

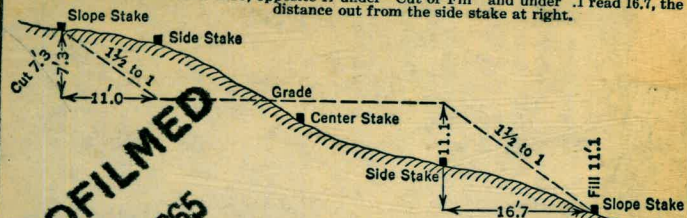
MISSION BAY

79

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.



MICROFILMED
JAN 8 1965

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

KEUFFEL & ESSER CO., N. Y.

Book #79

134

H. 99

3 + 11.

2.25

3 + 10.17
3 + 08.75

1.32

The paper in this book No. 373A
is made of 50% high grade rag stock
with a WATER RESISTING surface sizir g.

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Watson
Sisson
Sherry

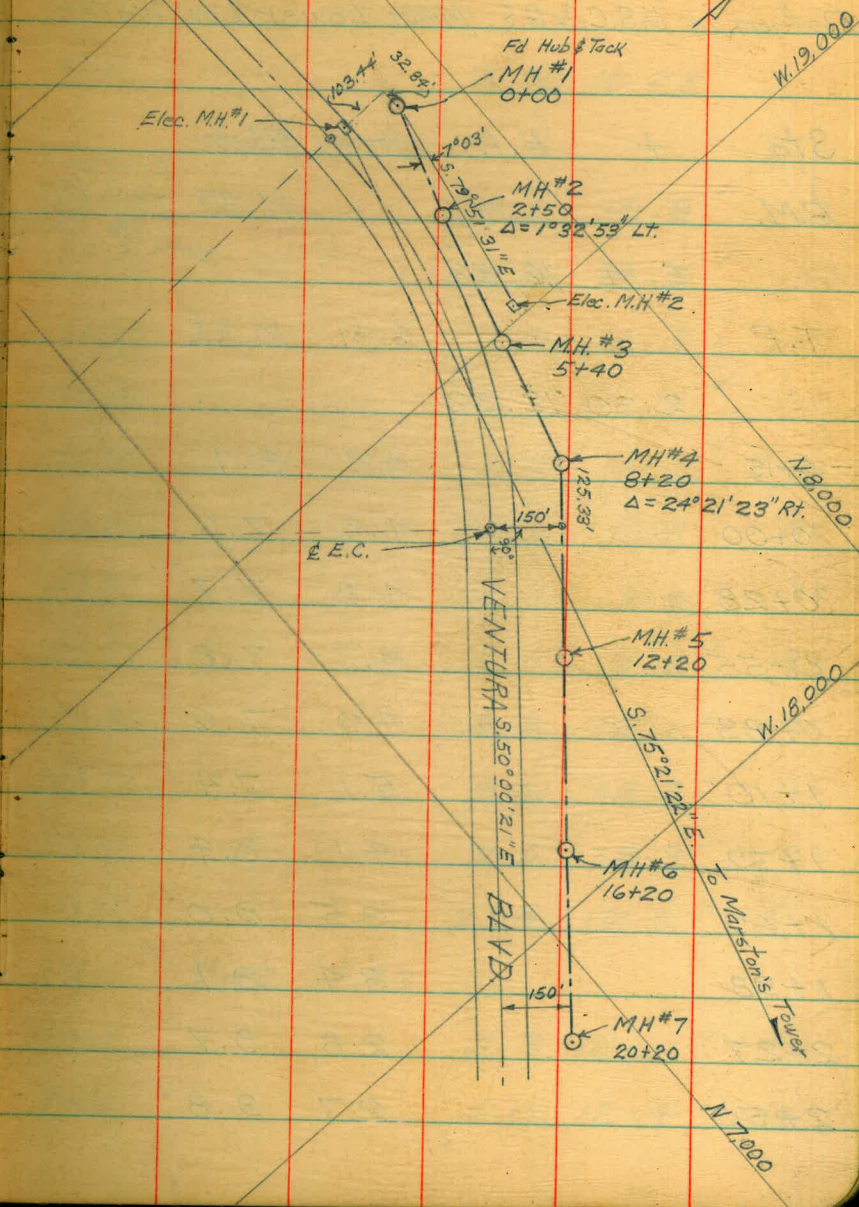
24 June 52

LOCATION

Proposed Sewer on Ventura Point

Sta	Bearing	Dist.	Coordinates North West
Elec. MH#1	N. 2° 02' 38" E	103.44'	7,767.65 19,537.48
L Point	N. 85° 16' 38" E	32.84'	7,871.02 19,533.79
MH#1, 0+00	S. 72° 48' 31" E	250.00'	7,873.73 19,501.06
MH#2, 2+50	S. 74° 21' 24" E	290.00'	7,799.84 19,262.23
MH#3, 5+40	S. 74° 21' 24" E	280.00'	7,721.64 18,982.97
MH#4, 8+20	S. 50° 00' 21" E	400.00'	7,646.14 18,713.34
MH#5, 12+20	S. 50° 00' 21" E	400.00'	7,389.06 18,406.90
MH#6, 16+20	S. 50° 00' 21" E	400.00'	7,131.97 18,100.45
MH#7, 20+20	S. 50° 00' 21" E	400.00'	6,874.89 17,794.01

Sec # B. 2173 City Engineering Office
10



Watson
Sisson
Sherry

PROFILE

24 June 52

(2)

Proposed Sewer on Ventura Point

Datum is U.S.C. & G.S. Mean Lower Low Water

Sta	+	H.I.	-	Elev.				
					T.P.		2.30	10.22 ✓
						4.73	14.95	
B.M.				11.39	2+78		4.1	10.8 ✓ Elev. City Datum
	5.14	16.53			3+08		3.6	11.3 ✓ 2.3
T.P.			6.31	10.22 ✓	3+35		3.4	11.5 ✓ 2.5
	2.30	12.52			3+66		3.2	11.7 ✓ 2.7
-0+15			4.4	8.1 ✓	3+93		2.9	12.0 ✓ 3.0
0+00			4.9	7.6 ✓	4+22		2.6	12.3 ✓ 3.3
0+28			4.8	7.7 ✓	4+50		2.6	12.3 ✓ 3.3
0+55			4.7	7.8 ✓	4+77		2.7	12.2 ✓ 3.2
0+83			4.9	7.6 ✓	5+06		2.8	12.1 ✓ 3.1
1+10			5.1	7.4 ✓	5+32		2.6	12.3 ✓ 3.3
1+39			4.1	8.4 ✓	5+40		2.6	12.3 ✓ 3.3
1+69			3.5	9.0 ✓	T.P.		2.94	12.01 ✓
1+98			3.4	9.1 ✓		5.42	17.43	
2+27			2.8	9.7 ✓	5+62		5.3	12.1 ✓ 3.1
2+50			2.7	9.8 ✓	5+92		5.0	12.4 ✓ 3.4

Coaster
U.S.C. & G.S.
Cont. Mon
City Datum
2.38

Elev.
City Datum

Ventura Point Sewer Profile Cont'd

Ventura Point Sewer Profile Cont'd

Sta. + H.I. - Elev.

Sta. + H.I. - Elev.

17.43

16.44

Elev. City Datum
2.3

Elev. City Datum
2.3

6+19 5.1 12.3 ✓

10+43 5.1 11.3 ✓

6+46 5.1 12.3 ✓

10+52 5.6 10.8 ✓

6+73 5.2 12.2 ✓

10+54 6.8 9.6 ✓

7+01 5.5 11.9 ✓

10+61 6.5 9.9 ✓

7+27 5.8 11.6 ✓

10+62 5.5 10.9 ✓

7+51 6.1 11.3 ✓

10+80 5.5 10.9 ✓

7+75 6.2 11.2 ✓

10+85 3.4 13.0 ✓

7+99 6.3 11.1 ✓

10+90 5.4 11.0 ✓

8+20 6.3 11.1 ✓

11+28 5.5 10.9 ✓

T.P. 5.22 12.21 ✓

11+71 5.4 11.0 ✓

4.23 16.44

12+20 5.6 10.8 ✓

8+56 5.7 10.7 ✓

T.P. 2.39 14.05 ✓

8+76 6.0 10.4 ✓

2.07 16.12

9+44 5.3 11.1 ✓

12+68 5.4 10.7 ✓

9+76 5.5 10.9 ✓

13+16 5.2 10.9 ✓

9+79 4.9 11.5 ✓

13+65 5.3 10.8 ✓

10+10 4.9 11.5 ✓

14+20 5.3 10.8 ✓

Ventura Point Sewer Profile Cont'd.

Ventura Point Sewer Profile Cont'd. ⁽⁴⁾

Sta.	+	H.I.	-	Elev.	
		16.12			Elev. City Datum ↓
14+66			5.3	10.8 ✓	1.8
15+18			5.3	10.8 ✓	1.8
15+68			5.2	10.9 ✓	1.9
16+20			5.2	10.9 ✓	1.9
T.P.			5.35	10.77 ✓	
	5.44	16.21			
16+79			5.5	10.7 ✓	1.7
17+30			5.6	10.6 ✓	1.6
17+86			5.6	10.6 ✓	1.6
18+36			5.0	11.2 ✓	2.2
18+84			3.0	13.2 ✓	4.2
19+32			2.7	13.5 ✓	4.5
19+59			2.6	13.6 ✓	4.6
19+93			3.4	12.8 ✓	3.8
20+20			3.4	12.8 ✓	3.8
20+62			3.4	12.8 ✓	3.8
21+04			3.9	12.3 ✓	3.3

Sta.	+	H.I.	-	Elev.	
		16.21			
T.P.			5.41	10.80 ✓	
	6.69	17.49			
T.P.			5.68	11.81 ✓	Elec MH
	4.28	16.09			
T.P.			4.36	11.73 ✓	
	3.96	15.69			
T.P.			4.56	11.13 ✓	
	4.04	15.17			
T.P.			3.95	11.22 ✓	
	4.48	15.70			
B.M.			4.29	11.41 ✓	U.S.C & G.S. Coaster 11.39 ✓

CONSTRUCTION ALIGNMENT
OF 60" R.C.P. STORM DRAIN
DE ANZA POINT W.O. 64036

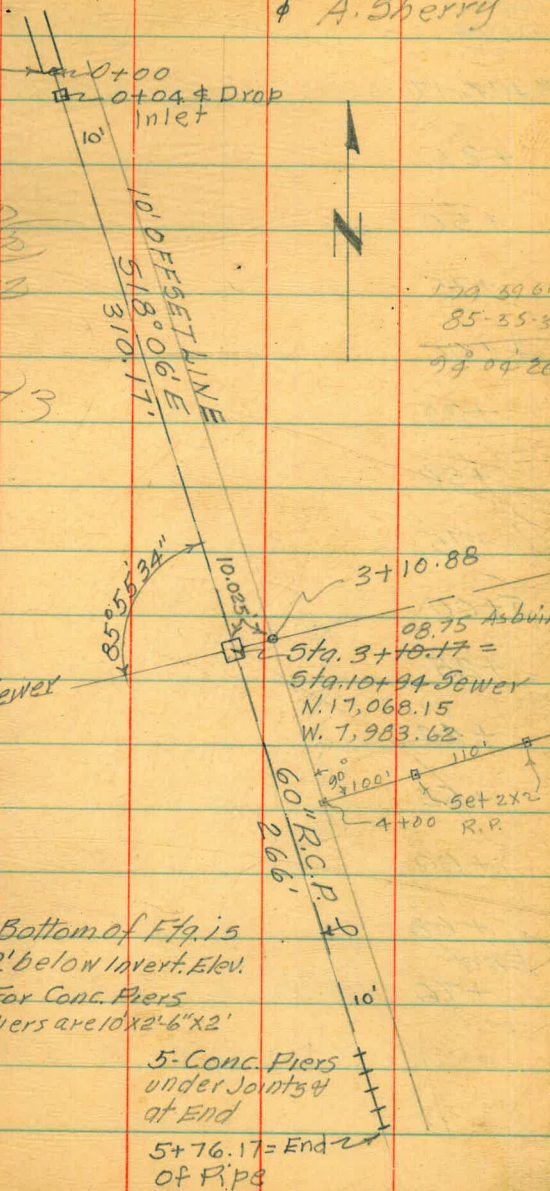
1-6-53

(5)
T. Stamper
R. Sisson
R. Shorey
A. Sherry

W.O. 64036

End of Existing
60" R.C.P.

