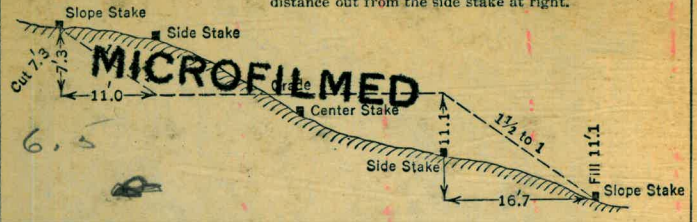
MISSION BAY

41

DISTANCES FROM SIDE STAKES FOR CROSS-SECTIONING

Roadway of any Width. Side Slopes 1½ 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.



6.5

Cut or Fill	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	Cut or Fill
	Distance out from Side or Shoulder Stake										
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

KEUFFEL & ESSER CO., N. Y.

Book # A1

3-1 DRAINAGE BOOK

9+35 55'

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

12.321-4. kh, c, yx. chss.

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DRAINAGE DITCH PROJ #3.1
& PROFILE FOR GRADES

DEC. 14. 1948

T. STAMPER
C. BARRAGAN
A. SHERRY
G. WATSON.

STA	+	H.I	−	ELEV	GRADE	LT. BNK. CUT	℄ CUT	½ DITCH WI.
STATE	7.90	19.99		12.09				
0+20			5.0	15.00	13.53		1.5	1.0
0+50			2.8	17.20	13.33		3.9	1.0
0+83			2.6	17.40	13.11		4.3	1.0
1+00			5.3	14.70	13.00		1.7	1.0
1+50			5.7	14.30	12.67		1.6	1.1
2+00			4.7	15.30	12.34		3.0	1.1
B.C. 2+37.34			5.0	15.00	12.10		2.9	1.1
2+50			5.3	14.70	12.02		2.7	1.1
75			5.5	14.50	11.86		2.6	1.2
3+00			5.6	14.40	11.70		2.7	1.2
25			5.6	14.40	11.50		2.9	1.2
50			5.6	14.40	11.38		3.0	1.2
75			5.3	14.70	11.22		3.5	1.3
4+00			6.0	14.00 (14.3)	11.06		3.9	1.3
25			5.9	14.10	10.90		3.2	1.3
50			5.7 (5.6)	14.30 (14.9)	10.74		3.6	1.35
75			5.3	14.70	10.58		4.1	1.35

STA	+	H.I	−	ELEV.	GRADE	℄ CUT	½ DITCH WI.
		19.99		14.7	4.3		
5+00			5.8	14.20	10.42	3.8	1.4
25			5.4	14.60	10.26	4.4	1.4
50			5.5	14.50	10.10	4.4	1.5
75			5.7	14.30	9.94	4.4	1.5
6+00			5.4	14.60	9.78	4.8	1.5
25			5.7	14.30	9.62	4.7	1.5
50			7.4	12.60	9.54	3.1	1.5
75			6.0	14.00	9.70	4.3	1.5
7+00			6.5	13.50	9.87	3.6	1.4
25			6.9	13.10	10.02	3.1	1.3
50			7.4	12.60	10.19	2.4	1.3
75			7.5	12.50	10.35	2.2	1.2
8+00			7.9	12.10	10.52	1.6	1.2
25			7.9	12.10	10.68	1.4	1.1
50			7.2	12.80	10.84	2.0	1.1
75			7.6	12.40	11.00	1.4	1.0
9+00			8.0	12.00	11.17	0.8	1.0
END 20			7.7	12.30	11.33	1.0	1.0

CHECK ON SLOPE STAKES

STA.	+	H.I 20.0	−	ELEV.	GRADE	CUT	DIST OUT
0+20			5.3	14.7	13.50	1.2	2.8
50			2.6	17.4	13.3	4.1	7.2
0+83			2.1	17.9	13.1	4.8	8.2
1+00			3.6	16.4	13.0	3.4	6.1
50			5.4	14.6	12.7	1.9	4.0
2+00			4.5	15.5	12.3	3.2	5.9
B.C +37.34							
50			5.1	14.9	12.0	2.9	5.5
75			5.2	14.8	11.9	2.9	5.6
3+00			5.5	14.5	11.7	2.8	5.4
25			5.3	14.7	11.5	3.2	6.0
50			5.3	14.7	11.4	3.3	6.2
75			5.5	14.5	11.2	3.3	6.3
4+00			5.7	14.3	11.1	3.2	~~4.6~~ 6.1
25			5.7	14.3	10.9	3.4	6.4
50			5.7	14.3	10.7	3.6	6.7
75			5.1	14.9	10.6	4.3	7.6
5+00			5.3	14.7	10.4	4.3	7.9
25			5.1	14.9	10.3	4.6	8.3

BENCH LEVELS SET FOR DRAINAGE STRUCTURES

PROS.# 3.1

STA	+	H.I.	−	ELEV
B.M.	7.90	19.99		12.09
B.M.			5.14	14.85
B.M.			5.38	14.61
B.M.			5.63	14.36
B.M			5.90	14.09
B.M			6.19	13.80
B.M.			6.45	13.54
B.M.			6.70	13.29
B.M			6.92	13.07
B.M	2.12	15.66		13.54
			5.59	10.07
			~~8.85~~ ~~9.05~~	6.81 ~~6.61~~
B.M.	0.77	13.84		13.07
B.M.			1.60	12.24
	3.65	14.89		12.24
B.M.			6.11	8.78
	2.60	14.84		12.24
			3.03	11.81
			3.43	11.41

212

8.3 . 28.6

7.07

0.92
7.54
13.96
3.68
10.28

13.54
0.40
13.91
8.59
5.35

166'

13.96
2.9
6.05

6.75
6.61
0.14

STATE (BRASS BUTTON)

℄ "O" HI-WAY STA 207+00

" " " " 206+00

" " " " 205+00

" " " " 204+00

" " " " 203+00

" " " " 202+00

" " " " 201+00

" " " 200+00

TOP OF EXISTING 36" CULVERT (BAYSIDE)

INVERT FLOW LINE 36" CULVERT (BAYSIDE)

200+00 ℄ 101 H.W. ("O")

196+00 " " " ("O")

196+00 " " " ("O")

TOP OF PIPE 24" CULVERT (BAYSIDE)

8.71 (4)
6.43
2.85
13.54
2.12
15.66
5.59
10.07

41
25
.21

15.66
5.59
10.07

15.66
9.05
6.61

15.66
7.85
6.81

13.07
0.77
13.84
1.60
12.24

5.78
2.27
6.91

5.78
6.43
2.35

STA	+	H.I 20.00	-	ELEV	GRADE	CUT	DIST. OUT
5+50			4.9	15.1	10.1	5.0	9.0
75			4.8	15.2	9.9	5.3	9.5
6+00			4.6	15.4	9.8	5.6	9.9
25			5.0	15.0	9.6	5.4	9.6
50			7.2	12.8	9.5	3.3	6.5
75			5.5	14.5	9.7	4.8	8.7
7+00			5.8	14.2	9.9	4.3	8.0
25			6.4	13.6	10.0	3.6	6.7
50			6.8	13.2	10.2	3.0	5.8
75			7.2	12.8	10.3	2.5	5.0
8+00			7.6	12.4	10.5	1.9	4.1
25			7.1	12.9	10.7	2.2	4.4
50			7.0	13.0	10.8	2.2	4.4
75			7.5	12.5	10.0	1.5	3.3
9+00			7.7	12.3	11.2	1.1	2.7
20			7.3	12.7	11.3	1.4	3.1

FLOW LINE GRADES FOR 54" CULVERT UNDER H.W. 101 – (3-1 DRAINAGE)

STA	+	H.I.	–	ELEV	FLOW LINE GRADE
		18.56			
0+00					5.00
0+08					4.94
0+16					4.88
0+24					4.82
0+32					4.76
0+40					4.70
0+48					4.64
0+56					4.58
0+64					4.52
0+72					4.46
0+80					4.40
0+88					4.34
0+96					4.28
1+04					4.22
1+12					4.16
1+20					4.10
1+28					4.04

FLOW LINE GRADES

STA	+	H.I.	–	ELEV	FLOW LINE GRADE
1+36					3.98
1+44					3.92
1+52 NEXT		18.56		13.56	3.86
		12.70		11.66	
1+60		5.77		6.90	3.80
		4.10		4.28	
1+68		1.67		2.62	3.74
1+76					3.68
					TOP OF
T.B.M.	1.86	14.93		10.07	15' OFF 1+20
				12.93 C-620	SOUTH
			4.63	10.30	2X2
				C-290	
		4.95			10.30
		9.3	8.35	6.58	1.70
		9.36			6.20
185	185	14.93		14.93	
20	46	7.45		8.03	
	139			6.90	
		48		3.58	
				3.22	
15.26		14.93			14.93
8.66		7.93			8.30
6.60					6.63
1.66		7.00		14.93	3.68
2.94		3.68		8.27	
		1.32		6.66	2.95
				3.68	
				2.98	14.93
					8.35
					6.58
					3.68
					2.90

DEFLECTIONS & FLOWLINE GRADES FOR DRAIN DITCH EAST OF H.W. 101 - PROJ. #3-1

STA	DEF ∠	CHORD	ELEV	℄ GRADE
B.M.				
0+20	0			13.53
0+50	0			13.33
1+00	0			13.00
1+50	0			12.67
2+00	0			12.34
B.C. 2+37.34	0			12.10
2+50	0°06'06"	12.66		12.02
2+75	0°18'09"	25.00		11.86
3+00	0°30'12"	"		11.70
25	0°42'15"	"		11.54
50	0°54'19"	"		11.38
75	1°06'21"	"		11.22
4+00	1°18'25"	"		11.06
25	1°30'28"	"		10.90
4+50	1°42'21"	"		10.74
4+75	1°54'35"	25.00		10.58
5+00	2°06'38"	"		10.42
25	2°18'42"	"		10.26
50	2°30'44"	"		10.10
75	2°42'48"	"		9.94
6+00	2°54'50"	"		9.78
25	3°06'54"	"		9.62
50	3°18'57"	"		9.54
75	3°31'06"	"		9.70
7+00	3°43'03"	"		9.87
25	3°55'07"	"		10.02
50	4°07'11"	"		10.19
75	4°19'15"	"		10.35
8+00	4°31'17"	"		10.52
25	4°43'19"	"		10.68
50	4°55'23"	"		10.84
75	5°07'26"	"		11.00
9+00	5°19'30"	"		11.17
9+20	5°29'09"	"		11.33

FLOW LINE GRADES FOR 27" CULVERT - EXTENTION - H.W.-101 (3-1 DRAINAGE)

STA	+	H.I.	-	ELEV.	GRADE
0+00					6.51
0+08					6.44
0+16					6.38
0+24					6.32
0+32					6.25
0+40					6.19
0+48					6.12
0+56					6.06
0+64					5.99
0+72					5.93
0+80					5.86
0+88					5.80
0+96					5.73
1+04					5.67
1+12					5.60
1+20					5.54
1+28					5.47

FLOW LINE GRADES 12-20-48

STA	+	H.I.	-	ELEV.	GRADE
1+36					5.41
1+44					5.35
1+52					5.28
1+60					5.22
1+68					5.15
1+76					5.09
1+84					5.02
1+92					4.96
2+00					4.89
2+08					4.83
2+16					4.76
2+24					4.70
2+32					4.63
2+40					4.57
2+48					4.50
2+56					4.44
2+64					4.37
2+72					4.31
2+80					4.24
2+88					4.18

PROFILE ALONG ℄ OF 27" DRAIN EXTENTION

H.W. 101 - PROJ #3-1

STA	+	H.I.	−	ELEV	
T Sta at 2+37 ℄	2.30	14.54		12.24	Sta 1+95 H
E 2+16			4.6	9.9	℄
E 1+66			4.7	9.8	
E 1+34			4.8	9.7	
E 0+92			4.8	9.7	
E 0+42 1+95			4.9	9.6	
E 0+07 2+30			4.5	10.0	
0+00 2+37			5.0	9.5	
W 0+21			7.3	7.2	
W 0+38			9.2	5.3	
W. 0+51			10.3	4.2	
W 0+60			11.0	3.5	Water
P.P. 100' S			5.81	8.73	OFF-2+37 2x2 Hub
T.P. 100' N.			4.79	9.75	OFF-2+37 2x2 Hub
	5.08	14.83		9.75	
			2.32	12.51	1"x2" STAK 40' N/of ℄ TOP STAKE

PROFILE ALONG ℄ OF 54" H.W. DRAIN

At STA-1+20 ℄: SECTION EAST ℄ WEST

STA	+	H.I.	−	ELEV	
		15.0			TOP OF 36" CUL. EXISTING
B.M.	4.91	19.98		10.07	
T.B.M			5.36	9.62	2x2 100' South 90° OFF ℄ STA-1+20
T.B.M			4.79	10.19	2x2 100' North 90° OFF ℄ STA-1+20
W/ 0+83			11.7	3.3	WATER
W/ 0+56			9.6	5.4	
W/ 0+36			7.6	7.4	
W/ 0+12			5.3	9.7	
0+00			4.8	10.2	
E/ 0+10			5.2	9.8	
E/ 0+40			5.4	9.6	
E/ 0+70			5.3	9.7	
E/ 1+00			5.3	9.7	
E/ 1+22			5.2	9.8	

1-6-49

(11)

X-SECTIONS OF ROAD FILL ALONG 54" DRAIN EXTENTION PROJ-3-1 DRAINAGE

STA-1+40

DIST	+	H.I.	−	ELEV.	
		14.93			
SEC 1+40 = 0+00					
0			5.9	9.0	
N 10			5.7	9.2	
N 20			5.5	9.4	
N 40			4.9	10.0	
SEC 1+20					
0			4.9	10.0	N.G
N 11			4.8	10.1	N.G
N 15			4.1	10.8	
N 27			3.6	11.3	
N 41			3.5	11.4	
N 44			5.3	9.6	N.G
N 50			5.2	9.7	

EXCAVATION

STA	+	H.I	−	ELEV.	
		14.93			
SEC 1+00					
0		14.93	5.2	9.7	
N 10			5.2	9.7	
N 13			3.3	11.6	
N 25			3.4	11.5	
N 39			3.6	11.3	
N 42			4.9	10.0	
N 50			4.7	10.2	
SEC 0+50					
0		14.93	5.3	9.6	
N 11			5.2	9.7	
N 15			2.7	12.2	
N 27			2.8	12.1	
N 44			2.8	12.1	
N 48			4.5	10.4	TOE
N 50			4.6	10.3	

STA	+	H.I	−	ELEV	
		14.93			PT
	SEC 0+00				
0			5.3	9.6	
N 2			5.4	9.5	
N 5			2.7	12.2	
N ~~27~~ 17			2.1	12.8	
N 25			2.5	12.4	
N 39			3.0	11.9	
N 50			3.7	11.2	

PROFILE FROM 0+00 TO ROAD

-0-10			4.6	10.3	
0-20			2.9	12.0	
0-30			2.6	12.3	EDGE PAVE

CROSS SECTIONS OF DRAINAGE DITCH AS BUILT

PX

STA	+	H.I	−	ELEV.	STA-0 on H.W
B.M	4.70	19.06		14.36	205+00
	0+50				
0		19.06	1.7	17.4	
W 05			6.0	13.1	
W 11			6.0	13.1	
W 14			4.1	15.0	
	0+83				
W/ 0		19.06	1.1	18.0	
W/ 6			6.7	12.4	
W/ 10			6.7	12.4	
W/ 15			4.9	14.2	
W/	1+00				
0		19.06	1.3	17.8	
W 7			6.2	12.9	
W 10			6.4	12.7	
W 14			4.7	14.4	
			4.5		

11-6-49 PX

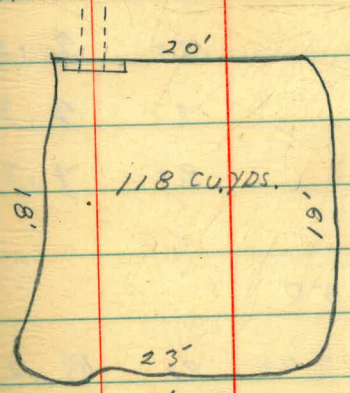
DIST	+	H.I	−	ELEV.
		1+50		
0		19.06	4.5	14.6
W/ 3			6.2	12.9
W 6			6.4	12.7
W 9			4.9	14.2
		2+00		
0		19.06	3.7	15.4
W 4			6.6	12.5
W 7			7.0	12.1
W 12			4.1	15.0
		2+50		
0		19.06	4.2	14.9
W 4			6.9	12.2
W 7			6.7	12.4
W 12			4.4	14.7
		3+00		
0		19.06	4.6	14.5
W 4			7.2	11.9
W 7			7.1	12.0
W 12			4.8	14.3

