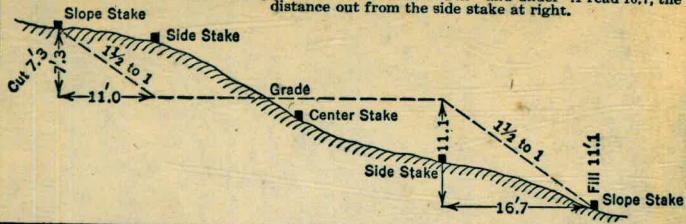


MISSION BAY

51

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.



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

MICROFILMED

Dep 12-3
 Ord 3293
 #51
 #57

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

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X-SECTIONS NORTH APPROACH

STA-30+00

STA	+	H.I.	-	ELEV
		28.55		
W	15 ^E		3.1	
W	02		2.6	
W	15		1.9	
W	00		1.9	
E	15		1.9	
E	02		2.9	
E	26		2.5	
E	26		1.1	
E	32		1.3	
E	60	9.37	0.2	
E	75	9.37	+0.95	

30+40.

STA	+	H.I.	-	ELEV
E	75	9.37	4.2	
E	65	9.37	3.7	
E	32	28.55	1.7	
E	27		1.7	
E	26 ^E		3.4	
E	02		3.4	
E	15		2.9	
W	00		2.9	
W	15		2.9	
W	02		3.3	
W	26		3.7	
W	26 ^E		2.3	
W	32	28.55	2.1	
W	60 ^B	12.69	7.5	
W	70	17.69	8.9	
W	85	12.69	9.4	

T.H. 4.3

M.H.
 10.74
 +6.95
 17.69 T.O.E
 H.I. FOR SLOPE
 SNOTS
 17.69
 3.15
 14.54
 T.P.

31+00

STA	+	H.I.	-	ELEV
W 85		17.69	10.4	
W 70		17.69	9.8	
W 60		17.69	7.7	
W 61		17.69	7.8	
W 32		28.55	3.5	
W 27		↓	3.6	
W 26			5.1	
W 02			4.6	
W 15			3.8	
R			3.8	
W 15			3.8	
E 02			4.8	
E 27			5.1	
E 27			3.2	
E 32			3.3	
E 61		9.37	3.7	
E 65		9.37	4.7	

31+50

STA	+	H.I.	-	ELEV
E 65		9.37	2.8	
E 59		9.37	2.4	
E 32		28.55	4.9	
E 26 ^E			4.7	
E 26			6.7	
E 02			6.3	
E 15			5.3	
E 00			5.3	
W 15			5.3	
W 02			6.2	
W 26			6.8	
W 26 ^E		↑	5.3	
W 32		28.55	5.2	
W 59 ⁷⁰		17.69	10.7	
W 70		17.69	11.7	
W 85		17.69	11.0	

32+00

STA	+	H.I.	-	ELEV
65				3.2
56				3.2
E 70'		17.69		11.0
W 58 ^{7.2}		17.69		11.5
E 32		28.55		6.9
W 26		↓		6.9
W 26				8.2
W 02				7.8
W 15				7.2
E 00				7.2
E 15				7.2
E 02				8.0
E 26				8.6
E 26 ⁵				6.6
E 32				6.8
E 56		9.37		
E 65		9.37		

32+50

STA	+	H.I.	-	ELEV
E 65		9.37		4.7
E 54 ^{7.2}		9.37		4.2
E 32		28.55		8.5
E 26 ⁵				8.7
E 26				10.3
E 02				10.0
E 15				9.2
E 00				7.2
W 15				9.2
W 02				9.9
W 26				10.2
W 26 ⁵				8.6
W 32				8.7
W 53 ^{7.2}		17.69		10.6
W 70		17.69		10.8

33+00

STA	H.I.	ELEV
	28.55	
W 70		11.7
W 53 ⁷⁰ / ₅₃		11.8
W 32		10.5
W 26		10.3
W 25 ⁵ / ₅		11.9
W 02		11.7
W 15		10.8
E 00		10.8
E 15		10.8
E 02		11.6
E 26		12.2
E 26		10.1
E 32		10.9
E [?] 65 13	9.37	4.5
	9.37	5.2

33+50

STA	H.I.	ELEV
	17.26	
E 58		12.0
E 50 ⁵ / ₅		12.2
E 41		5.8
E 32		1.0
E 26		0.8
E 26		2.6
E 02		2.5
E 15		1.5
E 00		1.5
W 15		1.5
W 02		2.9
W 25 ⁵ / ₅		2.5
W 26		0.9
W 32		1.1
W 48		11.2
W 60		11.7

④

-3.95

+13.05

-3.93

34+00

STA	H.L.	ELEV
W 55	17.26	11.3
W 48 ^S		11.2
W 40 ^S		6.2
W 32		2.9
W 26		2.6
W 25 ^S		4.9
W 02		4.1
W 15		3.2
W 00		3.2
E 15		3.2
E 02		4.1
E 26		4.5
E 26		2.6
E 32		2.8
E 40		5.9
E 49 ¹		12.3
E 55		13.0

34+50

STA	H.L.	ELEV
E 51 ²	17.26	10.5
E 49 ⁶		10.6
E 42		6.9
E 32		4.1
E 26 ^E		4.0
E 26		5.8
E 02		5.5
E 15		4.9
E 00		4.9
E 15		4.9
W 02		5.9
W 26 ³		5.6
W 26 ²		3.9
W 32 ¹		4.0
W 40 ³		2.9
W 46 ⁸		11.9
W 52		12.0