Sta	+ H.I. -	Elev.	Grade	Cut
B.M.			Top 2x2 Sewer 12+00	
0+00		10.99	6.27	
+04	Drop Inlet	14.11	6.25	7.86
+25		14.27	6.17	8.10
+50		14.20	6.08	8.12
+75		14.11	5.98	8.13
1+00		14.06	5.89	8.17
+25	0.5818%	13.77	5.79	7.98
+50		13.80	5.70	8.10
+75		13.66	5.60	8.06
2+00		13.47	5.51	7.96
+25		13.28	5.41	7.87
+50		12.77	5.32	7.45
+75		12.67	5.22	7.45
3+00		11.95	5.12	6.83



NOTE: Bottom of Ftg. is
2' below Invert. Elev.
For Conc. Piers
Piers are 10x2'-6"x2'

5 Conc. Piers
under Joints 34
at End
5+76.17 = End
of R.P.

170 89.60
85-55-34
94 04-26

60" R.C.P. STORM DRAIN CONTD.

⑥

Sta	+	H.I	-	Elev	Grade	Cut
Sewer 10+94				11.89	<u>7.40</u>	4.49' Sewer & Inv. Grade Cleanout No 1
3+10.17				11.89	5.08	6.81' Intersection Sta. 10+94-8" Sewer
^{14.83} +25				12.04	5.03	7.01' ✓
+50				11.82	4.93	6.89' ✓
+75				11.60	4.84	6.76' ✓
4+00				⁵⁷ 11.60	4.74	6.86' ✓
+25				⁶⁵ 11.70	4.65	7.00' ✓
+50				⁸⁰ 11.84	4.55	7.25' ✓
+75				⁸¹ 11.84	4.46	7.38' ✓
5+00				10.33	4.36	5.97' ✓
+25				9.25	4.26	4.99' ✓
¹⁹ +44				8.26	4.19	4.07' & Pier
+52				7.65	4.16	3.49' ✓ "
+60				7.00	4.13	2.87' ✓ "
+68				5.96	4.10	1.86' ✓ "
End +76				3.74	4.07	F. 0.33' ✓ "
				10.95	11.52	F. 0.57' Top of C.O. M.H. No 1

0.3818%

CONSTRUCTION ALIGNMENT

OF 8" C.I. SEWER DEANZA POINT
(PRESSURE)

Sta.	Elev	Grade	Cut
B.M.	11.37	TOP 2'x2' N. 16,700 F.B. 78	
B.M.	9.83	TOP 6" CONC. Man. No 2 M.H.T.	
0+27.70		58	
22.30		4.70	
+50	10.62	4.76	5.86
+75		4.82	
1+00	10.70	4.88	5.82
+25		4.95	
+50	10.60	5.01	5.59
+75		5.07	
2+00	10.91	5.14	5.77
+25		5.20	
+50	10.71	5.26	5.45
+75		5.33	
3+00	10.78	5.39	5.39
+25		5.45	
+50	10.85	5.52	5.33
+75		5.58	

0.253%

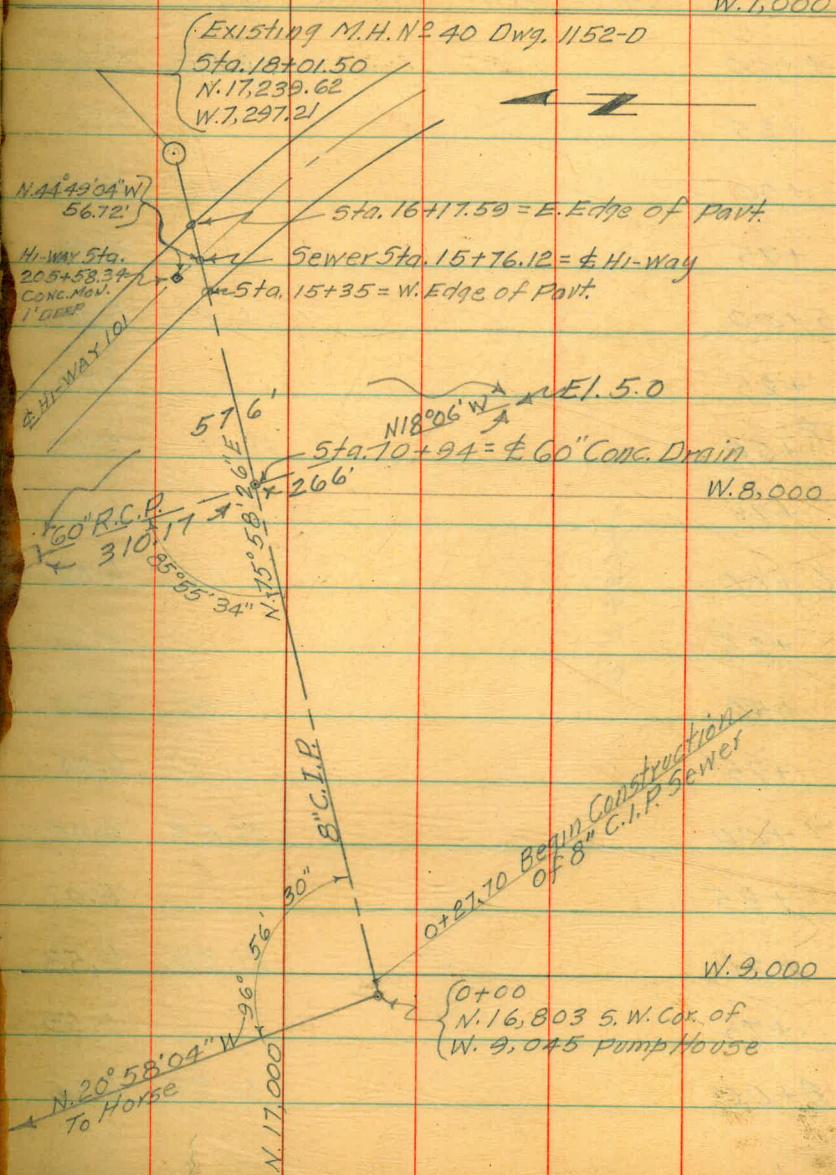
2-5-53

T.A. Stamper

W.O. 64036

NOTE: Grades are Run
With a Direct Reading
Rod

W.7,000



0+27.70 Begin Construction
of 8" C.I.P. Sewer

{ 0+00
N. 16,803 S.W. Cor. of
W. 9,045 Pump House

CONSTR. 8" PRESSURE SEWER

2-5-53

⑧

CONT'D.

■ T. Stamper
 ✕ R. Sisson
 † A. Sherry
 † R. Shorey

Sta	+	H.I.	-	Elev	Grade	Cut
4+00				10.86	5.64	5.22 ✓
+25					5.71	
+50				10.89	5.77	5.12 ✓
+75					5.83	
5+00				10.89	5.90	4.99 ✓
+25					5.96	
TP. +50				11.14	6.02	5.12 ✓
+75					6.09	
6+00				11.36	6.15	5.21 ✓
+25					6.21	
+50				11.20	6.28	4.92 ✓
+75					6.34	
7+00				11.03	6.40	4.63 ✓
+25					6.47	
+50				11.28	6.53	4.75 ✓
+75					6.59	
8+00				11.32	6.66	4.66 ✓

0.25390

CONST. 8" PRESSURE SEWER (CONT'D.)

9

Sta	+ H.I.	- Elev.	Grade	Cut
8+25			6.72	
+50		11.67	6.78	4.89 ✓
+75			6.85	
9+00		11.29	6.91	4.38 ✓
+25			6.97	
+50		11.86	7.04	4.82 ✓
+75			7.10	
10+00		11.67	7.16	4.51 ✓
+25			7.23	
+50		12.19	7.29	4.90 ✓
+75			7.35	
+94			7.40 ✓	
				Intersection With 60" R.C.P. Storm Drain
11+00		10.32	"	2.92 ✓
+50		11.48	"	4.08 ✓
+75			"	
12+00		11.04	"	3.64 ✓
+25			"	
+50		11.34	7.40	3.94 ✓

0.253%

0.0%

CONSTR. 8" PRESSURE SEWER CONTD.

1-24-53

10' South
Cut

Sta	+	H.I.	-	Elev.	Grade	
12+75					7.40	
13+00			check	11.79		
				11.80		4.40 ✓
+25				11.86		4.46 ✓
+50				11.88		4.48 ✓
+75				11.83		4.43 ✓
14+00				11.86		4.46 ✓
+25				11.92		4.52 ✓
+50				11.70		4.30 ✓
+75				11.90		4.50 ✓
15+00				12.08		4.68 ✓
+25		0.0%		13.34		5.94 ✓
+31.29				13.53		6.13 ✓
+50						W. End of 1/4" Steel Casing 90' Long
+76.12				14.00		Hi-Way 101
16+00						
+21.29				14.07		6.67 ✓
+50				14.99		7.59 ✓
+82.50				14.79	7.40	7.39 ✓

W. End of 1/4" Steel Casing 90' Long

Hi-Way 101

E. End of 1/4" Steel Casing 90' Long

CONSTR. 8" PRESSURE SEWER CONTD.

