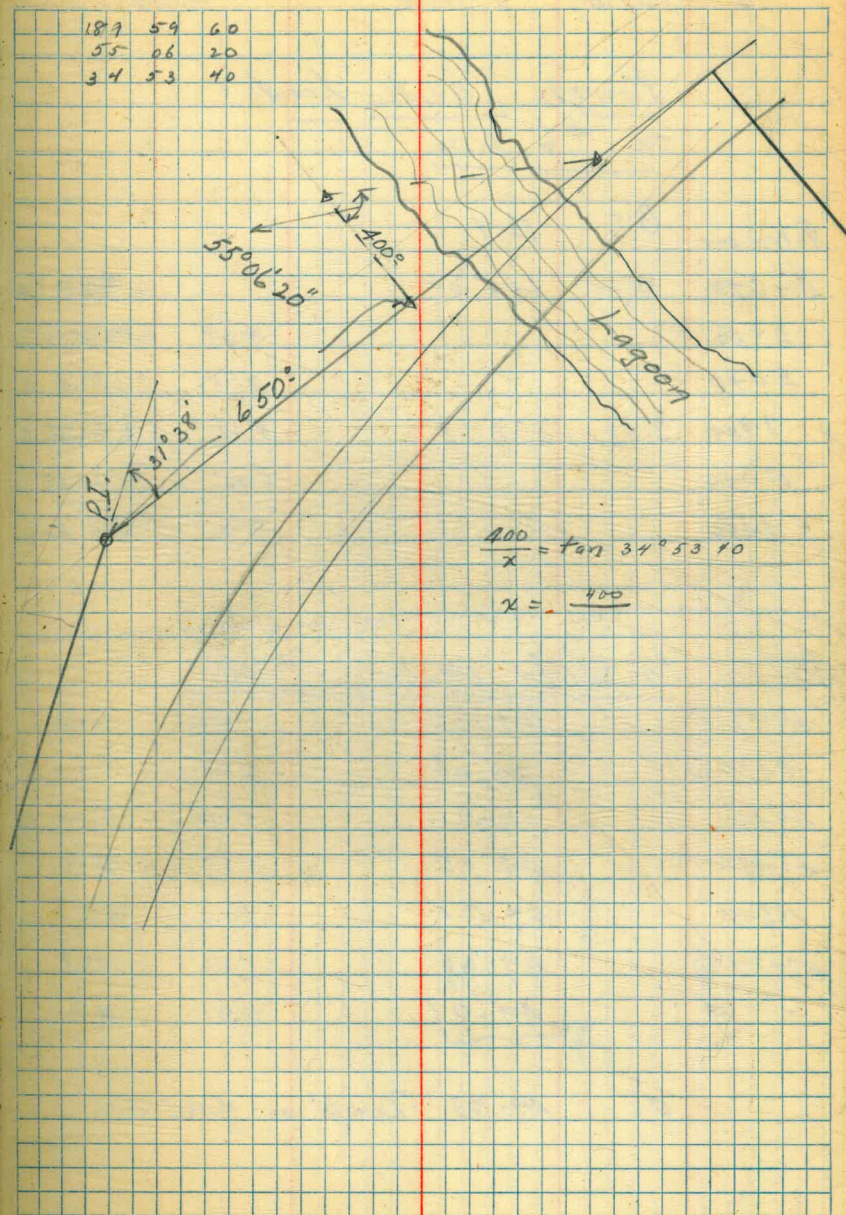


Line Change in Harbor Drive  
Pipe Line





187	59	60
55	06	20
34	53	40



$$\frac{400}{x} = \tan 34^{\circ}53'40''$$

$$x = \frac{400}{\tan 34^{\circ}53'40''}$$



6 March 1942

Rough Check Totals  
on #6 Line

B.W. on	BS	11.1		
Stn 0+0	0.75	245.05		244.30
D+50			4.08	240.97
E 0+0			7.75	237.30
1+00	2.17	238.37	8.95	236.20
F 0+0			6.00	232.37
1+50			7.24	231.13