⑤

35400

STA	#	H.I.	-	ELEV
W	48 ⁸	17.26	13.0	
W	45 ⁵		12.9	
W	37		6.9	
W	32		5.3	
W	26 ³		4.7	
W	26 ⁰		6.6	
W	02		6.9	
W	1 ⁵		5.5	
W	00		5.5	
E	1 ⁵		5.5	
E	02		6.3	
E	26 ⁴		6.5	
E	27		9.6	
E	33 ⁵		5.0	
E	36 ³		6.1	
E	41 ⁴		6.5	
E	47 ⁶		10.7	
E	53		11.0	

35450

STA	#	H.I.	-	ELEV
E	52 ⁸		12.7	
E	49 ⁶		12.2	
E	42		7.6	
E	37 ⁸		7.3	
E	34 ³		5.7	
E	26 ²		7.2	
E	02		7.2	
E	1 ⁵		6.1	
E	00		6.1	
E	1 ⁵		6.1	
E	02		7.0	
E	26		7.2	
E	26 ⁵		5.6	
E	32		5.7	
E	39 ⁶		10.3	
E	45		10.0	

6

36+00

STA	+	H. I.	-	ELEV
W				
W	47	17.26	11.0	
W	43		10.8	
W	35		8.5	
W	32 ⁵		6.9	
W	26 ⁵		6.3	
W	25 ⁵		7.8	
W	02		7.6	
W	15			
E	00		6.5	
E	15			
E	02		7.6	
E	20 ⁵		7.7	
E	27		6.0	
E	33 ²		6.1	
E	35 ¹		7.2	
E	41 ⁸		8.1	
E	E/A7 ³		10.5	
E	54		11.7	

36+40

STA	+	H. I.	-	ELEV
		17.26		
	16		11.3	
	19		9.7	
	40		7.2	
	39		7.0	
	32 ⁹		6.1	
	27 ²		6.9	
	26 ⁰		9.7	
	02		7.1	
	15		6.7	
	00		6.7	
	15		6.7	
	02		7.2	
	26		7.7	
	26 ⁵		5.9	
	32 ¹		6.2	
	36 ³		8.8	
	42 ¹		10.7	
	50		10.9	

♀ PROFILE PROPOSED ROAD

X H. Brown
W. CARVER
A. SHERRY

12-18-50

⊕

ENTRANCE TERRA DEL FUEGO WEST STA + H.I. - Elev

0+00 = Sta 1+37 7+50 18.33 5.3 13.0

STA + H.I. - Elev 8+00 5.0 13.3

B.M. 7.39 18.33 10.94 EAST CL. IN 1st STA. 8900 +50 4.8 13.5

0+00 5.5 12.8 3+00 4.7 13.6

+50 5.5 12.8

1+00 5.1 13.2

+50 5.4 12.9

2+00 5.6 12.7

+50 5.9 12.4

3+00 5.9 12.4

+50 5.7 12.6

4+00 5.5 12.8

+50 5.6 12.7

5+00 5.4 12.9

+50 5.4 12.9

6+00 5.4 12.9

+50 5.3 13.0

7+00 5.4 12.9

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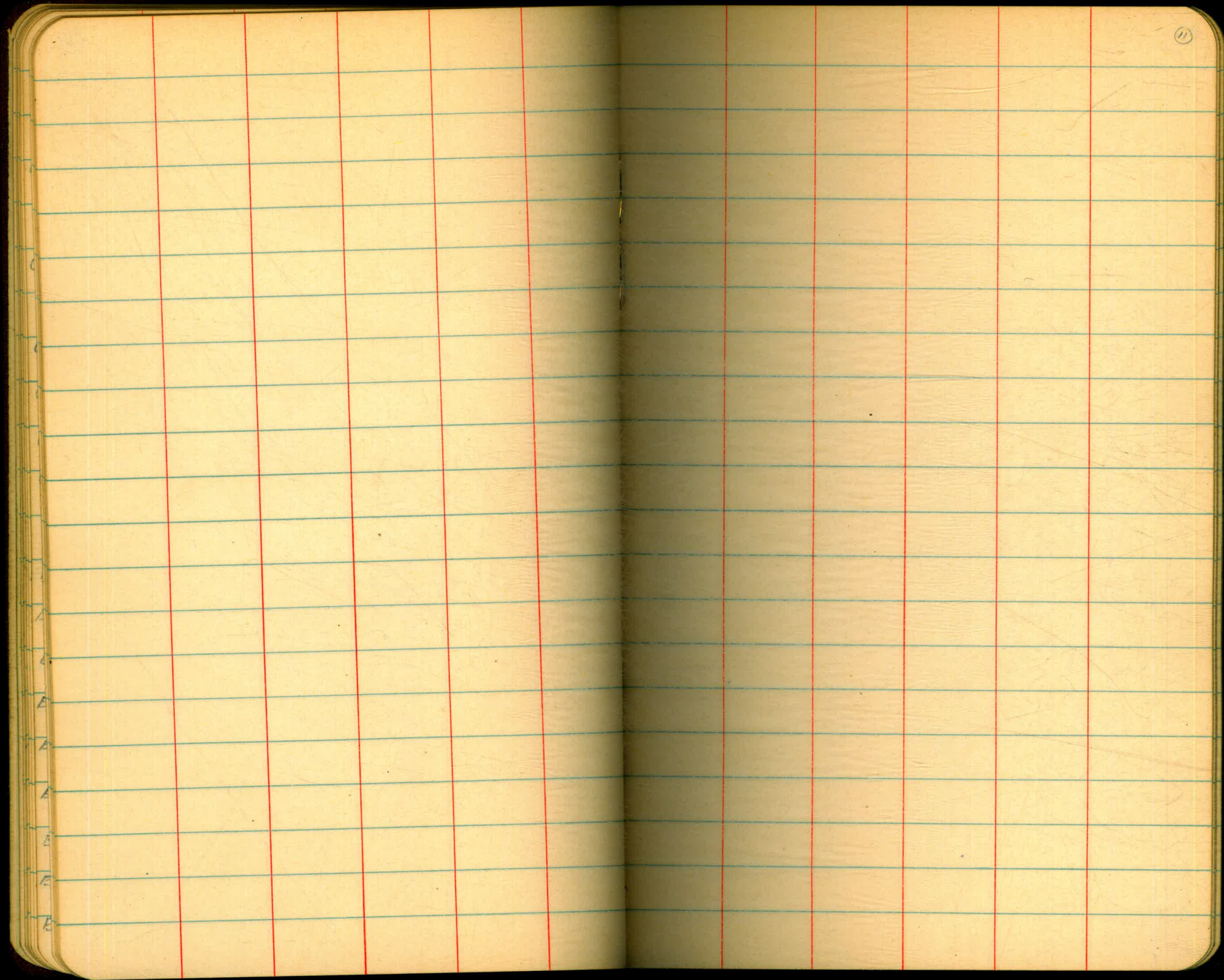
E