1-24-53

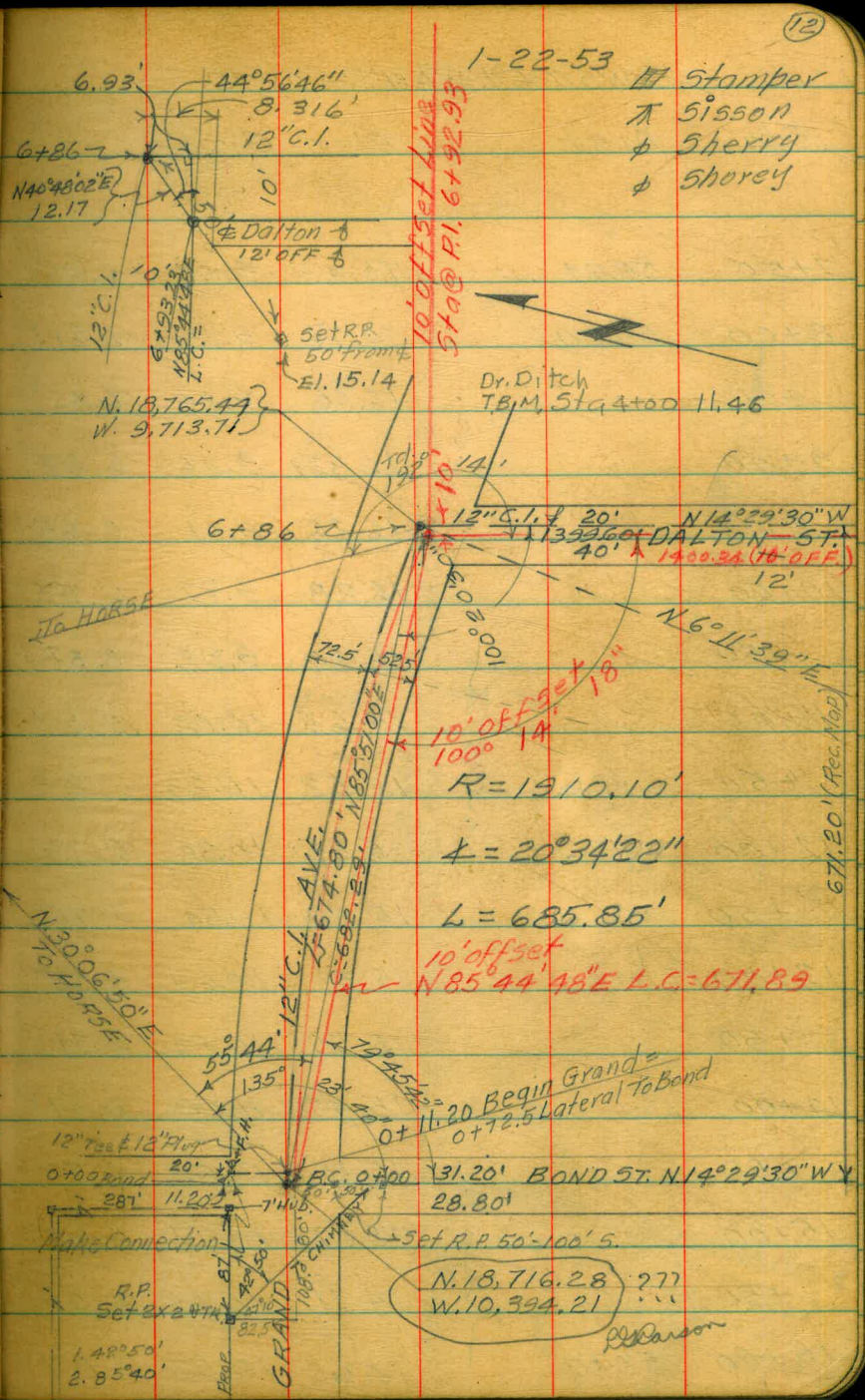
⑩

Sta.	+	H.I.	-	Elev.	Grade	Cut
17+00 ⁵⁰				14.85	7.98	6.87 ✓ Top of H.V. 14.97 ~ 14.98.
+18.50				14.83	8.90	5.93 ✓
+36.50				15.16	10.17	4.99 ✓
+54.50				16.37	11.63	4.74 ✓
+72.50				18.29	12.75	5.54 ✓
+90.50				19.81	13.50	6.31 ✓
End						
17+99 ⁵⁰				20.53	13.80	6.73 ✓ ≠ M.H. N° 40

CONSTRUCTION ALIGNMENT OF
 C.I. WATERLINE BOND ST. TO
 PUMP HOUSE - DEANZA POINT W.O. 64036

Computed on CURVE DATA L.C. = 671.89
 (10' offset line Rt.)
 $R = 1890.10'$ $\Delta = 20^\circ 28' 35''$ $L = 675.48'$ $d = .90940870$

Sta	DefL	Chord	Elev.	Grade	Cut
B.C.Rt. 0+00 B.M.			13.72		Top of 2x2" Hub 10' South
Water Begin Line 0+11.20	0°10'09"	11.14	13.89	8.80	5.09
+50	0°45'14"	38.60	14.02	8.89	5.13
1+00	1°30'28"	49.737	14.54	9.01	5.53
+50	2°15'42"	"	14.33	9.13	5.20
2+00	3°00'55"	"	14.53	9.25	5.28
+50	3°46'10"	"	14.50	9.36	5.14
3+00	4°31'23"	"	14.49	9.48	5.01
+50	5°16'37"	"	14.51	9.60	4.91
4+00	6°01'51"	"	14.90	9.48	5.42
+50	6°47'05"	"	15.00	9.36	5.64
5+00	7°32'20"	"	14.71	9.24	5.47
+50	8°17'32"	"	14.84	9.12	5.72
6+00	9°02'47"	"	14.98	9.00	5.98
+50	9°48'00"	49.737	15.06	8.87	6.19
P.I. 486 E.C.	10°14'17"	28.90	15.10	8.80	6.30



- 1-22-53
- Stamper
 - Sisson
 - Sherry
 - Shorey

671.20' (Rec. Map)

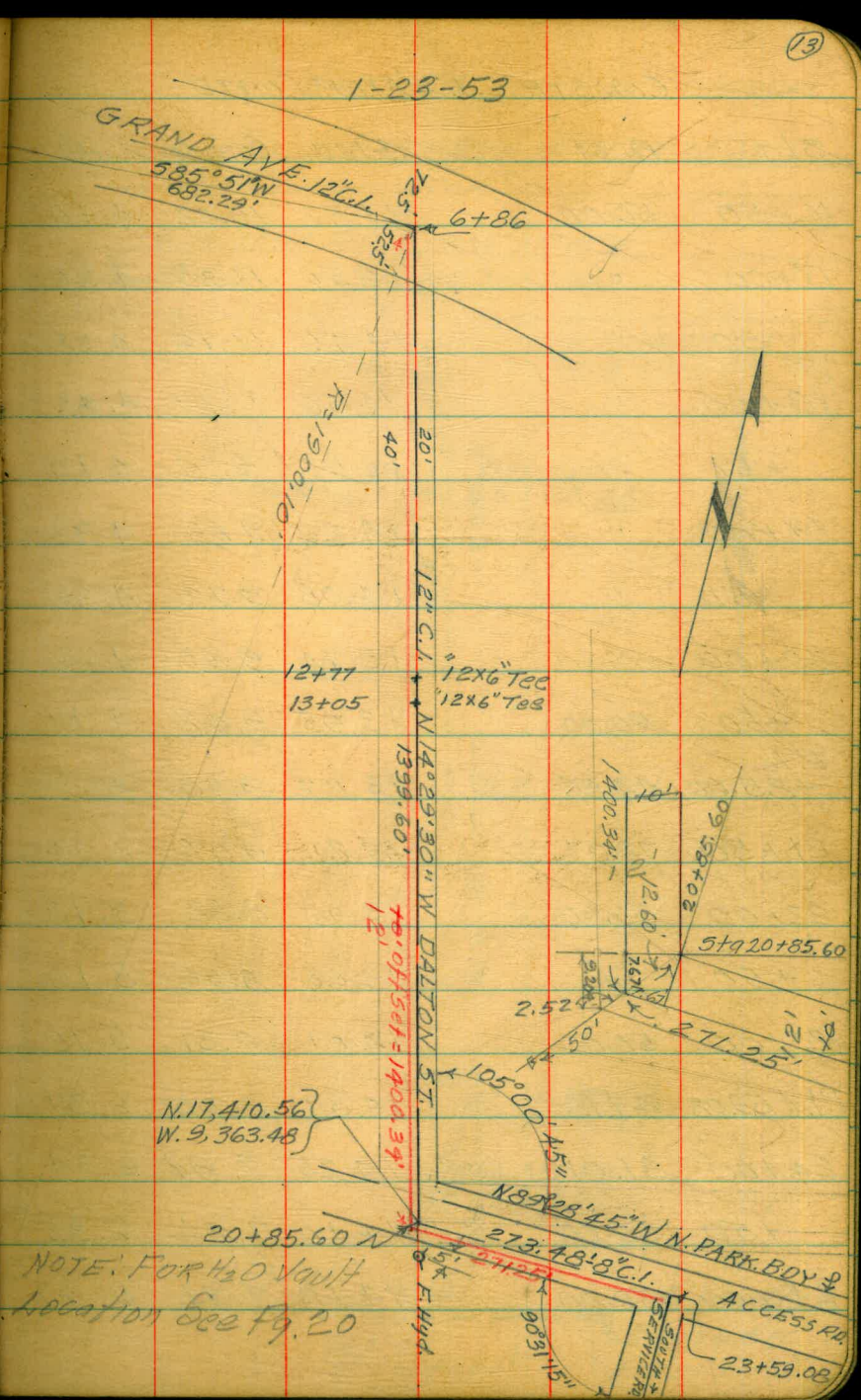
Blairson

CONSTR. I. WATER CONTD.

Sta	Dist	Elev.	Grade	Cut
7+50	55.68	15.45	9.00	6.45 ✓
8+00	50.00	15.76	9.15	6.61 ✓
+50	"	16.16	9.30	6.86 ✓
9+00	"	16.33	9.46	6.87 ✓
+50	"	16.26	9.61	6.65 ✓
10+00	"	16.28	9.77	6.51 ✓
+50	"	16.00	9.92	6.08 ✓
11+00	"	15.65	10.08	5.57 ✓
+50	"	15.52	10.23	5.29 ✓
12+00	"	15.55	10.38	5.17 ✓
TP. +50	"	15.24	10.54	4.70 ✓
13+00	"	15.38	10.69	4.69 ✓
+50	"	15.55	10.84	4.71 ✓
14+00	"	15.47	11.00	4.47 ✓
+50	"	15.15	10.88	4.27 ✓
15+00	"	15.01	10.77	4.24 ✓
+50	"	14.71	10.65	4.06 ✓
16+00	50.00	14.60	10.53	4.07 ✓

308%

233%



CONSTR C.I. WATER CONTD

2-9-53

T. Stamper

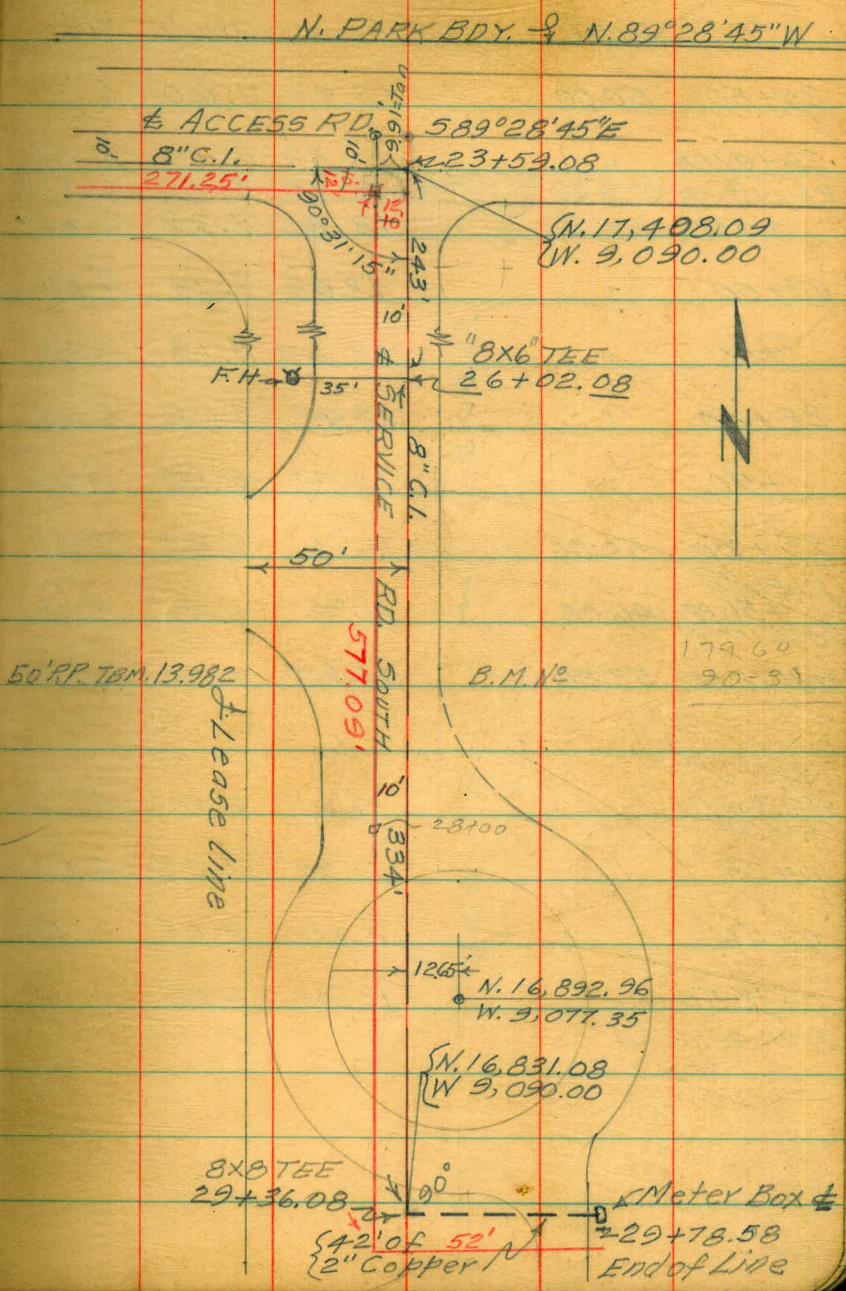
(14)

