MISSION BAY

VENTURA & 4-A PROJECTS

1

EUGENE DIETZGEN CO.

DRAWING MATERIALS, MATHEMATICAL and SURVEYING INSTRUMENTS

Chicago New York San Francisco New Orleans Pittsburg Toronto

Distances from Center of Roadway for Cross-Sectioning
Roadway 16 feet wide. Side Slopes 1 on 1.
For Single Track Embankment.

MICROFILMED JAN. 7 1965

H	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	H
0	8.0	8.1	8.2	8.3	8.4	8.5	8.6	8.7	8.8	8.9	0
1	9.0	9.1	9.2	9.3	9.4	9.5	9.6	9.7	9.8	9.9	1
2	10.0	10.1	10.2	10.3	10.4	10.5	10.6	10.7	10.8	10.9	2
3	11.0	11.1	11.2	11.3	11.4	11.5	11.6	11.7	11.8	11.9	3
4	12.0	12.1	12.2	12.3	12.4	12.5	12.6	12.7	12.8	12.9	4
5	13.0	13.1	13.2	13.3	13.4	13.5	13.6	13.7	13.8	13.9	5
6	14.0	14.1	14.2	14.3	14.4	14.5	14.6	14.7	14.8	14.9	6
7	15.0	15.1	15.2	15.3	15.4	15.5	15.6	15.7	15.8	15.9	7
8	16.0	16.1	16.2	16.3	16.4	16.5	16.6	16.7	16.8	16.9	8
9	17.0	17.1	17.2	17.3	17.4	17.5	17.6	17.7	17.8	17.9	9
10	18.0	18.1	18.2	18.3	18.4	18.5	18.6	18.7	18.8	18.9	10
11	19.0	19.1	19.2	19.3	19.4	19.5	19.6	19.7	19.8	19.9	11
12	20.0	20.1	20.2	20.3	20.4	20.5	20.6	20.7	20.8	20.9	12
13	21.0	21.1	21.2	21.3	21.4	21.5	21.6	21.7	21.8	21.9	13
14	22.0	22.1	22.2	22.3	22.4	22.5	22.6	22.7	22.8	22.9	14
15	23.0	23.1	23.2	23.3	23.4	23.5	23.6	23.7	23.8	23.9	15
16	24.0	24.1	24.2	24.3	24.4	24.5	24.6	24.7	24.8	24.9	16
17	25.0	25.1	25.2	25.3	25.4	25.5	25.6	25.7	25.8	25.9	17
18	26.0	26.1	26.2	26.3	26.4	26.5	26.6	26.7	26.8	26.9	18
19	27.0	27.1	27.2	27.3	27.4	27.5	27.6	27.7	27.8	27.9	19
20	28.0	28.1	28.2	28.3	28.4	28.5	28.6	28.7	28.8	28.9	20
21	29.0	29.1	29.2	29.3	29.4	29.5	29.6	29.7	29.8	29.9	21
22	30.0	30.1	30.2	30.3	30.4	30.5	30.6	30.7	30.8	30.9	22
23	31.0	31.1	31.2	31.3	31.4	31.5	31.6	31.7	31.8	31.9	23
24	32.0	32.1	32.2	32.3	32.4	32.5	32.6	32.7	32.8	32.9	24
25	33.0	33.1	33.2	33.3	33.4	33.5	33.6	33.7	33.8	33.9	25
26	34.0	34.1	34.2	34.3	34.4	34.5	34.6	34.7	34.8	34.9	26
27	35.0	35.1	35.2	35.3	35.4	35.5	35.6	35.7	35.8	35.9	27
28	36.0	36.1	36.2	36.3	36.4	36.5	36.6	36.7	36.8	36.9	28
29	37.0	37.1	37.2	37.3	37.4	37.5	37.6	37.7	37.8	37.9	29
30	38.0	38.1	38.2	38.3	38.4	38.5	38.6	38.7	38.8	38.9	30
31	39.0	39.1	39.2	39.3	39.4	39.5	39.6	39.7	39.8	39.9	31
32	40.0	40.1	40.2	40.3	40.4	40.5	40.6	40.7	40.8	40.9	32
33	41.0	41.1	41.2	41.3	41.4	41.5	41.6	41.7	41.8	41.9	33
34	42.0	42.1	42.2	42.3	42.4	42.5	42.6	42.7	42.8	42.9	34
35	43.0	43.1	43.2	43.3	43.4	43.5	43.6	43.7	43.8	43.9	35
36	44.0	44.1	44.2	44.3	44.4	44.5	44.6	44.7	44.8	44.9	36
37	45.0	45.1	45.2	45.3	45.4	45.5	45.6	45.7	45.8	45.9	37
38	46.0	46.1	46.2	46.3	46.4	46.5	46.6	46.7	46.8	46.9	38
39	47.0	47.1	47.2	47.3	47.4	47.5	47.6	47.7	47.8	47.9	39
40	48.0	48.1	48.2	48.3	48.4	48.5	48.6	48.7	48.8	48.9	40

Example—If point is 22.6 ft. above grade, how far should it be from center line to be a slope stake point? Ans. from Table 30.6. For same slopes but other widths of roadbed, correct above figures by one-half difference in width of roadbed; thus in example above, for 20 ft. roadbed distance will be 30.6+(20—16)÷2 or 2 ft. added to 30.6 =32.6. For slopes of 1 on 1½ see inside of back cover.

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CITY PLANNING COM.

SAN DIEGO, CALIF.

MISSION BAY IMPROVEMENT

Diary & Peg Book.

This Field Book is manufactured of a High Grade 50% Rag Paper having a WATER RESISTING SURFACE, and is sewed with Bing Special Enamel Waterproof thread.

Made in U. S. A.

112.68
56.34
28.17

79° 59' 60"
51° 10' 30"
78°-49'-30

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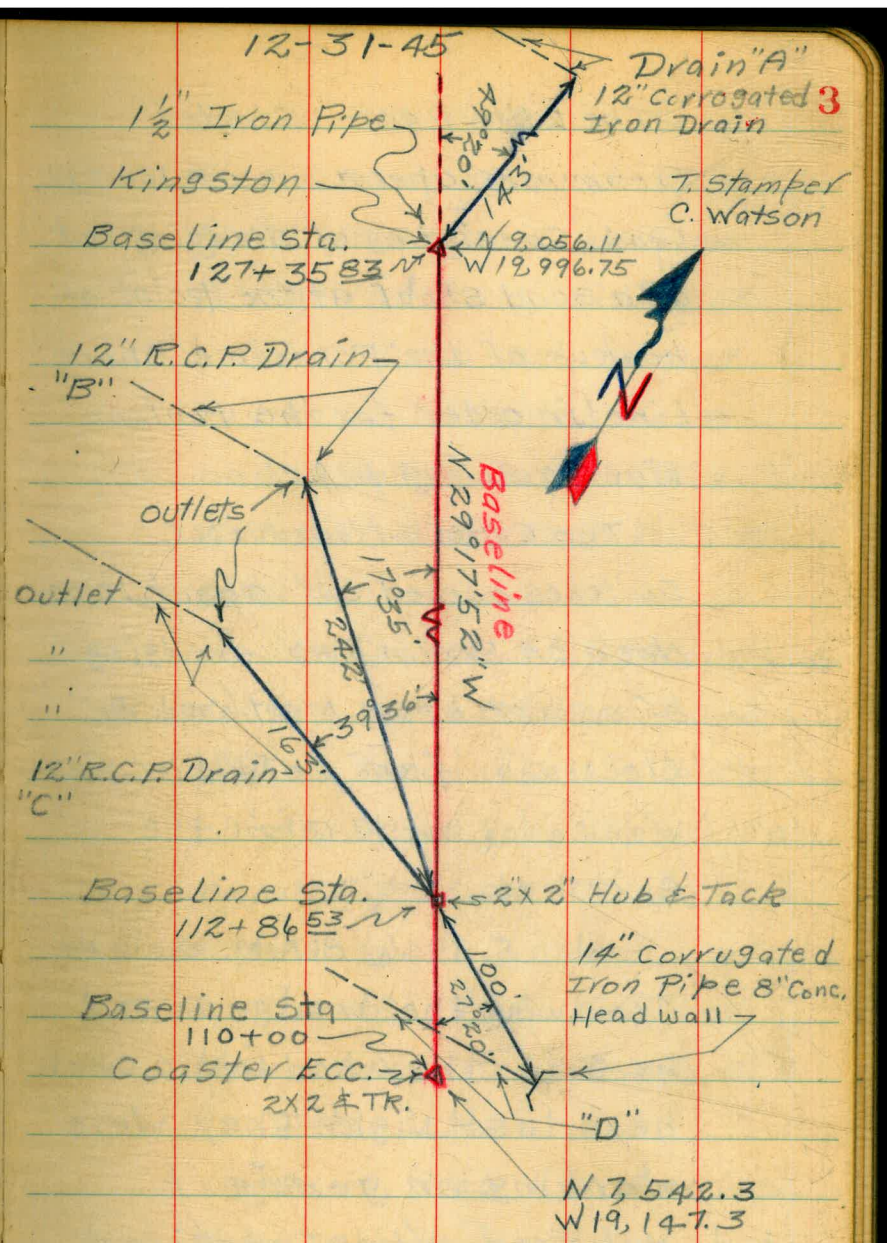
LOCATION OF EXISTING STORM DRAINS MISSION BAY AREA NEAR VENTURA PLACE

STA.	+	H.I.	-	ELEV. M.L.L.W	
B.M.				11.39	U.S.C.&G.S. Coaster
	3.19	14.58			
Drain "C"			10.60	3.98	Flow Line
"B"			9.67	4.91	" "
"D"			10.34	4.24	" "
B.M.			3.19	11.39	Coaster

INDEXED
Law
JUL 16 1953



The "Little Aggie" Started Preliminary operations on Jan. 3, 4, 1946, Consisting of dredging out of a sand shoal at the point of hookup of the Pontoon & Shore Line in order for the Pontoon Line to swing free

The Cutter & Main Motor Switches burned out about 12:00 Noon on Preliminary dredging of a shoal above Mentioned. An Electrician from Calif Elec. Works Was called out to repair the Switches.

Jan 5, 1946. 8:A.M. Saw Mr. Trautwine the dredge Supt & he said they had lost a cutter head last Night. They Were Working on getting it repaired When I arrived on the Job.

Jan 6 1946 Material found seems to be almost 100% gravel varying in size from Pea gravel to 6" diameter

Jan 7, 1946 New runner had to be installed rock had almost Completely Worn all the cross ANGLES out.

Jan 8, 1946 still encountering rock & some medium sand that is ideal for fill Material but is averaging about one runner per day to be replaced

Jan 9, 1946 Another New runner installed, still in bed rock

Jan. 10, 1946. fill seems to be standing up O.K. but Progress is Very Slow. Some Rocks are big enough to

"LITTLE AGGIE"
POWER METER READINGS

Multiply by 600

DATE	READING	DIFF.	Mo. TOTAL
1-2-46	3259	240 X 600 =	144,000 K.W
2-1-46	3499		
2-28-46	3761	262 X 600 =	157,200 K.W
4-3-46	4053	292 X 600 =	175,200
4-10-46	4094	41 X 600 =	24,600
	PROJ. NO-4-A.		
5-1-46	4226	132 X 600 =	79,200
6-3-46	4489	263 X 600 =	157,800
7-2-46	4732	243 X 600 =	145,800
8-1-46	4995	263 X 600 =	157,800
8-26-46	5193	198 X 600 =	118,800
	PROJ. NO 7.		
1-28-47	5348	155 X 600 =	93,000
2-28-47	5645	297 X 600 =	178,200
4-1-47	5969	324 X 600 =	194,400
5-1-47	6260	291 X 600 =	174,600
6-2-47	6552	292 X 600 =	175,200
7-3-47	6855	303 X 600 =	181,800
7-31-47	6961	106 X 600 =	63,600

MULTIPLY BY 2,000

PROJECT NO. 6
FRANKS POWER METER

10-28-46	7857	
12-2-46	8041	184 X 2,000 = 368,000
1-8-47	8268	227 X 2,000 = 454,000
2-28-47	8566	298 X 2,000 = 596,000
4-2-47	8800	234 X 2,000 = 468,000
	PROJ. NO. 8	
6-2-47	8881	81 X 2,000 = 162,000
7-3-47	9169	288 X 2,000 = 576,000
7-31-47	9363	194 X 2,000 = 388,000
8-28-47	9562	199 X 2,000 = 398,000

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JUL 16 1953

Contd. from Pg. 4

Jan 10, 1946

Plus Pump

Jan 11, 1946

New runner installed Mr. Trautwine is talking of Moving to S. End of Channel

Jan 12, 1946

Mr. Watson, Fisher, & Party of the U.S. Eng. Dept. Worked staking out Part of Inner Project Line of the Channel to-day.

Jan. 13, 1946

Sunday Shore Crew & watchmen Worked Today

Jan. 14, 1946

Mr. Trautwine took three Jet borings Near the S. End of Channel & found Sand & Shell only, So he has decided to Move to the S. End of Channel

Mr. Watson & I (Stamper) With the help of Mr. Trautwine Set Stakes on a Portion of the inner Project Line from S. End of Channel & Worked N. from 2:00 P.M. To 4:00 P.M.

Jan 15, 1946

8:00 A.M. Starting to Move the dredge to the S. End of the Channel, Have dredge & Pontoon Line Moved by 12:00 Noon, Shore Line is Not Complete.