DIST	+	H.I.	−	ELEV
	3+50			
0		19.06	4.3	14.8
W 4			7.3	11.8
W 7			7.4	11.7
W 12			4.6	14.5
	4+00			
0			4.9	14.2
W 4			8.2	10.9
W 7			8.5	10.6
W 13			5.2	13.9
	4+50			
0			4.6	14.5
W 4			8.2	10.9
W 7			8.4	10.7
W 12			5.1	14.0
	5+00			
0			4.4	14.7
W 5			9.4	9.7
W 9			9.5	9.6
W 15			5.0	14.1

DRAIN DITCH X-SECTIONS 1-6-49 PX (14)

DIST	+	H.I.	−	ELEV
	5+50			DEEP
0		19.06	4.2	14.9
W 5			9.4	9.7
W 9			9.5	9.6
W 16			4.9	14.2

EXCAVATION FOR INLET STRUCTURE



8' AV

N/E { 10.73 / 11.70

S/E { 10.72 / 11.71

8' DEEP

S/W { 10.71 / 11.71 / 11.68

17.42
5.5
11.92
STA-202+00 ON H.W.-101 CENTERLAND

T.B.M.	3.88	17.42		13.54	
			11.70	5.72	N/E
			10.73	6.69	
			11.71	5.71	S/E
			10.72	6.70	
			11.71	5.71	S/W
			10.71	6.71	
			10.70	6.72	N/W

X-SECTION OF EXCAVATION FOR 54" CULVERT

1 + 68

STA	+	H.I.	−	ELEV	
	5.19	15.26		10.07	TOP PIPE OLD CULVERT
1+68					PX
N/ 00			9.5	5.8	
N/ 06			9.9	5.4	
N/ 08			11.8	3.5	
N/ 10			13.1	2.2	
N/ 12			13.3	2.10	
N/ 17			13.1	2.2	
N/ 27			8.0	7.3	
1+50	1+50				PX
N/ 00 ~~00~~		15.26	7.1	8.2	
N/ 0.6 ~~00~~			9.2	6.1	
N/ 09			11.5	3.8	
N/ 11			12.5	2.8	
N/ 15			12.5	2.8	
N/ 19			12.3	3.0	
N/ 23			9.7	5.6	
N/ 24			7.8	7.5	
27			5.9	9.4	

15.3 / 6.6 / 8.7

15.3 / 9.6 / 5.7

5.19 / 10.07 / 15.26 / 7.3 / 8.0

3.68 / 4 / 3.28

15.26 / 3.28 / 11.98 / 15.26

3+60 = 3805 = 2.80

15.26 / 10.93 / 4.33

4.33 / 3.28 / 1.05

4.33 / 3.68 / .64

15.26 / 2.80 / 12.46

15.26 / 2.4 / 12.9

15.26 11.98

11.98 / 6 / 11.92 / 12.9

15.26 / 13.4 / 1.9

15.26 / 3.4 / 11.86

NOTE - 1+76 6' WIDE AT BOTTOM

4.9 / 3.74 / 8.64

15.26 / 8.64 / 6.62

3.68 / 4.9 / 8.58

15.26 / 8.58 / 6.68

6.72 / 6.65 / 7

X-SECTION OF 54" CULVERT DITCH

1+20

STA	+	H.I.	−	ELEV	
B.M 1+20	4.39	14.46		10.07	PX
N/ 00			4.4	10.1	
N/ 02			4.5	10.0	
N/ 02			6.7	7.8	
N/ 06			7.5	7.0	
N/ 09			10.2	4.3	
N/ 12			12.0	2.5	
16			12.0	2.2	
20			11.5	3.0	
25			6.4	8.1	N/GRD.

1-20-49 (16)

X-SECTIONS OF 54" CULVERT DITCH

0+72

STA	+	H.I.	−	ELEV	
B.M	4.30	14.37		10.07	TOP PIPE
				4.30 / 14.37.	PX
SOUTH/ 07					
RT/ 13' 07			4.5	9.9	
LT/ 12' 06			6.9	8.1	
LT/ 8 5' 2 5			8.5	5.9	
LT/ 4' 2 N			9.1	4.3	
LT/ 3' 3 N			10.9	3.5	
℄			11.0	3.4	
NORTH					
RT/ 4			11.0	3.4	
RT/ 6			8.0	5.4	
RT/ 9			6.0	8.4	
RT/ 13			2.0	12.4	

RIGHT		℄	LEFT		
		0+00			
9.8 / 12	3.7 / 6	3.7 / 0	3.7 / 4.5	5.4 / 5.5	9.8 / 11
		0+24			
9.8 / 14	3.5 / 6	3.4 / 0	3.8 / 5	5.0 / 6	9.8 / 14
		0+18			
9.7 / 13 5.0 / 5	3.2 / 4	3.2 / 0	3.2 / 5	9.7 / 13	

X-SECTIONS OF ROAD FILL FOR 27" CULVERT

0 – 15 = 0.0 FILL

0+00

STA	+	H.I.	–	ELEV	℄ 101-HW STA 196+00
B.M	377	16.01		12.24	
S/ 6'			6.6	9.4	
S/ 12'			4.2	11.8	
S/ 25'			3.5	12.5	
S/ 43'			4.0	12.0	
S/ 47			5.5	10.5	
S/ 55			5.3	10.7	

BX

0+25

S 00		16.01	6.0	10.0	
S/ 12			4.6	11.4	
S/ 15			3.1	12.9	
S/ 37			3.5	12.5	
S/ 45			3.6	12.4	
S/ 47			5.1	10.6	
60			6.0	10.0	

2-2-49

(17)

0+50

STA	+	H.I.	–	ELEV	℄-101-HW
	240	14.64		12.24	196+00
0+00			4.6	10.0	
S/ 10			3.7	10.9	
S/ 13			2.1	12.5	
S/ ~~5~~ ~~25~~ 40			2.3	12.3	
S/ ~~44~~ ~~55~~ ~~25~~			1.9	12.7	
S/ ~~43~~ ~~58~~ ~~28~~			3.7	10.9 ~~12.9~~	
S/ 59 ~~58~~			4.6	10.0	BX
S/ 70 ~~80~~			5.1	9.5	

1+00

1+00		14.64	4.7	9.9	
S/ 10			3.9	10.7	
S/ 13			2.3	12.3	
S/ 30			2.8	11.8	
S/ 41			2.6	12.0	
S/ 46			3.6	11.0	
S/ 60			4.9	9.7	
S/ 70			5.1	9.5	

1+50

STA	+	H.I.	−	ELEV
0+00		14.64	4.8	9.8
10			3.7	10.9
12			2.6	12.0
30			2.6	12.0
40			2.4	12.2
43			3.7	10.9
50			4.7	9.9
60			5.3	9.3
70			5.3	9.3 PX

2+00

STA	+	H.I.	−	ELEV
00		14.64	4.9	9.7
10			4.4	10.2
13			3.0	11.6
25			2.6	12.0
39			2.9	11.7
41			4.3	10.3
50			4.7	9.9
60			4.9	9.7
70			4.9	9.7

2+25

STA	+	H.I.	−	ELEV
00		14.64	4.6	10.0
11			4.5	10.1
15			3.2	11.4
30			3.1	11.5
37			3.6	11.0
40			4.6	10.0
50			4.9	9.7
60			4.8	9.8 PX
70			5.2	9.4

2+35

STA	+	H.I.	−	ELEV
00		14.64	5.0	9.6
11			4.8	9.8
13			3.8	10.8
28			3.5	11.1
40			3.9	10.7
50			4.8	9.8
60			4.8	9.8
70			5.2	9.4

2+50 = 0.0 FILL

X-SECTIONS OF BARROW PIT FOR ROAD MAT ON 27" CULVERT EXTENTION

STA	+	H.I.	−	ELEV
	5.58	19.67		

STA - 0+00 = 0.0 CUT
STA - 0+00

& H.W.-101 STA -

PX

STA	+	H.I.	−	ELEV
NI RT. E 0+00	5.58	19.67	3.9	14.09 15.8
RT. 10			3.6	16.1
RT. 20			3.3	16.4
RT. 30			3.1	16.6
RT. 40			2.7	17.0

& H.W.-101 STA 204+00

STA - 0+25

PX

STA	+	H.I.	−	ELEV
00		19.67	4.2	15.5
02			4.1	15.6
10			5.2	14.5
20			5.2	14.5
30			5.2	14.5
40			4.2	15.5
41			3.2	16.5
~~44~~ 44			3.0	16.7

STA - 0+75

PX

STA	+	H.I.	−	ELEV
00		19.67	4.7	15.0
05			4.5	15.2
10			5.4	14.3
20			5.8	13.9
30			5.5	14.2
40			4.8	14.9
43			3.7	16.0

STA - 1+25

PX

STA	+	H.I.	−	ELEV
00		19.67	4.6	15.1
06			4.8	14.9
12			5.6	14.1
20			5.8	13.9
30			5.8	13.9
40			5.4	14.3
41			4.3	15.4
47			4.3	15.4

STA -1+75

STA	+	H.I.	−	ELEV
		19.67		
00			4.4	15.3
08			4.5	15.2
12			5.4	14.3
20			5.8	13.9
30			6.0	13.7
40			5.3	14.4
45			4.2	15.5

STA -2+25

STA	+	H.I.	−	ELEV
		19.67		
00			4.4	15.3
05			4.6	15.1
10			5.2	14.5
20			5.3	14.4
30			5.2	14.5
37			4.5	15.2
40			3.3	16.4

STA -2+45

STA	+	H.I.	−	ELEV
		19.67		
00			4.2	15.5
17			4.1	15.6
40			3.4	16.3

LEVELS & CUTS TO FLOWLINE GRADE

(15) OFFSET N/27" CULVERT EXTENTION

STA	+	H.I.	−	ELEV	GRADE
B.M.	2.20	14.44		12.24	
0+96			4.70	9.74	5.73
1+28			4.59	9.85	5.47
1+60			4.59	9.85	5.22
1+92			4.65	9.79	4.96
2+24			4.33	10.11	4.70
2+56			6.71	7.73	4.44
2+88			9.46 ~~5.32~~	4.98	4.18
B.M.	2.11	14.35		12.24	
0+64			4.30 ~~4.77~~	10.05	5.99
0+32			4.49	9.86	6.25
0+00			1.77	12.58	6.51

2-4-49

(21)

12.24
2.20
14.44

CUT

STA - 196+00 ℄ H.W. - 101 "0"

4.01 974 573 401
4.38 985 547 438
4.63 985 522 463
4.83 979 496 483
5.41 10.11 4.70 5.41
3.29 773 444 329
0.80 14.44 9.32 5.12 1.18 0.94
4.06 14.44 9.46 4.98 4.15 .80
3.61 14.44 9.43 5.01 4.15 .83
6.07 12.24 2.11 14.35 9.21 10.14
4.18 .25 3.93
12.58 10.05
6.51 5.99
6.07 4.06
9.86 6.25
3.61
14.35 6.60 7.75
13.88 4.18 9.70
13.88 4.09 9.84
13.88 4.05 9.83
14.44 9.39 5.05 4.18 .87
14.35 4.15 10.17
10.86 .17 .09
14.35 3.93
10.42 .25 .17
10.42 10.36
47 30
14.35 9.35 5.00
12 26 .16

X-SECTIONS OF EXCAVATION FOR 27" CULVERT

STA-2+88

PX

DIST	+	H.I.	-	ELEV
B.M.		14.32	4.21	10.11
				~~224~~
℄			11.5	2.8
S/ 3'			11.4	2.9
S/ 3'			10.4	3.9
S/ 6'			9.9	4.4
N/ 3'			11.5	×2.8
N/ 3'			10.5	×3.8 ~~+2.8~~
N/ 6'			10.4	×3.9 ~~+2.9~~

HUB-(15) STA-2+24

2+56

STA	+	H.I.	-	ELEV
N ℄ 15'		14.32	6.8	8.0
N ℄ 7'			7.0	6.3
℄			11.8	2.5
N/ ℄ 3'			11.7	2.6
S/ ℄ 2'			11.7	2.6
S/ ℄ 8'			6.0	8.3

2-8-99 (22)

25
2+~~00~~

PX

STA	+	H.I.	-	ELEV
N/ ℄ 15' C		14.32	5.0	9.3
N/ ℄ 9' (6')			4.9	9.4
N/ 3' ℄ 12'			9.9	4.4
N/ 2' ℄ 3'			10.6	3.7
℄			10.9	3.4
S/ 18'			10.8	3.5
S/ 28'			4.7	9.6
			~~H.~~	

14.99
4.70
9.29

2+00

PT

℄ STA-H.W.-101 "O" 196+00

STA	+	H.I.	-	ELEV
T.B.M.	2.25	14.99		12.24
N/ ℄ 15'			4.8	9.1
N/ ℄ 10'			4.9	9.6
N/ ℄ 9'			7.5	~~7.0~~
N/ ℄ 3'			9.1	5.4
℄			9.4	5.1
S/ ℄ 2'			9.4	5.1
S/ ℄ 4'			8.7	5.8
S/ ℄ 9'			5.0	9.5

14.99
4.73
9.76
14.99
9.61
5.38
14.99
4.68
9.81
14.99
9.32
10.12
14.99
6.36
8.63

X-SECTIONS OF EXCAVATION FOR 27" CULVERT

PX

1+75

STA	+	H.I.	−	ELEV
S/℄ 9' 24/15		14.49 5	4.6	9.9
S/℄ 4' 19/15 1			7.2	7.3
℄			8.9	5.6
N/℄ 4' 15/11			9.1	5.4
N/℄ 9' 15/6			6.8	7.7
N/℄ 10' 15/5			4.8	9.7
N/℄ 15'			4.7	9.8

1+50

STA	+	H.I.	−	ELEV
T.B.M	4.32	14.17 2		9.85
00			4.5	9.7
7'			4.6	9.6
8			7.0	7.2
12'			7.9	6.3
13'			9.5	4.7
15'			9.5	4.7
19'			9.1	4.8
25'			7.0	7.2

2-8-49

(23)

PX

STA- 1+00

STA	+	H.I.	−	ELEV	
B.M	2.11	14.35 4		12.24	℄ 101-H.W 196+00
S/ 00			4.7	9.7	
S/ 5'			5.0	9.4	
S/ 7'			6.9	7.5	
S/ 11'			9.7	4.7	
S/ 15'			10.0	4.4	
S/ 19'			9.4	5.0	
S/ 23'			6.2	8.2	

0+50

STA	+	H.I.	−	ELEV	
B.M	3.36	15.60		12.24	℄ 101-H.W 196+00
00			6.0	9.6	
S/ 5'			6.3	9.3	
S/ 10'			10.2	5.4	
S/ 19'			9.8	5.8	
S/ 24'			6.8	8.8	

X-SECTIONS OF EXCAVATION FOR 27" CULVERT.