Sta.	Dist.	Elev.	Grade	Cut.
16+50	50.00	14.52	10.42	4.10 ✓
17+00	"	14.56	10.30	4.26 ✓
+50	"	14.46	10.18	4.28 ✓
TP				
18+00	"	14.50	10.07	4.43 ✓
+50	"	14.07	9.95	4.12 ✓
19+00	"	14.20	9.83	4.37 ✓
+50	"	14.08	9.72	4.36 ✓
20+00	"	13.74	9.60	4.14 ✓
+50	50.00	13.95	9.48	4.47 ✓
P.I.				
+85.60	44.80	13.82	9.40	4.42 ✓
21+50	72.07	13.81	9.07	4.74 ✓
22+00	50.00	13.95	8.82	5.13 ✓
+50	"	13.66	8.56	5.10 ✓
23+00	50.00	14.01	8.31	5.70 ✓
P.I. +59.08	47.18	14.37	8.00	6.37 ✓
24+00	31.01	14.25	7.91	6.34 ✓
+50	50.00	14.16	7.81	6.35 ✓
25+00	50.00	14.18	7.71	6.47 ✓

233%

0.51%

208%



N. PARK BDY. $\frac{9}{4}$ N. 89° 28' 45\" W

ACCESS RD. 589° 28' 45\" E

8\" C.I. 271.25'

N. 17,408.09
W. 9,090.00

8X6\" TEE
26+02.08

8\" C.I.

RD. SOUTH

577.09'

B.M. No

179.60
90-31

23100

1265'
N. 16,892.96
W. 9,077.35

N. 16,831.08
W. 9,090.00

8X8\" TEE
29+36.08

Meter Box

42' of 52\"
2\" Copper

29+78.58
End of Line

CONSTR. C.I. WATER CONTD.

2-9-53

(15)

Sta.	Dist	Elev.	Grade	Cut	
25+50	50.00	13.91	7.60	6.31	
26+02.08	"	13.33	7.50	5.83	
26+02.08	C.I. 69	13.69	7.50	6.19	lateral to Fire Hydrant 35' West Set Bot. Flame of Fire Hyd @ Elev. 12.00
+50	"	13.45	7.39	6.06	
27+00	"	13.09	7.29	5.80	
+50	"	12.69	7.19	5.45	
28+00	"	12.48	7.08	5.40	
+50	"	12.04	6.98	5.06	
29+00	50.00	11.76	6.87	4.89	
(P.I. End 8" +36.08 Reg 2" Copper)	46.08	11.98	6.80	5.18	
End 4 78.58	52.50	10.69	9.50	1.19	
EX 15+12" D.E. End 7 (0+00)		11.21	6.40	4.81	
0+25		11.27	7.23	4.04	
0+50		11.48	8.06	3.42	
F. 0+72.58 End = 0+11.2 Grand		13.48	8.80	4.68	

2.80%

3.31%

LOCATION OF SEWAGE PUMP

2 Dec. 1952

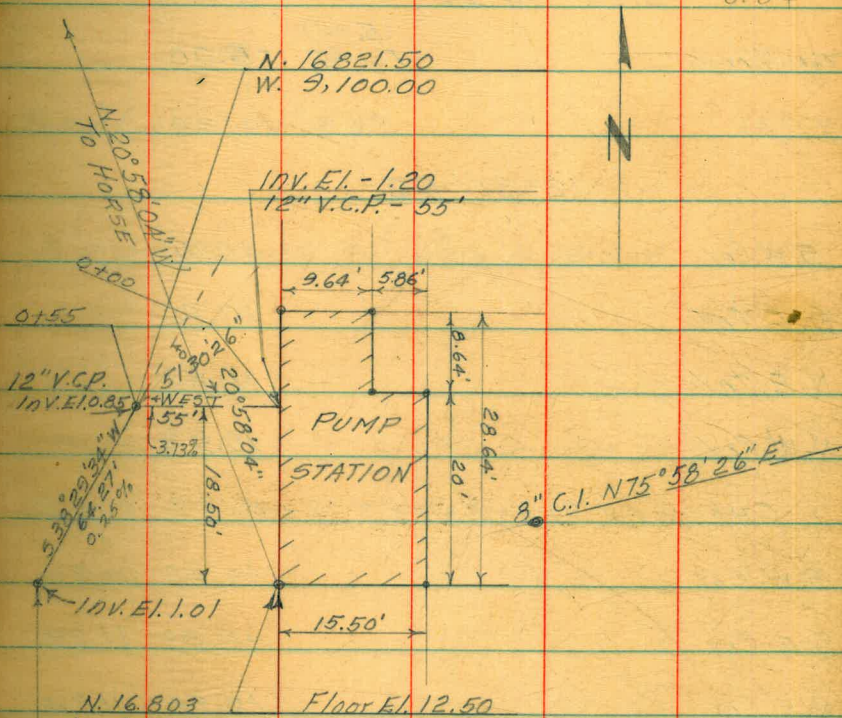
(16)

STATION DE ANZA POINT

W.O. 64034

T. Stamped
 R. Sisson
 A. Sherry
 R. Shorey

STA	+ H.I.	- ELEV.	
B.M.		11.37	N 16,700 W 9,200
N.W. Cor.		11.25	" 2x2" Hd
N.E. Cor.		11.31	"
S.E. Cor.		11.10	"
S.W. Cor.		11.18	"
N.W. L.Pt.		11.20	"
NE. L.Pt.		11.21	"
+10' & Ety. Body Purdy Lease B.M. # 2		9.83	N 16,681.28 W 9,140. Top 6" Conc. Mon.
T.B.M.		10.89	Top "2x2" 1+00 Press. Sewer
T.P.		12.81	
Ety Body Purdy Lease # B.M. # 3		13.555	N 17,288.51 W 9,140.00 Top 6" Conc. Mon.
Nty Body Purdy Lease # B.M. # 5		13.29	N 17,388.50 W 9,238.49 Top 6" Conc. Mon.
T.P. N# 1		14.06	14.06



Sta	+ H.I.	Elev	Grade	Cut
0+00		-1.20		
+25		-0.27		
P.I. +55		0.85		
+75		0.90		
1+00		0.96		
End +12.27		1.01		
0+55		11.00		
Top of M.H.		11.00		

12" V.C.P. LATERAL FROM PUMP HOUSE

N 16,803
W 9,045

1119.27
End of Line

N 16,771.20
W 9,140.00

Bot Ftg = El. - 6.0
 Bot Sump = El. - 7.0

FILL
 2-5-53
 4.40

ELEVATIONS PUMPHOUSE

12-19-52

①7

Stamper
Sisson
Shorey
Sherry

DE ANZA POINT SUBGRADE

STA	+	H. I.	-	Elev.	M. H. T.
B. M.				9.83	CONC. MON#2
	5.13	14.96			
Top Floor			(5.96')	19.96	-5.00
T.B.M.			3.63	11.33	

Top of "2x4" N.W.R.P.

12-31-52

S.W. Cor				10.78	
S.E. Cor				10.86	
N.E. Cor				10.83	
N.W. Cor				10.93	

Top of forms of Pump House

" " " "

CHECK ON SETTLEMENT 1-5-53 2-5-53

S.W. Cor			<u>11.26</u>	10.76	11.23
S.E. Cor			<u>11.33</u>	10.83	11.29
N.E. Cor			<u>11.28</u>	10.78	11.24
N.W. Cor			<u>11.40</u>	10.90	11.38

BENCH LEVELS FROM MHT.

1-6-1953

T. Stamper

MON. TO AREA OF 60" R.C.P.

R. Gibson

R. Shorey

DE ANZA POINT & VICINITY

Sta.	+	H.I.	-	Elev.
B.M.				9.83
TP				9.73
TP				11.41
T.B.M.				12.075
T.B.M.				10.99
B.M.				13.22
B.M.			17.01	17.01
B.M.			14.11	chisl. cross

□ □

Sta 10+00 Sewer Line Top of 2x2 Hub

" 12+00 " " " "

Chiseled Cross on East End of 60" Curb Hdwall on North Side of Entrance to DeAnza Point