DISCHARGE TESTS

DATE:	SAND	SILT	SOLIDS
1-18-46	75%	25%	8%
1-22-46	88%	12%	17%

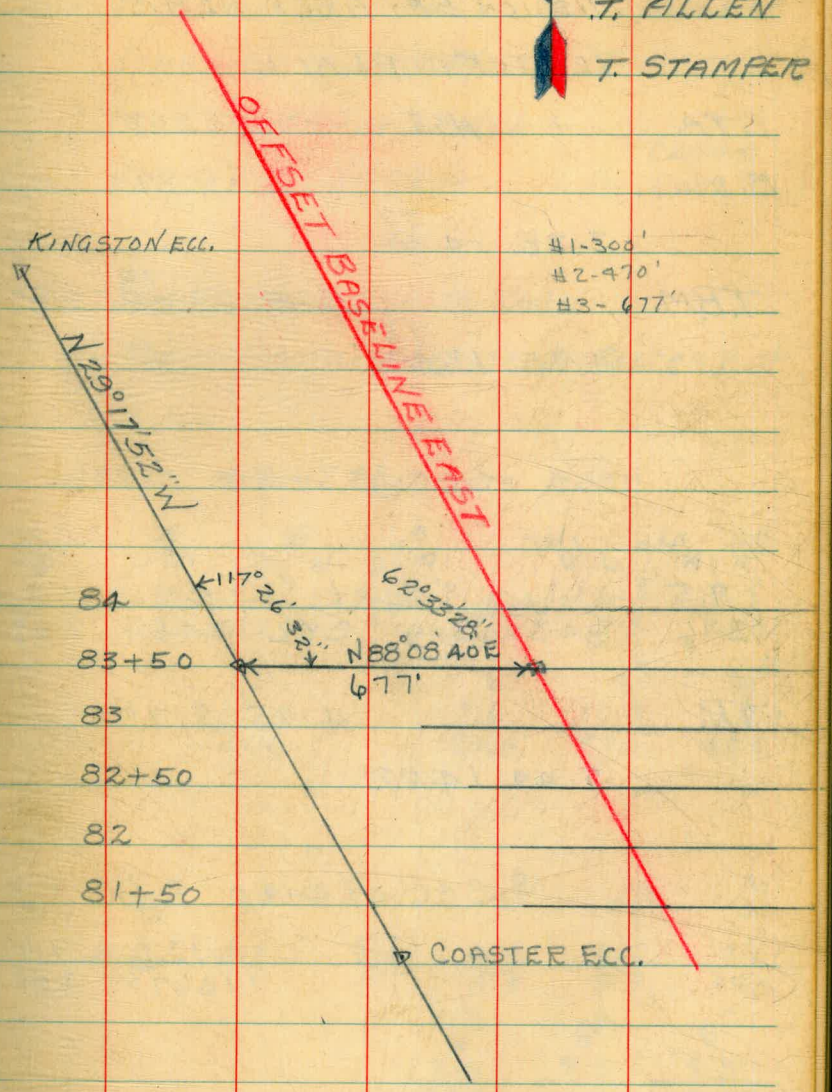
JETBORINGS WERE TAKEN
IN AREA N. OF VENTURA PL.
3-1-46 FROM 9:00 A.M. TO 12:30 NOON
3-2-46 FROM 8:00 A.M. TO 11:00 A.M.
3-[illegible]-46 WITH A CREW OF FOUR MEN
3-3-46 8:30 A.M. TO 10:00 A.M. 3-MEN
3-7-46 12:30 P.M. TO 2:30 P.M. 4-MEN
3-12-46 6:00 A.M. TO 8:30 A.M. 4-MEN
3-13-46 7:00 A.M. TO 10:00 A.M. 3-MEN
3-14-46 8:00 A.M TO 11:00 A.M. STUCK TUG &
NO BORINGS TAKEN
3-15-46 8:00 A.M. TO 11:00 A.M. 3-MEN
3-16-46 8:30 A.M. TO 11:30 A.M. 3-MEN
4-4-46 12:00 NOON TO 1:30 P.M. 3-MEN
4-5-46 12:30 P.M. TO 3:00 P.M. 3-MEN
28:30 TOTAL TO-DATE
5-20-46 PROJECT NO6.
3-MEN & JET SCOW 12:00 M TO 2:30 P.M.
6-11-46 5-MEN & SCOW. 4:00 P.M. TO 7:00 P.M.
6-13-46 3-MEN & SCOW. 3:00 P.M. TO 7:00 P.M.

BASELINE LAYOUT
FOR ESTIMATE X-SECTIONS
DREDGING NEAR VENTORA PL.

INDEXED
JUL 16 1953

1-29-46

T. ALLEN
T. STAMPER



PROGRESS X SECTIONS

MISSION BAY AREA NEAR VENTURA PLACE

1-29-46

NOTE: These sections are taken on offset B/L. (See pg. 9) for sketch

T. ALLEN
T. STAMPER

U.S.C.&G.S. △ COASTER

CLEAR
COOL

STA.	+	H.I	−	ELEV.
B.M.				11.39
	3.38	14.~~47~~ 77		
T.B.M.			5.99	8.~~40~~ 78
	4.95	13.~~73~~ 73		

NOTE: Numerators denote Rods
Denominators denote distances out

Sec. 83+50

WEST ← ℄ → EAST

4.2	5.6	4.9	6.9	7.9	8.1	7.3	8.5	8.6	8.9	8.3	6.9	5.9
9.5	8.1	8.8	6.8	5.8	5.6	6.4	5.2	5.1	4.8	5.4	6.8	7.8
376	343	304	282	246	207	193	143	82	0	69	74	154
								1.7		6.1	3.7	2.8
								12.0		7.6	10.0	10.9
								406		240	370	464

TP. 4.95 8.78

5.44 14.22

Sec. 84+00

				1.5	4.8	6.4	8.0	9.6	9.1	9.8	7.6	6.6
				12.7	9.4	7.6	6.2	4.6	5.1	4.4	6.6	7.6
				367	301	193	95	18	0	53	57	190
										6.8	5.9	5.7
										7.4	8.3	8.5
										232	286	340
										3.1		
										11.1		
										473		

1-29-46

X-SECTIONS CONTD.

STA	+	H.I.	−	ELEV.
		14.22		
TP.			5.44	8.78
	4.31	13.09		

Sec. 84+50

West ←

1.5	3.7	6.0	7.4
11.6	9.4	7.1	5.7
330	277	183	84

℄ → EAST

8.1	9.7	8.6	7.0	6.5	4.0
5.0	3.4	4.5	6.1	6.6	9.1
0	69	130	228	345	440

TP.			4.31	8.78
	3.66	12.44		

Sec. 85+00

1.3	4.6	5.3	6.4
11.1	7.8	7.1	6.0
296	262	205	94

1.4	1.8	1.4	6.2
5.0	4.6	5.0	6.2
0	110	226	322

T.B.M.			3.66	8.78

1-30-46

X SECTIONS CONT'D.

STA	+	H.I.	−	ELEV.
T.B.M.				8.78
	2.69	11.47		

Sec. 85+50

← WEST

5.3	5.9	6.5
6.2	5.6	5.0
142	70	0

TP.			2.69	8.78
	1.58	10.36		

Sec. 86+00

4.1	4.9	5.4
5.7	5.5	5.0
78	46	0

TP.			1.58	8.78
	3.50	12.28		

EAST →

6.7	7.3	6.9	6.9	
4.8	4.2	4.6	5.6	
68	212	340	412	

5.8	6.3	6.8	6.3	6.4
4.6	4.1	3.6	4.1	5.0
68	184	290	390	476

X-SECTIONS CONT'D.

1-30-46

PARTY SAME

WEATHER FAIR-COOL

STA.	+	H.I.	−	ELEV.
		12.28		

Sec. 83+00

← WEST.

4.8	8.0	8.5	7.5	7.8	7.1
7.5	4.3	3.8	4.8	4.5	4.6
264	250	220	192	122	70
			1.6	4.3	5.3
			10.7	8.0	7.0
			395	355	310

82+50			6.2	6.1	
82+00			7.1	5.2	
83+25			4.1	8.2	

Sec. 83+25

	5.0	13.2			
8.6	6.3	8.0	8.4	8.2	8.4
4.6	6.9	5.2	4.8	5.0	4.8
274	256	250	204	152	68
6.5	5.6	9.0	7.6	6.4	8.2
6.7	7.6	4.2	5.6	6.8	5.0
380	368	355	335	322	300
				1.5	3.5
				11.7	9.7
				420	400

← EAST →

7.3	6.7	5.9	5.0	4.1	3.5
5.0	5.6	6.4	7.3	8.2	8.8
0	63	165	273	342	388

H.I. Taken from profile ELEV. Sta 83+25

8.2	7.5	6.8	6.3	5.7	4.7
5.0	5.7	6.4	6.9	7.5	8.5
0	66	71	168	258	323
	3.9	3.0			
	9.3	10.2			
	386	450			

X-SECTIONS CONT'D.

1-30-46

STA	+	H.I.	−	ELEV.
82+50				6.1
	5.0	11.1		

(See Pg. 13)

Sec. 82+50

1.3	3.5	3.6	6.6	← 7.1	WEST 6.1	℄ 6.1	EAST → 6.0	5.4	4.9	4.1	TOP Bank 3.3
9.8	7.6	7.5	4.6	4.0	4.4	5.0	5.1	5.7	6.2	7.0	7.8
342	323	286	260	145	72	0	74	178	280	342	375

STA	+	H.I.	−	ELEV.
82+00				5.2
	4.8	10.0		

(See Pg. 13)

Sec. 82+00

0.8	3.7	6.0	6.4	6.2	5.7	5.2	5.2	4.7	4.3	3.6
9.2	6.3	4.0	3.6	3.8	4.3	4.8	4.8	5.3	5.7	6.4
322	310	280	240	136	73	0	70	145	220	276

TP.			4.8	5.2	
T.B.M.				8.78	
	3.93	12.71			
B.M.			1.27	11.44	11.39

U.S.C.&G.S. A COAST

X-SECTIONS CONT'D.

0+00 = COASTER ECC. TO KINGSTON

SOUND EAST

TIDE (1.0) SEC. 83+50

DIST	SOUND	ELEV.
230	5.5	4.5
244	4.3	3.3
250	3.0	2.0
220	6.4	5.4
210	6.0	5.0

VOID

1-30-46

0+00 = COASTER TO KINGSTON B/LINE

SOUND EAST SECTION 83+25

DIST. SOUND ELEV.

X- SECTIONS CONT'D.

0+00 = COASTER ECC. TO KINGSTON

SOUND EAST

SECTION 83+50

DIST. SOUND ELEV.

1-31-46

T. ALLEN

T. STAMPER

SOUND EAST

0+00 = COASTER TO KINGSTON B/L

SECTION 83+00

DIST. SOUND ELEV.

X-SECTIONS CONT'D.

0+00 = COASTER ECC. TO KINGSTON

SOUND EAST

SECTION 84+00

DIST	SOUND	ELEV.	DIST	SOUND	ELEV.
9:45 AM 54 (5.4)	0.0	+5.4	2+10	12.7	-7.3
60	1.3	+4.1	20	11.9	-6.5
70	1.8	+3.6	30	11.5	-6.1
80	2.4	+3.0	40	11.5	-6.1
90	3.2	+3.2	50	10.2	-4.8
1+00	3.8	+1.6	60	10.4	-5.0
10	4.0	+1.4	70	10.2	-4.8
20	4.3	+1.1	80	9.0	-3.6
30	6.2	-0.8	90	8.0	-2.6
40	8.0	-2.6	3+00	6.2	-0.8
50	8.5	-3.1	10	4.4	+1.0
60	9.3	-3.9	20	2.6	+2.8
70	9.8	-4.4			
80	10.0	-4.6			
90	11.2	-5.8			
2+00	12.5	-7.1			

Sta. 83+50

Dist.	Sound	Elev.	Dist.	Sound	Elev.
(5.2) 60			2+40	10.5	-5.3
70	0.2	+5.0	50	9.5	-4.3
80	1.2	+4.0	60	7.8	-2.6
90	2.1	+3.1	70	5.0	+0.2
1+00	3.0	+2.2	80	3.3	+1.9
10	4.5	+0.7	90	3.0	+2.2
20	4.6	+0.6	3+00	2.0	+3.2
30	6.7	-0.5	10		
40	8.3	-3.1	20		
50	9.4	-4.2	30		
60	10.1	-4.9	40		
70	10.8	-5.6	50		
80	10.9	-5.7			
90	10.9	-5.7			
2+00	11.1	-5.9			
10	11.2	-6.0			
20	11.2	-6.0			
30	11.5	-6.3			

Sta. 83+25

Dist 10:00 AM	Sound	Elev.	Dist	Soond	Elev.
70	0.3	+4.8	2+50	7.3	-2.2
80	1.4	+3.7	60	4.9	+0.2
(5.1) 90	2.7	+2.4	70	3.0	+2.1
1+00	3.5	+1.6	80		
10	4.0	+1.1	90		
20	4.2	+0.9	3+00		
30	7.0	-1.9	10		
40	8.3	-3.2			
50	10.0	-4.9			
60	10.4	-5.3			
70	10.9	-5.8			
80	10.8	-5.7			
90	11.0	-5.9			
2+00	11.0	-5.9			
10	10.9	-5.8			
20	10.1	-5.0			
30	9.9	-4.8			
40	9.3	-4.2			

Sta. 83+00

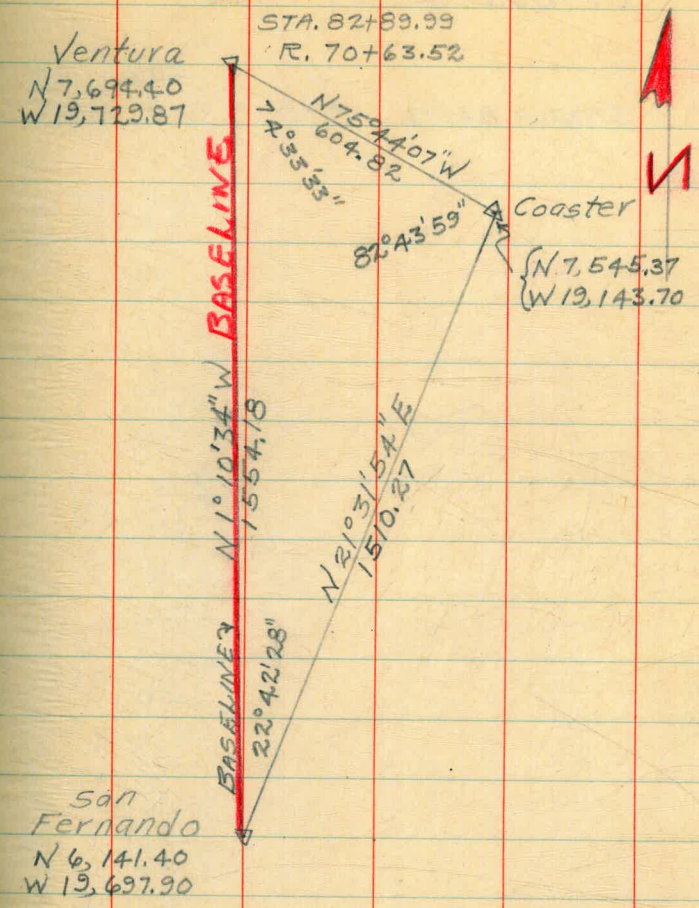
Dist. 10:15 AM.	Sound	Elev.	Dist	Sound	Elev.
70			2+50	8.4	-3.4
(5.0) 80	0.8	+4.2	60	7.0	-2.0
90	1.8	+3.2	70	2.5	+2.5
1+00	2.8	+2.2			
10	3.5	+1.5			
20	5.0	0.0			
30	5.2	-0.2			
40	9.0	-4.0			
50	9.8	-4.8			
60	10.4	-5.4			
70	10.3	-5.3			
80	10.3	-5.3			
90	10.5	-5.5			
2+00	10.2	-5.2			
10	10.8	-5.8			
20	9.5	-4.5			
30	9.8	-4.8			
40	9.0	-4.0			

Sta. 82+50

Dist.	Sound	Elev.	Dist	Sound	Elev.
10:35 AM					
(4.9)					
70			2+50	12.0	-7.1
80	0.7	+4.2	60	12.0	-7.1
90	1.2	+3.7	70	12.1	-7.2
1+00	1.9	+3.0	80	11.0	-6.1
10	3.0	+1.9	90	10.0	-5.1
20	5.0	-0.1	3+00	9.2	-4.3
30	5.0	-0.1	10	8.3	-4.4
40	7.9	-3.0	20	6.0	-1.1
50	9.7	-4.8	30	3.9	+1.0
60	10.0	-5.1	40	2.7	+2.2
70	10.0	-5.1	50	2.0	+2.9
80	10.0	-5.1			
90	9.8	-4.9			
2+00	9.8	-4.9			
10	10.5	-5.6			
20	11.0	-6.1			
30	11.2	-6.3			
40	12.1	-7.2			

BASELINE LAYOUT FOR
TOPOGRAPHY OF BONITA
BAY SHORELINE.