0+00

DX

STA	+	H.I.	−	ELEV
00		15.60	4.6	11.0
S/ 5'			5.0	10.6
S/ 9'			10.2	5.4
S/ 21'			10.1	5.5
S/ 25'			4.8	10.8

FLOW LINE ELEV.S AT M.H. 54" CULVERT

STA	+	H.I.	−	ELEV	
T.B.M	6.85	16.92		10.07	TOP EXISTING 36" CUL. BAY-SIDE
				F.L. = 4.61	TOP 36" CUL. JACKED THRU M.H. (BAYSIDE)
			9.06	7.86	
				F.L. = 4.94	TOP 54" CUL 0+00 END NEXT TO H.W.
			7.08	9.84	

CHECK LEVELS ON FORMS FOR M.H. BASE

27" & 54" CULVERT EXTENTIONS

STA	+	H.I.	−	ELEV	
					@ H.W.-101
B.M	3.57	17.11		13.54	202+00
ALL CORNERS OF BASE FOR 54" CULVERT EXT.			12.60	4.51	
					@ H.W.-101
B.M.	4.36	16.60		12.24	196+00
ALL CORNERS OF BASE FOR 27" CULVERT EXT.			10.50	6.10	
					@ H.W.-101
B.M	5.02	18.56		13.54	202+00
ALL CORNERS OF BASE FOR INLET STRUCTURE			12.29	6.27	

STA	+	H.I.	−	ELEV	
B.M.	2.40	15.94		13.54	STA - 202+00 H.W. 101
TOP FORM 54" CUL			4.69	11.25	
B.M	2.75	14.99		12.24	STA 196+00 H.W-101
TOP FORM 27" CUL			3.74	11.25	

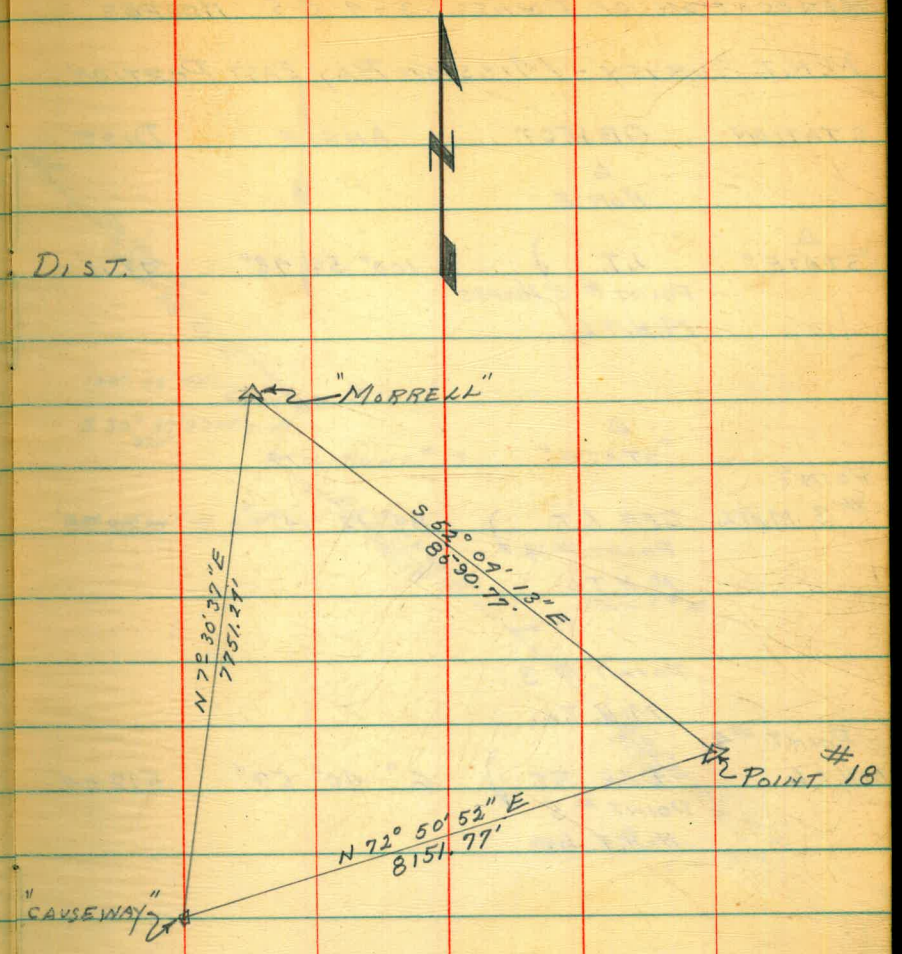
0.25' TH. PIPE

0.4' " "

COOL BRISK WIND VIS. FAIR — BARRAGAN SHERRY'S — 3-4-49

TRIANGULATION OF POINT # 18 ON HOOPES MEAN HIGH TIDE SURVEY OF MISSION BAY - EAST PORTION - 1926

STATION	OBJECT	ANGLE	MEAN	DIST.
	POINT # 18	① 59° 35'		
"MORRELL"	RT	② 119° 10'	59° 34' 52"	
	USC&GS "CAUSEWAY"	⑥ 357° 29' 15"		
	U.S.C.&G.S. "CAUSEWAY"	① 55° 05' 30"	"	
POINT #18	RT.	② 110° 10' 30"	55° 05' 00"	
	U.S.E.D. "MORRELL"	⑥ 330° 30' 00"		
	U.S.E.D. "MORRELL"	① 65° 20' 00"		
"CAUSEWAY"	RT	② 130° 40' 06"	65° 20' 20"	
	POINT # 18	⑥ 392° 02' 00"		
	U.S.E.D "MORRELL"	① 1° 15'		
POINT # 18	LT.	② 3° 30' 20"	1° 45' 10"	167.48'
	CONC. MON. (EAST COR. P.L. 256)			

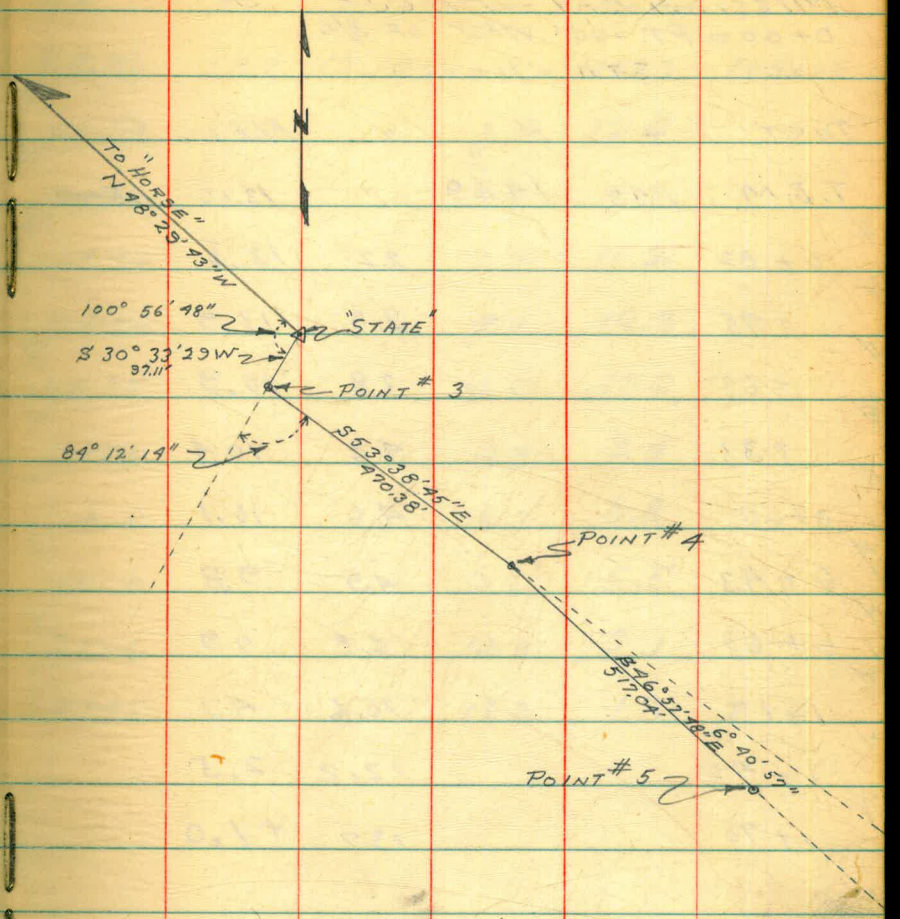


STAMPER BARRAGAN SHEARY 3-11-49 (27)

RELOCATION OF POINTS 3-4-& 5 HOOPES'

M.H.T. SURVEY - MISSION BAY EAST PORTION

STATION	OBJECT	ANGLE	DIST.
	△ HORSE		
△ "STATE"	LT. → POINT # 5 HOOPES M.H.T.L.	100° 56' 48"	97.11'
	△ "STATE"		
POINT # 3 M.H.T.L.	DEF LT. → POINT # 4 M.H.T.L.	84° 12' 14"	470.38'
	POINT # 3 M.H.T.L.		
POINT # 4 M.H.T.L.	DEF. RT. → POINT # 5 M.H.T.L.	6° 40' 57"	517.04'



PX

X-SECTIONS OF SEA SHORE LINE

MISSION BAY - PROJ - # 9

0+00 = PT. 100' WEST OF B/L

STA - 110+00

DIST	+	H.I.	-	ELEV	
T.B.M	1.43	14.69		13.16	105+00
E/ 0+82			2.2	12.5	
E/ +75			2.8	11.9	
E/ +63			3.8	10.9	
E/ +33			4.3	10.4	
E/ 0+00			4.6	10.1	
W/ 0+43			4.9	9.8	
W/ 0+69			6.8	7.9	
W/ 1+13			10.6	4.1	
W/ 1+40			12.2	2.5	
W/ 1+70			13.7	+1.0	

PX

1-11-49

(28)

STA - 105+00

STA	+	H.I.	-	ELEV	
T.B.M	1.90	15.13		13.23	105+00
E/ 0+99			3.1	12.0	
E/ 0+74			3.4	11.7	
E/ 0+40			3.9	11.2	
0+00			4.2	10.9	
W/ 0+35			4.5	10.6	
W/ 0+70			5.7	9.4	
W/ 1+10			6.3	8.8	
W/ 1+60			9.6	5.5	
W/ 2+06			12.6	3.1	
2+45			13.2	1.9	

18.1
12.1
14.9 PX

1.51
2/36 2

STA-104+00

STA	+	H.I.	−	ELEV	
T.B.M	1.47	14.71		13.24	104+00
E/ 0+99			2.6	12.1	
E/ 0+55			3.7	11.0	
E/ 0+00			4.3	10.4	
W/ 0+30			4.9	9.8	
W/ 0+65			5.1	9.6	
W/ 1+07			6.2	8.5	
W/ 1+63			8.7	6.0	
W/ 2+25			11.8	2.9	
W/ 2+92			13.8	0.9	
W/ 3+62			B.H. 13.1 14.9	−0.2	

1.81
13.9
14.9

PX

4-11-49

(29)

STA-103+00

DIST	+	H.I.	−	ELEV	
T.B.M	1.51	14.25		13.24	103+00
E/ 0+99			2.2	12.5	
E/ 0+55			3.3	11.4	
0+00			4.3	10.4	
W/ 0+40			3.8	10.9	
W/ 0+72			3.4	11.3	
W/ 1+20			6.8	7.9	
W/ 1+77			10.1	4.3	
W/ 2+40			12.8	1.9	
W/ 3+05			T.H. 12.9 14.4	+0.3	

1.52
2/305
2
10

12.9
1.5
14.4

PX

STA - 102+00

DIST	+	H.I.	-	ELEV	
T.B.M.	1.37	14.66		13.29	102+00
E/ 0+99			2.1	12.6	
E/ 0+50			3.5	11.2	
0+00			4.2	10.5	
W/ 0+35			3.9	10.8	
W/ 0+77			3.2	11.5	
W/ 0+80.			4.2	10.6	
W/ 1+12			7.2	7.5	
W/ 1+60			10.7	4.0	
W/ 2+10			12.6	2.1	
W/ 2+70			B.H. 13.0 14.3	+0.4	

1.35 13.0
2/770 1.3
14.3

PX

STA - 101+00

DIST	+	H.I.	-	ELEV	
T.B.M.	1.31	14.63		13.32	101+00
E/ 0+99			2.0	12.6	
E 0+50			3.5	11.1	
0+00			4.1	10.5	
W/ 0+37			3.7	10.9	
W/ 79			3.0	11.6	
W/ 80			4.3	10.8	
W/ 1+10			8.8	5.8	
W/ 1+70			11.8	2.8	
W/ 2+10			13.7	+0.9	

7-11-49

(30)

4-11-49

PX

STA = 100+00

STA	+	H.I.	−	ELEV	
T.B.M	1.53	14.79		13.26	100+00
E/ 0+92			3.9	10.9	
E/ 0+45			3.9	10.9	
0+00			4.0	10.8	
W/ 0+33			3.9	10.9	
W/ 0+74			3.3	11.5	
W/ 0+25			5.4	9.4	
W/ 1+05			9.5	5.3	
W/ 1+37			11.7	3.1	
W/ 1+62			12.8	+2.0	
W/					
3.26	1.25	14.51		13.26	100+00
165					
~~173~~ W					
E-0+04			3.2	11.3	
0+00			5.0	9.5	
0+36			9.3	5.2	
0+80			11.9	2.6	
1+20			12.9	1.6	
1+53			14.1	+0.4	

4-12-49

(37)

STA = 99+00

STA	+	H.I.	−	ELEV	
T.BM	1.12	14.45		13.33	99+00
~~X~~ WEST OF B/L					PX
E/-100'					
E/ 0+99			1.3	13.1	
E/ 0+81			3.0	11.4	
E 0+40			3.5	10.9	
0+00			3.7	10.7	
W/ 0+37			3.3	11.1	
0+62			3.0	11.4	
0+66			~~4.6~~	9.8	
1+11			10.8	3.6	
2+00'			13.9	+0.5	
			B.H. 13.8		
2+30'			14.95	-0.5	
		14.5	17.8		
		3.2	1.15		
		11.3	14.95		

STA - 98+00.

DIST	+	H.I.	−	ELEV	TR
T.B.M. ⊼ WEST 115'	1.91 OF B/L	14.68		13.27	98+00
E/ 114'			1.1	13.6	
E/ 1+05'			2.6	12.1	
E/ 0+85'			3.0	11.7	
E/ 0+63'			3.0	11.7	
0+00			3.6	11.1	
W of 65			3.5	11.2	
W/ of 70			6.0	8.7	
W/ 1+25			11.5	3.2	
W/ 2+05			13.9	+0.8	
W/ 2+45			B.H. 13.9 15.1	-0.4	
			13.9 1.2 15.1		

STA - 97+00

DIST	+	H.I.	−	ELEV	PT
T.B.M. ⊼ WEST 116	1.82 OF B/L	15.15		13.33	
E/ 0+15			3.5	11.6	
E/ 1+05			4.0	11.1	
E/ 0+58			3.8	11.3	
0+00			4.0	11.1	
W/ 0+57			3.9	11.2	
W/ 1+17			10.5	4.6	
W/ 2+43			B.H. 14.7 13.5 B.H. 14.1	+0.4	
W/ 2+80			15.5	-0.4	
			14.1 1.4 15.5		
			13.5 1.2 14.7		

96+00

PX

	DIST	+	H.I.	−	ELEV	
		1.67	15.04		13.37	96+00
E/	↑ WEST 123'	OF B/L				
E/	1+22			3.6	11.4	
E/	1+05			4.1	10.9	
E/	0+98			3.8	11.2	
	0+00			2.5	11.5	
W/	0+40			3.3	11.7	
W/	1+25			11.0	4.0	
W/	2+35			B.H. 14.5 / 13.3 B.H 13.1	+0.5	
W/	2+70			15.4	-0.4	
				M.I. 1.35		
				15.45		
			13.3			
			1.17			
			14.5			

95+00

PX

	DIST	+	H.I.	−	ELEV	
	T.B.M.	1.62	14.99		13.37	95+00
	↑ WEST 126'	OF B/L				
E/	1+25'			3.9	11.1	
E/	1+19'			3.1	11.9	
E/	0+85			3.7	11.3	
E	0+95			3.4	11.5	
	0+00			3.4	11.5	
W/	0+45			3.1	11.9	
W/	0+47			4.1	10.9	
W/	1+15			10.8	4.2	
W/	2+06			B.H 13.1 / 14.2 B.H. 13.2	+0.8	
W/	2+61			15.5	-0.5	
				13.1		
				1.1		
				14.2		
				13.2		
				1.3		
				14.5		
				+1.0		
				15.5		

94+00

DIST	+	H.I.	−	ELEV	
	0.00	13.33		13.33	94+00
E/ WEST ⊼ 188'					PI
E/ 1+87			1.6	11.7	
1+79			1.1	12.2	
1+27			2.1	11.2	
0+73			2.0	11.3	
0+11			1.5	11.8	
0+08			2.5	10.8	
0+00			4.0	9.3	
W/ 0+60			9.8	3.5	
W/ 1+47			13.2	+0.1	
W/ 1+62			+1 12.4 13.4	−0.1	

93+00

DIST	+	H.I.	−	ELEV	
T.B.M	−0.09	13.23		13.32	93+00
⊼ WEST 194'					PX
E/ 193			1.2	12.0	
E/ 1+87			1.3	11.9	
E 1+53			2.2	11.0	
E 0+91			2.4	10.8	
E/ 0+11			1.5	11.8	
E 0+07			3.3	9.9	
0+00			4.4	8.8	
W 0+76			10.7	+2.5	
W/ 1+93			+1. 12.8 12.8	−0.6	

92+00

DIST	+	H.I.	−	ELEV	
T.B.M. ↑ WEST 200'	0.24	13.57		13.33	92+00
E/ 199'			2.0	11.6	
E/ 1+85			1.8	11.8	
E/ 1+98			2.6	11.0	
E/ 1+16			3.4	10.2	
E 0+70			2.7	10.9	
0+15			2.0	11.6	
0+00			4.8	8.8	
0+50			10.1	3.5	
1+10			12.2	+1.4	
W/ 1+53			+1 12.8 13.8	−0.2	