"6x6" Conc. Mon. on Ely Side Pac. Hi-way & State Park Bdy

S.E. Cor. of Top of Walk To House N^o 4450 on West Side of Bond Street

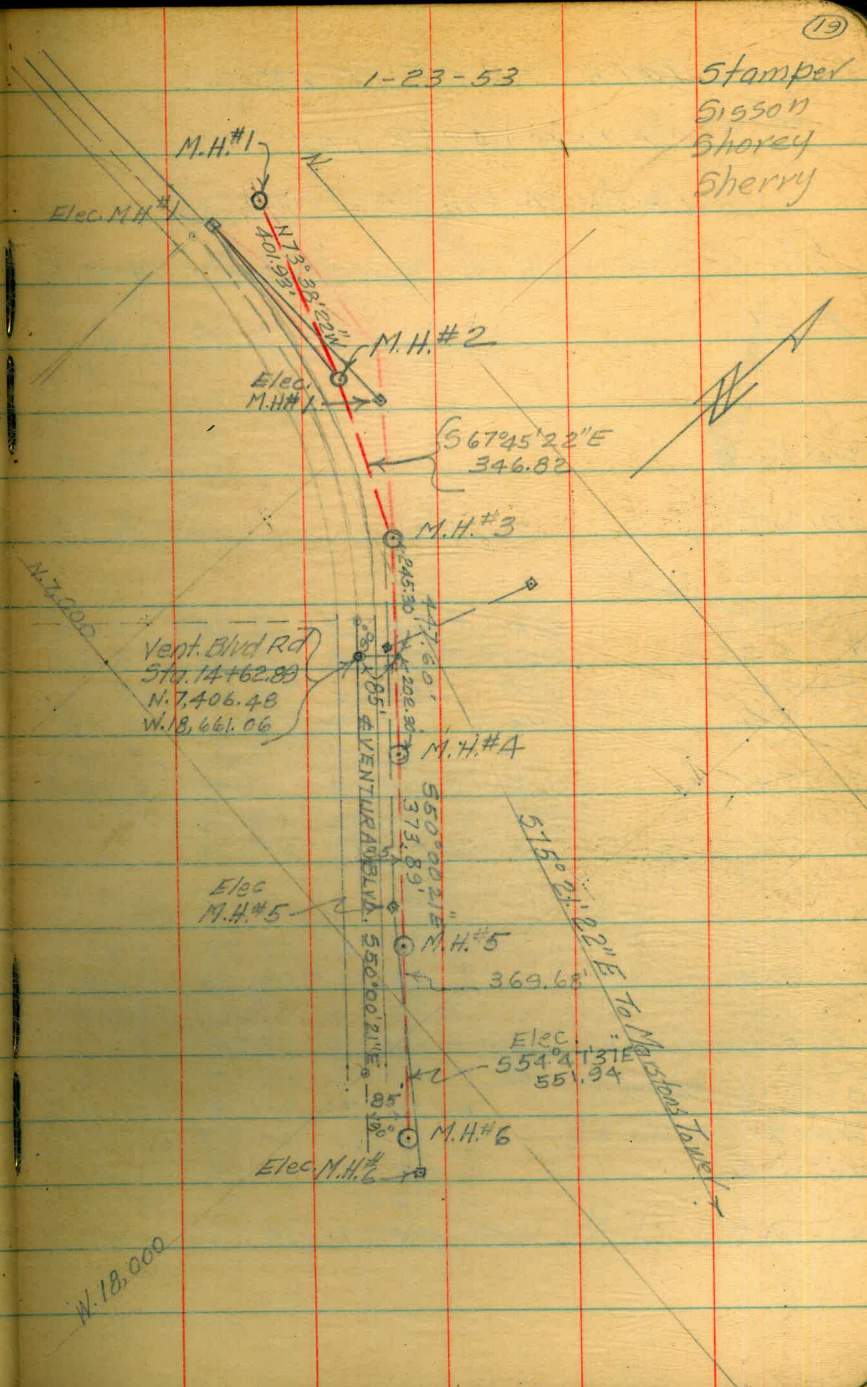
TOP OF CLEANOUT N^o 1 60" DRAIN

B.M.				13.22
TOP OF CLEANOUT			12.35	12.25 C.O. 10

AS BUILT LOCATION OF SEWER

ON VENTURA PT. ELY OF BLVD

Sta.	Object	Bearing	Dist	Coordinates	
				N.	W.
Elec. M.H.#1	Tower	$575^{\circ}21'22''E$		7767.65	19,537.48
Lt.		$1.13^{\circ}38'30''$			
		$2.27^{\circ}18'$			
Sewer M.H.#2		$589^{\circ}00'22''E$	421.48		
Elec. M.H.#1		$N89^{\circ}00'22''W$			
Sewer M.H.#2		$R. 1.15^{\circ}22'00''$			
		$2.30^{\circ}44'$			
Sewer M.H.#1		$N73^{\circ}38'22''W$	401.93		
Elec. M.H.#1		$N89^{\circ}00'22''W$			
Sewer M.H.#2		$Def 1. 21^{\circ}15'$			
		$Rt. 2. 42^{\circ}30'$			
Sewer M.H.#3		$567^{\circ}45'22''E$	346.82		
Sewer M.H.#2					
Sewer M.H.#3		$Def 1. 17^{\circ}45'$			
		$Rt. 2. 35^{\circ}30'$			
Sewer M.H.#4		$550^{\circ}00'21''E$	447.60		
		$0^{\circ}00'$			
Sewer M.H.#5		$550^{\circ}00'21''E$	373.89	0.3 W	
		$0^{\circ}00'$			
Sewer M.H.#6		$550^{\circ}00'21''E$	369.68	0.7 W	



LOCATION OF WATER

METER VAULT BOX ON

DEANZA POINT W.O. 64036

2-6-53

(20)

Stampel

Huffman

Shores

Sherry

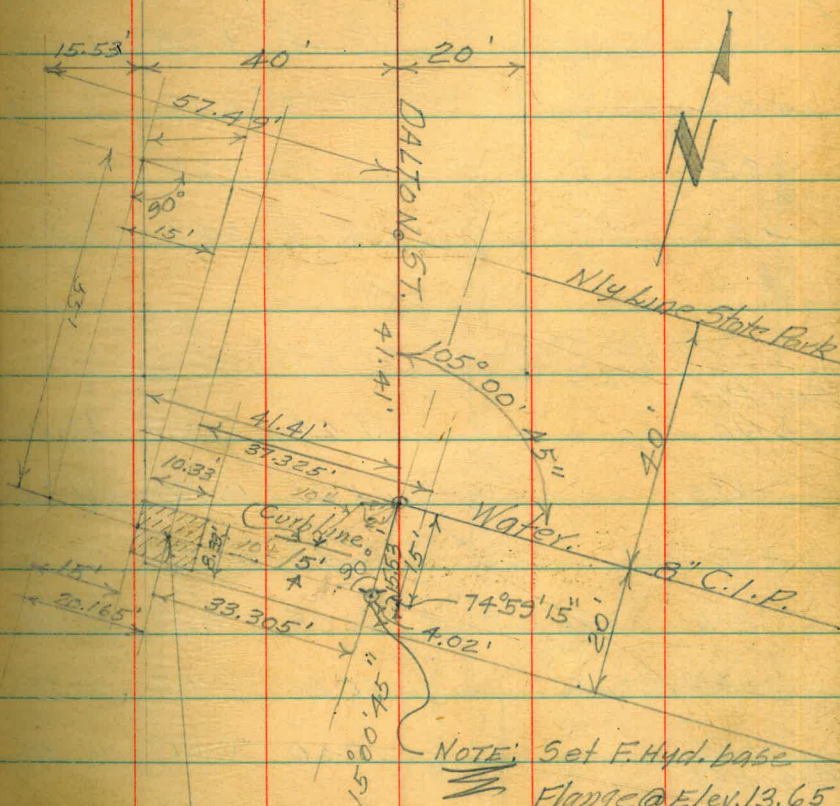
Sta	+ H.I.	- Elev.	Grade
B.M.		13.29	16

NOTE: See Page 13 For Location

Top Vault			13.65
Invert.			8.40

	Top	C	Elev.	Grade
NORTH R.P. 15' 1/2	0.23	13.88	13.65	
	Invert	5.44	8.40	
SOUTH R.P. 15' 1/2	0.26	14.01	13.63	
	Invert	5.61	8.40	
EAST R.P. 15' 1/2	0.25	13.40	13.63	
	Invert	5.00	8.40	
WEST R.P. 15' 1/2	0.02	13.63	13.63	
	Invert	5.23	8.40	

NORTH R.P. 30' 1/2	0.12	13.53	13.65
	5.13	13.53	8.40
SOUTH R.P. 30' 1/2	0.29	13.94	13.65
	5.54	13.94	8.40
EAST R.P. 26' 1/2	0.02	13.63	13.65
	5.23	13.63	8.40
WEST R.P. 30' 1/2	0.38	14.03	13.65
	5.63	14.03	8.40
SOUTH R.P. 55'	0.22	13.87	13.65
	5.47	13.87	8.40

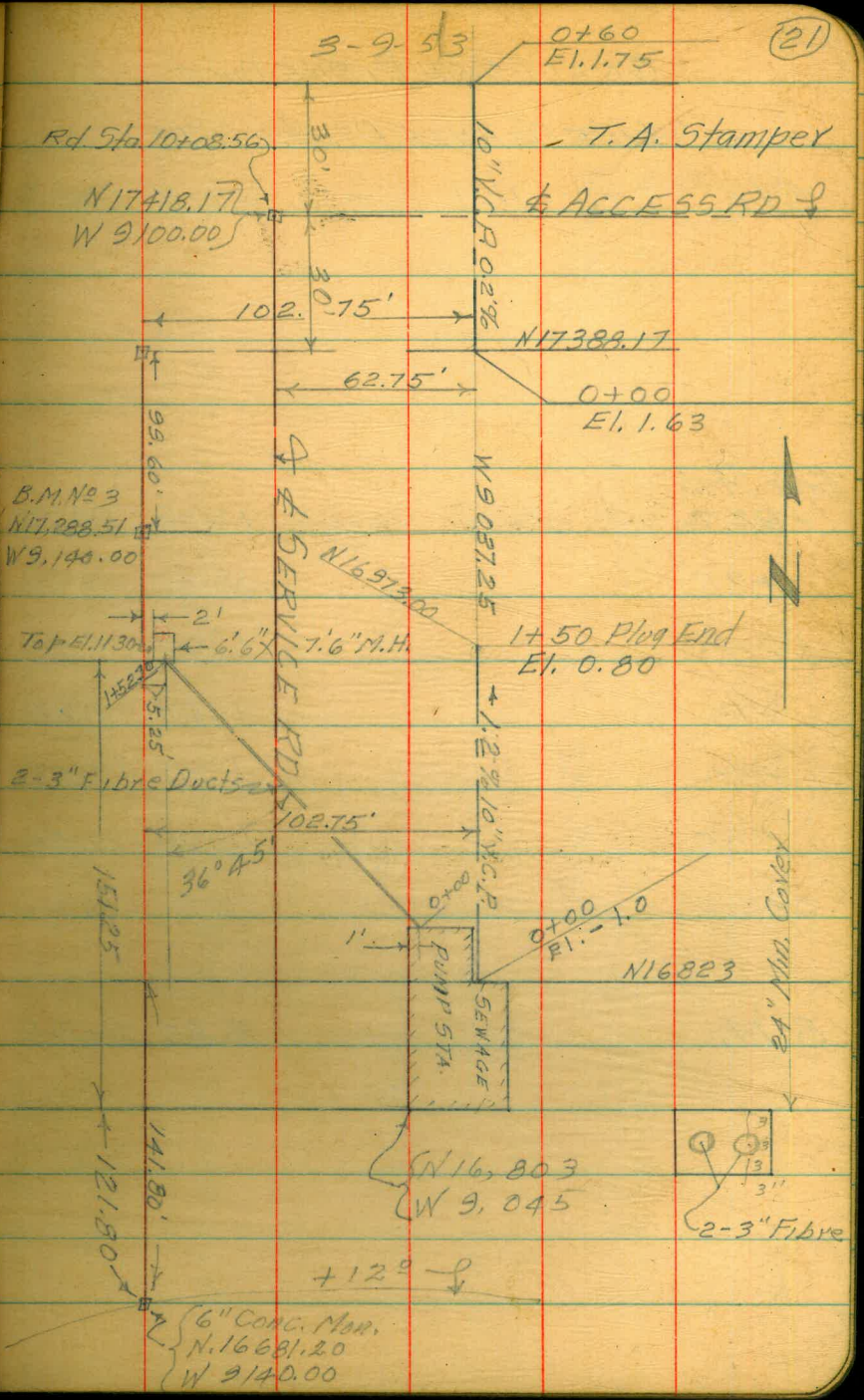


NOTE: Set F. Hyd. base
Flange @ Elev. 13.65
4' 5\"/>

WATER METER VAULT BOX

LOCATION OF PROPOSED
SEWER ACROSS ACCESS &
SERVICE ROADS DE ANZA PT.