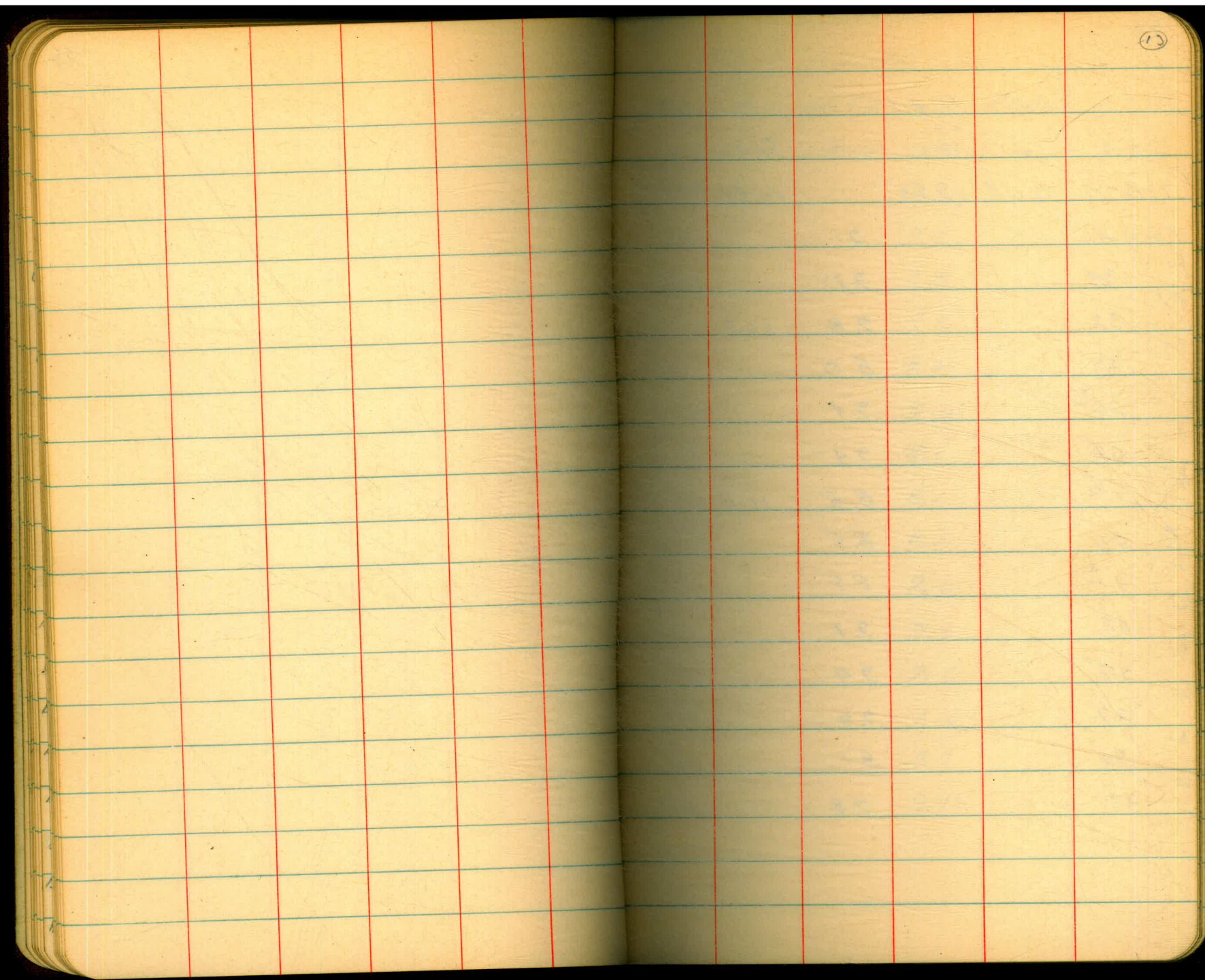
E

E

E

E





11 + 15

11 + 45

STA	+ H.I.	- ELEV	M.H.P 40 LINE
T.B.M	9.08	19.55	10.47
EAST 40'		9.1	
E/ 34		9.25	
E/ 32'		7.8	11.7
E/ 27'		8.0	
E/ 26 ^E		9.4	
F 02'		9.4	
E/ 1 ^E		8.5	11.5
R 00		8.5	
W 1 ^E		8.5	
W 02		9.1	
W 27'		9.4	
W 27		7.9	
W 30'		8.1	
W 33'		9.8	