91+00

DIST	+	H.I.	+	ELEV	
T.B.M. ↑ WEST 201'	0.11	13.43		13.32	91+00
E 200'			2.6	10.8	
1+85			2.5	10.9	
1+25			3.5	9.9	
0+72			2.7	10.7	
0+16			2.1	11.3	
0+00			4.7	9.7	
W/ 0+11			10.1	3.3	
W/ 1+33			12.4	+1.0	
W/ 2+03			+1 13.1 14.1	−0.7	

90+00 PX

DIST	+	H.I.	−	ELEV	
T.B.M	0.36	13.68 (7)		13.32	90+00
WEST π 217' ~~204~~					
E/ 2+06			2.4	11.3	
E/ 1+85			3.0	10.7	
E/ 1+30			4.1	9.6	
E/ 0+70			3.2	10.5	
E/ 0+15			2.2	11.5	
E/ 0+11			3.1	10.6	
0+00			4.7	9.0	
WEST 0+75			10.6	3.1	
W/ 1+52			12.8	+0.9	
W/ 1+80 ~~220~~			H.I. 13.1 14.1	−0.4	

1-12-49 PX (36)

89+00 PX

DIST	+	H.I.	−	ELEV
T.B.M	0.50	13.8		13.3
WEST π 205				
EAST 204			2.3	11.5
E/ 1+90			2.6	11.2
E/ 1+60			4.0	9.8
E/ 1+10			4.5	9.3
E/ 0+60			3.2	10.6
E/ 0+12			2.4	11.4
0+00			4.7	9.1
WEST 0+70			10.7	3.1
W/ 1+43			13.1	+0.7
W/ 2+27			H.I. 13.1 14.1	−0.3

PX

88+00

DIST	+	H.I.	−	ELEV
T.B.M. 3'	-0.3	13.0		13.3
T 1+96 WEST				
EAST				
1+92			0.7	12.3
1+86			1.9	11.1
1+45			3.4	9.6
0+95			3.6	9.4
0+47			2.4	10.6
0+10			1.6	11.4
0+00			4.7	8.3
WEST				
0+61			10.2	2.8
1+30			12.5	+0.5
1+61			+/ 12.0 13.0	0.0

4-12-49

PX (37)

87+00

DIST	+	H.I.	−	ELEV
T.B.M. (5')	-0.3	13.0		13.3
T 1+88 WEST				
1+83			1.1	11.9
1+75			1.2	11.8
1+42			2.7	10.3
0+95			3.4	9.6
0+52			2.6	10.4
0+09			1.7	11.3
0+06			3.7	9.3
0+00			4.7	9.3
0+57			10.0	3.0
1+15			12.1	+0.9
1+40			+/ 11.9 12.9	+0.1

STA.	2 +	H.I. 86+00	—	ELEV. 4-12-49	PX
π 2+00' WEST					
T.B.M	0.11	13.41		13.30	PX
1+83			1.3	12.1	
1+70			1.6	11.8	
1+30			3.7	9.7	
0+97			4.1	9.3	
0+50			3.0	10.4	
0+07			2.4	11.0	
0+06			4.2	9.2	
0+00			4.8	8.6	
w/ 0+53			9.9	3.5	
1+25			12.6	+0.8	
w/ 1+45			12.4 13.4	0.0	

DIST 125	+	H.I. 85+00	—	ELEV 4-12-49	PX
π 196' WEST					
T.BM.	0.21	13.51		13.3	PX
1+83			1.0	12.5	
1+60			3.0	10.5	
1+15			3.7	9.8	
0+58			3.1	10.4	
0+27			2.6	10.9	
0+10			3.3	10.2	
0+00			4.7	8.8	
0+68			10.5	3.0	
1+25			12.6	0.9	
1+48			+1 12.2 13.2	+0.3	

183
13
196

4-13-49

STA - 106+00

DIST	+	H.I.	-	ELEV	
T.B.M. WEST (3')	0.52	13.68		13.16	105+00
Δ 186					
E/AST					
1+83			1.4	12.3	
E/ 1+78			1.3	12.4	
E/ 1+62			2.9	10.8	
E/ 1+05			3.0	10.7	
E/ 0+55			2.8	10.9	
E/ 0+04			3.0	10.7	
0+00			5.1	8.6	
W/EST					
W/ 0+55			9.4	4.3	
W/ 1+10			11.2	2.5	
W/ 1+58			12.3	1.4	
W/ 1+95			13.2	+0.5	
T.P.			0.46	13.22	106+00

4-13-49 (39)

STA - 107+00

DIST	+	H.I.	-	ELEV	
T.B.M. WEST (5')	0.89	14.11		13.22	106+00
Δ 165'					
E/AST					
1+60			1.9	12.2	
E/ 1+55			1.9	12.2	
E/ 1+30			3.1	11.0	
E/ 0+82			3.1	11.0	
E/ 0+45			3.2	10.9	
E/ 0+02			3.0	11.1	
0+00			5.1	9.0	
W/EST					
0+32			10.0	4.1	
W/ 1+00			11.8	2.3	
W/ 1+50			13.8	+0.3	
T.P.			0.89	13.22	107+00

STA. 108+00

DIST	+	H.I.	−	ELEV	
T.B.M. (8') WEST	0.93	14.15		13.22	107+01
T 151'					
EAST					
1+93			2.5	11.6	
E/ 1+90			2.2	11.9	
E/ 1+00			3.1	11.0	
E/ 0+92			3.2	10.9	
E/ 0+02			3.2	10.9	
0+00			5.1	9.0	
W/ 0+43			9.1	5.0	
W/ 1+00			11.8	2.3	
W/ 1+45			13.9	+0.2	
T.P.			0.95	13.20	108+00

PK

13.9 12.1 13.55 3.10 1.45

STA. 109+00

DIST	+	H.I.	−	ELEV	
T.B.M. WEST (12')	0.82	14.02		13.20	108+00
T 148'					
EAST					
1+36			1.5	12.5	
E/ 1+33			1.5	12.5	
E/ 1+10			3.5	10.5	
E/ 0+55			3.7	10.3	
E/ 0+10			3.5	10.5	
0+00			4.8	9.2	
WEST 0+42			8.8	5.2	
W/ 0+90			11.2	2.8	
W/ 1+25			12.7	1.3	
W/ 1+42			13.8	+0.2	
T.P.			0.80	13.22	WEST SIDE OF SEA WALL 109+00

PK

TOPO

Survey of Shut-In Home at Front + Quince

STA	+	Hi.	−	ELEV
B.M	12.34	220.36 (1)		208.02
COR			0.0	220.4
COR			-0.06	220.3
COR			0.08	220.3
COR			0.2	220.2
COR			0.4	220.0
T.P.	3.50	221.15 (2)	2.71	217.65
WALK			0.59	220.56
WALK			0.53	220.62
1			0.7	220.3
2			1.25	220.0
3			1.25	220.0
4			1.2	220.0
COR N/E			2.6	218.6
FLOOR EL.			0.45	220.70
STUCCO			0.00	221.15

STAMPER
BARRAGAN
SHERRY

5-24-49

(41)

Blk #349

CHISELED □ AT NORTH END OF EAST CURB

ON GROUND

ON GROUND

ON GROUND

GROUND

GROUND

END OF WALK (TO RAMP) AWAY FROM BLDG

" " " " " AGAINST BLDG.

GROUND SHOTS SOUTH SIDE OF HOME

GROUND AT N/E COR OF HOME

FINISH FLOOR EL. AT DOUBLE DOORS UNDER CANOPY FRONT OF BLDG.

BOTTOM OF EXTERIOR STUCCO ON HOME

STAMPER
BARRAGAN
SHERRY

5-25-49

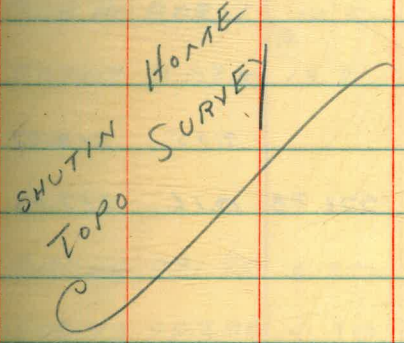
(72)

STA	+	H.I.	-	ELEV	
B.M.	1.86	209.88		208.02	
DIRT ROAD			5.2	204.7	BOTTOM OF SWAY OF DIRT FILL ROAD
" "			5.2	204.7	" " " " " " " "
B.M	1.56	209.58		208.02	
END CURB GUTTER			2.44	207.14	GUTTER AT END OF CURB (NORTH)
B.M.	2.50	210.52		208.02	
T.P.			13.01	197.51	DOWN WEST BANK OF DIRT FILL ROAD.
T.P.			12.70	197.82	" EAST " " " " " " .
T.P.	1.43	199.25		197.82	" EAST " " " " " " .
T.P.	3.94	190.67	12.52	186.73	
M.H.			11.27	179.40	MAN HOLE EAST SIDE " " " "
DRAIN PIPE			12.10	178.57	TOP DRAN CONC. PIPE (18") (2" THICK)
	0.15	197.66		197.51	T.P. WEST BANK DIRT FILL RD.
T.P	2.79	188.19	12.26	185.40	T.T.P.
T.P	1.10	176.59	12.70	175.49	
DRAIN PIPE			2.15	174.44	FLOW LINE 18" I.D.
T.P.	1.56	165.92	12.23	164.36	

STAMPER BARRAGAN SHERRY 5-25-19

STA	+	H.I.	−	ELEV	
FROM LAST PAGE		165.92			
M.H.			11.78	154.14	TOP MAN HOLE @ FOOT OF WEST BANK DIRT FILL RD.
T.B.M	10.95	231.51		220.56	OUTSIDE COR. SIDEWALK LEADING TO RAMP #
M.H.			8.88	222.63	TOP OF MAN HOLE FRONT CENTER LOT "E"
RAMP			7.86	223.65	TOP OF RAMP ON EAST SIDE OF HOME
T.B.M	4.47	225.03		220.56	

BLOCK 340

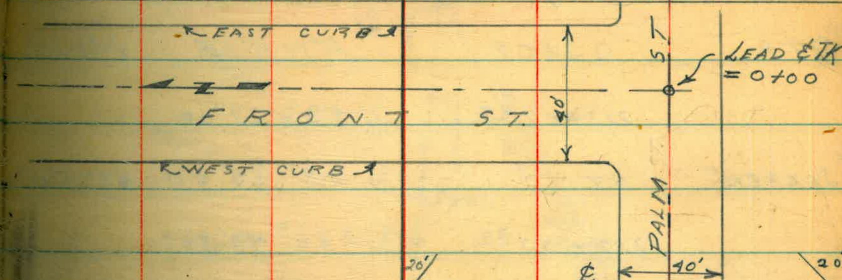


Profile along Front St. - Palm to Quince

STAMPER
BARRAGAN
SHERRYS

5-26-49

6.15



STA	+	H.I.	−	ELEV		ELEV. GUTTER WEST	ELEV CENTER	ELEV GUTTER EAST	ROD GUTTER WEST	ROD CENTER	ROD GUTTER EAST
0+90	12.00	220.02		208.02	Chiseled □ N. End E.C.	219.02	219.75	219.67	1.00	0.27	0.35
1+15						217.16	218.05	217.84	2.86	1.97	2.18
1+40						216.30	216.47	216.02	4.62	3.55	3.90
1+65					BRK. IN FENCE		214.52	114.30		5.4	5.62
1+90						211.12	212.62	212.67	8.8	7.3	7.35
2+15						210.22	210.57	210.80	9.7	9.15	9.12
2+40					END OF FENCE ℄ CURB	208.52	208.80	209.17	11.4	11.22	10.85
2+65						206.02	207.07	207.10	13.0	12.95	12.80
			7.75	212.27	N/END WEST CURB						
T.P	7.12	226.98	0.16	219.86							
0+65						220.63	220.48	221.35	6.35	5.50	5.63
0+40						221.68	222.66	223.08	5.30	4.32	3.90
0+00							222.23			4.75	
	2.35	218.95	10.38	216.60							
			10.95	208.00							

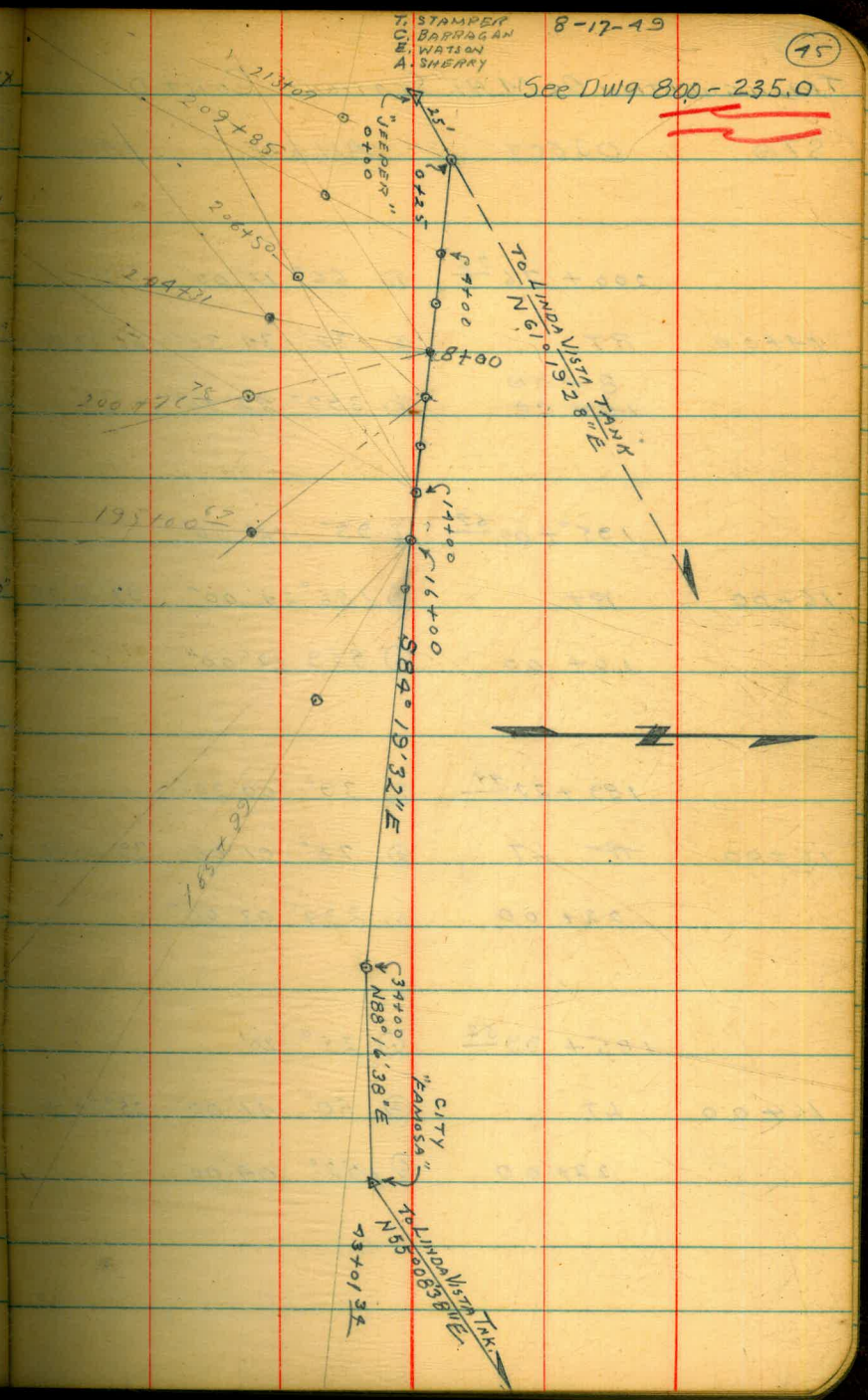
B.M. AT N/END OF EAST CURB

TRIANGULATION OF STATIONS ON M.H.T. LINE OF MISSION BAY - THROUGH OCEAN BEACH PARK ANNEX

T - STATIONS ON B/L ALONG OLD R.R. GRADE

← SEE F.B. No. 45 P. 75

STA	OJECT	ANGLE	MEAN
	213+07 28	① 99° 27'00	
"JEEPER"	RT	② 98° 54'00	99°27'15"
	217+03 80	⑥ 296° 43'30"	
	209+85 86	① 110° 52'00"	
4+00	RT	② 221° 44'00"	110°51'50"
	8+00	⑥ 665 11'00	
	206+50 71	① 35° 58'00"	
14+00	RT.	② 71° 56'30"	35°58'15"
	8+00 +6+00	⑥ 215° 49 30"	
	204+31 83	① 46° 26'00"	
14+00	RT	② 92° 52'30"	46°26'10"
	8+00 +6+00	⑥ 278° 37'00"	



TRIANGULATION OF M.H.T. STATIONS CONT'D.