Stn 10 July 1942 Checks

50+0 (6)	49.05	10.91	38.10
49+50 (6)	49.03	9.03	40.0
49+0	49.04	7.64	41.4
48+50	49.03	7.03	42.0
48+0	49.01	5.91	43.1
47+74 (6)	49.06	5.26	43.8
. d	49.01	4.91	44.1

at 49.03 Accept as good H.1

Pierious

244.4
242.4
237.1
240.6
232.1
230.8



Angles to Adm. Bld on N. Island  
from given Points. All ~~is~~ turned  
from Ballon top of Tower to Tangent  
West of point occupied.

Sta. ~~X~~ Rt to tan

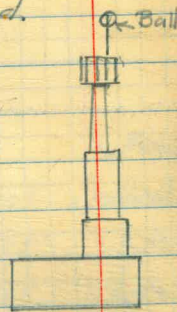
210+70<sup>23</sup> 74° 46' 149° 32'

PI. 183+24<sup>35</sup> 94° 31' 189° 03'

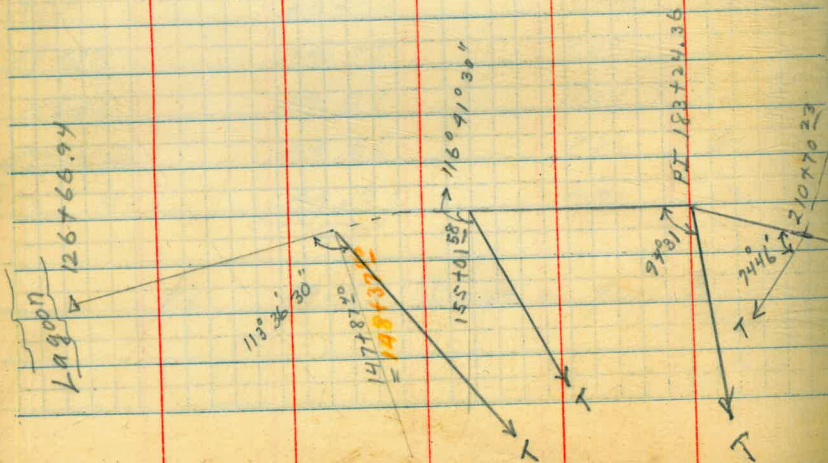
EC. 155+01<sup>58</sup> 116° 42' 233° 23'

BC. 147+87<sup>45</sup>

147+37<sup>45</sup> > 113° 37' 00" 227° 13'



Tower Viewed from N.



## CURVE TABLES.

Published by KEUFFEL & ESSER CO.

### HOW TO USE CURVE TABLES.

Table I. contains Tangents and External to a 1° curve. Tan. and Ext. to any other radius may be found nearly enough, by dividing the Tan. or Ext. opposite the given Central Angle by the given degree of curve.

To find Deg. of Curve, having the Central Angle and Tangent: Divide Tan. opposite the given Central Angle by the given Tangent.

To find Deg. of Curve, having the Central Angle and External: Divide Ext. opposite the given Central Angle by the given External.

To find Nat. Tan. and Nat. Ex. Sec. for any angle by Table I.: Tan. or Ext. of twice the given angle divided by the radius of a 1° curve will be the Nat. Tan. or Nat. Ex. Sec.

#### EXAMPLE.

Wanted a Curve with an Ext. of about 12 ft. Angle of Intersection or I. P. = 23° 20' to the R. at Station 542+72.

Ext. in Tab. I opposite 23° 20' = 120.87  
120.87 ÷ 12 = 10.07. Say a 10° Curve.

Tan. in Tab. I opp. 23° 20' = 1183.1  
1183.1 ÷ 10 = 118.31.

Correction for A. 23° 20' for a 10° Cur. = 0.16  
118.31 + 0.16 = 118.47 = corrected Tangent.

(If corrected Ext. is required find in same way)  
Ang. 23° 20' = 23.33° ÷ 10 = 2.3333 = L. C.