2-8-46



SHORELINE TOPOGRAPHY
OF BONITA BAY AREA

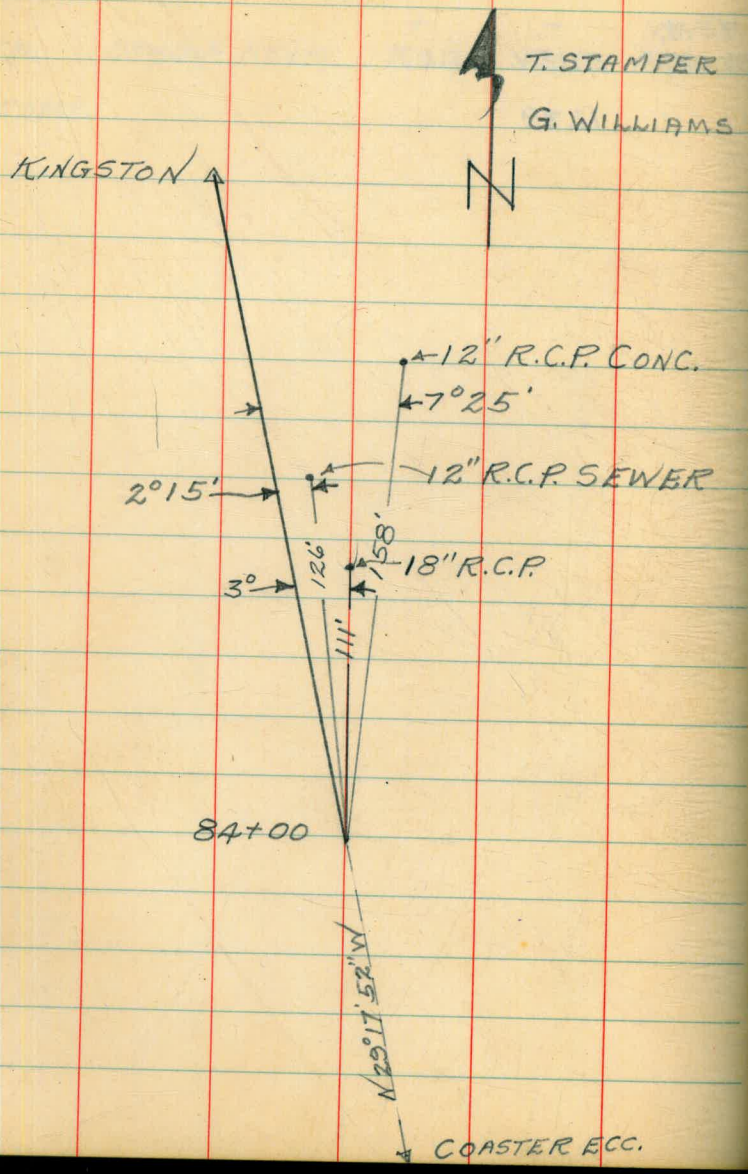
STA.	STADIA	AZIM.	+ ROD	− ROD	VERT. ANGLE	HOR. DIST.	ELEV.
Coaster							11.39

7-16-46

LOCATION OF

STORM DRAIN EXTENSIONS

MISSION BAY NEAR VENTURA



INDEXED
JUL 16 1953

STA	STADIA	AZIM	+ ROD	− ROD	VERT ANGLE	HOR. DIST	ELEV.				

TOPOGRAPHIC FEATURES MISSION BAY AMUSEMENT CENTER AREA

STA.	AZIM	DIST.
↑ VENTURA	78°49'30	332
1	316°10'	149
2	332°10	133
3	350°25	134
4	359°	137
5	181°15'	150
6	175°20'	216
7	176°40'	250
8	175°40'	250
9	161°05'	275
10	152°	248
11	147°35'	219
12	131°35'	219
13	131°45'	237
14	142°35'	293
15	140°55'	263
16	133°55'	277
17	126°40'	298
18	122°55	358
19	116°10'	404
20	112°20'	384

2-8-46

F.S. SAN FERNANDO

Fence Cor

P.P.

N.W. Cor Bricks

S.W. " "

P.P.

F. Hyd.

Island Curb

P.P.

W. R.D. Curb

P.P.

E. Curb

Curb

Curb Return

W. "

N. Island Return

S " "

P.P.

W. Curb

W. "

Island

NOTE: See P9. 20 for B/L. Location Ventura To San Fernando

VERIFIED JUL 16 1953

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STA	AZIM	DIST	ROD	ELEV	
21	111°15	380			Island
22	108°55	367			"
23	110°55	301			Post
24	103°15'	356			E. Curb
25	99°45'	333			"
26	99°40'	302			" Return
27	92°15	311			Fence Cor.
28	97°20'	238			" "
29	83°40'	222			Roof Shed N.E. Cor
30	35°10'	202			M.H.
31	35°30'	183			Top Bank
32	52°	180			" "
33	69°20'	207			" "
34	77°50'	247			" "
B.L.		332'			S. of Ventura
⊼	78°49'30	332'			" " "
35	349°	350	7.7	7.2	N.W. End of Pier
36	349°	364	12.4	2.5	Edge water
37	337°50'	360	12.5	2.4	
38	328°20'	340	12.4	2.5	
39	317°40'	290	12.4	2.5	

STA	AZ.	DIST	ROD	ELEV.
40	308°	224	12.4	2.5
41	299°50'	168	12.4	2.5
42	295°10'	113	12.4	2.5
43	299°05'	80	12.4	2.5
44	324°15'	60	12.4	2.5
45	22°30'	43	12.4	2.5
46	60°10	99	12.4	2.5
47	69°20'	220	12.6	2.3
48	71°40'	325	12.5	2.4
49	78°05'	311		
50	78°55'	400		
51	81°30	350		
52	80°10'	289	5.6	9.3
53	83°20'	155	5.2	9.7
54	94°40'	57	5.3	9.6
55	95°10'	12.5		
56	162°	243		
57	162°25'	204		
58	156°	179		
59	158°15'	143		
60	158°20	118		

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E. water

M.H.

N.E. Ent. Under Pass

Top of Bank

" "

" "

" "

M.H.

Curb Return

P.P.

Curb Return

"

" Old Drive

STA.	AZ	DIST	ROD	
61	158°20'	101		
62	167°25'	99		
63	192°45	78		
64	230°10'	37		
65	239°50	35		
66	266°30'	33		
67	256°50'	28		
68	283°30'	30		
69	326°25'	72		
70	327°30'	88		
71	334°40'	125		
72	342°	121		
73	337°15	83		
74	336°45	78		
75	3°05'	77		
76	1°30'	91		
77	339°05	92	Stopped Here	
78	91°20'	412		
79	93°50'	418		
80	96°35'	422		
81	100°40'	436		

2-8-46

Curb E.E. Old Drive
P.P.
F. Cor.
" " & Ticket Booth
S.E Cor " "
M.H.
℄ Pier 4' wide
" " & Beg. of H. Rail
End of Pier & Start of Ramp → Platform 9'x12'
N.W. Cor Float Main
N.E " " "
S.E " " "
S.W. " " "
N.W. " " Aux.
S.W. " " "
S.E " " "
N.E " " "
Under Pass at abandoned Road E.E. of Rd.
" " " "
Curb

STA.	AZ	DIST		
82	102°30'	410		
83	105°40	420		
84	107°30	426		
85	110°25'	443		
86	111°45	435		
87	118°10	471		
88	121°50'	506		
89	136°45'	411		
90	155°30	360		
91	166°40'	352		
92	177°15'	351		
93	191°	354		
⋀ VENTURA 94	342°38'	277		
STA	+	H.I.	—	ELEV.
B.M.				11.39
	4.39	15.78		
T.B.M.			8.53	7.25

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N.E Cor Stg
N.W. " "
Island
Corb
N.E. Cor Depot
N.W. " "
E. Corb of S. walk
" " " "
" " " " & Line of Posts
" " " " at S. Ent Amusement Park
" " " " N. " " "
" " " "
New M.H. Near Power Transformer

Coaster

Top of Pier NOTE: See Shot #35 Pg. 25
7.2 + 7.7 = 14.9 = H.I
To be used for Rod Reductions

PROGRESS X-SECTIONS
MISSION BAY AREA
NEAR VENTURA PLACE

STA	+	H.I.	-	ELEV.	
T.B.M.	5.73	14.51		8.78	
83+50				4.3	10.2
84				5.4	9.1
+50				5.5	9.0
85				5.7	8.8
+50				6.2	8.3
86				7.6	6.9
+50				5.2	9.3
87				6.6	7.9
+50				3.3	11.2
				8.6	5.9
	+4.5	14.70			10.2
17' W				5.4	9.3
148 W				6.0	8.7
206 W				7.3	7.4
212 W				4.9	9.8
231 W				7.8	6.9

952'
472
1424

Feb. 26 1946 ~~Estimate~~

Newport Dredging Co.

Tom Allen
Tom Stamper
H.M. Crafton
Feb 26th '46

(See Pg. 10)

Shots on line parallel to Base Line 952'E of Kindston Ecc and Coaster Ecc.

INDEXED
JUL 16 1953

Inst. at Sta. 83+50 – 952' E.

		14.70			
276 W				5.8	8.9
8 E				2.1	12.6
22 E				8.5	6.2
90 E				10.0	4.7
	4.90	14.0			9.1
90' E				4.2	9.8
100' E				2.6	11.4
114' E				8.0	6.0
93 W				5.4	8.6
222 W				6.0	8.0
224 W				4.2	9.8
278 W.				4.8	9.2
	4.90	13.9			9.0
278 W				5.7	8.2
206' W				4.7	9.2
185' W				4.6	9.3
184 W				6.0	7.9
62 W				5.4	8.5
118' E				3.7	10.2
188' E				3.3	10.6

Inst at Sta. 84+00 - 952 E.

Inst at Sta 84+50 - 952' E

		13.90			
200' E				1.1	12.8
221 E				7.8	6.1
	4.8	13.6			8.8
90 W.				5.8	7.8
164 W.				5.8	7.8
181 W				3.5	10.1
188' W.				6.1	7.5
216' W.				6.1	7.5
154' E				2.6	11.0
250' E				2.7	10.9
254' E				0.5	13.1
265' E				2.6	11.0
272' E				7.7	5.9
	4.8	13.1			8.3
323' E.				7.0	6.1
317' E				2.3	10.8
294' E				0.3	12.8
288' E				2.2	10.9
200' E				2.0	11.1
93' E.				3.6	9.5

Inst at Sta. 85 – 952' E'ly.

Inst at Sta. 85+50 – 952' E'ly

		13.1				
94' W.				5.8	7.3	
133' W.				3.1	10.0	
142' W				6.5	6.6	
278 W.				6.6	6.5	
	5°	11.9			6.9	Inst. at Sta. 86 - 952' E'ly.
278 W.				6.4	5.5	
98 W				5.7	6.2	
90 W				1.4	10.5	
72' W				4.3	7.6	
54' E				3.7	8.2	
168' E				2.3	9.6	
266' E				1.2	10.7	
304 E				+1°	12.9	
361' E				0°	11.9	
374 E				6.5	5.4	
	4.3	13.6			9.3	on level. Inst. at Sta. 86+50 - 952' E'ly
403 E				7.9	5.7	
397 E				3.2	10.4	
390 E				6.1	7.5	
331 E				5.1	8.5	
322 E				2.9	10.7	

		13.6			
271 E				3.3	10.3
172 E				5.0	8.6
68' E				5.9	7.7
0.0				5.2	8.4
40' W.				5.8	7.8
86' W				2.0	11.6
66' W				8.0	5.6
118' W				8.4	5.2
	5.0	12.9			7.9
122' W				7.7	5.2
36' W.				6.9	6.0
27' W.				1.5	11.4
20' W.				4.8	8.1
124' E				5.1	7.8
273' E				3.8	9.1
296' E.				3.8	9.1
303' E.				5.1	7.8
428' E.				4.7	8.2
436' E.				2.4	10.5
443' E.				7.0	5.9
502' E.				7.8	5.1

Average ground shot.
2 3

Inst. at Sta. 87 - 952' ~~East~~.

	14.1	15.3		11.2	Inst at Sta. 87+50 - 952' E.
607 E			11.5	3.8	
481 E			9.8	5.5	
470' E			8.5	9.8	
468' E			7.1	8.2	
350' E			7.2	8.1	
314' E			7.4	7.9	
308' E			8.5	9.8	
304' E			7.0	8.3	
300' E			7.7	7.6	
100' E			7.3	8.0	
10' E			7.0	8.3	
8' W			9.1	6.2	
180 W			10.1	5.2	
	1.80	13.8		12.0	Inst at Sta. 88 - 1424' E l.
472. W			7.9	5.9	
442			7.1	6.7	
435			3.2	10.6	
430			5.6	8.2	
343			5.8	8.0	
215			6.4	7.4	

		13.8				
140 W				5.9	7.9	
57' W				4.7	9.1	
0.0				4.8	9.0	
79' E				5.1	8.7	
31' E				4.0	9.8	
37' E				8.2	5.6	
140' E				9.9	3.9	
			4.4		9.4	Sta 89 - 1424 E.
			5.7		8.1	89 + 50 "
			6.6		7.2	90 "
	4.6	14.0			9.4	Inst. at Sta. 89 - 1424' E.
194 E				9.8	4.2	
91 E				7.7	6.3	
83 E				4.3	9.7	
33 E				4.1	9.9	
130 W				6.5	7.5	
273 W				6.5	7.5	
306 W				6.0	8.0	
380 W				6.1	7.9	
388 W				3.4	10.6	
394'				8.1	5.9	

		H.I			
	4.4	11.6			7.2
87 E				3.2	8.4
129 E				3.4	8.2
132 E				1.2	10.4
141 E				5.9	5.7
238' E				8.4	3.2
90 W.				5.1	6.5
218 W				4.7	6.9
284' W				4.4	7.2
350' W				4.6	7.0
356' W				2.3	9.3
362' W				5.4	6.2
400' W.				6±	5.6
			5.7		5.9

Inst at Sta. 90 + 1424 'E.