STA	OJECT	ANGLE	MEAN
	200+76 78	① 66° 17'00"	
14+00	RT	② 132° 34'30"	66°17'00"
	8+00		
	~~10+00~~	⑥ 397° 42'00"	
	195°+00 67	① 93° 12'00"	
16+00	RT	② 186° 24'00"	93°12'00"
	10+00	⑥ 559 12'00"	
	189+27 71	① 39° 00'30"	
16+00	~~RT~~ LT.	② 78° 01'00"	39°00'30"
	22+00	6. 234° 03'00"	
	185+99 52	① 25° 20'	
16+00	LT.	② 50° 41'00	25°20'30"
	22+00	⑥ 152° 04'00"	

C. BARRAGAN
E. WATSON
A. SHERRY

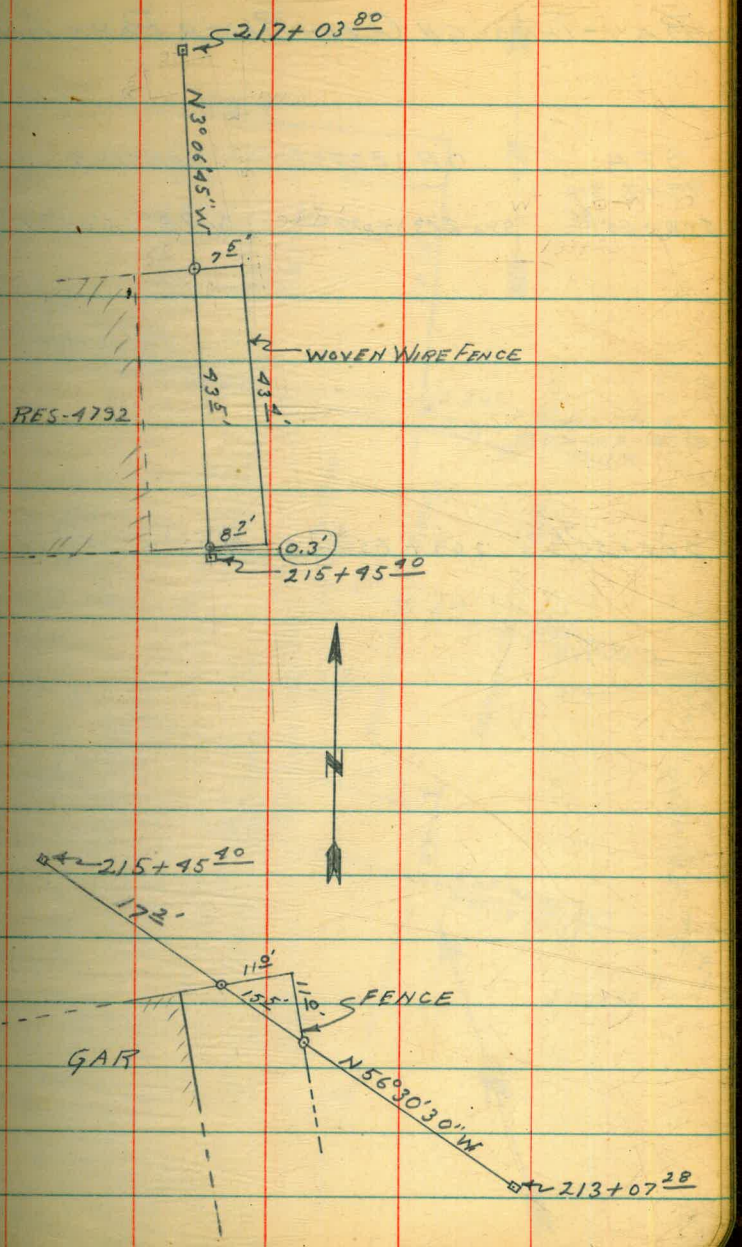
47

8-17-49

SURVEY OF

MEAN HIGH TIDE (BOUNDARY LINE) OF MISSION BAY - THROUGH OCEAN BEACH PARK ANNEX

STATION	OBJECT	BEARING	DIST.
$215+45\frac{40}{}$	$217+03\frac{80}{}$	N 3° 06' 45" W	158.40'
$213+07\frac{28}{}$	$215+45\frac{40}{}$	N 56° 30' 30" W	238.12



SURVEY OF

MEAN HIGH TIDE (BOUNDARY LINE) OF MISSION BAY - THROUGH OCEAN BEACH PARK ANNEX

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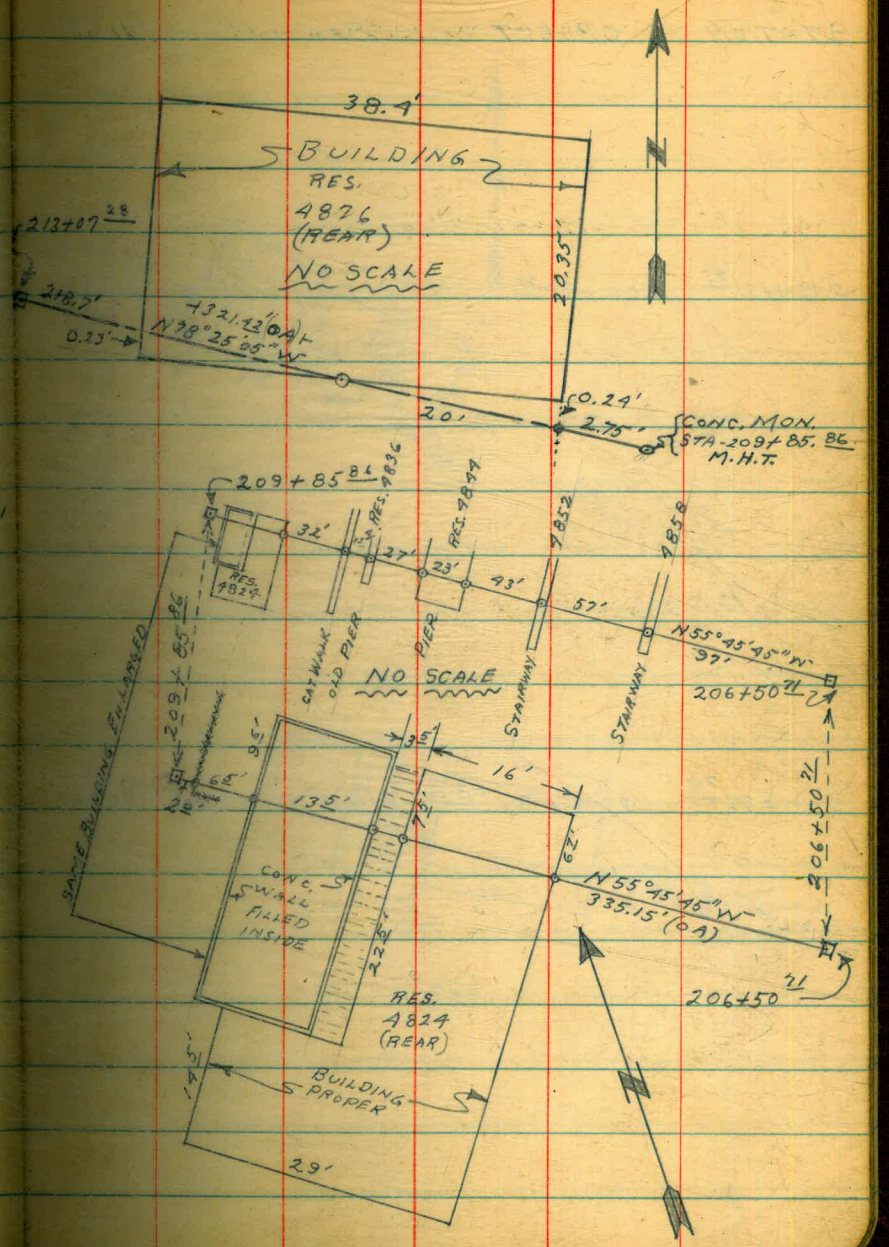
A. SHERRY

8-17-43

(48)

STA	OBJECT	BEARING	DIST.
M.H.T. STA. 209+85.86	STA 213+07.28	N 78° 25' 05" W	321.12'
206+50.71	209+85.86	N 55° 45' 45" W	335.15'



OCEAN BEACH

MEAN HIGH TIDE SURVEY (PARK ANNEX)

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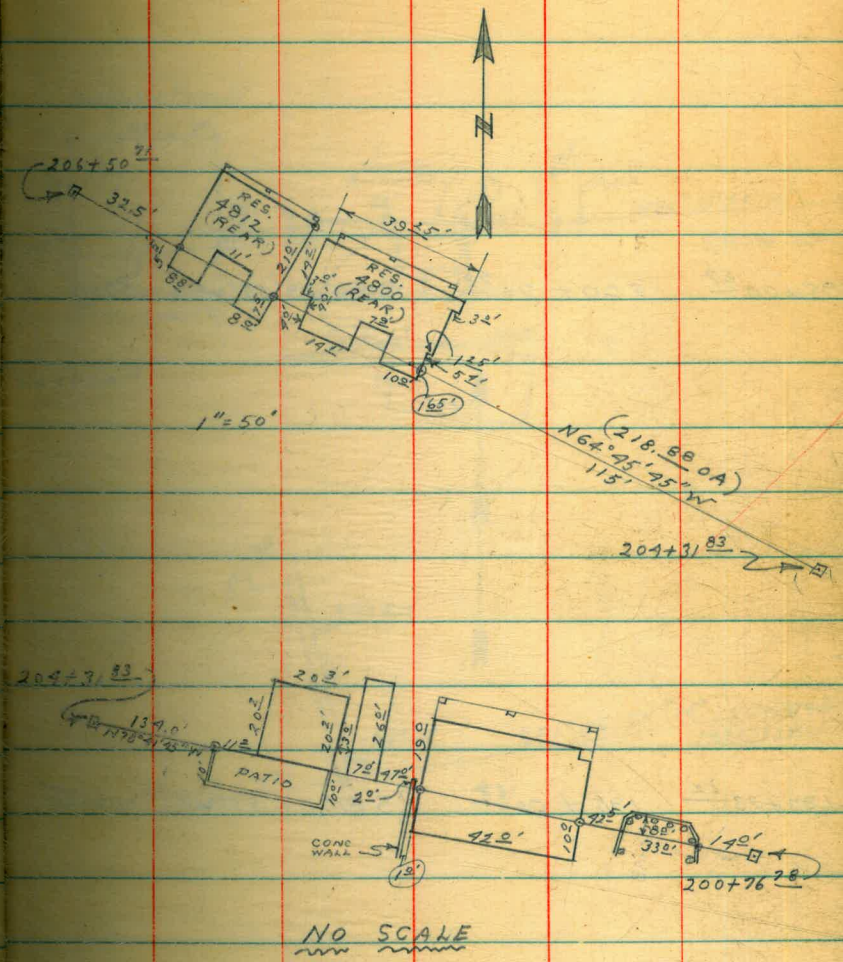
E. WATSON
A. SHERRY

8-17-49

STATION	OBJECT	BEARING	DIST
204+31 83	206+50 71	N 64°45'45" W	218.88'
200+76 78	204+31 83	N 78°41'45" W	355.05'

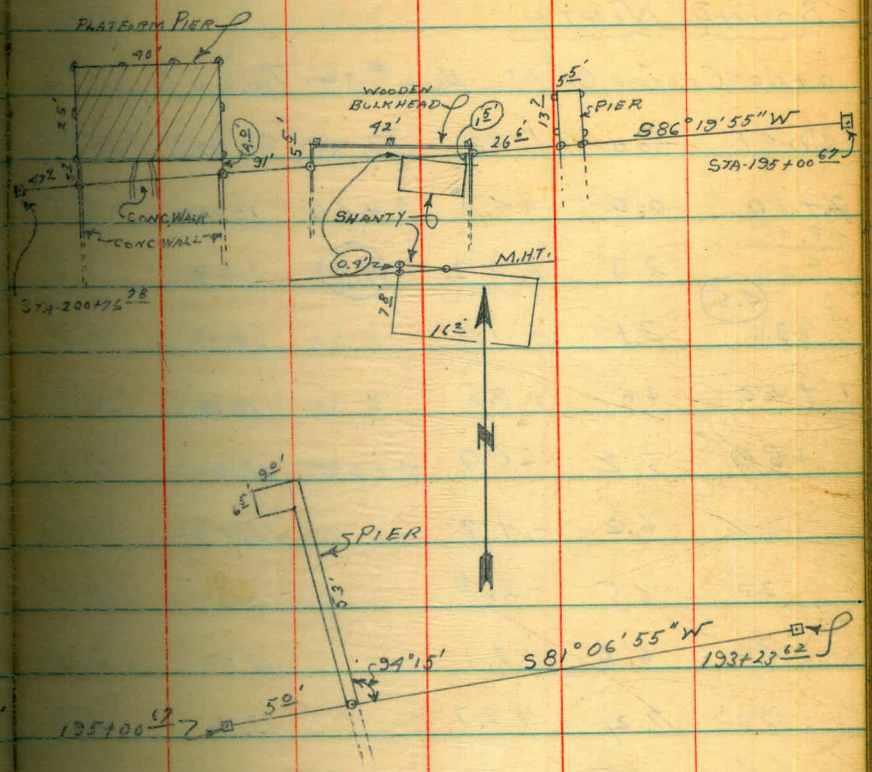


NO SCALE

C. BARRAGAN
E. WATSON
A. SHEARY

8-17-49

STATION	OBJECT	BEARING	DIST
195+00 67	200+76 38	S 86° 19' 55" W	576 11'
193+23 62	195+00 67	S 81° 06' 55" W	177 05'



CHECK SOUNDINGS OF DREDGED CHANNEL FOR SUBMARINE SEWER LINE - OCEAN BEACH TO MISSION BEACH

SOUND NORTH

0+00 = CENTER OF MAN HOLE # 39 · TRUNK SEWER #4

DIST	SOUND	ELEV	DIST	SOUND	ELEV
2+10	0.0+-	+4.5	3+60	10.1	5.5
08:45					
+20	2.3	+ 2.2	(4.6)	10.3	5.7
(4.5)					
+30	3.1	+ 1.4		10.5	5.9
+40	4.0	+ 0.5		11.2	6.6
+50	5.2	- 0.7	4+00	12.0	7.4
60	6.2	- 1.7		12.1	7.5
70	6.5	- 2.0		12.3	7.7
80	6.6	- 2.1		12.5	7.9
90	7.2	- 2.7		13.4	8.8
3+00	7.5	- 3.0	50	13.4	8.8
4.5	8.0	- 3.5		13.7	9.1
09:00					
(4.6)	8.5	4.0		14.0	9.4
	8.8	4.3	09:03	14.5	9.9
	9.8	5.3		15.3	10.7
+ 50	10.1	5.6	5+00	16.1	11.5

DIST	SOUND		DIST	SOUND
	15.5	11.6		
5+10	16.3 x	~~10.8~~		
09:17	16.3			
(4.7)	16.4 x	11.6		
	16.6			
	17.0 x	11.9		
09:05	17.0			
	17.3 x	12.3		
50	17.8	13.1		
	18.0	13.3		
	18.0	13.3		
	18.4	13.7		
	18.8	14.1		
6+00	18.8	14.1		
5+10	19.0	14.3		
09:22				
(4.7)				

1 6 3
4.7
11

STANAPER
BARRAGAN
WATSON
SHERRY
SMITH

9-C-49

PX

(5)

STAMPER
BARRAGAN
WATSON
SHERRY
SMITH

3-6-79

PROFILE & GRADES ALONG 30' OFFSET LINE (WEST) OF SEWER LINE:- OCEAN BEACH SHORE

GRADE = -4.07%.