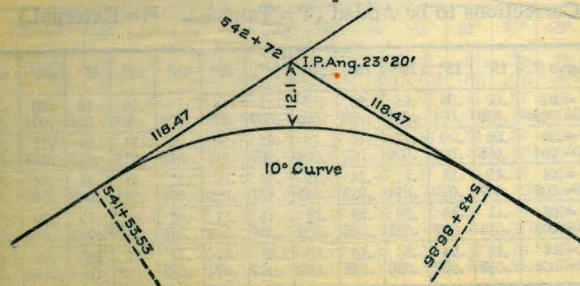
2° 19½' = def. for sta.	542	I. P. = sta.	542+72
4° 49½' = " " "	+50	Tan. =	118.47
7° 19½' = " " "	543	B. C. = sta.	541+53.53
9° 49½' = " " "	+50	L. C. =	2.3333
11° 40' = " " "	543+	E. C. = Sta.	543+86.86
	86.86		

100 - 53.53 = 46.47 × 3' (def. for 1 ft. of 10° Cur.) = 139.41' =

2° 19½' = def. for sta. 542.

Def. for 50 ft. = 2° 30' for a 10° Curve.

Def. for 36.86 ft. = 1° 50½' for a 10° Curve.





Natural Trigonometrical Functions

Angle.	Sin.	Tan.	Sec.	Cosec.	Cotg.	Cosin.	Angle.	Sin.	Tan.	Sec.	Cosec.	Cotg.	Cosin.
32	.5299	.6249	1.1792	1.887	1.600	.84805	58	.6293	.8098	1.2868	1.589	1.235	.77715
10	.5324	.6289	1.1813	1.878	1.590	.84650	50	.6316	.8146	1.2898	1.583	1.228	.77531
20	.5348	.6330	1.1835	1.870	1.580	.84495	40	.6338	.8195	1.2929	1.578	1.220	.77347
30	.5373	.6371	1.1857	1.861	1.570	.84339	30	.6361	.8243	1.2959	1.572	1.213	.77162
40	.5398	.6412	1.1879	1.853	1.560	.84182	20	.6383	.8292	1.2991	1.567	1.206	.76977
50	.5422	.6453	1.1901	1.844	1.550	.84025	10	.6406	.8342	1.3022	1.561	1.199	.76791
33	.5446	.6494	1.1924	1.836	1.540	.83867	57	.6428	.8391	1.3054	1.556	1.192	.76604
10	.5471	.6536	1.1946	1.828	1.530	.83708	50	.6450	.8441	1.3086	1.550	1.185	.76417
20	.5495	.6577	1.1969	1.820	1.520	.83549	40	.6472	.8491	1.3118	1.545	1.178	.76229
30	.5519	.6619	1.1992	1.812	1.511	.83389	30	.6494	.8541	1.3151	1.540	1.171	.76041
40	.5544	.6661	1.2015	1.804	1.501	.83228	20	.6517	.8591	1.3184	1.535	1.164	.75851
50	.5568	.6703	1.2039	1.796	1.492	.83066	10	.6539	.8642	1.3217	1.529	1.157	.75661
34	.5592	.6745	1.2062	1.788	1.483	.82904	56	.6561	.8693	1.3251	1.524	1.150	.75471
10	.5616	.6787	1.2086	1.781	1.473	.82741	50	.6583	.8744	1.3284	1.519	1.144	.75280
20	.5640	.6830	1.2110	1.773	1.464	.82577	40	.6604	.8796	1.3318	1.514	1.137	.75088
30	.5664	.6873	1.2134	1.766	1.455	.82413	30	.6626	.8847	1.3352	1.509	1.130	.74896
40	.5688	.6916	1.2158	1.758	1.446	.82248	20	.6648	.8899	1.3386	1.504	1.124	.74703
50	.5712	.6959	1.2183	1.751	1.437	.82082	10	.6670	.8952	1.3421	1.499	1.117	.74509
35	.5736	.7002	1.2208	1.743	1.428	.81915	55	.6691	.9004	1.3456	1.494	1.111	.74314
10	.5760	.7046	1.2233	1.736	1.419	.81748	50	.6713	.9057	1.3492	1.490	1.104	.74120
20	.5783	.7089	1.2258	1.729	1.411	.81580	40	.6734	.9110	1.3527	1.485	1.098	.73924
30	.5807	.7133	1.2283	1.722	1.402	.81412	30	.6756	.9163	1.3563	1.480	1.091	.73728
40	.5831	.7177	1.2309	1.715	1.393	.81242	20	.6777	.9217	1.3600	1.476	1.085	.73531
50	.5854	.7221	1.2335	1.708	1.385	.81072	10	.6799	.9271	1.3636	1.471	1.079	.73333
36	.5878	.7265	1.2361	1.701	1.376	.80902	54	.6820	.9325	1.3673	1.466	1.072	.73135
10	.5901	.7310	1.2387	1.695	1.368	.80730	50	.6841	.9380	1.3711	1.462	1.066	.72937
20	.5925	.7355	1.2413	1.688	1.360	.80558	40	.6862	.9435	1.3748	1.457	1.060	.72737
30	.5948	.7400	1.2440	1.681	1.351	.80386	30	.6884	.9490	1.3786	1.453	1.054	.72537
40	.5972	.7445	1.2466	1.675	1.343	.80212	20	.6905	.9545	1.3824	1.448	1.048	.72337
50	.5995	.7490	1.2494	1.668	1.335	.80038	10	.6926	.9601	1.3863	1.444	1.042	.72136
37	.6018	.7536	1.2521	1.662	1.327	.79864	53	.6947	.9657	1.3902	1.440	1.036	.71934
10	.6041	.7581	1.2549	1.655	1.319	.79688	50	.6967	.9713	1.3941	1.435	1.030	.71732
20	.6065	.7627	1.2577	1.649	1.311	.79512	40	.6988	.9770	1.3980	1.431	1.024	.71529
30	.6088	.7673	1.2605	1.643	1.303	.79335	30	.7009	.9827	1.4020	1.427	1.018	.71325
40	.6111	.7720	1.2633	1.636	1.295	.79158	20	.7030	.9884	1.4061	1.422	1.012	.71121
50	.6134	.7766	1.2661	1.630	1.288	.78980	10	.7050	.9942	1.4101	1.418	1.006	.70916
38	.6157	.7813	1.2690	1.624	1.280	.78801	52	.7071	1.0000	1.4141	1.414	1.000	.70711
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						