Sta. 92+00 - 1424'E.

+	H.I.	−	Cooster
3.08	14.47		11.39
Dist.	Asth.	Rod.	Elev.
96	139°25'	9.5	5±
44	100°50'	〃	5±
60	10°15'	〃	5±
68	337°00'	〃	5±
108	316°10'	8.41	6.06
142	312-45	8.5	5.97
170	333-30	9.5	5±
214	340.00	9.4	5.07
255	345-30	9.5	5.0
300	350-25	〃	5±
506	0.-30	6±	8.47
447	359-35	6±	8.47
384	357-20	6.1	8.37
330	353°-0'	6±	8.47
279'	345°-0'	6.1	8.37
242'	332°-15'	6.1	8.37
231'	319°-10'	6±	8.47
234	312-30	6±	8.47

Location of 5' Contour and Topographic features near Ventura Place

37

Inst. at Sta. 84+00. Set on Kingston assumed 0° Azimuth.

Tom Allen
Tom Stamper
H.M. Cooster
Feb. 26 to '46

INDEXED
JUL 16 1953

End 18" Conc. Pipe (Top)
" 12" Saw (Top)

End 12" Storm Drain (Top)

E Edge of conc walk opposite Sta. 88+50
" " " " " on curve SW'ly
" " " " " "
" " " " " "
" " " " " "
" " " " " "
" " " " " "
" " " " " "

Dist	Az.	Rod	H.I. 12.47	
140'	305-40	6±		8.47
80	305°-0'	6±		8.47
73	3°-40'	6±		8.47
20	102°-55	6±		8.47
176	269-15	4.7		9.77

Top of cover. M.H. of storm drain (Ventura Pl.)

X-SECTIONS CONTD.

STA	+	H.I.	−	ELEV.
T.B.M.				8.78
	2.28	11.06		
0			5.0	6.1
76 E			5.1	6.0
138 E			5.4	5.7
313 E			6.6	4.5
360 E			7.3	3.8
403 E			10.0	1.1
130 W			4.1	7.0
241 W			4.9	6.2
0		12.3	5.1	7.2
197 W			5.0	7.3
33 E			5.4	6.9
60 E			4.2	8.1
195 E			3.7	8.6
212 E			2.3	10.0
234 E			6.6	5.7

2-27-46

H.M. Crooker
Tom Stamper

(See Pg. 10)

Inst. At Sta 82+50 677' E. of B/L.
(see Pg. 9)

⊼ At Sta. 83+00-677' E

STA	+	H.I	-	ELEV.
	0.3	12.3		12.0
390 E			9.0	3.3

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40

T At Sta. 83+00 - 677' E. of B/L.

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ORIGINAL X-SECTIONS

MISSION BAY PROJECT NO. 4-A

0+00 = RANGE 88+67 58

STA. 79+00 Sound West

DIST	SOUND	ELEV.	DIST	SOUND	ELEV.
0+00	41	+1.1	60	52	0.0
10	53	-0.1	70	5.2	0.0
20	8.0	-2.8	80	5.2	0.0
30	7.8	-2.6	90	5.1	+0.1
40	6.0	-0.8	200	5.3	-0.1
50	6.3	-1.1	10	5.3	-0.1
8 26 60	7.2	-2.0	20	6.0	-0.8
(5.2) 70	7.4	-2.2	8 29 30	6.5	-1.3
80	5.5	-0.3	(5.2) 40	7.2	-2.0
90	5.1	+0.1	50	8.5	-3.3
1+00	4.6	+0.6	60	8.5	-3.3
10	4.1	+1.1	70	8.0	-1.8
20	4.0	+1.2	80	8.5	-3.3
30	4.3	+0.9	90	9.0	-3.8
40	4.5	+0.7	300	9.1	-3.9
50	4.8	+0.4	10	8.6	-3.4

79+00

DIST	Sound	ELEV	DIST	Sound	ELEV.
20	8.4	-3.2	10	12.0	-6.7
30	9.3	-4.1		12.2	-6.9
40	8.4	-3.2		12.0	-6.7
50	9.5	-4.3		11.4	-6.1
60	9.8	-4.6	50	9.6	-4.3
70	10.4	-5.2		8.7	-3.4
80	10.4	-5.2		7.4	-2.1
90	10.1	-4.9	(5.3)	5.5	-0.2
4+00	10.0	-4.8	8 34	5.2	+0.1
8 31 10	10.0	-4.8	600	4.6	+0.7
(5.2) 20	10.0	-4.8		4.5	+0.8
30	10.0	-4.8		4.8	+0.5
40	10.0	-4.8		4.4	+0.9
50	10.0	-4.8		3.9	+1.4
60	10.4	-5.2	50	3.7	+1.6
70	11.0	-5.8		3.4	+1.9
80	11.1	-5.9		3.2	+2.1
90	11.4	-6.2		3.1	+2.2
5000	11.8	-6.6		3.2	+2.1
			700	3.0	+2.3

79+00

Dist	Sound	Elev.
10	2.7	+2.6
20	23	+3.0
30	21	+3.2
40	22	+3.1
7+50	23	+3.0
	24	+2.9
	28	+2.5
(5.3)	25	+2.8
8[36]	22	+3.1
800	20	+3.3
	20	+3.3
	28	+2.5
	37	+1.6
	4.5	+0.8
50	49	+0.4
	53	0.0
	65	-1.2
	11.4	-6.1
	134	-8.1
900	150	-9.7

Dist	Sound	Elev
10	15.2	-9.9
	173	-12.0
	17.7	-12.4
	17.5	-12.2
50	166	-11.3
	14.0	-8.7
	110	-5.7
8[38]	10.5	-5.2
(5.3)	9.7	-4.4
1000	85	-3.2
	8.0	-2.7
	7.0	-1.7
	85	-3.2
	93	-4.0
50	93	-4.0
	94	-4.1
	70	-1.7
	54	-0.1
	52	+0.1
1100	48	+0.5

79+00

Dist	Sound	Elev
10	4.5	+0.8
20	42	+1.1
30	41	+1.2
8[40] 40	35	+1.8
(5.3) 50	30	+2.3
60	21	+3.2
70	1.5	+3.8
80	0.3	+5.0

0+00 = 88+67 58

5 to 79+00 Sound East

Dist	Sound	Elev.	Dist	Sound	Elev.
10	35	+1.9	10	30	+2.4
	35	+1.9		30	+2.4
	32	+2.2		30	+2.4
	32	+2.2		30	+2.4
50	32	+2.2	50	30	+2.4
	32	+2.2		30	+2.4
	32	+2.2		30	+2.4
8 46	33	+2.1	(5.4)	30	+2.4
(5.4)	33	+2.1	8 47	31	+2.3
100	33	+2.1	300	31	+2.3
	32	+2.2		31	+2.3
	32	+2.2		32	+2.2
	32	+2.2		33	+2.1
	32	+2.2		34	+2.0
50	31	+2.3	50	34	+2.0
	31	+2.3		34	+2.0
	31	+2.3		34	+2.0
	30	+2.4		35	+1.9
	30	+2.4		35	+1.9
200	30	+2.4	400	36	+1.8

79+00

Dist	Sound	Elev.	Dist	Sound	Elev.
10	36	+1.8	10	33	+2.1
	36	+1.8		32	+2.2
	36	+1.8		32	+2.2
	36	+1.8		30	+2.4
50	36	+1.8	50	28	+2.6
	37	+1.7		28	+2.6
	37	+1.7		28	+2.6
(5.4)	37	+1.7	(5.4)	28	+2.6
8 49	36	+1.8	8 50	27	+2.7
500	35	+1.9	700	25	+2.9
	35	+1.9		25	+2.9
	35	+1.9		24	+3.0
	35	+1.9		24	+3.0
	34	+2.0		24	+3.0
50	33	+2.1	50	24	+3.0
	33	+2.1		23	+3.1
	33	+2.1		22	+3.2
	33	+2.1		21	+3.3
	33	+2.1		21	+3.3
600	33	+2.1	800	21	+3.3

79+00

Dist	Sound	Elev.	D
10	21	+3.3	
	21	+3.3	
	21	+3.3	
	21	+3.3	
50	21	+3.3	
	21	+3.3	
	22	+3.2	
(54)	22	+3.2	
8 52	23	+3.1	
900	23	+3.1	
	24	+3.0	
	24	+3.0	
	25	+2.9	
	25	+2.9	
50	30	+2.4	
	30	+24	
	30	+2.4	
	30	+2.4	
	31	+2.3	
1000	31	+2.3	

0+00 = 88+67 58

Sta 78+00 Sound West

Dist	Sound	Elev.	Dist	Sound	Elev.
0+00	5.4	+0.1	10	40	+1.5
	52	+0.3		40	+1.5
	51	+0.4		40	+1.5
	52	+0.3		3.8	+1.7
	52	+0.3	50	3.7	+1.8
50	50	+0.5		3.5	+2.0
	50	+0.5		3.5	+2.0
	50	+0.5	(5.5)	35	+2.0
9 00	50	+0.5	9 02	35	+2.0
(5.5)	50	+0.5	300	35	+2.0
100	50	+0.5		33	+2.2
	4.8	+0.7		33	+2.2
	4.7	+0.8		32	+2.3
	4.7	+0.8		31	+2.4
	46	+0.9	50	30	+2.5
50	45	+1.0		30	+2.5
10	45	+1.0			
20	44	+1.1		30	+2.5
	44	+1.1		30	+2.5
	41	+1.4		30	+2.5
200	41	+1.4	400	30	+2.5

78+00

DIST	SOUND	ELEV.	DIST	SOUND	ELEV.
10	2.7	+2.8		11.1	-5.6
	25	+3.0		120	-6.5
	25	+3.0		130	-7.5
	24	+3.1		140	-8.5
50	24	+3.1	50	145	-9.0
	24	+3.1		148	-9.3
	25	+3.0		153	-9.8
9.04	29	+2.6	9.06	151	-9.6
(5.5)	40	+1.5	(5.5)	14.7	-9.2
500	51	+0.4	700	145	-9.0
	65	-1.0		135	-8.0
	7.0	-1.5		110	-5.5
	76	-2.1		90	-3.5
	80	-2.5		56	-0.1
50	81	-2.6	50	55	0.0
	90	-3.5		55	0.0
	93	-3.7		50	+0.5
	100	-4.5		50	+0.5
	10.3	-4.8		48	+0.7
600	107	-5.2	800	48	+0.7

78+00

DIST	SOUND	ELEV.	DIST	SOUND	ELEV
	50	+0.5		73	-1.8
	51	+0.4		71	-1.6
	53	+0.2		75	-2.0
	55	0.0		74	-1.9
50	70	-1.5	50	68	-1.3
	65	-1.0		100	-4.5
	75	-2.0		125	-7.0
(5.5)	84	-2.9	(5.5)	13.2	-7.7
9.08	101	-4.6	9.10	134	-7.9
900	128	-7.3	1100	134	-7.9
	140	-8.5		131	-7.6
	151	-9.6		110	-5.5
	158	-10.3		90	-3.5
	150	-9.5		69	-1.4
50	140	-8.5	50	45	+1.0
	140	-8.5		47	+0.8
				41	+1.1
	123	-6.8		35	+2.0
				30	+2.5
	107	-5.2	1200	25	+3.0
			10	20	+3.0
	88	-3.3	20	17	+3.8
			30	14	+4.1
1000	72	-1.7	40	10	+4.5
			50	06	+4.9

0+00 = R88+67.58

Sta 78+00 Sound East

Dist	Sound	Elev.	Dist	Sound	Elev.
10	55	+0.1		5.5	+0.1
	60	-0.4		56	0.0
	10.2	-4.6		6.0	-0.4
	10.0	-4.4		64	-0.8
50	6.8	-1.2	50	64	-0.8
	55	+0.1		6.4	-0.8
	50	+0.6	(5.6)	6.4	-0.8
9.18	50	+0.6	9.20	65	-0.9
(5.6)	51	+0.5		65	-0.9
100	52	+0.4	300	65	-0.9
	52	+0.4		65	-0.9
	5.2	+0.4		67	-1.1
	5.2	+0.4		68	-1.2
	52	+0.4		70	-1.4
50	5.2	+0.4	50	70	-1.4
	51	+0.5		70	-1.4
	52	+0.4		70	-1.4
	53	+0.3		70	-1.4
	55	+0.1		75	-1.9
200	55	+0.1	400	80	-2.4

78+00

Dist	Sound	Elev.	Dist	Sound	Elev.
	80	-2.4		80	-2.4
	80	-2.4		78	-2.2
	83	-2.7		74	-1.8
	85	-2.9		72	-1.6
50	84	-2.8	50	70	-1.4
	80	-2.4		71	-1.5
	80	-2.4		70	-1.4
(5.6)	80	-2.4	(5.6)	70	-1.4
9.21	80	-2.4	9.23	72	-1.6
500	80	-2.4	700	72	-1.6
	80	-2.4		72	-1.6
	80	-2.4		73	-1.7
	78	-2.2		72	-1.6
	78	-2.2		72	-1.6
50	78	-2.2	50	75	-1.9
	78	-2.2		75	-1.9
	79	-2.3		73	-1.7
	79	-2.3		70	-1.4
	79	-2.3		67	-1.1
600	80	-2.4	800	65	-0.9

0+00 = R 88+67.58

Sta 77+00 Sound West

Dist	Sound	Elev.	Dist	Sound	Elev
0+00	71	-1.5		64	-0.8
10	71	-1.5			
20	72	-1.6		62	-0.6
	70	-1.4		60	-0.4
	67	-1.1		56	0.0
50	67	-1.1	50	54	+0.2
	67	-1.1		52	+0.4
	70	-1.4		51	+0.5
(5.6)	70	-1.4	(5.6)	50	+0.6
9 33	68	-1.2	9 35	48	+0.8
100	66	-1.0	300	45	+1.1
	65	-0.9		45	+1.1
	64	-0.8		40	+1.6
	64	-0.8		35	+2.1
	62	-0.6		35	+2.1
50	60	-0.4	50	31	+2.5
	61	-0.5		28	+2.2
	62	-0.6		25	+3.1
	63	-0.7		24	+3.2
	63	-0.7		24	+3.2
200	63	-0.7	400	24	+3.2