STA	+ H.I.	- ELEV
60		10.2
56	19.55	11.3
45		11.0
37		9.7
33		7.8
27		7.8
27		9.2
02		9.0
1 ^E		8.1
00		8.1
1 ^E		8.1
02		9.0
26'		9.1
27		7.6
33		7.4
26		9.3
50		9.15

11+70

STA	H.L.	FLCU
E/ 50'	19.55	9.5
E/ 37'		9.3
E/ 33'		7.55
E/ 27'		7.3
EE/ 26 ⁵		9.2
EE 02		8.7
E/E 15'		7.85
E 00		7.85
E/W 15'		7.85
W 02		8.7
WW 26 ⁵		9.0
WW 27'		7.2
WW 31'		7.2
WW 37'		9.2
WW 47'		10.2
WW 57'		11.1

11+95

STA	H.L.	FLCU
W 19.55	10.8	
W 50	10.0	
W 37	8.8	
W 34	6.9	
W 27	7.0	
W 26 ⁵	8.8	
W 02	8.3	
W 15'	7.4	
W 00	7.4	
W 15'	7.4	
W 02	8.4	
W 26'	8.6	
W 26 ⁵	7.0	
W 33	7.0	
W 36'	9.4	
W 50'	9.6	

(15)

12+50

STA	+	H.I.	-	ELEV
E 60'		19.55	9.7	
E 50'			9.8	
E 39'			9.6	
E 33'			9.8	
E 27			6.0	
E 26.5			7.6	
E 02			7.0	
E 15			6.1	
W 00			6.1	
W 15			6.1	
W 02			6.95	
W 26			7.2	
W 26.5			5.7	
W 33			5.7	
W 42			11.2	
W 50			11.0	
W 60'			11.2	

13+00

STA	+	H.I.	-	ELEV
W 60'		19.55	11.4	
W 50'			11.9	
W 42			11.2	
W 32			4.3	
W 26			4.2	
W 26			5.9	
W 02			5.5	
W 15			4.7	
W 00			4.7	
W 15			4.7	
W 02			5.7	
W 26			5.8	
W 26.5			4.1	
W 32			4.2	
W 41			9.9	
W 50'			9.9	
W 60'			9.8	

13 + 50

14 + 00

STA	H.L.	FLEV
E 60	19.55	2.8
E 50		2.9
E 43		2.5
E 32		2.2
E 26 ⁵		2.1
E 26		3.9
E 02		3.6
E 15		2.7
R 00		2.7
W 15		2.7
W 02		3.8
W 26		3.9
W 26 ⁵		2.3
W 32		2.3
W 46		10.9
W 50		11.1
W 60		11.3
W 90		11.5

STA	H.L.	FLEV
32	19.55	0.2
26 ⁵		0.2
26		1.7
02		1.6
15		0.7
R 00		0.7
W 15		0.7
W 02		1.7
W 26		2.1
W 26 ⁵		0.2
W 32		0.3
T.P.	19.55	0.65 18.90
9.30	28.20	18.90

R 14+00

14450

STA + H.L. - FLEV

STA	H.L.	FLEV
YE 32	28.70	7.0
E 26		6.8
E 26		8.5
E 02		8.3
E 15		7.9
R 00		7.9
W 15		7.9
W 02		8.3
W 26'		8.8
W 26 ⁵		6.8
W 32'		7.2

15400

STA + H.L. - FLEV

STA	H.L.	FLEV
W 32	28.20	5.4
W 26		5.2
W 26		7.0
W 02		6.8
W 15		5.8
R 00		5.8
W 15		5.8
W 02		6.9
W 26		6.8
W 26 ⁵		5.15
W 32'		5.3

(18)

15450

STA +

H.L.

- FLEV

STA	H.L.	FLEV
E 32'	30.14	6.3 23.7 ✓
E 25'	28.20	3.9 24.3
E 25 ⁵		3.8
E 25 ⁵		7.8 22.3
E 02		5.2 23.0
E 15		7.9 22.2
E 00		5.4 22.8
W 15		4.1
W 15		4.1
W 02		8.0 22.1
W 26'		4.4 23.8
W 26 ⁵		5.3
W 32 ⁵		7.9 22.2
		5.5 22.7
		3.7
		6.2 23.9
		3.9 24.3

16400

STA +

H.L.

- FLEV

STA	H.L.	FLEV
W 32	28.20	2.5 25.7
W 26		2.5
W 25 ⁵		4.7
W 02		3.9
W 15		2.9
W 00		2.9
W 15		2.9
W 02		2.7
W 26		4.0
W 26 ⁵		2.9
W 32		2.9

16+56 ⁺

STA + H.I. - ELEV

E			
E	32	28.20	2.1
E	26'		1.8
E	25'		2.4
E	03'		2.2
E	02 ⁵		1.3
00	6		1.3
W	01		1.3
W	01		2.1
W	26'		2.7
W	26'		0.7
W	32'	28.20	1.0