Cosin.	Cotg.	Cosec.	Sec.	Tan.	Sin.	Angle	Cosin.	Cotg.	Cosec.	Sec.	Tan.	Sin.	Angle
.84805	1.600	1.1792	1.887	.6249	.5299	32	.70711	1.000	1.4141	1.414	1.000	.70711	52
.84650	1.590	1.1813	1.878	.6289	.5324	33							
.84495	1.580	1.1835	1.870	.6330	.5348	34							
.84339	1.570	1.1857	1.861	.6371	.5373	35							
.84182	1.560	1.1879	1.853	.6412	.5398	36							
.84025	1.550	1.1901	1.844	.6453	.5422	37							
.83867	1.540	1.1924	1.836	.6494	.5446	38							
.83708	1.530	1.1946	1.828	.6536	.5471	39							
.83549	1.520	1.1969	1.820	.6577	.5495	40							
.83389	1.511	1.1992	1.812	.6619	.5519	41							
.83228	1.501	1.2015	1.804	.6661	.5544	42							
.83066	1.492	1.2039	1.796	.6703	.5568	43							
.82904	1.483	1.2062	1.788	.6745	.5592	44							
.82741	1.473	1.2086	1.781	.6787	.5616	45							
.82577	1.464	1.2110	1.773	.6830	.5640	46							
.82413	1.455	1.2134	1.766	.6873	.5664	47							
.82248	1.446	1.2158	1.758	.6916	.5688	48							
.82082	1.437	1.2183	1.751	.6959	.5712	49							
.81915	1.428	1.2208	1.743	.7002	.5736	50							
.81748	1.419	1.2233	1.736	.7046	.5760	51							
.81580	1.411	1.2258	1.729	.7089	.5783	52							
.81412	1.402	1.2283	1.722	.7133	.5807	53							
.81242	1.393	1.2309	1.715	.7177	.5831	54							
.81072	1.385	1.2335	1.708	.7221	.5854	55							
.80902	1.376	1.2361	1.701	.7265	.5878	56							
.80730	1.368	1.2387	1.695	.7310	.5901	57							
.80558	1.360	1.2413	1.688	.7355	.5925	58							
.80386	1.351	1.2440	1.681	.7400	.5948	59							
.80212	1.343	1.2466	1.675	.7445	.5972	60							
.80038	1.335	1.2494	1.668	.7490	.5995								
.79864	1.327	1.2521	1.662	.7536	.6018								
.79688	1.319	1.2549	1.655	.7581	.6041								
.79512	1.311	1.2577	1.649	.7627	.6065								
.79335	1.303	1.2605	1.643	.7673	.6088								
.79158	1.295	1.2633	1.636	.7720	.6111								
.78980	1.288	1.2661	1.630	.7766	.6134								
.78801	1.280	1.2690	1.624	.7813	.6157								
.78622	1.272	1.2719	1.618	.7860	.6180								
.78442	1.265	1.2748	1.612	.7907	.6202								
.78261	1.257	1.2778	1.606	.7954	.6225								
.78079	1.250	1.2808	1.601	.8002	.6248								
.77897	1.242	1.2838	1.595	.8050	.6271								