STATION	+	H.I.	−	ELEV	GRADE	CUT	
B.M.	6.61	15.65		9.04			U.S.E.D. "JEEP" (CONC MON ±100' S/OF SHORE)
0+00			2.44	13.21	9.80	3.41	
+25			3.61	12.04	8.78	3.26	
+50			3.38	12.27	7.76	4.51	
+75			3.76	11.89	6.74	5.15	
1+00			3.87	11.78	5.73	6.05	
+25			4.29	11.36	4.71	6.65	
+50			5.00	10.65	3.69	6.96	
+75			5.76	9.89	2.67	7.22	
2+00			6.32	9.33	1.66	7.67	
+25			~	~	0.64	~	
2+50			~	~	~	~	
CENTER M.H.			2.63	13.02			CENTER M.H. COVER (T.P.)
B.M.			6.61	9.04			U.S.E.D. "JEEP" CONC. MON.

T. STAMPER
BARRAGAN
WATSON
SHERRY

(53)

CHECK SOUNDINGS OF SUBMARINE SEWER

(TIE 1+80) MISSION BEACH TO OCEAN BEACH.

0+00 = MAN HOLE #39 -- SOUND NORTH.

DIST	SOUND		DIST	SOUND	
1+80	+?		3+30	8.8	-4.0
+90				9.8	-5.0
2+00			50	10.0	-5.2
10				10.3	5.5
20				10.3	5.5
(4.8) 30	4.0	+0.8		10.8	6.0
40	4.0	+0.8		11.0	6.2
+50	4.9	-0.1	4+00	11.7	6.9
	6.1	-1.3		12.0	7.2
	7.0	-2.2		12.0	7.2
	7.0	-2.2		12.6	7.8
	8.0	3.2		13.0	8.2
3+00	8.0	3.2	50	13.3	8.5
	8.0	3.2		13.6	8.8
3+20	8.4	3.6	4+70	13.9	9.1

DIST	SOUND		DIST	SOUND	
4+80	14.1	-9.3	6+70	20.9	16.1
	15.0	10.3		20.9	16.1
5+00	15.5	10.7		21.3	16.5
	16.0	11.2	7+00	21.2	16.4
	16.3	11.5		21.0	16.2
	16.7	11.9		21.1	16.3
	17.0	12.2		20.8	16.0
50	18.0	13.2		20.8	16.0
	18.1	13.3	50	20.5	15.7
	18.2	13.4		21.0	16.2
	18.4	13.6		21.4	16.6
	18.9	14.1		21.0	16.2
6+00	19.0	14.2		21.0	16.2
	19.0	14.2	8+00	21.1	16.3
	19.4	14.6		21.0	16.2
	20.7	15.9		21.2	16.4
	21.0	16.2		21.2	16.4
50	20.8	16.0		21.8	17.0
6+60	21.0	16.2	8+50	21.5	16.7

DIST	SOUND		DIST	SOUND
8+60	21.5	16.7		
	21.5	16.8		
	21.7	17.0		
	21.3	16.6		
9+00	21.6	16.9		
	21.7	17.0		
	21.4	16.7		
	21.5	16.8		
	21.7	17.0		
50	21.3	16.6		
	21.5	16.8		
	21.7	17.0		
9+80	21.2	16.5		
10+00				

T. Stamper
Barragan
Watson
& Herry

9-10-49

CENTER LINE

SOUNDINGS OF SUBMARINE SEWER

MISSION BEACH TO OCEAN BEACH

∠ CHANNEL ℄ = 71°25'

∠ ℄ CHANNEL TO NORTH JETTY ℄ = 42°50' = 0+00

SOUND NORTH

DIST	SOUND		DIST	SOUND
17+00 = 0+00	22.3	-17.1	15+50 ~~1+50~~	21.8
~~1+10~~ 90	22.3	17.1	40	21.3
80	23.0	17.8	30	21.7
(5.2) 70	23.3	18.1	20	21.5
60	23.0	17.8	10	21.2
~~1+50~~ 50	22.4	17.2	15+00 ~~2+00~~	21.3
40	21.8	16.6	90	21.7
30	21.6	16.4	80 (5.7)	21.5
20	21.9	16.7	70	21.7
10	21.5	16.3	14+60 ~~2+40~~	21.7
16+00 ~~1+00~~	21.6	16.4	14+50 ~~2+50~~	
~~1+10~~ 90	21.4	16.2		
80	21.0	15.8		
70	21.3	16.0		
~~1+40~~ 60	21.4	16.1		

(0+00 = 16+84 ALONG DREDGE)

SOUND SOUTH

DIST	SOUND	
16+94 ~~0+10~~ (5.2)	21.5	16.3
17+09 ~~+20~~	21.7	16.5
17+19 ~~+30~~	21.8	16.6 16.8
17+29 ~~+40~~	21.0	15.8
17+39 ~~+50~~	21.0	15.8
17+49 ~~+60~~	21.0	15.8
17+59 ~~+70~~	21.0	15.8 = 17+50 (SEWER STATION)
17+69 ~~+80~~	21.0	15.8

CENTER LINE SOUND SOUTH

DIST	SOUND

17+00
16
16+84

16+70
2+40
14+30

1848
36
1752

240
80
320

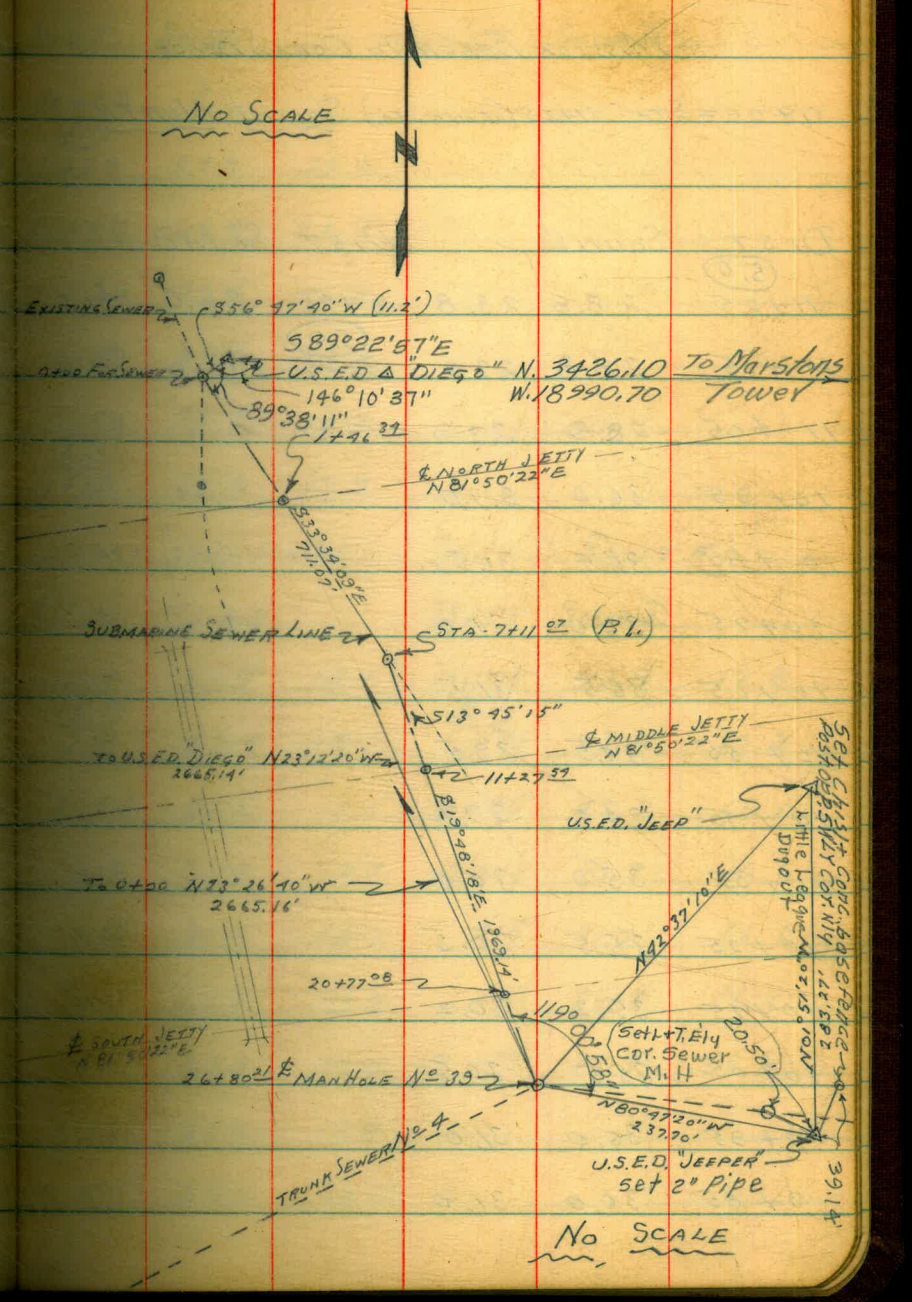
1750
320
1430

9-6-49

(56)

Location Of Submarine Pressure Sewer

Mission Beach To Ocean Beach



CENTER LINE

SOUNDINGS OF SUBMARINE SEWER

MISSION BEACH TO OCEAN BEACH

0+00 = STA - 11+25 (SEWER STA.) SOUND NORTH

DIST	SOUND		DIST	SOUND	
(5.0)					
11+25	28.8	23.8	9+75	36.0	31.0
11+15	28.8	23.8	(5.0) 9+65	36.0	31.0
11+05	28.9	23.9			
10+95	36.0	31.0			
10+85	36.5	31.5			
10+75	36.0	31.0			
10+65	36.5	31.5			
10+55	34.5	29.5			
10+45	34.8	29.8			
10+35	35.0	30.0			
10+25	35.5	30.5			
10+15	35.2	30.2			
10+05	35.5	30.5			
9+95	36.0	31.0			
9+85	36.0	31.0			

9-12-49 (57)

0+00 = 11+09 SOUND SOUTH

DIST	SOUND	
11+09	?	
(5.1) 11+19	27.3	22.2
11+29	27.4	22.3
11+39	27.0	21.9
11+49	29.0	18.9
11+59	23.3	18.2
(5.1) 11+69	23.0	17.9

0+00 = STA - 11+85 SOUND SOUTH

DIST	SOUND		DIST	SOUND	
11+85	23.5	18.1	12+75	22.9	17.8
(5.1) +95	23.1	18.3	(5.1) +85	23.0	17.9
12+05	23.6	18.5	12+95	22.2	18.1
+15	22.8	17.7	13+05	21.7	16.6
+25	23.1	18.3	+15	21.7	16.6
+35	22.8	17.7	+25	21.7	16.6
+45	22.9	17.8	13+35	21.7	16.6
+55	23.0	17.9			
12+65	23.0	17.9			

Cross Section Of Dredged Channel For Submarine Sewer-Mission To Ocean Beach

STA - 10+50

Dist	Sound		Dist	Sound	
0+00	?		1+10	33.0	27.8
0+10	11.7	-6.5	+50	27.5	22.3
	13.5	8.3		22.5	17.3
(5.2)	16.2	11.0		18.0	12.8
	19.7	14.5		15.1	9.9
0+50	20.5	15.3		15.0	9.8
	26.0	20.8	2+00	14.8	9.6
	34.0	28.8		14.0	8.8
	34.5	29.3	(5.2)	13.8	8.6
	34.5	29.3	2+30	13.1	7.9
1+00	34.5	29.3			
	35.2	30.0			
	35.2	30.0			
1+30	34.5	29.3			

Cross Sections

STA - 14+00

Dist	Sound		Dist	Sound	
0+00	9.5	-4.3	1+50	21.5	16.3
	10.0	-4.8		20.0	14.8
	9.7	4.5		16.8	11.6
(5.2)	9.9	4.7	(5.2)	13.0	7.8
	9.9	4.7		10.2	5.0
50	9.9	4.7	2+00	9.3	4.1
	9.5	4.3		9.0	3.8
	14.5	9.3			
	18.5	13.3			
	21.0	15.8			
1+00	21.9	16.7			
	21.5	16.3			
	22.0	16.8			
	22.2	17.0			
1+10	22.4	17.2			

Check Soundings Of Submarine Sewer

Mission Beach To Ocean Beach

0+00 = Rear of Dredge

0+00 = 9+40 Sound North

Dist	Sound		Dist	Sound	
0+00	35.0	-30.5		35.0	30.5
10:00	35.0	30.5		35.0	30.6
	35.0	30.5		35.0	30.5
(4.5)	34.9	30.4		34.8	30.3
	34.9	30.4	2+00	34.8	30.3
50	35.0	30.5	(4.5)	34.8	30.3
	34.9	30.4		34.8	30.3
	34.9	30.4		35.0	30.5
	34.9	30.4		34.9	30.4
	35.0	30.5	50	34.9	30.4
1+00	35.1	30.6		35.5	31.0
	35.0	30.5		34.9	30.4
	35.1	30.6		34.7	30.2
	35.0	30.5		34.9	30.4
	34.9	30.4	3+00	34.9	30.4
50	34.8	30.3		34.9	30.4
				35.0	30.5

0+00 = 10+20 Sound South

Dist	Sound		Dist	Sound	
0+00	34.7	30.1		23.5	18.8
	34.6	30.0	2+00	23.7	19.0
	34.8	30.2		23.0	18.3
10:12	35.1	30.5	(4.7)	22.8	18.1
	35.4	30.8		23.0	18.3
50	35.4	30.8		22.5	17.8
(4.6)	32.0	27.4	50	22.7	18.0
	29.5	24.9		22.9	18.2
	28.5	23.9	10:18	23.3	18.6
	28.2	23.6	(4.7)	22.0	17.3
1+00	27.5	22.9		21.8	17.1
	27.4	22.8	3+00	22.2	17.5
	27.5	22.9		21.0	16.3
10:15	26.8	22.2			
	26.1	21.5			
50	25.0	20.4			
	24.7	20.1			
	23.8	19.2			
	23.3	18.7			

9-13-49 0+00 = East Bulkhead
Channel X-Sec at Sta
8+40 Sound East

Dist	Sound		Dist	Sound	
0+50	13.5	-8.8		16.5	-11.7
	13.6	-8.9	10.30	15.2	-10.4
(4.7)	13.2	-8.5	50	15.0	-10.2
	15.3	-10.6	(4.8)	15.0	-10.2
	18.8	-14.1		15.2	-10.4
1+00	21.5	-16.8	2+80	14.7	-9.9
	24.5	-19.8			
	25.7	-21.0			
	34.7	-30.0			
	35.0	-30.3			
50	35.4	-30.7			
	35.5	-30.8			
	35.4	-30.7			
	34.8	-30.1			
	33.0	-28.3			
2+00	26.0	-21.3			
	21.8	-17.1			
	18.0	-13.3			

for Rock sample
Dallas = 21° Rt. ∠ Middle Jetty Diego Rt. N. Pt. 30° 38'

CHECK SOUNDINGS OF SUBMARINE SEWER
9-13-49
MISSION BEACH TO OCEAN BEACH

0+00 = Sta

DIST	SOUND		DIST.	SOUND
0+00	34.4	30.4		
9:30	34.5	30.5		
	34.6	30.6		
	34.3	30.3		
(4.0)	34.0	30.0		
50	34.1	30.1		
	34.4	30.4		
	34.5	30.5		
	34.4	30.4		
	34.4	30.4		
1+00	35.0	31.0		
	34.5	30.5		
	34.0	30.0		
	34.1	30.1		
	34.2	30.2		
50	34.3	30.3		

PX 9-18-49

CHECK SOUNDINGS OF SUBMARINE SEWER

MISSION BEACH TO OCEAN BEACH

0+00 = 0+80 ℄

DIST.	SOUND		DIST	SOUND	
0+05	0.6	+3.4		28.0	24.0
(4.0)	1.8	+2.2		27.2	23.2
9:24	8.5	-4.5		25.7	21.7
	10.9	6.9		24.7	20.7
	14.5	10.5	2+00	24.5	20.5
50	14.7	10.7		24.0	20.0
	14.8	10.8		25.8	21.8
	16.9	12.9	(4.0)	26.6	22.6
	18.8	14.8		32.8	28.8
	20.0	16.0	50	33.9	29.9
1+00	23.5	19.5		33.8	29.8
9:28	26.2	22.2		34.0	30.0
	26.9	22.9	9.32	34.2	30.2
	29.8	25.8	(3.8) 9:46	34.5	30.7
	29.2	25.2	3+00	34.6	30.8
50	28.7	24.7		34.9	31.1

PX 0+80 ℄

DIST	SOUND	
	34.9	31.1
	34.2	30.4
	34.1	30.3
50	34.6	30.8
	34.5	30.7
	34.7	30.9
(3.8)	34.7	30.9
	34.8	31.0
4+00	34.9	31.1
	34.8	31.0
	34.8	31.0
	34.8	31.0
	34.8	31.0
50	34.8	31.0
9:45	34.9	31.1
(3.7)	34.9	31.2
	34.9	31.2
	34.8	31.1
5+00	34.8	31.1
	34.7	31.0

SEE F.B. No 43 P.P. 27-29 FOR SHORE SECTIONS

(62)

31.1
34
9.7

PX

9-18-99

CHECK SOUNDINGS SEWER

0+00 = 0+60 = Sta 40' East.