16+75

20

STA + H.I. - ELEV

W	32	28.20	0.8
W	26 ⁵		0.2
W	26		2.1
W	01		1.8
E	00		1.1
E	03		1.7
E	13'	28.20	2.3

16+87 ±

STA - ELEV - ELEV

℄ 00	28.20	1.95
w 25 ⁵		1.4
w 26 ⁵		+0.2
w 33		0.2

CHECK

T.B.M. 28.20 1.46

28.20
1.46
26.74 LONG NAIL TOP OF SOUTH END EAST W. WALL

CHECK LEVELS ON EXPANSION JOINTS

MIDWAY DRIVE BRIDGE



STA + H.I. - ELEV

T.B.M 7.402 17.872 10.47

T.P 0.41 17.462

" 9.548 27.01 17.462

T.B.M. 0.338 26.672

" 0.981 27.653 26.672

T.P. 7.997 19.656

" 0.465 20.121 19.656

10.470
 2.675 10.445
 + .024
 26.672
 26.696

T.B.M 6.40 33.096 26.696

9-7 7.276 25.826 25.90

9-6 7.023 26.096 26.13

9-5 6.817 26.279 26.36

9-4 6.588 26.508 26.58

9-3 6.373 26.723 26.79

9-2 6.159 26.937 27.00

9-1 5.941 27.155 27.20

(IN FRONT OF A.B.C. PLUMBING CO.)
 CONC. NAIL ± CENTER OF CONC VALVE VAULT 12" HO LINE

7.402 26.672
 16.97 0.981
 17.872 27.653
 .41 7.997
 17.462 19.656
 3.598 20.121
 27.010 26.675
 0.338 26.672
 26.672 10.496

" " " CONC NAIL SOUTH END OF EAST WING WALL

(TEMP. T.P.)

(FRONT OF A.B.C. PLUMBING)
 CONC NAIL ± CENTER OF CONC VALVE VAULT 7 1/2" HO LINE

26.696
 6.400
 33.096

GRADE CONC NAIL SOUTH END EAST WING WALL.

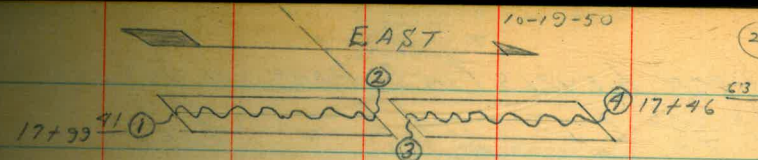
NOTES TOP OF GIRDERS (BACK OF ANGLES) DIRECTLY

ABOVE & OF BEARING SOUTH ABUT.

(SEE BOOK N^o 52 PAGE 72)

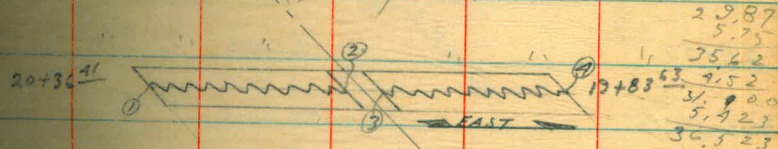
CHECK LEVELS ON EXPANSION JOINTS
MIDWAY DRIVE BRIDGE

STA	+	H.I.	-	ELEV
17+99 ⁴¹		33.096	3.798	29.298
WEST CENTER			3.94	29.156
EAST CENTER			3.999	29.097
17+46 ⁶³			4.605	28.991
T.P.		3.225		29.871
"	5.75	35.620		29.87
20+36 ⁴¹			4.35	31.27
WEST CENTER			4.235	31.385
EAST CENTER			4.237	31.383
19+83 ⁶³			4.628	30.992
SET T.P.			4.520	31.100
"	5.423	36.523		31.100



WEST END EXP. JOINT ON WEST HALF
AT CENTER " " " "
AT CENTER " " " EAST HALF
EAST END " " ON EAST HALF

TOP RIVET HEAD ON (G-6) OVER PIER 9

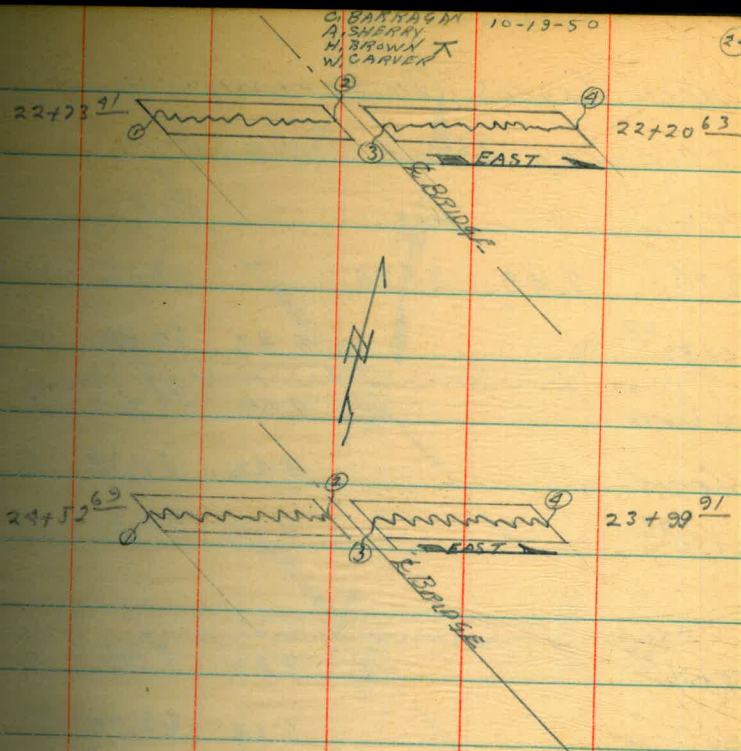


TOP RIVET HEAD ON (G-6) OVER PIER N^o 7

" " " " " "