Sta.	Elev.	Grade	Cut
End Plug +60	13.42	1.75	11.67
+50	13.23	1.73	11.50
+25	13.88	1.68	12.20
Plug 0+00	14.19	1.63	12.56
+ 0.2 %			
End Plug 1+50	11.68	0.80	10.88
+25	11.66	0.50	11.16
1+00	11.46	0.20	11.26
+75	11.05	-0.10	11.15
+50	10.80	-0.40	11.20
+25	10.60	-0.70	11.30
@ Pump Sta. 0+00	10.6	-1.00	11.6
+ 1.2 %			
B.M. N ^o 2	9.83	See Pg. 16	



T. A. Stamper
& ACCESS RD

GRADES OF FIBRE DUCT

3-9-53

(22)

LINE DE ANZA PT. W. O. 65036

Sta + H.S. - Elev Grade Cut

- Stamper
- ⌘ Huffman
- ⊕ Storey
- ⊕ Sherry

End Stub

1+52.7		12.54	10.0	2.54 ✓
+25		12.26	9.80	2.46 ✓
1+00	+0.72 0/0	11.69	9.62	2.07
+75		11.09	9.44	1.65 ✓
+50		11.20	9.26	1.94 ✓
+25		10.90	9.08	1.82 ✓
0+00		Ground 10.5	11.3	8.9

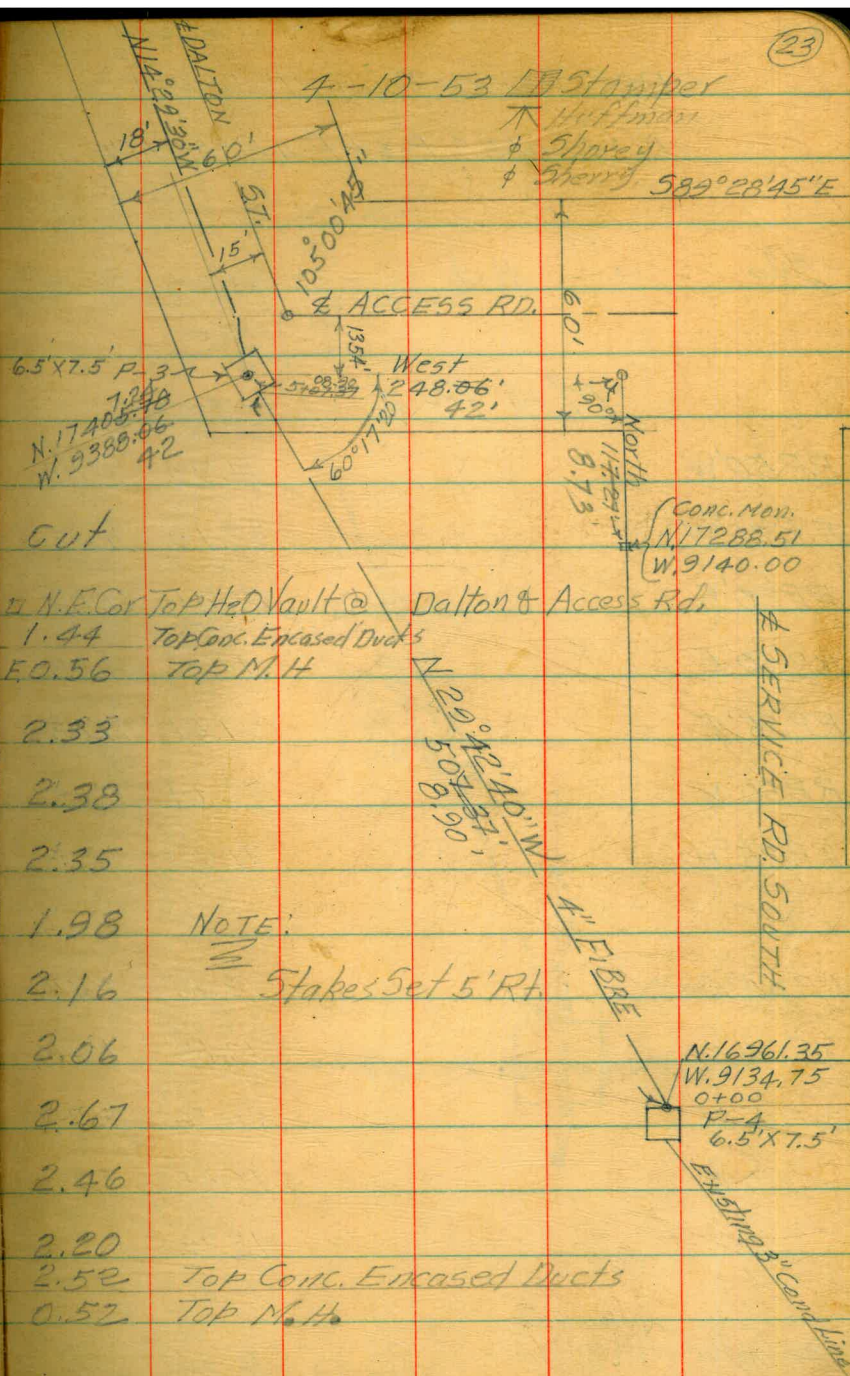
NOTE: Stakes Set 5' Rt.

Top of Duct Conc. (Theoretical)

B.M. 9.83 See Pg 16

00

LOCATION OF FIBRE DUCT
LINE DE ANZA POINT W.O. 64038
PROFILE



Sta	H.I.	Elev.	Grade	Cut
B.M.		13.73	Set Ch...	N.E. Cor Top H ₂ O Vault
5+00	M.H. P. 3	11.54	10.10	1.44 Top Conc. Encased Ducts
	5+07.37	11.54	12.10	50.56 Top M.H.
+50		14.33	12.00	2.33
4+00		14.19	11.81	2.38
+50		13.97	11.62	2.35
3+00		13.42	11.44	1.98
+50		13.40	11.24	2.16
2+00		13.11	11.05	2.06
+50		13.54	10.87	2.67
1+00		13.14	10.68	2.46
+50		12.70	10.50	2.20
0+00	N. Face M.H. P. 4	11.55	9.03	2.52 Top Conc. Encased Ducts
	0+00	11.55	11.03	0.52 Top M.H.
B.M.		13.555		

↑
7.375

REFERENCE POINTS TO POWER
MAN HOLES P-3 & P-4 DEANZPT.

Sta	+ H.I.	-	Elev	Grade	Cut
	M.H. P-4		6-18-53		
			Checked	11.21	
RP.50'W			11.99	11.03	0.96
RP.25'W			12.19	11.03	1.16
RP.20'S			12.46	11.03	1.43
RP.50'E			11.26	11.03	0.23
RP.25'E			11.61	11.03	0.58
RP.50'N			12.01	11.03	0.98
RP.25'N			11.79	11.03	0.76
			13.48	12.77	
			13.79	12.77	
			13.75	12.77	
			13.77	12.77	
			13.78	12.77	
B.M.			13.73		

Set 2x2 TR
Line Hub

4-13-53

Stamp
Huffman
Shorey
Sherry

(24)

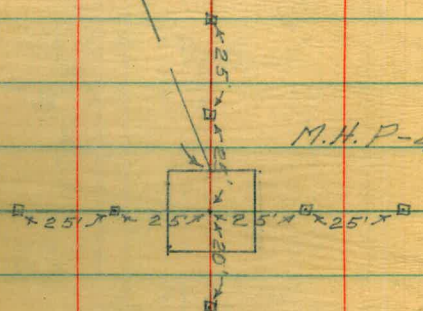
Set 2x2 TR
R.P.



M.H. P-3

N29°42'40\"/>
~~508.9'~~
508.9'

M.H. P-4



Christ N.E. Cor H₂O Vault M.H. @ Dalton Access Rd

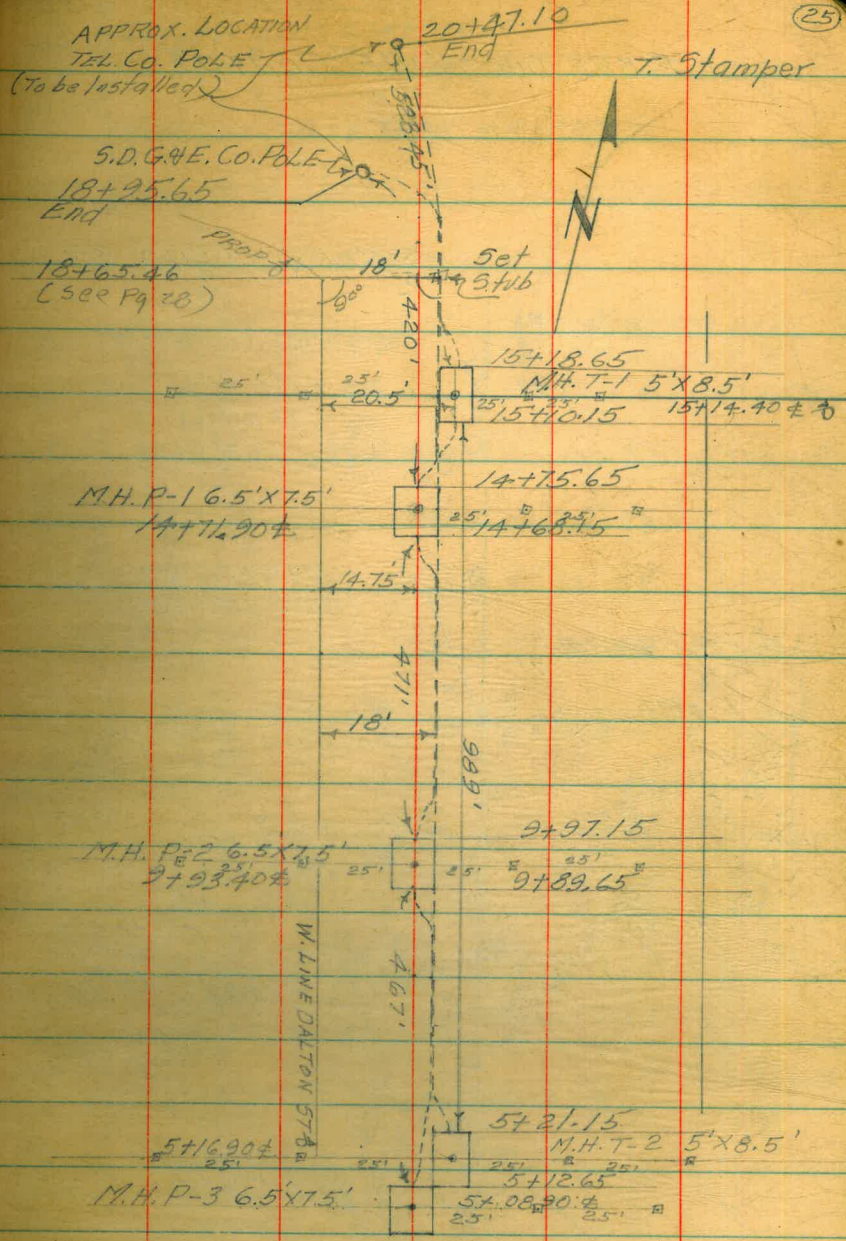
4" FIBRE DUCT LINE CONT'D.

25.00
 5.25
 21.75
 23
 46.75

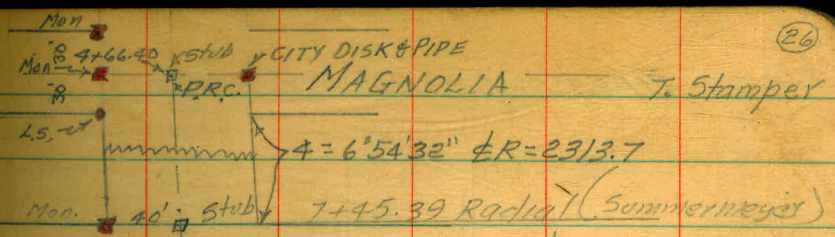
20.5
 18 Tol
 22.5 W 47.5
 27.5 E 52.5

18.00
 14.75
 3.25
 25.
 28.25 W
 23
 53.25 W

3.75
 + 23



FIBRE DUCT LINE CONTD.



S HORN BLEND ST.