Dist	Sound		Dist	Sound	
0+20	0.0	+3.7	2+00	26.0	-22.3
(3.7)	0.8	+2.9		27.0	-23.3
9:58	1.5	+2.2		26.1	-23.9
50	7.4	-3.7		26.0	-22.3
	12.0	-8.3	(3.7)	26.8	-23.1
10:00	15.0	-11.3	50	26.5	-22.8
	16.1	-12.4		26.0	-22.3
	15.9	-12.2		27.6	-23.9
1+00	15.9	-12.2		30.0	-26.3
	16.2	-12.5	10:05	30.8	-27.1
	19.1	-15.4	3+00	30.0	-26.3
	21.2	-17.5		28.5	-24.8
	24.1	-20.4	(3.6)	29.4	-25.7
50	27.7	-24.0		30.3	-26.6
10:02	29.6	-25.9		29.0	-25.3
	28.7	-25.0	50	27.7	-24.0
	27.0	-23.3		27.2	-23.6
	27.5	-23.8		30.1	-26.5

PX

Dist	Sound	
3+80	29.0	-25.4
	28.1	-24.5
4+00	29.2	-25.6
10:07	29.5	-25.9
	28.6	-25.0
(3.6)	29.0	-25.4
	29.9	-26.3
50	30.3	-26.7
	29.3	-25.7
	28.6	-25.0
	26.0	-22.4

9-18-49

PK

CHECK SOUNDINGS SEWER GRADE

0+00 = 0+60 - Sta 40' West Sounding

Dist	Sound		Dist	Sound	
0+00				25.8	-22.2
0+13	0+00	+3.6	10;17	24.3	-21.7
20	3.3	+0.3	2+00	25.1	-21.5
10;14	7.5	-3.9		26.2	-22.6
(3.6)	8.4	-4.8		27.0	-23.4
50	9.6	-6.0		27.5	-23.9
	11.0	-7.4		28.6	-25.0
	12.9	-9.3	50	Dredge 27.4	-23.8
	14.8	-11.2		27.0	-23.4
	15.3	-11.7	(3.6)	30.7	-27.1
1+00	17.2	-13.6		31.4	-27.8
	18.0	-14.4		31.9	-28.3
	18.9	-15.3	3+00	33.1	-29.5
	22.5	-18.9	10;20	33.7	-30.1
	23.9	-20.3		33.0	-29.4
50	24.2	-20.6		34.0	-30.4
	25.0	-21.4		34.0	-30.4
	25.4	-21.8	50	33.1	-29.5

PK

9-18-49

(64)

0+00 = 1+10 Sta 0+85 W

Dist	Sound		Dist	Sound
0+11	0.0	+3.5	2+00	19.0
20	5.1	-1.6		17.0
(3.5)	9.0	-5.5		16.9
10;26	10.1	-6.6		16.9
~~50~~	~~13.0~~			~~19.2~~
	13.6		50	23.2
	14.3			23.6
	15.0			23.6
	15.9			26.5
1+00	14.3			27.4
	16.9		3+00	25.4
	19.8			24.8
	19.4			25.0
	20.3			26.1
50	20.1			26.9
10;29	19.9		50	26.8
	20.0		10;34	26.5
	21.0			28.3
	19.3			27.1

9-18-49 Cont'd

Dist	Sound
3+90	22.5
4+00	20.8
10;35	21.3
	21.6
	20.9
	21.8
50	23.5
	23.5
	20.1
	21.3
	23.0
5+00	25.0
10;38	24.1
	23.4
	23.9
	23.3
50	20.2
	20.7
	13.4
	13.5

Dist	Sound

Sound South 0+00 = 1+10 Sta 0+85 W. (65)

DX

Dist	Sound		Dist	Sound	
0+50	12.7	-9.4	50	18.1	-14.8
(3.3)	13.8	-10.5	10:56	19.4	-16.1
	13.9	-10.6		20.1	-16.8
	16.0	-12.7		19.0	-15.7
	13.0	-9.7		17.0	-13.7
1+00	13.0	-9.7	3+00	15.5	-12.2
	17.3	-14.0		15.5	-12.2
10:50	20.4	-17.1		15.0	-11.7
	19.5	-16.2	(3.3)	16.0	-12.7
	19.8	-16.5		16.3	-13.0
50	19.8	-16.5	50	16.7	-13.4
	19.7	-16.4		18.0	-14.7
	19.8	-16.5		18.0	-14.7
1053	16.1	-12.8	10:58	16.9	-13.6
	17.0	-13.7		12.0	-8.7
2+00	17.3	-14.2	4+00	11.5	-8.2
	15.9	-12.6		13.1	-9.8
	16.8	-13.5		13.3	-10.0
	18.5	-15.2		10.0	-6.7
	18.6	-15.2		9.6	-6.3

PX

Dist	Sound	
4+50	12.7	-9.5
"	14.0	-10.8
"	14.0	-10.8
11:00	13.3	-10.1
"	13.2	-10.0
5+00	13.9	-10.6
"	12.8	-9.6
"	12.1	-8.9
"	13.1	-9.9
"	13.1	-9.9
50	11.0	-7.8
"	12.3	-9.1
(3.2)	13.9	-10.7
11:02	15.2	-12.0
"	15.1	-11.9
6+00	14.8	-11.6
"	15.1	-11.9
"	15.7	-12.5
"	15.0	-11.8

PX

0+00 = 1+00 Sta 0+80 W. Sound East

Dist	Sound	
0+05	0.0	+3.2
10	2.9	+0.3
(3.2)	5.3	-2.1
11.2	7.0	-3.8
"	8.1	-4.9
50	9.9	-6.7
"	8.1	-4.9
"	8.2	-5.0
"	7.0	-3.8
"	5.5	-2.3
1+00	5.9	-2.7
"	3.0	+0.2
"	0.5	+2.7

PX 9-18-99

0+00 = 1+50 Sta 1+40W. Sound East

Dist	Sound		Dist	Sound	
0+10	0.0	+3.2	2+00	10.4	-7.2
(3.2)	5.6	-2.4		8.2	-5.0
11:14	7.8	-4.6		4.8	-1.6
	11.2	-8.0		5.5	+2.3
50	11.4	-8.2			
	7.2	-4.0			
	9.7	-6.5			
	10.0	-6.8			
	11.4	-8.2			
1+00	16.7	-13.5			
	17.5	-14.3			
	17.1	-13.9			
	16.8	-13.6			
	17.0	-13.8			
50	17.2	-14.0			
11:16	17.0	-13.8			
	17.2	-14.0			
	16.1	-12.9			
	10.6	-7.4			

PX 9-18-99 (67)

0+00 = 2+00 Sta 1+50 W. Sound East

Dist	Sound		Dist	Sound	
0+16	0.0	+3.2	2+00	23.1	-19.9
20	2.3	+0.9		22.0	-18.8
(3.2)	5.4	-2.2	(3.2)	24.4	-19.2
11:21	8.5	-5.3		23.0	-19.8
50	10.3	-7.1		21.9	-18.7
	13.0	-9.8	50		
	15.5	-12.3			
	18.9	-15.7			
	20.3	-17.1			
1+00	22.0	-18.8			
	23.3	-20.1			
	25.4	-22.2			
	25.9	-22.7			
	27.0	-23.8			
50	27.3	-24.1			
11:24	27.0	-23.8			
	27.0	-23.8			
	26.8	-23.6			
	25.3	-22.1			

0+00 = 2+50 Sta 1+70W Sound East

Dist	Sound		Dist	Sound	
0+16	0.0	+3.1	2+00	27.2	-24.1
20	3.0	+0.1		27.0	-23.9
11:32	8.0	-4.9		25.1	-22.0
(3,1)	10.2	-7.1	(3,1)	23.2	-20.1
50	12.0	-8.9		20.3	-17.2
	14.3	-11.2	50	16.1	-13.0
	15.1	-12.0		14.2	-11.1
	16.9	-13.8	7/37	10.9	-7.8
	20.2	-17.1		9.6	-6.5
1+00	20.9	-17.8		11.5	-8.4
	23.9	-20.8	3+00	13.3	-10.2
	24.8	-21.7		14.9	-11.8
	24.7	-21.6			
	23.6	-20.5			
50	23.7	-20.6			
11:35	24.5	-21.4			
	25.1	-22.0			
	26.8	-23.7			
	27.1	-24.0			

SEE F.B. NO 43 P.P. 27-29 FOR SHORE SECTIONS

9-22-49

SOUNDINGS OF BACKFILL OVER SUBMARINE SEWER

0+00 = 1+25

DIST	SOUND		DIST	SOUND	
0+60	+0.4	+5.2		4.6	+ 0.9
	0.5	+5.1	9:37	4.2	+ 1.2
9:34	1.1	4.5	50	4.3	+1.2
(5.6)	3.2	2.4		3.5	+ 2.0
1+00	4.4	1.2		3.3	+ 2.2
	4.4	1.2	(5.5)	3.3	+2.2
	5.0	+0.6		3.0	+ 2.5
	6.3	- 0.3	3+00	3.0	+ 2.5
	6.9	- 1.3		2.9	+ 2.6
50	7.1	1.5		3.1	+ 2.4
	7.4	1.8		3.3	+ 2.2
	7.2	1.6		4.1	+ 1.4
	7.3	1.7	50	3.0	+ 2.5
	7.7	2.1		2.8	+ 2.7
2+00	7.2	2.6		2.9	+ 2.6
	6.8	- 1.2		2.9	+ 2.6
	5.0	+0.6		3.0	+ 2.5

DIST	SOUND		DIST	SOUND	
4+00	2.9	+ 2.6	6+00	10.2	- 4.7
(5.5)	2.9	+ 2.6	9.43	9.1	- 3.6
	3.0	+ 2.5	(5.5)	10.0	- 4.5
	3.8	+ 1.7		11.0	5.5
	5.1	+ 0.4		12.2	6.7
50	7.5	- 2.0	50	13.0	7.5
	10.5	- 5.0		13.2	7.7
	13.1	- 7.6		13.5	8.0
	13.6	- 8.1		14.0	8.5
9:41	13.2	- 7.7		14.5	9.0
5+00	13.8	- 8.3	7+00	16.1	10.6
	13.3	- 7.8		17.3	11.8
(5.5)	13.3	- 7.8	(5.5)	16.8	11.3
	13.9	- 8.4		15.3	9.8
	14.5	- 9.0		13.9	8.4
50	14.5	- 9.0	50	13.0	7.5
	14.0	- 8.5	Fog	12.1	Black
	13.3	- 7.8		11.9	out.
	12.5	- 7.0		11.5	↓
	11.0	- 5.5		11.5	

9-22-49

SUBMARINE SEWER CONTD

Dist	Sound
8+00	11.5
10	10.5
20	11.0
30	10.8
40	10.0
50	10.2
60	10.0
70	10.3
80	11.0
90	11.9
900	11.9
10	12.0
20	12.1
30	11.5
40	11.1
52	10.5
66	10.1
70	10.3
9.80	10.3
90	10.5
10.00	10.0
10	9.4
20	9.3
30	9.0
40	9.0
50	9.0
60	9.8
70	9.5
80	9.3
90	9.0
11.00	8.6
10	8.7
20	9.3
30	9.4
40	9.8
50	9.2
60	8.8

Too foggy - Lineup certain

9-22-49

SUBMARINE SEWER

11.70	8.5
80	9.0
90	9.0
12.00	9.8
10	9.4
20	9.7
30	9.8
40	9.8
50	10.6
60	10.8
70	11.1
80	11.0
90	11.0
13.00	10.9
10	11.5
20	13.0
30	12.0
40	11.2
50	11.9
13.60	11.3
70	11.6
80	11.4
90	12.0
14.00	12.0
10	12.3
20	12.8
30	12.9
40	13.7
50	13.2
60	13.4
70	13.8
80	12.9
90	13.0
15.00	12.1
10	12.7
20	12.7
30	13.0
40	12.8

10:00 to 10:10

9-22-49
SUBMARINE SEWER

15:30	11.5
"	12.4
"	12.3
"	11.7
"	12.0
16.00	11.3
"	11.5
5:4	11.2
10:04	11.5
"	11.9
50	11.9
"	13.1
"	12.8
"	13.4
"	13.2
17:06	13.9
10	14.2
20	14.0
30	14.2

10/8

O.K. Clear - Visibility

9-22-49

(71)

5:00	13.1	-7.9	40	13.5	-8.3
"	12.0	6.8	7:00	14.6	-9.4
"	11.5	6.3	"	16.1	-10.9
"	12.0	6.8	"	15.5	-10.3
"	12.6	-7.4	"	14.0	-8.8
50	13.5	-8.3	"	13.9	-8.1
"	12.9	-7.7	50	12.0	-6.8
"	13.2	-8.0	"	11.3	-6.1
"	13.0	-7.8	"	10.9	-5.1
10	12.9	-7.7	10.18	10.5	-5.3
400	9.8	-4.6	"	9.8	-4.6
5.2	9.0	-3.8	8:00	10.1	-4.9
"	10.5	-5.3	5.2	10.3	-5.1
"	10.9	-5.7	"	10.3	-5.1
"	11.8	-6.6	"	10.9	-5.7
50	12.2	-7.0	"	10.9	-5.7
"	12.5	-7.3	50	10.9	-5.1
"	12.8	-7.6	"	9.8	-4.6
50	13.0	-7.8	9:00	9.9	-4.7

8+80	9.0	-3.8	10+70	9.2	-4.0	12+60	10.4	-5.2	14+60	11.5
	9.4	-4.2		8.8	-3.6		9.9	-4.7		12.0
9+00	9.3	-4.1		8.9	-3.7		9.9	-4.7		12.0
	10.0	-4.8	11+00	9.0	-3.8		10.9	-5.7		11.0
	10.2	-5.0		10.1	-4.9	13+00	11.3	-6.1	15+00	14.5
	10.5	-5.3		9.0	-4.8		11.5	-6.3		14.5
	10.0	-4.8		9.0	-4.8		12.0	-6.8		12.0
9+50	9.9	-4.7		9.0	-4.8		11.0	-5.9		11.8
	9.3	-4.1	50	8.8	-4.6		10.8	-5.7		12.8
14:20	8.8	-3.6	10:22	8.3	-4.1	50	11.0	-5.9	10:32 50	
	9.2	-4.0		9.3	-5.1	10:28	11.0	-5.9		
(5.2)	8.5	-3.3	(5.2)	9.2	-5.0		11.0	5.9	(5.1)	
10+00	9.0	-3.8		9.3	-5.1	(5.1)	11.0	5.9		
	9.0	-3.8	12.00	9.1	-4.9		10.3	-5.2		
	9.0	-3.8		11.1	-5.9	14+00	10.0	4.9	16+00	
	8.8	-3.6		10.4	-5.2		9.8			
	8.6	-3.6		9.9	-4.7		9.0			
50	8.5	-3.2		12.8	-7.6		10.3			
60	8.5	-3.2	50	10.5	-5.3		10.3			
						50	10.9		50	

Sound Soundings — South Submarine Sewer Backfill — 9-23-49

See Pg. 78

DIST	SOUND		DIST	SOUND	
0+44	0.0	+6.0		19.8	-13.8
50	2.2	+3.8		21.0	-15.0
10:10	4.2	+1.8	50	22.8	-16.8
	4.5	+1.5	10:15	23.2	-17.2
(6.0)	5.9	+0.1		24.0	-18.0
	6.4	-0.4	(6.0)	24.8	-18.8
1+00	4.0	+2.0		24.1	-18.1
	4.0	+2.0	3+00	24.5	-18.5
	5.1	+0.9		24.0	-18.0
	4.8	+1.2		22.1	-16.1
10:12	4.9	+1.1		24.6	-18.6
50	5.5	+0.5		24.8	-18.8
	7.7	-1.7	50	23.8	-17.8
	8.4	-2.4		23.8	-17.8
10:13	10.6	-4.6		23.0	-17.0
	12.8	-6.8		22.3	-16.3
2+00	14.2	-8.2	10:18	23.0	-16.0
	15.1	-9.1	4+00	25.0	-19.0
	17.7	-11.7		24.8	-18.8