Handwritten calculations and diagrams on the right page of the notebook.

Top right:  $64.38$   
 $35.62$

Left side calculations:  
 $97 \ 10 \ 30$   
 $14 \ 23$   
 $91 \ 33 \ 30$   
 $88 \ 26 \ 30$   
 $100 \ 00 \ 00$

Center calculations:  
 $7763.0$   
 $6$   
 $7757.0$   
 $7150.8$   
 $71.43$   
 $822.23$   
 $71.43$   
 $6419.70$   
 $71.43$   
 $6911.3$

Right side calculations:  
 $64.38$   
 $7.03$   
 $71.41$   
 $23.7$   
 $822.23$   
 $1.5$   
 $757.00$   
 $608.66$   
 $1365.66$   
 $3720.8$   
 $524$   
 $6049.5$   
 $29$   
 $60510$   
 $994$   
 $502$   
 $1988$   
 $4970$   
 $51688$   
 $994$   
 $51$   
 $994$   
 $4970$   
 $50894$   
 $60495$   
 $7$   
 $502$

Diagram: A geometric diagram showing a triangle with a horizontal base and a vertical height. A dashed line extends from the top vertex to the base, and another dashed line connects the top vertex to the right side of the base. The diagram is annotated with various numbers and lines, possibly representing trigonometric relationships or a specific construction.

Bottom left calculations:  
 $4040$   
 $22$   
 $9780$   
 $988$   
 $108650$   
 $33.93$   
 $35.00$   
 $1750.73$



lost: 1 <sup>Survey</sup> transit tripod. lost. Old  
 Wm. Pan and City gauge

1 2 3 4 5 6 7 8 9 10  
 a b c d e f g h i j

6±

145.86  
 72.9

31  
 222

62  
 6  
 69

1710  
 17060  
 9553  
 81 0.2  
 3.116

12600.4  
 1356

750.7

96+26.9

86+71.5  
 955.5

209.85

216.85  
 36

180.7

M.H.T. Sta. 96+26.78

Haycorse foot of Level

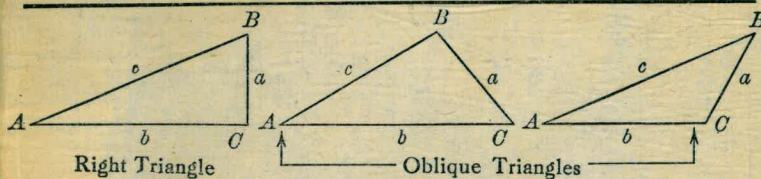
A 31° 22'