Sta 78+00

Dist	Sound	Elev.	Dist	Sound	Elev.
10	64	-0.8		37	+1.9
	61	-0.5		37	+1.9
	60	-0.4		37	+1.9
	58	-0.2		38	+1.8
50	55	+0.1	50	40	+1.6
	53	+0.3	9 25	38	+1.8
	50	+0.6		37	+1.9
(5.6)	48	+0.8	(5.6)	35	+2.1
9 27	46	+1.0		35	+2.1
900	45	+1.1	1100	35	+2.1
	44	+1.2			
	43	+1.3			
	41	+1.5			
	41	+1.5			
50	40	+1.6			
	40	+1.6			
	40	+1.6			
	40	+1.6			
	40	+1.6			
1000	38	+1.8			

77+00

Dist	Sound	Elev.	Dist	Sound	Elev.
	24	+3.2		3.2	+2.9
	24	+3.2		32	+2.9
	23	+3.3		31	+2.5
	23	+3.3		31	+2.5
50	23	+3.3	50	31	+2.5
	23	+3.3		35	+2.1
	23	+3.3		45	+1.1
(5.6)	24	+3.2	(5.6)	67	-1.1
9 37	24	+3.2	9 39	81	-2.5
500	25	+3.1	700	94	-3.8
	25	+3.1		100	-4.4
	27	+2.9		115	-5.9
	29	+2.7		14.7	-9.1
	30	+2.6		15.5	-9.9
50	30	+2.6	50	170	-11.4
	30	+2.6		167	-11.1
	32	+2.4		162	-10.6
	33	+2.3		156	-10.0
	33	+2.3		149	-9.3
600	32	+2.4	800	140	-8.4

77+00

Dist	Sound	Elev.	Dist	Sound	Elev.
	13.4	-7.8		6.0	-0.4
	143	-8.7		50	+0.6
	138	-8.2		4.5	+1.1
	128	-7.2		4.4	+1.2
50	104	-4.8	50	4.3	+1.3
	80	-2.4		4.7	+0.9
	100	-4.4		52	+0.4
(5.6)	12.7	-7.1	(5.6)	51	+0.5
9 41	153	-9.7	9 43	54	+0.2
900	160	-10.4	1100	90	-3.4
	160	-10.4		118	-6.2
	160	-10.4		130	-7.4
	163	-10.7		130	-7.4
	13.6	-8.0		131	-7.5
50	130	-7.4	50	140	-8.4
	120	-6.4		145	-8.9
	17.3	-5.7		14.5	-8.9
	105	-4.9		13.7	-8.1
	94	-3.8		126	-7.0
1000	68	-1.2	1200	120	-6.4

77+00

DIST	Sound	ELEV.	DIST	Sound	ELEV.
	108	-5.2		105	-4.9
	100	-4.4		110	-5.4
	8.7	-3.1		114	-5.8
	68	-1.2		118	-6.2
50	6.1	-0.5	50	120	-6.4
	64	-0.8		120	-6.4
	65	-0.9		11.7	-6.1
(5.6)	61	-0.5	(5.6)	117	-6.1
9 45	55	+0.1	9 46	118	-6.2
1300	47	+0.9	1500	118	-6.2
	45	+1.1		117	-6.1
	45	+1.1		115	-5.9
	44	+1.2		11.1	-5.5
	44	+1.2		110	-5.4
50	44	+1.2	50	10.7	-5.1
	44	+1.2		102	-4.6
	47	+0.9		102	-4.6
	60	-0.4		105	-4.9
	63	-0.7		110	-5.4
1400	100	-3.4	1600	111	-5.5

77+00

DIST	Sound	ELEV.
	111	-5.5
	110	-5.4
	112	-5.6
	114	-5.8
50	116	-6.0
	120	-6.4
	120	-6.4
(5.6)	120	-6.4
9 48	123	-6.7
1700	120	-6.4
	115	-5.9
	110	-5.4
	108	-5.2
	108	-5.2
50	9.7	-4.1
	60	-0.4
	60	-0.4
	24	+3.2
	1.4	+4.2
1800	00	+5.6

0400 = R 88+67.58

Sta 77+00 Sound East

Dist	Sound	Elev.	Dist	Sound	Elev.
10	7.0	-1.5		7.1	-1.6
	70	-1.5		70	-1.5
	7.0	-1.5		68	-1.3
	7.0	-1.5		65	-1.0
50	71	-1.6	50	65	-1.0
	71	-1.6		67	-1.2
	7.1	-1.6		70	-1.5
(5.5)	71	-1.6	(5.5)	70	-1.5
9.59	73	-1.8	10.00	70	-1.5
100	74	-1.9	300	75	-2.0
	74	-1.9		73	-1.8
	74	-1.9		73	-1.8
	74	-1.9		74	-1.9
	74	-1.9		72	-1.7
50	71	-1.6	50	71	-1.6
	71	-1.6		71	-1.6
	70	-1.5		75	-2.0
	70	-1.5		75	-2.0
	7.1	-1.6		75	-2.0
200	7.1	-1.6	400	78	-2.3

77+00

Dist	Sound	Elev.	Dist	Sound	Elev.
	80	-2.5		85	-3.0
	80	-2.5		84	-2.9
	80	-2.5		82	-2.7
	80	-2.5		86	-3.1
50	80	-2.5	50	87	-3.2
	78	-2.3		85	-3.0
	80	-2.5		85	-3.0
(5.5)	80	-2.5	(5.5)	85	-3.0
10.02	80	-2.5	10.04	85	-3.0
500	84	-2.9	700	84	-2.9
	84	-2.9		85	-3.0
	84	-2.9		88	-3.3
	83	-2.8		88	-3.3
	83	-2.8		85	-3.0
50	83	-2.8	50	81	-2.6
	84	-2.9		85	-3.0
	85	-3.0		90	-3.5
	86	-3.1		90	-3.5
	86	-3.1		91	-3.6
600	87	-3.2	800	91	-3.6

0+00 = R88+67.58

Sta 75+00 Sound West

Dist	Sound	Elev.	Dist	Sound	Elev.
0+00	4.0	+1.4		2.5	+2.9
10	40	+1.4			
20	40	+1.4		2.5	+2.9
	40	+1.4		2.5	+2.9
	40	+1.4		2.6	+2.8
50	40	+1.4	50	3.0	+2.4
	40	+1.4		30	+2.4
	38	+1.6		2.5	+2.9
(5.4)	38	+1.6	(5.4)	2.1	+3.3
10+20	38	+1.6	10+21	21	+3.3
100	38	+1.6	300	21	+3.3
	37	+1.7		21	+3.3
	37	+1.7		21	+3.3
	36	+1.8		20	+3.4
	35	+1.9		21	+3.3
50	32	+2.2	50	20	+3.4
	30	+2.4		20	+3.4
	30	+2.4		20	+3.4
	28	+2.6		20	+3.4
	25	+2.9		20	+3.4
200	25	+2.9	400	19	+3.5

77+00

Dist	Sound	Elev.	Dist	Sound	Elev.
	92	-3.8		10.1	-4.7
	95	-4.1		98	-4.4
	96	-4.2		97	-4.3
	100	-4.6		94	-4.0
50	97	-4.3	50	93	-3.9
	96	-4.2		90	-3.6
	96	-4.2		83	-2.9
(5.4)	98	-4.4	(5.4)	73	-1.9
10+07	10.0	-4.6	10+09	67	-1.3
900	10.0	-4.6	1100	60	-0.6
	102	-4.8		57	-0.3
	104	-5.0		55	-0.1
	105	-5.1		5.7	-0.3
	10.6	-5.2		5.7	-0.3
50	110	-5.6	50	54	0.0
	106	-5.2		50	+0.4
	111	-5.7		48	+0.6
	110	-5.6		46	+0.8
	110	-5.6		45	+0.9
1000	100	-4.6	1200	45	+0.9

75+00

DIST	SOUND	ELEV.	DIST	SOUND	ELEV.
	20	+3.3		30	+2.3
	20	+3.3		30	+2.3
	19	+3.4		31	+2.2
	19	+3.4		32	+2.1
50	19	+3.4	50	33	+2.0
	20	+3.3		31	+2.2
	20	+3.3		32	+2.1
(5.B)	20	+3.3	(5.2)	34	+1.9
1023	21	+3.2	1025	36	+1.7
500	22	+3.1	700	40	+1.3
	25	+2.8		40	+1.3
	25	+2.8		40	+1.3
	26	+2.7		45	+0.8
	28	+2.5		45	+0.8
50	28	+2.5	50	45	+0.8
	29	+2.4		43	+1.0
	29	+2.4		40	+1.3
	30	+2.3		40	+1.3
	30	+2.3		40	+1.3
600	30	+2.3	800	41	+1.2

75+00

DIST	SOUND	ELEV.	DIST	SOUND	ELEV.
	40	+1.3		137	-8.4
	40	+1.3		120	-6.7
	61	-0.8		10.1	-4.8
	70	-1.7		9.0	-3.7
50	6.8	-1.5	50	6.5	-1.2
	6.7	-1.4		5.0	+0.3
	7.3	-2.0		4.8	+0.5
(5.2)	8.0	-2.7	(5.3)	4.5	+0.8
1027	9.0	-3.7	1029	4.6	+0.7
900	10.4	-5.1	1100	6.1	-0.8
	12.0	-6.7		6.5	-1.2
	13.8	-8.5		6.4	-1.1
	15.3	-10.0		6.4	-1.1
	16.1	-10.8		7.0	-1.7
50	16.5	-11.2	50	7.4	-2.1
	16.5	-11.2		8.1	-2.8
	16.5	-11.2		9.2	-3.9
	16.1	-10.8		10.1	-4.8
	15.4	-10.1		11.0	-5.7
1000	14.5	-9.2	1200	13.3	-8.0

75+00

DIST	Sound	ELEV.	DIST	Sound	ELEV.
	13.3	-8.1		15.5	-10.3
	13.3	-8.1		15.4	-10.2
	13.9	-8.7		15.1	-9.9
	14.8	-9.6		15.0	-9.8
50	15.3	-10.1	50	14.5	-9.3
	15.3	-10.1		13.6	-8.4
	15.3	-10.1		12.5	-7.3
(5.2)	15.1	-9.9	(5.2)	11.2	-6.0
10 31	15.0	-9.8	10 33	8.0	-2.8
1300	15.0	-9.8	1500	4.8	+0.4
	15.5	-10.3		3.5	+1.7
	15.6	-10.4		3.0	+2.2
	15.7	-10.5		2.4	+2.8
	15.8	-10.6		1.9	+3.3
50	15.6	-10.4	50	1.5	+3.7
	15.5	-10.3		1.0	+4.2
	15.3	-10.1			
	15.3	-10.1			
	15.5	-10.3			
1400	15.5	-10.3	1600		

0+00 = R 88+67.58

75+00 Sound East

DIST	Sound	ELEV.	DIST	Sound	ELEV.
	3.6	+1.6		3.5	+1.7
	3.7	+1.5		3.5	+1.7
	3.7	+1.5		3.5	+1.7
	3.5	+1.7		3.5	+1.7
50	3.7	+1.5	50	3.4	+1.8
	3.9	+1.3		3.4	+1.8
	3.8	+1.4		3.4	+1.8
(5.2)	3.7	+1.5	(5.2)	3.3	+1.9
10 40	3.6	+1.6	10 42	3.2	+2.0
100	4.1	+1.1	300	3.2	+2.0
	3.7	+1.5		3.2	+2.0
	3.7	+1.5		3.2	+2.0
	3.7	+1.5		3.1	+2.1
	3.7	+1.5		3.1	+2.1
50	3.7	+1.5	50	3.1	+2.1
	3.7	+1.5		3.1	+2.1
	3.6	+1.6		3.1	+2.1
	3.6	+1.6		3.1	+2.1
	3.5	+1.7		3.1	+2.1
200	3.5	+1.7	400	3.1	+2.1

75+00

DIST	SOUND	ELEV.	DIST	SOUND	ELEV.
	31	+2.0		45	+0.6
	31	+2.0		45	+0.6
	31	+2.0		50	+0.1
	31	+2.0		50	+0.1
50	31	+2.0	50	50	+0.1
	31	+2.0		54	-0.3
	31	+2.0		54	-0.3
(5.1)	33	+1.8	(5.1)	54	-0.3
10 44	34	+1.7	10 45	51	0.0
500	35	+1.6	700	48	+0.3
	38	+1.3		46	+0.5
	40	+1.1		44	+0.7
	41	+1.0		44	+0.7
	42	+0.9		41	+1.0
50	41	+1.0	50	43	+0.8
	41	+1.0		43	+0.8
	42	+0.9		45	+0.6
	42	+0.9		45	+0.6
	43	+0.8		45	+0.6
600	44	+0.7	800	44	+0.7

75+00

DIST	SOUND	ELEV.	DIST	SOUND	ELEV.
	44	+0.7		50	+0.1
	42	+0.9		51	0.0
	42	+0.9		51	0.0
	44	+0.7		51	0.0
50	46	+0.5	50	51	0.0
	45	+0.6		50	+0.1
	45	+0.6		51	0.0
(5.1)	45	+0.6	(5.1)	52	-0.1
10 47	45	+0.6	10 48	52	-0.1
700	45	+0.6	1100	52	-0.1
	45	+0.6		52	-0.1
	45	+0.6		50	+0.1
	44	+0.7		50	+0.1
	44	+0.7		50	+0.1
50	46	+0.5	50	50	+0.1
	48	+0.3		50	+0.1
	50	+0.1		50	+0.1
	50	+0.1		50	+0.1
	50	+0.1		50	+0.1
1500	50	+0.1	1700	50	+0.1

0+00 = R88+67.58

Sta 74+00 Sound West

Dist	Sound	Elev.	Dist	Sound	Elev.
0+00	15	+3.5		19	+3.1
10	16				
20	17	+3.4		20	+3.0
30	18	+3.3		23	+2.7
40	18	+3.2		21	+2.9
50	18	+3.2	50	22	+2.8
	20	+3.0		23	+2.7
	18	+3.2		22	+2.8
(5.0)	20	+3.0	(5.0)	24	+2.6
10 57	21	+2.9	10 59	24	+2.6
100	21	+2.9	300	24	+2.6
	17	+3.3		21	+2.9
	15	+3.5		20	+3.0
	15	+3.5		18	+3.2
	15	+3.5		17	+3.3
50	14	+3.6	50	16	+3.4
	14	+3.6		17	+3.3
	20	+3.0		18	+3.2
	18	+3.2		18	+3.2
	18	+3.2		17	+3.3
200	18	+3.2	400	16	3.4