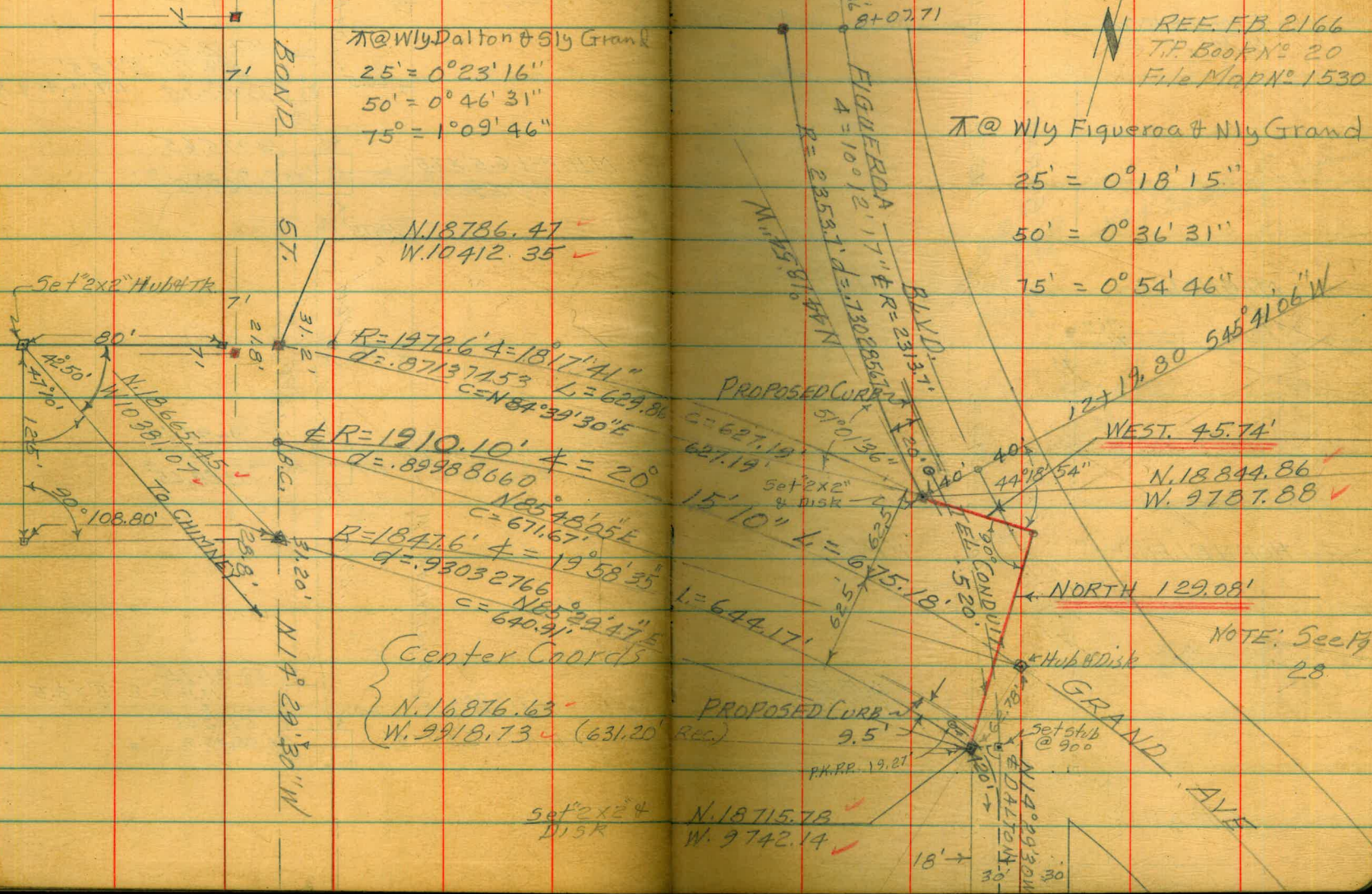
π @ Wly Dalton & Sly Grand
 25' = $0^{\circ}23'16''$
 50' = $0^{\circ}46'31''$
 75' = $1^{\circ}09'46''$

$N75^{\circ}30'30''E$

REF. F.B. 2166
 T.P. BOOK N^o 20
 File Map N^o 1530

π @ Wly Figueroa & Nly Grand

25' = $0^{\circ}18'15''$
 50' = $0^{\circ}36'31''$
 75' = $0^{\circ}54'46''$

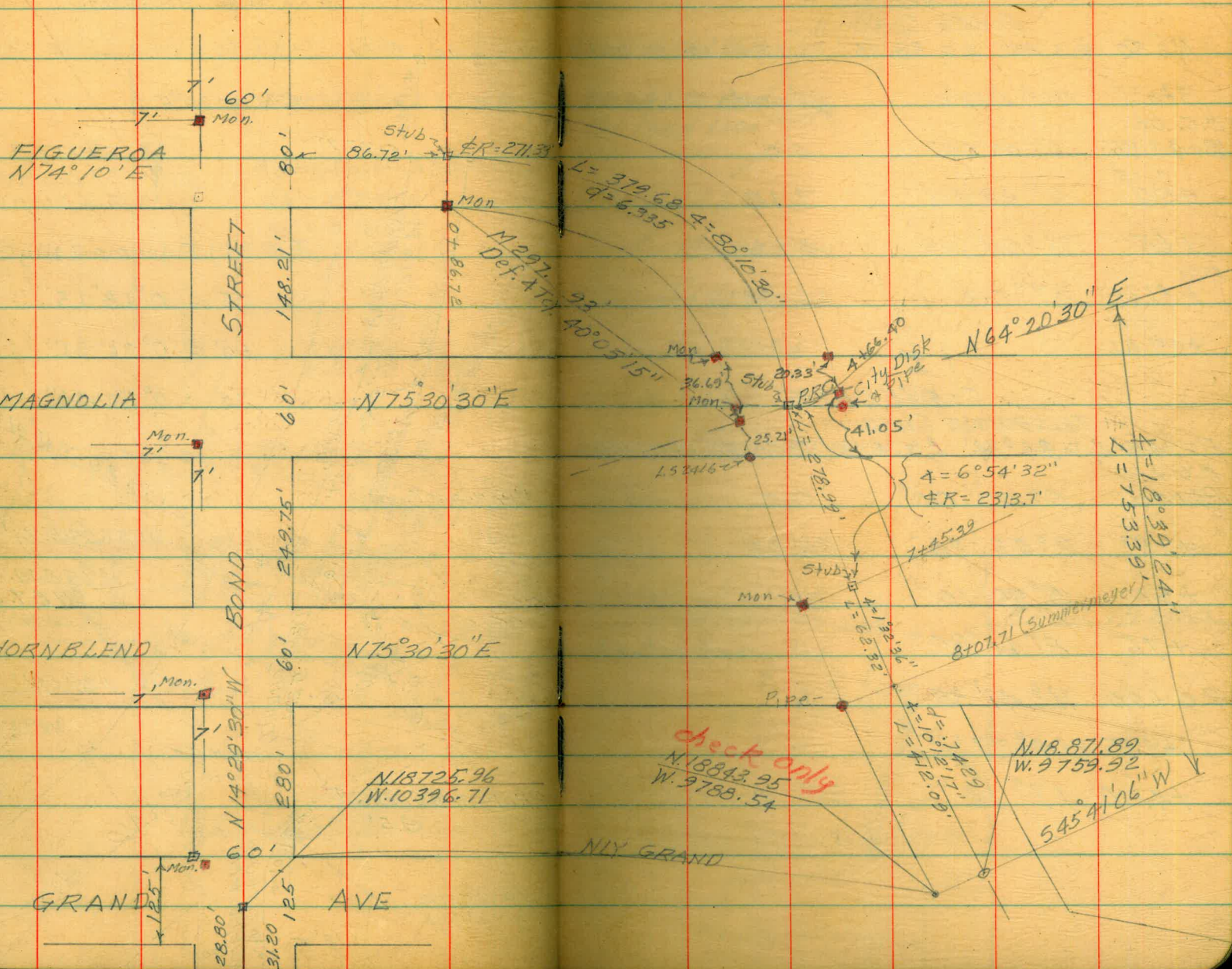


(Center Coords)

NOTE: See Pg 28

TIES, BOND-GRAND-FIGUEROA

(27)
T. A. Stamper



FIBRE CONDUIT LINE CONTD.

CURVE DATA
POWER CONDUIT.

R=30' Δ=74° L=38.75' T=22.61' d=57.2958

Sta.	Def Angle	Chord
B.C. Lt. 18+42.85	0° 00' 00"	0.0
+50	6° 49' 40"	7.12
+65	21° 09' 05"	14.64
P.C.C. +81.60	37° 00'	16.38
End +95.65		

Ed. 1x2" Mk'd Pole

20+47.10 End
Tel Cond Line

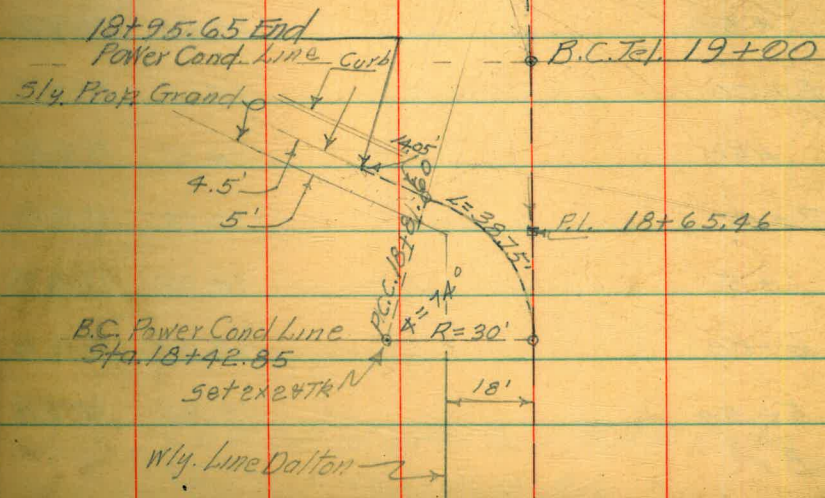
R=245'
Δ=34° 24'
T=75.84'
L=147.10'
d=7.015809

53.17
57.72
110.89

CURVE DATA
TELEPHONE CONDUIT

R=245' Δ=34° 24' L=147.10' T=75.84' d=7.015809

B.C. Lt.	Sta.	Def Angle	Chord
19+00	0° 00' 00"	0.0	
+25	2° 55' 24"	25.00	
+50	5° 50' 10"	"	
+75	8° 46' 35"	"	
20+00	11° 41' 35"	"	
+25	14° 37'	"	
+47.10	17° 12'	22.10	



FIBRE CONDUIT LINE CONTD

4-29-53

Sta	+	H.I.	-	Elev.	Grade	Cut
TP						
14+00				15.54	12.91	2.63 ✓
+50				15.32	12.82	2.50 ✓
13+00				15.33	12.74	2.59 ✓
+50				15.62	12.65	2.97 ✓
12+00		.175%		15.70	12.56	3.14 ✓
+50				15.07	12.48	2.59 ✓
11+00				15.05	12.39	2.66 ✓
+50				14.83	12.30	2.53 ✓
10+00				14.81		
9+93.40 P-2					11.907012	
+50				14.46	12.00	2.46 ✓
9+00				14.60	11.91	2.69 ✓
TP						
+50				14.56	11.82	2.74 ✓
8+00				14.66	11.74	2.92 ✓
+50				14.22	11.65	2.57 ✓
7+00				14.18	11.56	2.62 ✓
+50				14.05	11.47	2.58 ✓
6+00				13.98	11.39	2.59 ✓
5+50				13.84	11.30	2.54 ✓
B.M.				13.73		

chiseled @ N.E. Cor. of Water Vault N.H. @ Dalton
St. of N.Y. Line of State Park Bdy.

FIBRE CONDUIT LINE CONTD

4-29-53

Sta.	+ H.I	- Elev	Grade	Cut	
B.M.			13.72 ~ 13.73	(see Pg. 29)	
T.P.			14.21		
T.P.			15.63		
T.P.			16.08		
B.M.			10.505		See Sketch Pg 26 Top of 2x2 Nly Grand & Wly Line Figueroa
T.B.M.			15.19		Top of 2x2 Hub Center 30' Radius
End Power Line					
+95.65			14.79	10.00	4.79 ✓ Power Line Only
P.C.C.		↑			
+81.60		.22%	14.84	10.03	4.81 ✓ " " "
+65			15.16	10.07	5.09 ✓ " " "
+50			15.26	10.10	5.16 ✓ " " "
B.C.Lt.		↑			
+42.85			15.45	10.18	5.27 ✓ Power Line Only (see Pg 28)
18+00			15.58	10.65	4.93 ✓ Power & Tel.
+50			16.07	11.20	4.87 ✓
17+00			16.21	11.75	4.46 ✓
+50		↓	16.20	12.30	3.90 ✓
16+00		1.1%	16.33	12.85	3.48 ✓
+50			15.95	13.40	2.55 ✓
T-1 +14.40				14.80	
15+00			15.79	13.20	2.59 ✓
P.114 +71.90				14.70	
14+50			15.56	13.00	2.56 ✓

FIBRE CONDUIT CONTD.