R 900

T 25-2.75

L 492.71

TRIGONOMETRIC FORMULÆ



Solution of Right Triangles

For Angle A.  $\sin = \frac{a}{c}$ ,  $\cos = \frac{b}{c}$ ,  $\tan = \frac{a}{b}$ ,  $\cot = \frac{b}{a}$ ,  $\sec = \frac{c}{a}$ ,  $\text{cosec} = \frac{c}{b}$

Given	Required	Formulas
a, b	A, B, c	$\tan A = \frac{a}{b} = \cot B$ , $c = \sqrt{a^2 + b^2} = a \sqrt{1 + \frac{b^2}{a^2}}$
a, c	A, B, b	$\sin A = \frac{a}{c} = \cos B$ , $b = \sqrt{(c+a)(c-a)} = c \sqrt{1 - \frac{a^2}{c^2}}$
A, a	B, b, c	$B = 90^\circ - A$ , $b = a \cot A$ , $c = \frac{a}{\sin A}$
A, b	B, a, c	$B = 90^\circ - A$ , $a = b \tan A$ , $c = \frac{b}{\cos A}$
A, c	B, a, b	$B = 90^\circ - A$ , $a = c \sin A$ , $b = c \cos A$

Solution of Oblique Triangles

Given	Required	Formulas
A, B, a	b, c, C	$b = \frac{a \sin B}{\sin A}$ , $C = 180^\circ - (A + B)$ , $c = \frac{a \sin C}{\sin A}$
A, a, b	B, c, C	$\sin B = \frac{b \sin A}{a}$ , $C = 180^\circ - (A + B)$ , $c = \frac{a \sin C}{\sin A}$
a, b, C	A, B, c	$A + B = 180^\circ - C$ , $\tan \frac{1}{2}(A - B) = \frac{(a - b) \tan \frac{1}{2}(A + B)}{a + b}$ $c = \frac{a \sin C}{\sin A}$
a, b, c	A, B, C	$s = \frac{a + b + c}{2}$ , $\sin \frac{1}{2}A = \sqrt{\frac{(s - b)(s - c)}{bc}}$ $\sin \frac{1}{2}B = \sqrt{\frac{(s - a)(s - c)}{ac}}$ , $C = 180^\circ - (A + B)$
a, b, c	Area	$s = \frac{a + b + c}{2}$ , $\text{area} = \sqrt{s(s - a)(s - b)(s - c)}$
A, b, c	Area	$\text{area} = \frac{bc \sin A}{2}$
A, B, C, a	Area	$\text{area} = \frac{a^2 \sin B \sin C}{2 \sin A}$

REDUCTION TO HORIZONTAL



Horizontal distance = Slope distance multiplied by the cosine of the vertical angle. Thus: slope distance = 319.4 ft. Vert. angle = 5° 10'. From Table, Page IX,  $\cos 5^\circ 10' = .9959$ . Horizontal distance =  $319.4 \times .9959 = 318.09$  ft. Horizontal distance also = Slope distance minus slope distance times (1 - cosine of vertical angle). With the same figures as in the preceding example, the following result is obtained.  $\cos 5^\circ 10' = .9959$ .  $1 - .9959 = .0041$ .  $319.4 \times .0041 = 1.31$ .  $319.4 - 1.31 = 318.09$  ft. When the rise is known, the horizontal distance is approximately: -the slope distance less the square of the rise divided by twice the slope distance. Thus: rise = 14 ft., slope distance = 302.6 ft. Horizontal distance =  $302.6 - \frac{14 \times 14}{2 \times 302.6} = 302.6 - 0.32 = 302.28$  ft.