74+00

Dist	Sound	Elev.	Dist	Sound	Elev.
	16	+3.4		28	+2.2
	16	+3.4		29	+2.1
	16	+3.4		29	+2.1
	16	+3.4		29	+2.1
50	16	+3.4	50	29	+2.1
	16	+3.4		30	+2.0
	18	+3.2		31	+1.9
(5.0)	18	+3.2	(5.0)	32	+1.8
11 01	18	+3.2	11 03	32	+1.8
500	19	+3.1	700	32	+1.8
	18	+3.2		35	+1.5
	19	+3.1		38	+1.2
	20	+3.0		38	+1.2
	20	+3.0		38	+1.2
50	22	+2.8	50	39	+1.1
	24	+2.6		40	+1.0
	25	+2.5		40	+1.0
	25	+2.5		40	+1.0
	26	+2.4		44	+1.0
600	27	+2.3	800	44	+1.0

74+00

Dist	Sound	Elev.	Dist	Sound	Elev.
	48	+0.1		11.5	-6.6
	45	+0.4		11.5	-6.6
	40	+0.9		11.5	-6.6
	64	-1.5		11.5	-6.6
50	65	-1.6	50	11.0	-6.1
	65	-1.6		10.1	-6.2
	65	-1.6		88	-3.9
(4.9)	65	-1.6	(4.9)	60	-1.1
11[05]	75	-2.6	11[07]	64	-1.5
900	75	-2.6	1100	65	-1.6
	83	-3.4		63	-1.4
	94	-4.5		63	-1.4
	95	-4.6		64	-1.5
	10.6	-5.7		67	-1.8
50	120	-7.1	50	7.5	-2.6
	12.0	-7.1		85	-3.6
	127	-7.8		96	-4.7
	130	-8.1		110	-6.1
	12.6	-7.7		178	-6.9
1000	120	-7.1	1200	120	-7.1

74+00

Dist	Sound	Elev.	Dist	Sound	Elev.
	120	-7.2	157	157	-10.9
	123	-7.5	46	160	-11.2
	121	-7.3		160	-11.2
	115	-6.7		156	-10.8
50	110	-6.2	50	15.5	-10.7
	105	-5.7		151	-10.3
	104	-5.6		150	-10.2
(4.8)	100	-5.2	(4.8)	14.5	-9.7
11[09]	10.0	-5.2	11[11]	142	-9.4
1300	104	-5.6	1500	13.7	-8.9
	124	-7.6		130	-8.2
	135	-8.7		124	-7.6
	145	-9.7		118	-7.0
	153	-10.5		115	-6.7
50	151	-10.3	50	113	-6.5
	151	-10.3		110	-6.2
	151	-10.3		105	-5.7
	15.1	-10.3		10.2	-5.4
	15.2	-10.4		96	-4.8
1400	154	-10.6	1600	95	-4.7

74+00

DIST	Sound	ELEV.
	92	-4.4
	95	-4.7
	10.5	-5.7
	11.3	-6.5
50	11.2	-6.4
	11.8	-7.0
	120	-7.2
(4.6)	124	-7.6
11+23	130	-8.2
1700	133	-8.5
	133	-8.5
	135	-8.7
	131	-8.3
	131	-8.3
50	110	-6.2
	78	-3.0
	34	+1.4
	20	+2.8
	1.0	+3.8

0+00 = R 88+67.58

Sta 74+00 Sound East

57.

DIST	Sound	ELEV.	DIST	Sound	ELEV
10	1.2	+3.4		2.7	+1.9
	1.2	+3.4		27	
	13	+3.3		27	
	14	+3.2		27	
58	14	+3.2	50	27	
	15	+3.1		27	
	18	+2.8		27	
(4.6)	20	+2.6	(4.6)	27	+1.9
11+27	21	+2.5	11+29	26	+2.0
100	22	+2.4	300	26	
	24	+2.2		26	
	24	+2.2		26	
	25	+2.1		26	
	25	+2.1		26	
50	26	+2.0	50	26	+2.0
	26	+2.0		27	+1.9
	26	+2.0		27	
	27	+1.9		27	
	27	+1.9		27	
200	27	+1.9	400	27	

74+00

DIST	SOUND	ELEV.	DIST	SOUND	ELEV.
	27	+1.9		25	+2.1
	27			26	+2.0
	27			27	+1.9
	27			27	+1.9
50	26	+2.0	50	28	+1.8
	26			28	+1.8
	26			29	+1.7
A.6	26		A.6	30	+1.6
11+30	25	+2.1	11+32	30	+1.6
500	25		700	30	+1.6
	25			30	+1.6
	25			31	+1.5
	25			34	+1.2
	25			36	+1.0
50	25		50	36	+1.0
	25			36	+1.0
	25			35	+1.1
	25			35	+1.1
	25			34	+1.2
600	25		800	34	+1.2

74+00

DIST	SOUND	ELEV.	DIST	SOUND	ELEV.
	34	+1.1	70	30	+1.5
	35	+1.0		30	+1.5
	36	+0.9		31	+1.4
	35	+1.0		30	+1.5
50	35	+1.0	50	30	
	38	+0.7		30	
	38	+0.7		30	
A.6	38	+0.7	A.6	30	
11+34	35	+1.0	11+36	30	
900	35	+1.0	1100	30	
	34	+1.1		30	
	32	+1.3		30	
	31	+1.4		31	+1.4
	30	+1.5		31	+1.4
50	30	+1.5	50	32	+1.3
	30	+1.5		34	+1.1
	30			36	+0.9
	30			41	+0.4
	30			40	+0.5
1000	30		1200	41	+0.4

0+00 = R 88+67.58

Sta 68+00 Sound East

Dist	Sound	Elev.	Dist	Sound	Elev.
0+00	5.6	-2.7	10	12.6	-9.7
10	6.0	-3.1		12.4	-9.5
20	6.8	-3.9			
30	6.5	-3.6		13.0	-10.1
40	7.2	-4.3		14.2	-11.3
50	6.8	-3.9	50	14.0	-11.1
	7.5	-4.6		13.7	-10.8
	7.5	-4.6		14.8	-11.9
(29)	7.5	-4.6	(29)	15.1	-12.2
135	7.8	-4.9	137	14.8	-11.9
1+00	7.8	-4.9	300	14.8	-11.9
	8.0	-5.1		15.7	-12.8
	8.6	-5.7		15.5	-12.6
	8.6	-5.7		14.7	-11.8
	9.4	-6.5		15.8	-12.9
50	10.0	-7.1	50	15.5	-12.6
	10.5	-7.6		14.6	-11.7
	11.0	-8.1		15.5	-12.6
	11.0	-8.1		16.0	-13.1
	12.5	-9.6		15.4	-12.5
200	12.5	-9.6	400	14.6	-11.7

68+00

Dist	Sound	Elev.	Dist	Sound	Elev.
10	16.0	-13.2	10	14.4	-11.6
	15.5	-12.7		14.3	-11.5
	14.8	-12.0		14.0	-11.2
	15.7	-12.9		13.8	-11.0
50	15.0	-12.2	50	13.4	-10.6
	15.0	-12.2	145	13.0	-10.2
	15.5	-12.7	(28)	13.0	-10.2
(28)	15.0	-12.2		12.8	-10.0
142	14.7	-11.9		12.5	-9.7
500	14.6	-11.8	700	12.5	-9.7
	14.8	-12.0			
	14.2	-11.4			
	14.2	-11.4			
	14.0	-11.2			
50	14.4	-11.6			
	14.6	-11.8			
	14.6	-11.8			
	14.6	-11.8			
	14.5	-11.7			
600	14.5	-11.7			

0+00 = R88+67.58

Sta 68+00 Sound West

Dist	Sound	Elev.	Dist	Sound	Elev.
	6.0	-3.3	10	44	-1.7
	5.9	-3.2		38	-1.1
	5.7	-3.0		38	-1.1
	57	-3.0		37	-1.0
50	58	-3.1	50	34	-0.7
	57	-3.0		3.5	-0.8
	45	-1.8		36	-0.9
(2.7)	45	-1.8	(2.5)	3.6	-0.9
148	46	-1.7	150	35	-0.8
100	45	-1.8	300	3.5	-0.8
	44	-1.7		37	-1.0
	45	-1.8		42	-1.5
	45	-1.8		44	-1.7
	45	-1.8		4.4	-1.7
50	43	-1.6	50	4.2	-1.5
	43	-1.6		4.3	-1.6
	49	-2.2		4.3	-1.6
	49	-2.2		4.4	-1.7
	48	-2.1		44	-1.7
200	45	-1.8	400	46	-1.9

Sta 68+00

Dist	Sound	Elev.	Dist	Sound	Elev.
10	47	-2.0	70	38	-1.1
	40	-1.3		38	-1.1
	41	-1.4		38	-1.1
	41	-1.4		32	-0.5
50	41	-1.4	50	32	-0.5
	44	-1.7		34	-0.7
	44	-1.7		35	-0.8
(2.7)	40	-1.3	(2.7)	32	-0.5
151	40	-1.3	153	30	-0.3
500	40	-1.3	700	31	-0.4
	40	-1.3		31	-0.4
	40	-1.3		31	-0.4
	40	-1.3		31	-0.4
	41	-1.4		31	-0.4
50	46	-1.9	50	33	-0.6
	41	-1.4		33	-0.6
	40	-1.3		15	+1.2
	40	-1.3		18	+0.9
	40	-1.3		23	+0.4
600	41	-1.4	800	20	+0.7

Sta 68+00

Dist	Sound	Elev.	Dist	Sound	Elev.
10	9.7	-2.0	10	7.4	-4.7
	4.7	-2.0		70	-4.3
	52	-2.5		68	-4.1
	55	-2.8		67	-4.0
50	60	-3.3	50	67	-4.0
	62	-3.5		74	-4.7
	62	-3.5		68	-4.1
(2.7)	62	-3.5	(2.7)	68	-4.1
/55	62	-3.5	/57	70	-4.3
900	62	-3.5	1100	68	-4.1
	62	-3.5		60	-3.3
	64	-3.7		65	-3.8
	68	-4.1		65	-3.8
	68	-4.1		65	-3.8
50	71	-4.4	50	66	-3.9
	68	-4.1		64	-3.7
	68	-4.1		64	-3.5
	70	-4.3		67	-3.8
	72	-4.5		67	-3.8
1000	74	-4.7	1200	66	-3.9

68+00

Dist	Sound	Elev.	Dist	Sound	Elev.
10	67	-4.1			
	60	-3.4			
	70	-4.4			
	70	-4.4			
50	70	-4.4			
	67	-4.1			
	63	-3.7			
(2.6)	55	-2.9			
/59	46	-2.0			
1300	44	-1.8			
	43	-1.7			
	47	-2.1			
	53	-2.7			
	54	-2.8			
50	57	-2.5			
	30	-0.4			
70	1.5	+1.1			
	13	+1.3			
90	00	+2.6			

0+00 = 88+67.58

Sta 69+00 Sound West

Dist	Sound	Elev.	Dist	Sound	Elev.
0+00	3.0	+1.2	10	3.1	+1.1
10	30	+1.2			
20	30	+1.2		31	
30	3.0	+1.2		31	
40	30	+1.2		31	
50	31	+1.1	50	31	
	31	+1.1		32	+1.0
(4.2)	31		(4.2)	33	+0.9
	31			33	
7 50	31		7 52	33	
100	31		300	33	
	31			34	+0.8
	31			34	
	30	+1.2		34	
	30			34	
50	30		50	34	
	3.0			34	
	30			34	
	30			35	+0.7
	30			37	+0.5
200	30		400	4.0	+0.2

69+00

Dist	Sound	Elev.	Dist	Sound	Elev.
20	40	+0.2	10	3.2	+1.0
	38	+0.4		3.0	+1.2
	4.2	0.0		31	+1.1
	38	+0.4		31	
50	3.6	+0.6	50	31	
	35	+0.7		3.1	
	34	+0.8		30	+1.2
(4.2)	34	+0.8	(4.2)	30	
7 54	34		7 56	30	
500	34		700	30	
	34			35	+0.7
	34			38	+0.4
	34			40	+0.2
	34			45	-0.3
50	34		50	46	-0.4
	34			46	-0.4
	33	+0.9		40	-0.2
	32	+1.0		54	-1.2
	32			60	-1.8
600	32		800	65	-1.3

6 9+00

DIST	SOUND	ELEV	DIST	SOUND	ELEV
	66	-2.3		97	-5.4
	65	-2.2		97	-5.4
	65	-2.2		90	-4.7
	67	-2.4		90	-4.7
50	68	-2.5	50	86	-4.3
	68	-2.5		90	-4.7
(4.3)	68	-2.5	(4.3)	87	-4.4
	68	-2.5		87	-4.4
7 58	69	-2.6	8 00	87	-4.4
900	71	-2.8	1100	88	-4.5
	78	-3.5		90	-4.7
	74	-3.1		94	-5.1
	80	-3.7		95	-5.2
	85	-4.2		93	-5.0
50	85	-4.2	50	90	-4.7
	82	-3.9		127	-8.4
	82	-3.9		110	-6.7
	86	-3.3		100	-5.7
	88	-3.5		91	-4.8
1000	86	-3.2	1200	90	-4.7

6 9+00

DIST	SOUND	ELEV.
	95	-5.2
	100	-5.7
	108	-6.5
	11.1	-6.8
50	10.7	-6.4
	95	-5.2
(4.3)	8.0	-3.7
	6.5	-2.2
8	6.1	-1.8
1300	6.1	-1.8
	58	-1.5
	45	-0.2
	30	+1.3
	21	+2.2
50	1.4	+2.9
	09	+3.4
70	00	+4.3

0+00 = R 88+67.58

Sta 69+00 Sound East

Dist	Sound	Elev.	Dist	Sound	Elev.
10	30	+1.4	10	28	+1.6
	30			27	+1.7
	30			25	+1.9
	30			25	+
50	31	+1.3	50	25	
	31			25	
(4.4)	31		(4.4)	25	
	31			25	
8 0E	31		8 10	25	
100	31		300	24	+2.0
	31			24	+2.0
	30	+1.4		23	+2.1
	31	+1.3		21	+2.3
	31	+1.3		24	+2.0
50	31	+1.3	50	26	+1.8
	30	+1.4		31	+1.3
	30			35	+0.9
	30			42	+0.2
	30			65	-1.1
200	30		400	86	-4.2