4-29-53

Sta.	H.I.	Elev	Grade	Cut	NOTE:
<u>Tel. Conduit</u>					
RR 50' W T-1 (North) RP. 25' W	16.00 <small>Top of Lid Grade</small>	16.10	14.80	1.30	✓
T-1 RP. 50' E	16.00	15.82	14.80	1.02	✓
T-1 RP. 25' E	16.00	15.84	14.80	1.04	✓ Fill 1.46 To Top of Lid
T-1 RP. 50' W	16.00	15.81	14.80	1.01	✓
T-2 RP. 25' W	13.40	13.78	12.10	1.68	✓ Top Box F 1.30 To Top Lid
T-2 RP. 50' E	13.40	13.71	12.10	1.61	✓ " "
T-2 RP. 25' E	13.40	13.44	12.10	1.34	✓ " "
T-2 (South)	13.40	13.62	12.10	1.52	✓ " "
<u>NOTE:</u>					
End Tel Line +47.10		10.58	8.00	2.58	✓ See Layout Sketch Pg. 28
+25		10.65	8.24	2.41	✓
20+00		10.86	8.51	2.35	✓
+75		10.70	8.77	1.93	✓
+50		10.90	9.04	1.86	✓
+25		13.78	9.30	4.48	✓
B.C. Lt. 19+00		15.10	9.57	5.53	✓
18+50		15.33	10.10	5.23	✓

1.065%

POWER MANHOLES
FIBRE CONDUIT LINE CONTD.

NOTE: 4-29-53

≡

See Sketch Pg 25

Sta	+ H.I.	- Elev.	Grade	Cut.	
			TOP Lid Grade		
RP. 42' W		checked.	12.12		
P-3		13.40	14.28	12.10	2.18
RP. 50' E					Top of Box F. 1.18 To Top of Lid.
P-3		13.40	13.36	12.10	1.16
RP. 25' E					" " "
P-3		13.40	13.52	12.10	1.42
					" " "
RP. 50' W		checked 6-30-53	14.21		
P-1 (N.M.H.)		16.00	15.94	14.70	1.24
RP. 25' W					F. 1.79 To Top of Lid
P-1		16.00	15.82	14.70	1.12
RP. 50' E					
P-1		16.00	15.96	14.70	1.26
RP. 25' E					
P-1 ✓		16.00	15.74	14.70	1.24
RP. 50' W		checked	11.88		
P-2 ✓		14.50	14.44	11.90	2.54
RP. 25' W					
P-2		14.50	14.72	11.90	2.82
RP. 50' E					
P-2		14.50	14.44	11.90	2.54
RP. 25' E					
P-2		14.50	14.72	11.90	2.82

B.M.

INDEXED

DE ANZA POINT

SEWER ALIGNMENT & GRADES

W.D. 21205

7-14-54

Stamper (33)
Sisson
Nordahl

Sta	Elev.	Grade	Cut.
4+00	14.20	1.60	12.60
+75	14.26	1.55	12.71
+50	14.39	1.50	12.89
+25	14.12	1.45	12.67
3+00	14.03	1.40	12.63
+75	13.88	1.35	12.53
+50	13.55	1.30	12.25
+25	13.33	1.25	12.08
2+00	13.27	1.20	12.07
+75	13.13	1.15	11.98
1+65 ^L B.M. N°6	13.07	1.13	11.94
+50	13.02	1.10	11.92
+25	12.82	1.05	11.77
1+00	12.68	1.00	11.68
+75	12.49	0.95	11.54
+50	11.97	0.90	11.07
+25	11.70	0.85	10.85
0+00	10.91	0.80	10.11

NOTE:

See Pg. 21 for ties
to Existing Sewer
Set stakes 10' Lt. N 17.38417
4+15.172

contd. Pg. 34

Elev. 1.75
6' Existing 10" V.C.P.
Sewer
Elev. 1.63

B.P.M. N°6
10' 10'

Elev. Grade Cut

cp 10' 10'

4+15 11.96 1.63 10.33

W. 90.37. E. 5



0 2 0

0+00
Elev 0.80

Fd. Hub & Disk.
N 16.973

Existing 10" Sewer

(See Pg. 21)

B.M.

13.555

SEWER GRADES & ALIGNMENT DE ANZA POINT

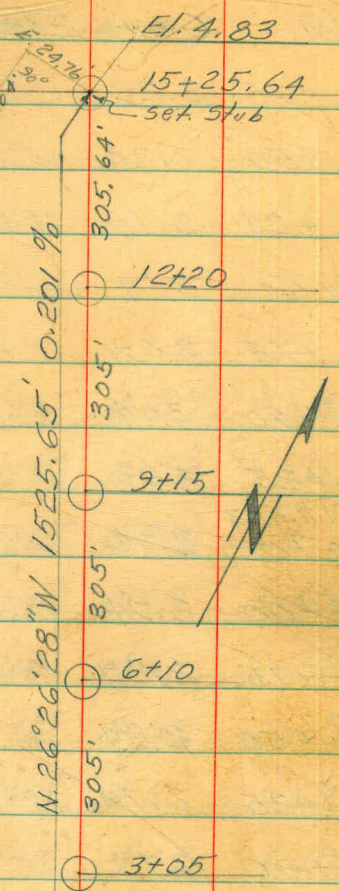
Stamper
Sisson
Nordahl

Sta.	Elev.	Grade	Cut (stakes 10' w/ly)
+50	14 ⁸⁹	2.43	C12 ⁴⁶
+25	14 ⁴⁸	2.38	C12 ⁰
EM.H.N. 24 3+05	14 ⁵⁸	2.34	C12 ²²
3+00	14 ⁴⁹	2.33	C12 ¹⁶
+75	14 ⁴²	2.28	C12 ⁰¹
+50	14 ³⁶	2.23	C12 ¹³
+25	14 ⁴⁸	2.18	C12 ³⁰
2+00	14 ³¹	2.16	C12 ¹⁵
+75	14 ⁰¹	2.11	C11 ²⁰
+50	13 ⁹⁵	2.06	C11 ⁸⁹
+25	14 ⁰⁷	2.01	C12 ⁰⁶
1+00	13 ⁸⁹	1.96	C11 ²³
+75	13 ⁸⁷	1.91	C11 ²⁶
+50	14 ⁴⁶	1.86	C12 ⁶⁰
0+25	14 ⁷⁹	1.81	C12 ²⁸
EM.H.N. 5 0+00	11 ⁷⁹	1.76	C10 ⁰³
0-05		1.75	

E. 4.83
 N. 18,818.82
 W. 9,717.38
 15+25.64
 Set Stub

N. 18,715.78
 W. 9,742.14
 HARP DISK SW COR
 Grand & Dalton

NOTE: See sketch, Pg. 26



N. 89° 28' 45\" W
 4. PAVED RD

E. 1.76
 N. 17,453.17
 W. 9,037.25
 0+06
 75' Make Connection
 39.28'
 60' Existing
 To V.C.P.
 Sewer
 Set Pk.

NOTE: See Pg. 21. for ties to existing sewer.

SEWER GRADES DE ANZA POINT

staked 10/21/14

Sta.	Grade	Elev.	Cut	Sta.	Elev.	Grade	Cut.	Sta.	Elev.	Grade	Cut.
+75	3.29	15 ²⁷	C11 ²⁸	12+00	16 ²⁸	4.17	C12 ⁰⁷				
+50	3.24	15 ³²	C12 ⁰⁹	+75	16 ²⁸	4.11	C11 ²⁷				
+25	3.19	15 ¹⁹	C-12 ⁰⁹	+50	16 ²⁸	4.06	C-12 ¹⁰				
7+00	3.14	14 ²¹	C11 ⁷⁷	+25	16 ²⁸	4.01	C-12 ²⁴				
+75	3.09	14 ²⁰	C-11 ²¹	11+00	16 ²⁸	3.96	C-12 ⁴⁵				
+50	3.04	14 ⁶¹	C-11 ⁵⁷	+75	16 ²⁸	3.91	C-12 ⁵⁵	End Line E.M.H.N. No 6 15+25 ⁶⁴	10 ²⁹	4.83	C-6 ¹⁶
+25	2.99	14 ⁶³	C11 ⁶⁴	+50	16 ²⁸	3.86	C-12 ⁶²	15+00	13 ¹⁴	4.78	C-8 ³⁶
E.M.H.N. No 3 6+10	2.96	14 ⁴⁵	C11 ⁴⁹	+25	16 ²⁸	3.81	C12 ³⁹	+75	14 ⁷⁵	4.73	C10 ⁰²
6+00	2.94	14 ⁴⁴	C11 ⁵⁰	10+00	16 ²⁸	3.76	C12 ³⁸	+50	15 ¹¹	4.68	C-10 ⁴³
+75	2.89	14 ⁵⁴	C11 ⁶⁵	+75	16 ²⁸	3.70	C12 ⁴⁹	+25	15 ⁶⁰	4.63	C-10 ²⁷
+50	2.84	14 ⁵¹	C-11 ⁶⁷	+50	16 ²⁸	3.65	C12 ⁵²	14+00	15 ⁸¹	4.58	C-11 ²³
+25	2.79	14 ⁶⁸	C11 ⁸⁹	+25	16 ²⁸	3.60	C-12 ⁵³	+75	15 ⁶⁷	4.52	C11 ¹⁵
5+00	2.74	14 ⁶⁹	C11 ⁹⁵	E.M.H.N. No 42 9+15	16 ²⁸	3.58	C12 ⁴³	+50	15 ²⁸	4.47	C11 ³¹
+75	2.68	14 ³⁶	C11 ⁶⁸	9+00	15 ²⁸	3.55	C-12 ⁴²	+25	15 ⁶⁹	4.42	C-11 ²⁷
+50	2.63	14 ⁴⁴	C11 ⁸¹	+75	15 ²⁸	3.50	C12 ³⁷	13+00	15 ²³	4.37	C-11 ⁵⁶
+25	2.58	14 ⁵⁴	C11 ⁹⁶	+50	15 ²⁸	3.45	C12 ²²	+75	16 ⁰⁶	4.32	C11 ²⁴
4+00	2.53	14 ⁵¹	C11 ²⁸	+25	15 ²⁸	3.40	C11 ²⁰	+50	16 ⁰⁶	4.27	C11 ²²
3+75	2.48	14 ²⁵	C12 ²⁷	8+00	15 ²⁸	3.35	C11 ⁷⁴	E.M.H.N. No 51 12+20	15 ⁹⁶	4.21	C11 ⁷⁵

89-60
42-50

47-10

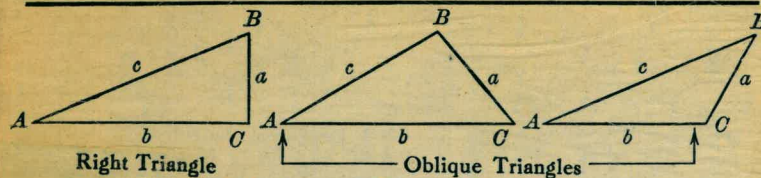
179 5960
100-14-18

Td 79-51' \approx 79°-45'-42"

89-104 48
70-48-02

44°-56'-46" 12.17'

TRIGONOMETRIC FORMULÆ



Right Triangle

Oblique Triangles

Solution of Right Triangles

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

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 = $5^\circ 10'$. 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.