CHECK LEVELS ON EXPANSION JOINTS

STA	+	H. I.	-	ELEV	
		36.523			
22+73 ⁹¹				4.570	31.953 (1)
WEST CENTER				4.360	32.163 (2)
EAST CENTER				4.382	32.191 (3)
22+20 ⁶³				4.591	31.932 (4)
24+52 ⁶⁹				4.605	31.918 (1)
WEST CENTER				4.310	32.213 (2)
EAST CENTER				4.314	32.209 (3)
23+99 ⁹¹				4.517	32.006 (4)
SET T.P.				5.089	31.434



T.O.P. RIVER HEAD ON (G-5) OVER PIERN^o 5

CHECK LEVELS ON EXPANSION JOINTS
MIDWAY DRIVE BRIDGE

STA	+	Hgt.	-	ELEV	
B.M.	7.48	35.70		28.22	
26+89 ⁶⁹			* 4.82	30.88	①
WEST CENTER			* 4.44	31.26	②
EAST CENTER			4.42	31.38	③
26+36 ⁹¹			4.49	31.21	④
29+26 ⁶⁹			7.25	28.95	①
WEST CENTER			6.66	29.09	②
EAST CENTER			* 6.57	29.23	③
28+73 ⁹¹			6.41	29.29	④
30+11 ⁹¹			9.08	26.62	①
WEST CENTER			8.29	27.41	②
EAST CENTER			8.20	27.50	③
29+58 ⁶³			7.85	27.85	④

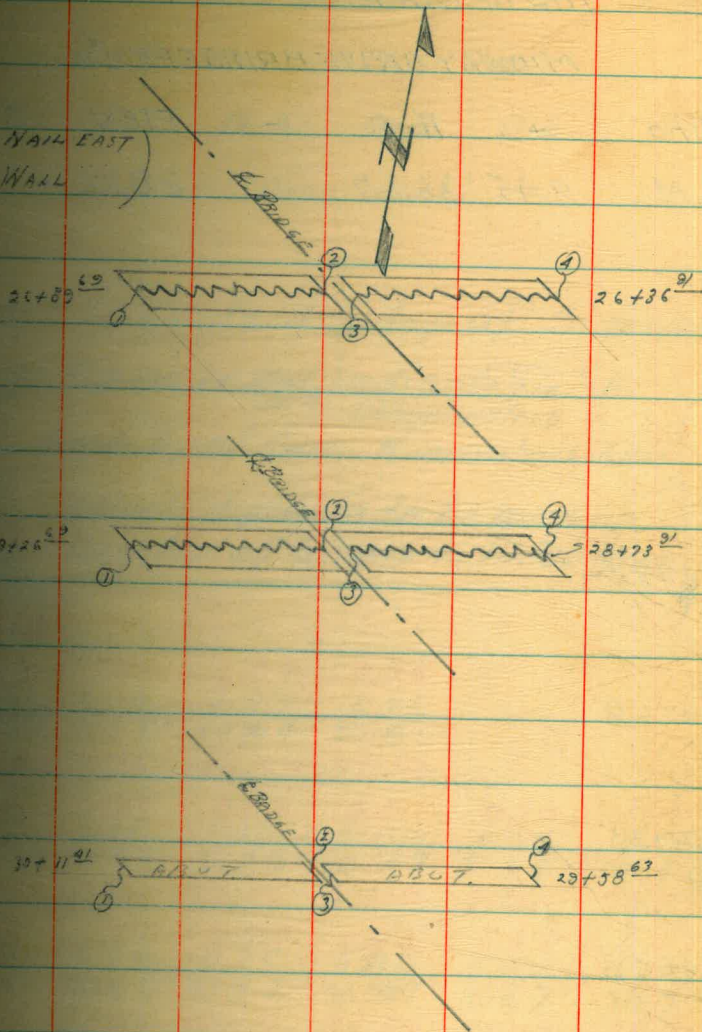
CHECK B.M.

C. BAPIDAN
A. SHERRY
H. BROWN
W. CARNEY

10-23-50

25

(CONC NAILED EAST
WING WALL)



TOP OF GIRDER ELEVATIONS + W

Oct 30, 1950

Elev

MIDWAY DRIVE BRIDGE PROJ #40

±

Sta	+	H.I.	-	Elev	28'	18'	8'	±	8'	18'	28'
					G-1	G-2	G-3	G-4	G-5	G-6	G-7
B.M	8.45	36.67		28.22	East Wing Wall (Conc Nail)						

Grade to (outside) top of Sidewalk

NOTE: Figures in Red indicate finish
Denominators
Grade Top of Conc. Numerators in Red