STAMPER
BARRAGAN
WATSON
SHERRY

PX-9-23-49

9-23-49

(73)

DIST	SOUND		DIST	SOUND	
	24.1	-18.1		26.0	-20.1
	22.8	-16.8	10:25	27.2	-21.3
	23.0	-17.0		27.7	-21.8
50	26.5	-20.5	50	28.0	-22.1
	27.8	-21.8	(5.9)	28.3	-22.4
	28.5	-22.5		28.0	-22.1
	27.3	-21.3		27.4	-21.3
	25.5	-19.5		25.7	-19.8
5+00	25.0	-19.0	7+00	25.4	-19.5
	25.1	-19.1		27.0	-21.1
10:20	25.0	-19.0		27.5	-21.6
	24.2	-18.3		22.1	-16.2
(5.9)	22.0	-16.1		21.7	-15.8
50	20.0	-14.1	50	24.0	-18.1
	23.2	-17.3		23.0	-17.1
	24.5	-18.6			
	25.5	-19.6			
	25.0	-19.1			
6+00	25.0	-19.1			
	25.2	-19.3			

9-23-49 T.A. Stamper E.F. Watson

PROFILE SUBMARINE SEWER
OCEAN BEACH SIDE - NORTH

Sta	+	H.I.	−	Elev.	
TBM.				13.20	#39 Top M.H.
	4.09	17.29			
0+08			7.78	9.51	F.L. Grade
0+24			8.40	8.89	"
0+40			9.05	8.24	"
0+56			9.60	7.69	"
0+72			10.33	6.96	"
0+88			10.69	6.60	"
1+04			11.23	6.06	"
1+20			12.11	5.18	"
1+36					
1+52					

SOUNDINGS SUBMARINE SEWER
AFTER BACKFILLING SOUND NORTH

0+00 = 545 North of M.H. ℄ #49

Dist	Sound	Dist.	Sound	
0+20	1.0		5.9	
2.45	3.2	2+00	6.4	
	6.4		7.0	
50	8.7		7.7	
	9.0		8.1	6.9
(1.3)	9.5		8.0	6.8
	8.8	50	8.3	7.1
	8.2	2:50	8.7	7.5
1+00	8.0		9.2	8.0
	8.4	(1.2)	9.5	8.3
	8.4		10.6	9.4
	9.6	3+00	11.1	9.9
	8.8		9.4	8.2
50	9.4		8.3	7.1
	9.7		7.9	6.7
	8.9		7.0	5.8
	7.5	50	7.0	5.8

9-22-49

SEWER BACKFILL CONT'D.

Dist	Sound	Dist	Sound
3+60	6.5	50	5.0
	6.1		4.8
	6.0		5.1
	6.0		4.7
4+00	6.2		5.1
	6.3	6+00	5.1
	6.5		4.6
(1.2)	6.1		4.6
	5.5		4.8
50	5.5		4.9
	5.7	50	4.9
	5.8		4.9
2:56	6.0		5.3
	6.3		5.2
5+00	6.4		5.0
	6.8	7+00	5.5
	7.6		6.0
	7.0		5.5
	5.2		5.0

9-22-49

Dist	Sound
	6.1
50	5.7
	5.2
3:00	6.6
	6.0
	6.0
8+00	6.2
3:02	6.1
(1.2)	6.6
	7.3
	7.1
50	7.0
	6.9
	6.9
	7.0
	7.6
9+00	7.8
	7.7
	8.0
	8.2

Dist	Sound
3:05	8.0
50	8.2
	7.6
	6.9
	6.8
	6.9
10+00	6.7
	7.5
	7.1
(1.2)	7.6
	8.1
50	8.0
	8.0
	8.1
	8.4
	8.4
11+00	8.4
	10.3
	9.0
	9.5

9-22-49

SEWER BACKFILL CONT'D

Dist	Sound	Dist.	Sound
11+40	9.9		16.8
50	9.8		18.7
3:08	10.3	50	20.0
	10.8	3:12	19.3
(1.1)	11.8		17.9
	12.9	(1.1)	17.6
12+00	12.8		17.5
	12.6	14+00	15.8
	14.2		18.0
	14.8		20.2
	15.3		16.4
50	16.1		18.8
	16.8	50	20.7
	18.3		21.0
	20.8		
	18.6		
13+00	18.8		
	17.8		
	16.3		

SUB SEWER CHECK 9-26-49 (7c)

0+00 = 40' S. SOUND SOUTH

DIST	SOUND		DIST	SOUND	
4+00	21.8	-16.7	+80	20.3	-15.2
9:40	21.8	-16.7		20.0	-14.9
	23.3	-18.2	6+00	20.0	-14.9
(5.1)	24.0	-18.9		20.1	-15.0
	23.1	-18.0		20.6	-15.5
+50	21.8	-16.7		22.1	-17.0
	20.6	-15.5		22.1	-17.0
	20.5	-15.4	+50	21.7	-16.5
	19.8	-14.7	9:43	21.5	-16.3
	19.9	-14.8		21.5	-16.3
5+00	20.0	-14.9		23.0	-17.8
	17.1	-12.0		22.8	-17.6
	18.2	-13.1	7+00	22.1	-16.9
	19.5	-14.4	(5.2)	21.1	-16.9
	21.0	-15.9		21.8	-16.6
+50	21.1	-16.0		21.6	-16.4
9:42	19.0	-13.9	9:45	21.2	-16.0
+70	20.1	-15.0	+50	21.7	-16.5

Check Soundings Sub Sewer

0+00 = 3+80 N.MH

DIST.	SOUND	
0+00		
+10		
10:18		
	3.2	+2.4
	3.5	+2.1
+50	2.2	+3.4
	3.1	+2.5
5.6	3.4	+2.2
	4.5	+1.1
	3.5	+2.1
1+00	3.1	+2.5
	3.1	+2.5
10:20	3.0	+2.6
	3.1	+2.5
	2.8	+2.8
+50	3.3	+2.3
	5.1	+0.5
+70	3.3	+2.3

Sound North 9-26-49

DIST	SOUND	
+80	4.8	+0.8
10:21	7.1	-1.5
2+00	9.0	-3.4
	9.9	-4.3
	9.8	-4.2
	8.1	-2.5
	6.8	-1.2
+50	7.2	-1.4
	9.3	-3.7
5.6	9.4	-3.8
	9.2	-3.6
	10.4	-4.8
3+00	9.8	-4.2
	8.4	-2.8
	7.1	-1.5
	6.9	-1.3
10:24	7.0	-1.4
+50	7.1	-1.5

Cont'd

DIST	SOUND	
+60	7.6	-2.0
+70	8.8	-3.2
	9.1	-3.5
	9.8	-4.2
4+00	11.6	-6.0
	12.8	-7.2
5.6	11.9	-6.3
	12.5	-6.9
10:26	13.3	-7.7
+50	13.3	-7.7

0+00 = 3+80 N. MH
Sound South

DIST.	SOUND	
0+00	0.8	+4.9
+10	0.6	+5.1
10:32	0.3	+5.4
5.7	0.2	+5.5
	0.3	5.4
+50	0.8	+4.9

DIST	SOUND	
+60	0.7	+5.0
10:34	0.7	+5.0
5.7	0.8	+4.9
+90	1.7	+4.0
1+00	2.0	+3.7
10:35		
+10		

Sound North
0+00 = 2+10 N MH

0+00	0.0	+5.8
10:47		
+10	2.3	+3.5
+20	1.5	+4.3
+30	2.0	+3.8
5.8		
+40	2.9	+2.9
+50	3.0	+2.8
+60	3.1	+2.7
+70	1.9	+3.9
10:48		
1+00		

℄ PROFILE OF SUBMARINE SEWER AFTER BACKFILL - (MISSION BEACH SHORE)

STA	+	H.I.	-	ELEV	
	4.94	14.27		9.33	DIEG 0'
0+00			4.9	9.4	
+22			5.1	9.2	
+50			6.0	8.3	
+60			7.0	7.3	
+66			11.0 WATER	3.3	
+75			11.3	3.0	WATER LEVEL
+85			14.7 3.4	-0.4 ~~-0.4~~	
+96			12.3 1.0 ~~+5.3~~	+2.0 ~~+1.0~~	
0+98			12.2 0.9 ~~+5.2~~	+2.1 ~~+0.9~~	
1+13			12.9 1.6 ~~+5.9~~	+0.4 ~~+1.6~~	

See Pg. 73

For Channel x-Sec. See Pg. 60

℄ PROFILE OF SUBMARINE SEWER AFTER BACKFILL - OCEAN BEACH SHORE 9-26-49

STA	+	H.I.	-	ELEV	
	4.10	17.2		13.1	M.H. TOP @ CENTER M.H.
0+00			4.1	13.1	
0+55			5.3	11.9	
1+02 ~~1+02~~			6.1	11.1	
1+68			7.5	9.6	
2+03			8.4	8.8	
2+13			10.8	6.4	
2+20			13.4 ~~14.1~~	3.8	
2+41			12.9	4.8	
2+62			BOTT. HAIR - 12.65 1.31 13.96	3.2	
2+92			12.0	5.2	

ELEVATIONS OF TOPS OF M.H.

2-22-49
H.WY.-101

STA	+	H.I.	-	ELEV	
					202
CHECK	2.40	15.94		13.54	
					Top M.H.
			4.69	11.25	
CHECK	2.75	14.99		12.24	196+00
					Top M/H
			3.74	11.25	

CHECK SOUNDINGS SUB SEWER

0+00 = 4++0 N MH.39

9-27-49

DIST	SOUND		DIST	SOUND	
2+60	6.2	-1.5	+80	12.1	-7.4
10:15	6.0	-1.3		12.0	-7.3
	6.0	-1.3	4+00	10.7	-6.0
(4.7)	6.5	-1.8		9.5	-4.8
3+00	6.6	-1.9		8.4	-3.7
	7.5	-2.8		9.6	-4.9
	8.0	-3.3		10.9	-6.2
	8.2	-3.5	+50	11.8	-7.1
	11.0	-6.3		11.5	-6.8
+50	11.4	-6.7		11.2	-6.5
10:17	10.2	-5.5		11.2	-6.5
+70	10.8	-6.1	10:20	11.0	-6.3
			5+00	10.4	-5.7

13.54
2.40
15.94
10.50
5.44

15.94
11.25
4.69

15.94
5.96
9.98

12.24
2.75
14.99
11.25
3.74
.75
1.49

11.25
.75
10.50

"0"

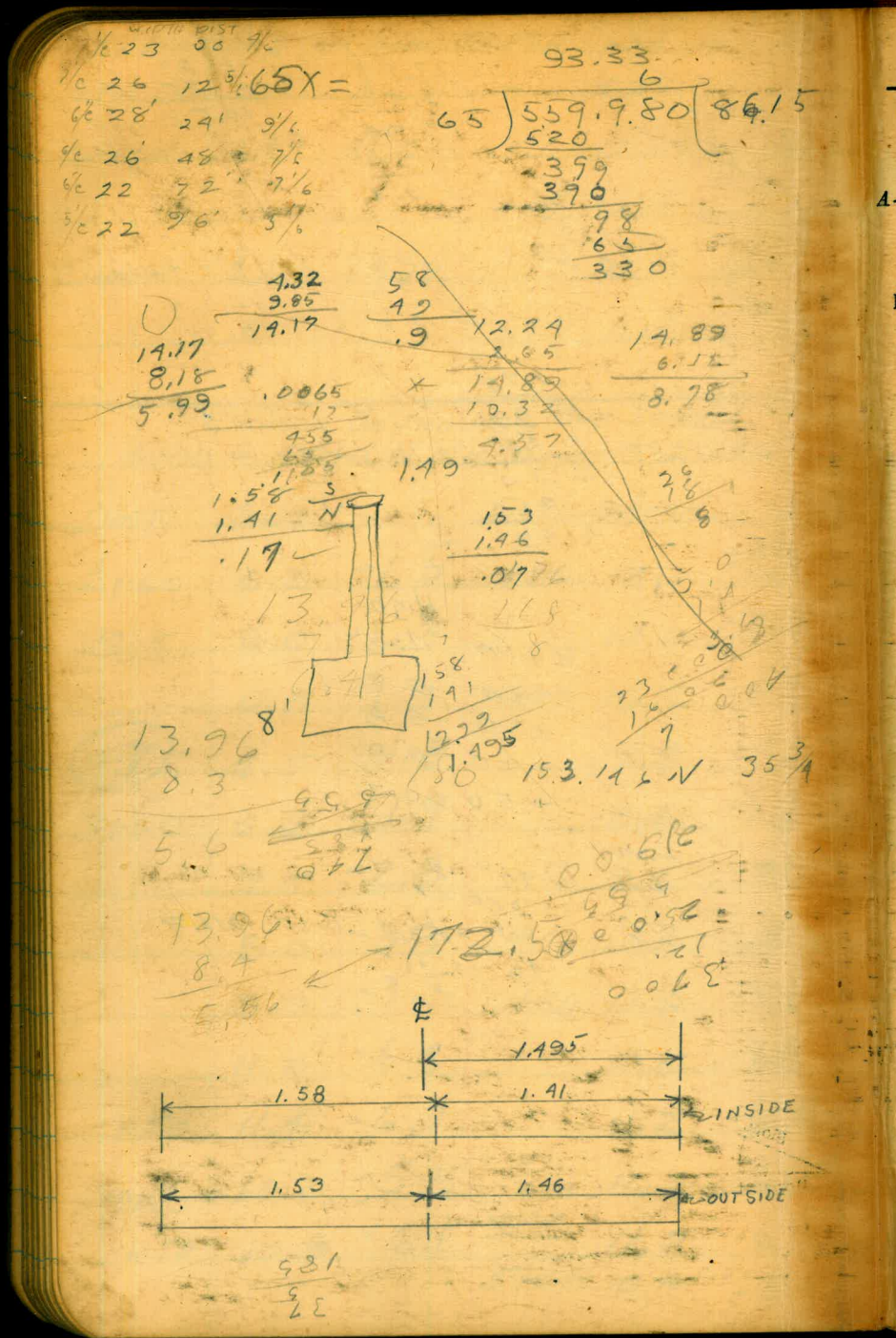
202+00
10.09
9.98
.09

74
69
.5

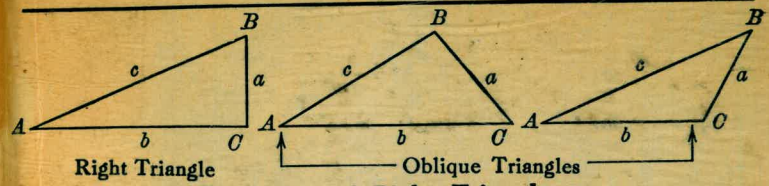
High

2+10	1.2'
+20	0.2
+30	0.8
+40	0.8
+50	0.7

JEEPER ① 90° 15' DEF LT.
HUB 80° 29' 30" DIST - 216.71
10 14' 45"



TRIGONOMETRIC FORMULÆ



Solution of Right Triangles

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

Given	Required	
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	$B = 90° - A, b = a \cot A, c = \frac{a}{\sin A}$
A, b	B, a, c	$B = 90° - A, a = b \tan A, c = \frac{b}{\cos A}$
A, c	B, a, b	$B = 90° - A, a = c \sin A, b = c \cos A,$

Solution of Oblique Triangles

Given	Required	
A, B, a	b, c, C	$b = \frac{a \sin B}{\sin A}, C = 180° - (A + B), c = \frac{a \sin C}{\sin A}$
A, a, b	B, c, C	$\sin B = \frac{b \sin A}{a}, C = 180° - (A + B), c = \frac{a \sin C}{\sin A}$
a, b, C	A, B, c	$A + B = 180° - C, \tan \frac{1}{2}(A - B) = \frac{(a-b)\tan \frac{1}{2}(A+B)}{a+b}, c = \frac{a \sin C}{\sin A}$
a, b, c	A, B, C	$s = \frac{a+b+c}{2}, \sin \frac{1}{2}A = \sqrt{\frac{(s-b)(s-c)}{bc}}, \sin \frac{1}{2}B = \sqrt{\frac{(s-a)(s-c)}{ac}}, C = 180° - (A+B)$
a, b, c	Area	$s = \frac{a+b+c}{2}$, area $= \sqrt{s(s-a)(s-b)(s-c)}$
A, b, c	Area	area $= \frac{bc \sin A}{2}$
A, B, C, a	Area	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° 10′ = .9959. Horizontal distance = 319.4 × .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. Cosine 5° 10′ = .9959. 1 — .9959 = .0041. 319.4 × .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.