Sta 69+00

Dist	Sound	Elev.	Dist	Sound	Elev.
10	105	-6.1	10	148	-10.3
	105	-6.1		146	-10.1
	98	-5.4		147	-10.2
	117	-7.3		160	-11.5
50	125	-8.1	50	158	-11.3
	126	-8.2		161	-11.6
	120	-7.6	(4.5)	164	-11.9
(4.4)	120	-7.6		165	-12.0
8 12	121	-7.7	8 14	165	-12.0
500	125	-8.1	700	161	-11.6
	128	-8.4		156	-11.1
	130	-8.6		170	-12.5
	134	-9.0		165	-12.0
	139	-9.5		160	-11.5
50	141	-9.7	50	165	-12.0
	144	-10.0		165	-12.0
	144	-10.0		165	-12.0
	150	-10.6		160	-11.5
	150	-10.6		170	-12.5
600	150	-10.6	800	165	-12.0

0+00 = R 8 8+67.58

Sta 7+00 Sound West

69+00

Dist	Sound	Elev.
	156	-11.1
	151	-10.6
	174	-12.9
	171	-12.6
50	167	-12.2
	178	-13.3
(4.5)	165	-12.0
815	158	-11.3
	160	11.5
900	158	11.3

Dist	Sound	Elev	Dist	Sound	Elev.
0+00	1.5	+3.1	10	20	+2.6
10	1.5	+3.1			
20	1.5	+3.1		20	
	1.5			20	
	1.5			20	
50	1.5		50	20	
	1.7	+2.9		20	
(4.6)	1.7		(4.6)	20	
	1.7			20	
825	18	+2.8	827	20	
100	18	+2.8	300	20	
	17	+2.9		20	
	16	+3.0		20	
	17	+2.9		20	
	19	+2.7		18	+2.8
50	18	+2.8	50	18	+2.8
	18	+2.8		17	+2.9
	19	+2.7		17	+2.9
	19			18	+2.8
	19			18	
200	19		400	18	

7/+00

Dist	Sound	Elev.	Dist	Sound	Elev.
10	18	+2.8		25	+2.2
	19	+2.7		26	+2.1
	19			28	+1.9
	19			30	+1.7
50	19		50	30	+1.7
	19			35	+1.2
(4.6)	20	+2.6	(4.7)	35	+1.2
	20			41	+0.6
829	20		831	44	+0.3
500	20		700	46	+0.1
	20			47	0.0
	21	+2.5		47	
	20	+2.6		47	
	19	+2.7		50	-0.3
50	19	+2.7	50	51	-0.4
	20	+2.6		51	-0.4
	20	+2.6		53	-0.6
	22	+2.4		55	-0.8
	2r			56	-0.9
600	22		800	56	-0.9

7/+00

Dist	Sound	Elev.	Dist	Sound	Elev.
10	65	-1.8	10	9.2	-4.5
	63	-1.6		103	-5.6
	63	-1.6		104	-5.7
	68	-2.1		100	-5.3
50	65	-1.8	50	10.7	-6.0
	64	-1.7		111	-6.4
(4.7)	64	-1.7	(4.7)	116	-6.9
	76	-2.9		116	
834	80	-3.3	837	116	
900	74	-2.7	1100	116	
	74	-2.7		117	-7.0
	83	-3.6		115	-6.8
	75	-2.8		120	-7.3
	76	-2.9		120	-7.3
50	77	-3.0	50	124	-7.7
	80	-3.3		125	-7.8
	88	-4.1		130	-8.3
	88	-4.1		130	-8.3
	82	-3.5		125	-7.8
1000	87	-4.0	1201	121	-7.4

0+00 = R 88+67.58

71+00

Dist	Sound	ELEV.
	110	-6.2
(4.8)	68	-2.0
	35	+1.3
8 37	36	+1.2
50	20	+2.8
60	14	+3.4
70	10	+3.8
80	03	+4.5
85	00	+4.8

Sta 71+00 Sound East

Dist	Sound	ELEV.	Dist	Sound	ELEV.
10	17	+3.2	10	18	+3.1
	17			18	+3.1
	17			19	+3.0
	17			19	
50	17		50	19	
	17			20	+2.9
(4.9)	18	+3.1	(4.9)	21	+2.8
	19	+3.1		23	+2.6
8 46	18		8 48	23	+2.6
100	18		300	25	+2.4
	18			30	+1.9
	19	+3.0		32	+1.7
	19			36	+1.3
	19			37	+1.2
50	18	+3.1	50	37	+1.2
	18	+3.1		38	+1.1
	17	+3.2		38	
	17			38	
	17			38	
200	17		400	38	

71+00

Dist	Sound	Elev.	Dist	Sound	Elev.
	37	+1.2	10	37	+1.2
	36	+1.3		38	+1.1
	36			39	+1.0
	36			40	+0.9
50	36		50	40	
	38	+1.1		40	
(4.9)	38	+1.1	(4.9)	41	+0.8
	39	+1.0		41	+0.8
850	40	+0.9	851	43	+0.6
500	40		700	44	+0.5
	40			45	+0.4
	38	+1.1		45	
	38			45	
	38			44	+0.5
50	38		50	45	+0.4
	38			45	
	37	+1.2		45	
	37			45	
	37			40	+0.9
600	37		800	40	

71+00

Dist	Sound	Elev.	Dist	Sound	Elev.
	40	+0.9		95	-4.5
	38	+1.1	(5.0)	103	-5.3
	39	+1.0		105	-5.5
	44	+0.5	854	108	-5.8
50	46	+0.3	50	110	-6.0
	51	-0.2		114	-6.4
(4.9)	51	-0.2		117	-6.7
	45	+0.4		120	-7.0
853	45	+0.4		123	-7.3
900	44	+0.5	1100	123	-7.3
	43	+0.6			
	44	+0.5			
	45	+0.4			
	45	+0.4			
50	46	+0.3			
	53	-0.4			
	56	-0.7			
	70	-2.1			
	75	-2.6			
1050	89	-4.0			

0+00 = R 88+67.58

Sta 72+00 Sound West

Dist	Sound	Elev.	Dist	Sound	Elev.
0+00	1.6	+3.4	10	22	+2.9
10	16	+3.4			
20	17	+3.3		21	+3.0
30	17	+3.3		21	+3.0
40	16	+3.4		21	+3.0
50	16	+3.4	50	20	+3.1
	17	+3.3		20	
(5.0)	17		(5.1)	20	
	17			20	
9 03	18	+3.2	9 05	20	
100	18	+3.2	300	20	
	20	+3.0		19	+3.2
	20			19	
	20			19	
	20			19	
50	20		50	19	
	20			19	
	20			20	+3.1
	20			20	+3.1
	20			21	+3.0
200	20		400	21	+3.0

72+00

Dist	Sound	Elev.	Dist	Sound	Elev.
00	21	+3.0	10	3.4	+1.7
	22	+2.9		36	+1.5
	24	+2.7		36	
	24			36	
50	24		50	40	+1.1
	25	+2.6		40	+1.1
(5.1)	25	+2.6	(5.1)	41	+1.0
	26	+2.5		43	+0.8
9 07	27	+2.4	9 09	42	+0.9
500	26	+2.5	700	44	+0.7
	26	+2.5		48	+0.3
	26	+2.5		46	+0.5
	25	+2.6		50	+0.1
	25			51	0.0
50	25		50	52	-0.1
	25			54	-0.3
	26	+2.5		54	-0.3
	28	+2.3		54	
	29	+2.2		54	
600	32	+1.9	800	55	-0.4

72400

Dist	Sound	ELEV.	Dist	Sound	ELEV
10	57	-0.6	10	108	-5.7
	60	-0.9		11.1	-6.0
	64	-1.3		11.1	-6.0
	64	-1.3		11.6	-6.5
50	65	-1.4	50	120	-6.9
	67	-1.6		120	-6.9
(5.1)	70	-1.9	(5.1)	121	-7.0
	72	-2.1		122	-7.1
9[10]	81	-3.0	9[12]	125	-7.4
900	81	-3.0	1100	127	-7.6
	82	-3.1		127	-7.6
	78	-2.7		124	-7.3
	80	-2.9		11.8	-6.7
	78	-2.7		118	-6.7
50	82	-3.1	50	118	-6.7
	84	-3.3		112	-6.1
	100	-4.9		97	-4.6
	96	-4.5		90	-3.9
	104	-5.3		83	-3.2
1000	11.4	-6.0	1200	78	-2.7

72400

Dist	Sound	ELEV.	Dist	Sound	ELEV.
10	80	-2.9			
	74	-2.3			
(5.1)	51	-0.0			
9[13]	35	+2.0			
50	25	+3.0			
60	17	+3.4			
70	10	+4.1			
	00	+5.1			

0+00 = R 88+67.58

Sta 72+00 Sound East

Dist.	Sound	Elev.	Dist	Sound	Elev.
10	18	+3.4		19	+3.3
	18			19	+3.3
	18			20	+3.2
	18			22	+3.2
50	18		50	23	+3.0
	18			23	+3.0
(5.2)	18		(5.2)	24	+3.1
	17	+3.5		28	+2.4
9 20	17		9 22	30	+2.2
100	17		300	30	+2.2
	18	+3.4		31	+2.1
	18			32	+2.0
	18			33	+1.9
	18			33	+1.9
50	18		50	34	+1.8
	18			34	+1.8
	18			36	+1.6
	18			38	+1.4
	19	+3.3		39	+1.3
200	19	+3.3	400	39	+1.3

72+00

Dist	Sound	Elev.	Dist	Sound	Elev.
10	40	+1.2	10	40	+1.3
	40			40	
	40			40	
	40			40	
50	40		50	40	
(5.2)	40			40	
	40		(5.3)	40	
	40			40	
9 23	40		9 25	40	
500	40		700	40	
	40			40	
	41	+1.1		40	
	41			41	+1.2
	41			45	+0.8
50	41		50	50	+0.3
	40	+1.2		52	+0.1
	40			52	+0.1
	40			54	-0.1
	40			53	0.0
600	40		800	53	0.0

72+00

Dist	Sound	ELEV.	Dist	Sound	ELEV.
10	53	0.0	10	43	+1.0
	52	+0.1		40	+1.3
	51	+0.2		38	+1.5
	51	+0.2		38	
50	52	+0.1	50	38	
	50	+0.3		38	
(5.3)	48	+0.5	(5.3)	38	
	48			39	+1.4
9 26	48		9 27	39	
900	48		1100	39	
	48			40	+1.3
	47	+0.6		40	
	47	+0.6		40	
	46	+0.7		42	+1.1
50	45	+0.8	50	42	+1.1
	44	+0.9		43	+1.0
	44			44	+0.9
	44			45	+0.8
	44			46	+0.7
1000	45	+0.8	1200	46	+0.7

0+00 = R 8846758

Sta 73+00 Sound West

Dist	Sound	ELEV.	Dist	Sound	ELEV.
0+00	17	+3.6	10	20	+3.3
10	17	+3.6		21	+3.2
20	18	+3.5		24	+2.9
	19	+3.4		24	
	19	+3.4		24	
50	20	+3.3	50	24	
	20			24	
(5.3)	20		(5.3)	24	
	20			24	
9 38	20		9 40	24	
100	23	+3.0	300	25	+2.8
	23			26	+2.7
	23			28	+2.5
	21	+3.2		29	+2.4
	21	+3.2		30	+2.3
50	24	+2.9	50	30	
	22	+3.1		30	
	21	+3.2		30	
	21	+3.2		30	
	21	+3.2		27	+2.6
200	20	+3.3	400	25	+2.8

73400

Dist	Sound	ELEV.	Dist	Sound	ELEV.
10	25	+2.8	10	36	+1.8
	24	+2.9		37	+1.7
	24			39	+1.5
	24			39	
50	24		50	39	
	24			37	+1.7
(5.3)	25	+2.8	(5.4)	39	+1.5
	26	+2.7		40	+1.4
9 42	26	+2.7	9 45	42	+1.2
500	25	+2.8	700	44	+1.0
	25	+2.8		46	+0.8
	25	+2.8		45	+0.9
	27	+2.6		47	+0.7
	27	+2.6		50	+0.4
50	29	+2.4	50	51	+0.3
	31	+2.2		51	+0.3
	34	+1.9		45	+0.9
	35	+1.8		48	+0.6
	35			51	+0.3
600	35		800	55	-0.1

73400

Dist	Sound	ELEV.	Dist	Sound	ELEV.
10	59	-0.5	10	120	-6.6
	60	-0.6		121	-6.7
	63	-0.9		121	-6.7
	71	-1.7		118	-6.4
50	72	-1.8	50	114	-6.0
	72	-1.8		110	-5.6
	72		(5.4)	114	-6.0
(5.4)	72			124	-7.0
9 47	72		9 49	127	-7.3
900	73	-1.9	1100	96	-4.2
	84	-3.0		85	-3.1
	90	-3.6		80	-2.6
	92	-3.8		83	-2.9
	97	-4.3		82	-2.8
50	110	-5.6	50	82	-2.8
	110	-5.6		85	-3.1
	112	-5.8		100	-4.6
	116	-6.2		100	-4.6
	119	-6.5		94	-4.0
1000	120	-6.6	1200	98	-4.4

73+00

Dist	Sound	ELEV.
	94	-4.0
	94	-4.0
	97	-4.3
	105	-5.1
50	105	-5.1
	10.2	-4.8
(5.4)	9.8	-4.4
	91	-3.7
95	75	-2.1
1300	50	+0.4
	44	+1.0
	41	+1.3
	40	+1.4
	35	+1.9
50	31	+2.3
	27	+2.7
	22	+3.2
	21	+3.3
	21	}
1400	21	}

Dist	Sound	ELEV.
10	22	+3.2
	24	+3.0
	27	+2.7
	27	+2.7
50	30	+2.4
	31	+2.3
(5.4)	36	+1.8
	41	+1.3
95	50	+0.4
1500	87	-3.3
	103	-4.9
	108	-5.4
	108	-5.4
	101	-4.7
50	110	-5.6
	131	-7.7
	145	-9.1
	146	-9.2
	144	-9.0
1600	140	-8.6

73+00

Dist	Sound	ELEV.
	140	-8.6
	140	-8.6
	145	-9.1
	150	-9.6
50	151	-9.7
	151	
(5.4)	151	
	151	
95	151	
1700	151	
	151	
	150	-9.6
	147	-9.3
	132	-7.8
50	101	-4.7
	50	+0.4
	33	+2.1
	20	+3.4
	10	+4.4
1800	00	+5.4