Indicate distances to be meas. up
from top of Girders to finish grade

26+75	1.64	0.79			6.33	6.23					
	30.74	30.74			31.98	31.13					
26+50	1.55	0.68	0.81	1.00	0.95						
	6.12	6.02	6.12	6.23	6.26						
	30.66	30.58	30.55	30.44	30.41						
	32.11	31.26	31.36	31.44	31.36						
26+25	1.46	0.57	0.76	0.86	0.81	0.76	1.65				
	5.96	5.81	5.95	5.97	6.00	6.05	6.09				
	30.77	30.81	30.72	30.70	30.67	30.62	30.58				
	32.23	31.38	31.48	31.56	31.48	31.38	32.23				
26+00	1.43	0.58	0.70	0.75	0.72	0.67	1.57				
	5.76	5.76	5.78	5.75	5.80	5.85	5.90				
	30.91	30.91	30.89	30.92	30.78	30.82	30.77				
	32.34	31.49	31.59	31.67	31.59	31.49	32.34				
25+75	1.43	0.58	0.68	0.75	0.68	0.60	1.46				
	5.66	5.66	5.66	5.65	5.66	5.68	5.69				
	31.01	31.01	31.01	31.02	31.01	30.99	30.88				
	32.44	31.59	31.69	31.77	31.69	31.59	32.44				
A Low Spot, 25+50	1.57	0.66	0.66	0.74	0.68	0.59	1.48				
	5.71	5.65	5.55	5.55	5.57	5.58	5.62				
	30.96	31.02	31.12	31.12	31.10	31.09	31.05				
	32.53	31.68	31.78	31.86	31.78	31.68	32.53				

10-30-50

(27)
E →

← W

Profile
#

Sta	H.I.	Elev	28'	18'	8'	8'	18'	28'
			G-1	G-2	G-3	G-4	G-5	G-6
25+25	36.67		30.99	31.07	31.09	31.09	31.11	31.17
			32.61	31.76	31.86	31.94	31.86	31.76
25+00			31.08	31.07	31.09	31.11	31.14	31.15
			32.68	31.83	31.93	32.01	31.93	31.83

9173
Outside
Top of
Sidewalk

outside top
Sidewalk
4272

T.P. 8.30 36.52 28.22 Cent. Wall East Wing Wall
 set
 T.P. 5.26 31.26 Transit on G. 6 Pier # 4
 T.P. 5.47 36.73

Oct. 31-50

24+75			31.21	31.26	31.26	31.19	31.16	31.18
			32.74	31.89	31.99	32.07	31.99	31.89
24+50			31.23	31.26	31.29	31.32	31.32	31.30
			32.80	31.95	32.05	32.13	32.05	31.95
24+25			31.30	31.33	31.29	31.31	31.33	31.41
			32.84	31.99	32.09	32.17	32.09	31.99
24+00			31.39	31.35	31.36	31.36	31.35	31.37
			32.87	32.02	32.12	32.20	32.12	32.02

Sta	+ H.I	- Elev	G.1	G.2	G.3	G.4	G.5	G.6	G.7
			28'	18'	8'		8'	18'	28'
23+75	36.73		1.45 5.30 31.43 32.89	0.62 5.31 31.42 32.04	0.69 5.28 31.45 32.14	0.85 5.36 31.37 32.22	0.77 5.36 31.37 32.14	0.65 5.34 31.39 32.04	1.55 5.39 31.34 32.89
23+50			1.48 5.31 31.42 32.90	0.61 5.29 31.44 32.05	0.71 5.29 31.44 32.15	0.80 5.30 31.43 32.23	0.68 5.26 31.47 32.15	0.61 5.29 31.44 32.05	1.57 5.40 31.33 32.90
23+25			1.53 5.38 31.36 32.89	0.57 5.26 31.47 32.04	0.70 5.29 31.44 32.14	0.78 5.29 31.44 32.22	0.70 5.29 31.44 32.14	0.64 5.33 31.40 32.04	1.53 5.37 31.36 32.89
23+00			1.57 5.42 31.31 32.83	0.65 5.32 31.38 32.03	0.75 5.35 31.38 32.13	0.79 5.31 31.42 32.21	0.66 5.26 31.47 32.13	0.63 5.33 31.40 32.03	1.52 5.37 31.36 32.88

Set
T.P. 5.33 31.40 River in Pier #6

Nov 1 - 195

Sta	+ H.I	- Elev	G.1	G.2	G.3	G.4	G.5	G.6	G.7
T.P.	5.09	36.49 ^v	31.40	River in Pier #6					
22+75			1.54 5.17 31.32 32.86	0.69 5.17 31.32 32.01	0.78 5.16 31.33 32.11	0.83 5.13 31.36 32.19	0.77 5.15 31.34 32.11	0.67 5.15 31.34 32.01	1.53 5.16 31.33 32.86
22+50			1.50 5.16 31.33 32.83	0.59 5.10 31.39 31.98	0.78 5.19 31.30 32.08	0.87 5.20 31.29 32.16	0.80 5.21 31.28 32.08	0.64 5.15 31.34 31.98	1.55 5.21 31.28 32.83
22+25			1.52 5.22 31.27 32.79	0.50 5.15 31.34 31.84	0.61 5.16 31.33 31.94	0.79 5.16 31.33 32.12	0.67 5.22 31.27 31.94	0.54 5.19 31.30 31.84	1.50 5.20 31.29 32.79