0+00 = R88+67.58

73+00 Sound East

Dist	Sound	Elev.	Dist	Sound	Elev.
10	18	+3.6	10	29	+2.5
	18			30	+2.4
	18			30	+2.4
	17	+3.7		31	+2.3
50	17	+3.7	50	35	+1.9
	18	+3.6		35	
(5.4)	18	+3.6		35	
	19	+3.5	(5.4)	35	
10 03	19		10 05	35	
100	19		300	35	
	18	+3.6		35	
	18	+3.6		35	
	17	+3.7		35	
	17			36	+1.8
50	17		50	37	+1.7
	20	+3.4		37	
	23	+3.1		37	
	25	+2.9		37	
	27	+2.7		38	+1.6
200	28	+2.6	400	38	+1.6

73+00

Dist	Sound	Elev.	Dist	Sound	Elev.
10	38	+1.6	10	34	+2.0
	38			34	
	38			34	
	38			34	
50	38		50	35	+1.9
	38			35	
(5.4)	38		(5.4)	35	
	37	+1.7		35	
10 07	37		10 08	35	
500	37		700	35	
	37			36	+1.8
	36	+1.8		37	+1.7
	35	+1.9		39	+1.5
	35	+1.9		40	+1.4
50	35		50	42	+1.2
	35			44	+1.0
	35			44	+1.0
	35			41	+1.3
	35			41	+1.3
600	34	+2.0	800	42	+1.2

0+00 = R88+67.58

Sta 67+00 Sound West

Dist	Sound	Elev.	Dist	Sound	Elev.
	147	-9.3	10	128	-7.4
	145	-9.1		124	-7.0
	143	-8.9		117	-6.3
	145	-9.1		113	-5.9
50	140	-8.6	50	113	-5.9
	143	-8.9		117	-6.3
	144	-9.0	(5.4)	114	-6.0
(5.4)	142	-8.8		110	-5.6
10[20]	140	-8.6	10[32]	110	-5.6
100	136	-8.2	300	108	-5.4
	131	-7.7		103	-4.9
	128	-7.4		103	-4.9
	125	-7.1		103	-4.9
	130	-7.6		104	-5.0
50	133	-7.9	50	104	-5.0
	134	-8.0		100	-4.6
	131	-7.7		96	-4.2
	128	-7.4		96	
	130	-7.6		96	
200	130	-7.6	400	96	

73+00

Dist	Sound	Elev.	Dist	Sound	Elev.
10	42	+1.2	10	40	+1.4
	42	+1.2		40	
	41	+1.3		40	
	40	+1.4		40	
50	40		50	41	
	40			41	+1.3
(5.4)	40			40	+1.4
	41	+1.3	(5.4)	40	
10[10]	41	+1.3	10[41]	40	
900	46	+0.8	1100	40	
	45	+0.9		40	
	43	+1.1		40	
	40	+1.4		40	
	40			38	+1.6
50	40		50	38	
	42	+1.2		38	
	44	+1.0		38	
	44	+1.0		38	
	41	+1.3		38	
1060	40	+1.4	1200	38	

67+00

Dist	Sound	Elev.	Dist	Sound	Elev.
10	94	-4.1		82	-2.9
	90	-3.7		89	-3.6
	85	-3.2		87	-3.4
	82	-2.9		80	-2.7
50	82		50	87	-3.4
	82			95	-4.2
(5.3)	85	-3.2	(5.3)	95	-4.2
	87	-3.4		91	-3.8
10+34	90	-3.7	10+35	94	-4.1
500	82	-2.9	700	92	-3.9
	86	-3.3		92	
	84	-3.1		92	
	83	-3.0		94	-4.1
	88	-3.5		100	-4.7
50	80	-2.7	50	100	-4.7
	83	-3.0		98	-4.5
	78	-2.5		94	-4.1
	82	-2.9		90	-3.7
	85	-3.2		90	
600	88	-3.5	800	90	

67+00

Dist	Sound	Elev.	Dist	Sound	Elev.
10	90	-3.7	10	115	-6.6
	91	-3.8		114	-6.1
	91	-3.8		111	-5.8
50	90	-3.7	50	110	-5.7
	92	-3.9		121	-6.8
(5.3)	95	-4.2	(5.3)	115	-6.2
	97	-4.4		115	-6.2
10+37	103	-5.0	10+39	117	-6.4
900	101	-4.8	1100	120	-6.7
	104	-5.1		115	-6.2
	110	-5.7		110	-5.7
	118	-6.5		110	
	118	-6.5		110	
	115	-6.2		110	
50	104	-5.1	50	104	-5.1
	106	-5.3		101	-4.8
	111	-5.8		101	-4.8
	114	-6.1		100	-4.7
	114			100	
1000	114		1200	100	

67+00

Dist	Sound	ELEV.	Dist	Sound	ELEV.
10	100	-4.7	10	71	-1.8
	96	-4.3		66	-1.2
	88	-3.5		52	+0.1
	89	-5.6		45	+0.8
50	90	-3.7	50	40	+1.3
	95	-4.2		33	+2.0
5.3	97	-4.4	5.3	28	+2.5
	97	-4.4		14	+3.9
10 40	94	-4.1	86	00	+5.3
1300	85	-3.2	1500		
	70	-1.7			
	68	-1.5			
	70	-1.7			
	75	-2.2			
50	82	-2.9			
	90	-3.7			
	94	-4.1			
	94	-4.1			
	90	-3.7			
1400	84	-3.1			

0+00 = R 88+67 58

Sta 67+00 Sound East

Dist	Sound	ELEV.	Dist	Sound	ELEV.
10	154	-10.1	10	185	-13.3
	154	-10.1		173	-12.1
	151	-9.8		183	-13.1
	155	-10.2		176	-12.4
50	158	-10.5	50	180	-12.8
	153	-10.0		175	-12.3
5.3	158	-10.5	5.2	175	-12.3
	155	-10.2		173	-12.1
10 50	155	-10.2	10 53	173	-12.1
100	150	-9.7	300	170	-11.8
	172	-11.9		170	
	173	-12.0		170	
	166	-11.3		170	
~~50~~	180	-12.7	~~50~~	168	-11.6
50	182	-12.9	50	166	-11.4
	174	-12.1		166	
	183	-13.0		166	
	190	-13.7		162	-11.0
	190			167	-11.5
200	190		400	165	-11.3

67+00

Dist	Sound	Elev.			
10	16.0	-10.8			
	16.0	}			
	160	}			
5.2	155	-10.3			
50	153	-10.1			
10 55	151	-9.9			
	148	-9.6			
	148	-9.6			
	150	-9.8			
50 U	147	-9.5			
		H.I.			2X4 HUB
T.B.M.	+3.94	+3.69		-0.25	P.H. BASE
CURB			-4.52	-0.83	
CURB			4.65	-0.96	
City Brass Cap B.M.			5.25	-1.56	City B.M. Brass Button
CURB			5.75	-2.06	
Gar. Slab			5.20	-1.51	Gar. Clm'n.
Curb-Alley S.			5.59	-1.90	
" " N.			5.36	-1.67	
CURB			5.56	-1.87	
75' CURB			3.51	-1.82	

DIETZGEN'S RAILROAD CURVE AND REDUCTION TABLES

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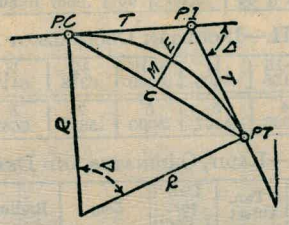

117-26
90
27-26

CURVE FORMULAS

Radius=R=$\frac{50}{\text{sin. } D/2}$ (1) Degree of Curve=D and sin. $\frac{D}{2}=\frac{50}{R}$ (2)

Tangent=T=R tan $\frac{\Delta}{2}$ (3) Length of Curve=L=$100\frac{\Delta}{D}$ (4)

Middle ordinate=M=R(1—cos. $\frac{\Delta}{2}$) (5)=Rvers $\frac{\Delta}{2}$ (6)

External=E=T tan $\frac{\Delta}{4}$ (7)=R ÷ cos. $\frac{\Delta}{2}$—R (8)=R exsec $\frac{\Delta}{2}$ (9)

Long Chord=C=2 R sin. $\frac{\Delta}{2}$ (10) Δ=Central Angle

EXPLANATION AND USE OF TABLES

Stations.—Given P. I.=Sta. 161+60.35 to find Sta. of P. C. and P. T. Δ=62° 10′ D=8° 20′. From Table IV for 1° curve T=3454.1 and ÷8⅓=414.49 ft. From Table V correction=.36 or T=414.85 ft. P. C.=Sta. P.I.—T=157 +45.50. Also from (4) L=746.00 and P. T.=Sta. P. C.+L=164+91.50.

Offsets.—Tangent offsets vary (approximately) directly with D and with square of the distance. Thus tangent offset for Sta. 158 on above curve is 2.16 ft. found as follows. From Table III tangent offset for 100 ft.=7.27 ft. Distance=158—Sta. P. C.=54.50, hence offset=7.27 $(54.50 \div 100)^2$=2.16 ft. Also square of any distance divided by twice the radius equals (approximately) the distance from tangent to curve. Thus $(54.50)^2 \div (2 \times 688.26)$=2.16 ft.

Deflections.—Deflection angle=½ D for 100 ft., ¼ D for 50 ft., etc. For c ft.=(in minutes) .3 x C x D° or=defl. for 1 ft. from Table III x C. For Sta. 158 of above curve=.3 x 54.5 x 8⅓=136.2′ or 2° 16.2′, or=2.50 x 54.5=136.2′ from Table III. For Sta. 159 deflection angle=2° 16.2′ +8° 20′ ÷2=6° 26.2′, etc.

Externals.—May be found in similar manner to tangents. Thus E for curve above is 115.37. For from Table IV for 1° curve E=960.6 for 8° 20′=960.6 ÷8⅓=115.27 and from Table V correction=.10 or E=115.37 ft. Or suppose Δ=32° and E is measured and found to be 42 ft. What is D? From Table IV E=230.9 and ÷42=5.5 or D=5° 30′.

DISTANCES FROM CENTER OF ROADWAY FOR CROSS-SECTIONING.

Roadway 16 feet wide. Side Slopes 1 on 1½

For Single Track Embankment.

H	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	H
0	8.0	8.2	8.3	8.5	8.6	8.8	8.9	9.1	9.2	9.4	0
1	9.5	9.7	9.8	10.0	10.1	10.3	10.4	10.6	10.7	10.9	1
2	11.0	11.2	11.3	11.5	11.6	11.8	11.9	12.1	12.2	12.4	2
3	12.5	12.7	12.8	13.0	13.1	13.3	13.4	13.6	13.7	13.9	3
4	14.0	14.2	14.3	14.5	14.6	14.8	14.9	15.1	15.2	15.4	4
5	15.5	15.7	15.8	16.0	16.1	16.3	16.4	16.6	16.7	16.9	5
6	17.0	17.2	17.3	17.5	17.6	17.8	17.9	18.1	18.2	18.4	6
7	18.5	18.7	18.8	19.0	19.1	19.3	19.4	19.6	19.7	19.9	7
8	20.0	20.2	20.3	20.5	20.6	20.8	20.9	21.1	21.2	21.4	8
9	21.5	21.7	21.8	22.0	22.1	22.3	22.4	22.6	22.7	22.9	9
10	23.0	23.2	23.3	23.5	23.6	23.8	23.9	24.1	24.2	24.4	10
11	24.5	24.7	24.8	25.0	25.1	25.3	25.4	25.6	25.7	25.9	11
12	26.0	26.2	26.3	26.5	26.6	26.8	26.9	27.1	27.2	27.4	12
13	27.5	27.7	27.8	28.0	28.1	28.3	28.4	28.6	28.7	28.9	13
14	29.0	29.2	29.3	29.5	29.6	29.8	29.9	30.1	30.2	30.4	14
15	30.5	30.7	30.8	31.0	31.1	31.3	31.4	31.6	31.7	31.9	15
16	32.0	32.2	32.3	32.5	32.6	32.8	32.9	33.1	33.2	33.4	16
17	33.5	33.7	33.8	34.0	34.1	34.3	34.4	34.6	34.7	34.9	17
18	35.0	35.2	35.3	35.5	35.6	35.8	35.9	36.1	36.2	36.4	18
19	36.5	36.7	36.8	37.0	37.1	37.3	37.4	37.6	37.7	37.9	19
20	38.0	38.2	38.3	38.5	38.6	38.8	38.9	39.1	39.2	39.4	20
21	39.5	39.7	39.8	40.0	40.1	40.3	40.4	40.6	40.7	40.9	21
22	41.0	41.2	41.3	41.5	41.6	41.8	41.9	42.1	42.2	42.4	22
23	42.5	42.7	42.8	43.0	43.1	43.3	43.4	43.6	43.7	43.9	23
24	44.0	44.2	44.3	44.5	44.6	44.8	44.9	45.1	45.2	45.4	24
25	45.5	45.7	45.8	46.0	46.1	46.3	46.4	46.6	46.7	46.9	25
26	47.0	47.2	47.3	47.5	47.6	47.8	47.9	48.1	48.2	48.4	26
27	48.5	48.7	48.8	49.0	49.1	49.3	49.4	49.6	49.7	49.9	27
28	50.0	50.2	50.3	50.5	50.6	50.8	50.9	51.1	51.2	51.4	28
29	51.5	51.7	51.8	52.0	52.1	52.3	52.4	52.6	52.7	52.9	29
30	53.0	53.2	53.3	53.5	53.6	53.8	53.9	54.1	54.2	54.4	30
31	54.5	54.7	54.8	55.0	55.1	55.3	55.4	55.6	55.7	55.9	31
32	56.0	56.2	56.3	56.5	56.6	56.8	56.9	57.1	57.2	57.4	32
33	57.5	57.7	57.8	58.0	58.1	58.3	58.4	58.6	58.7	58.9	33
34	59.0	59.2	59.3	59.5	59.6	59.8	59.9	60.1	60.2	60.4	34
35	60.5	60.7	60.8	61.0	61.1	61.3	61.4	61.6	61.7	61.9	35
36	62.0	62.2	62.3	62.5	62.6	62.8	62.9	63.1	63.2	63.4	36
37	63.5	63.7	63.8	64.0	64.1	64.3	64.4	64.6	64.7	64.9	37
38	65.0	65.2	65.3	65.5	65.6	65.8	65.9	66.1	66.2	66.4	38
39	66.5	66.7	66.8	67.0	67.1	67.3	67.4	67.6	67.7	67.9	39
40	68.0	68.2	68.3	68.5	68.6	68.8	68.9	69.1	69.2	69.4	40

Example—If point is 22.6 ft. above grade, how far should it be from center line to be a slope stake point? Ans. from Table 41.9. For same slopes but other widths of roadbed correct above figures by one-half difference in width of roadbed; thus in example above for 20 ft. roadbed distance will be 41.9 + (20—16) ÷ 2 or 2 ft. added to 41.9 = 43.9. For slopes of 1 on 1 see inside of front cover.

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