Sta	+	H1	-	Elev	28' G-1	18' G-2	8' G-3	± G-4	8 G-5	18 G-6	28' G-7
22+00		36.49			1.57 5.32 31.17 32.74	0.70 5.30 31.19 31.89	0.81 5.31 31.18 31.99	0.86 5.28 31.21 32.07	0.73 5.23 31.26 31.99	0.57 5.17 31.32 31.89	1.45 5.20 31.29 32.74
21+75					1.56 5.37 31.12 32.68	0.66 5.32 31.17 31.83	0.76 5.32 31.17 31.93	0.87 5.35 31.14 32.01	0.82 5.38 31.11 31.93	0.66 5.32 31.17 31.83	1.46 5.27 31.22 32.68
21+50					1.50 5.38 31.11 32.61	0.57 5.30 31.19 31.76	0.76 5.39 31.10 31.86	0.84 5.39 31.10 31.94	0.75 5.38 31.11 31.86	0.67 5.40 31.09 31.76	1.52 5.40 31.09 32.61
21+25					1.50 5.46 31.03 32.53	0.61 5.42 31.07 31.68	0.72 5.43 31.06 31.78	0.74 5.37 31.12 31.86	0.65 5.36 31.13 31.78	0.68 5.49 31.00 31.68	1.54 5.50 30.99 32.53
21+00					1.49 5.54 30.95 32.44	0.62 5.52 30.97 31.59	0.72 5.52 30.97 31.69	0.80 5.52 30.97 31.77	0.70 5.50 30.99 31.69	0.65 5.55 30.94 31.59	1.45 5.50 30.99 32.44
20+75					1.54 5.63 30.80 32.34	0.66 5.66 30.83 31.49	0.67 5.57 30.92 31.59	0.79 5.61 30.88 31.67	0.70 5.60 30.89 31.59	0.59 5.59 30.90 31.49	1.48 5.63 30.86 32.34
20+50					1.54 5.80 30.69 32.23	0.68 5.79 30.79 31.38	0.74 5.75 30.74 31.48	0.86 5.79 30.70 31.56	0.74 5.75 30.74 31.48	0.53 5.64 30.85 31.38	1.49 5.75 30.74 32.23
20+25					1.44 5.82 30.67 32.11	0.66 5.89 30.69 31.26	0.77 5.90 30.59 31.36	0.83 5.88 30.61 31.44	0.72 5.85 30.64 31.36	0.63 5.86 30.63 31.26	1.53 5.91 30.58 32.11
20+00					1.41 5.92 30.57 31.98	0.56 5.92 30.57 31.13	0.68 5.94 30.55 31.23	0.82 6.00 30.49 31.31 ⁰⁷	X 6.00 30.49 31.23	0.69 6.05 30.44 31.13	1.55 6.06 30.43 31.98

T.P. 3.23 33.67 6.05 30.44

0.89
1975 G-6

28' 18' 8' 8' 18' 28'

Sta H.D. Elev G-1 G-2 G-3 G-4 G-5 G-6 G-7

33.67 ✓

19+75

1.46 0.63 0.74 0.77 0.67 0.61 1.49
3.29 3.31 3.32 3.27 3.25 3.29 3.32
30.38² 30.36 30.35 30.40 30.42 30.38 30.35⁰⁶
31.84 30.99 31.09 31.17 31.09 30.99 31.84

19+50

Correct ✓

1.68 0.63 0.80 0.85 0.72 0.56 1.60
3.43 3.46 3.53 3.50 3.45 3.39 3.43
30.16 30.21 30.14 30.17 30.22 ✓ 30.28⁸ 30.24⁰⁸ ✓
31.84 30.84 30.94 31.02 30.94 30.84 31.84

19+25

1.50 0.69 0.77 0.83 0.76 0.64 1.51
3.64 3.68 3.66 3.64 3.65 3.63 3.65
30.03 29.99 30.01 30.03 30.02 30.04 30.02 ✓
31.53 30.68 30.78 30.86 30.78 30.68 31.53

19+00

1.57 0.67 0.71 0.80 0.79 0.68 1.58
3.91 3.96 3.80 3.81 3.88 3.87 3.92
29.76 29.81 29.87 29.86 29.79 29.80 29.75 ✓
31.33 30.48 30.58 30.66 30.58 30.48 31.33

18+75

1.60 0.66 0.73 0.80 0.79 0.66 1.58
4.18 4.09 4.06 4.05 4.12 4.09 4.16
29.49 29.58 29.61 29.62 29.55 29.58 29.51 ✓
31.09 30.24 30.34 30.42 30.34 30.24 31.09

18+50

1.60 0.59 0.67 0.83 0.79 0.74 1.58
4.41 4.22 4.27 4.35 4.39 4.44 4.43
29.22 29.38 29.40 29.32 29.28 29.23 29.24 ✓
30.82 29.97 30.07 30.15 30.07 29.97 30.82

18+25

1.53 0.64 0.74 0.78 0.74 0.74 1.58
4.64 4.63 4.65 4.61 4.65 4.75 4.74
28.98 29.02 29.02 29.06 29.02 28.92 28.93 ✓
30.51 29.66 29.76 29.84 29.76 29.66 30.51

18+00

1.52 0.65 0.72 0.82 0.76 0.71 1.54
5.03 5.01 4.98 5.00 5.02 5.07 5.05 ✓
28.64 28.66 28.69 28.67 28.65 28.60 28.62
30.16 29.31 29.41 29.49 29.41 29.31 30.16

17+75

1.48 0.52 0.78 0.83 0.72 0.58 1.57
5.33 5.27 5.41 5.40 5.37 5.34 5.47
28.34 28.40 28.26 28.27 28.30 28.33 28.23
29.77 28.92 29.02 29.10 29.02 28.92 29.77 ✓

38 - Cont on Page

X - Sections Midway Dr.

Oct 30, 1950

(31)

Bridge Proj # 40

Sta	+	H.I.	-	Elev	
B.M	6.35	34.57		28.22	conc. Nail East W.W.
30+00			7.72	26.85	west Gut
			6.83	27.74	west curb
			6.76	27.81	west Edge
29+75			6.99	27.58	East Pro.
			6.90	27.67	west Pro.
			7.15	27.42	west Gut.
			6.31	28.26	west curb
			6.23	28.34	west Edge
29+50			5.70	28.87	west Edge
			5.80	28.77	west curb
			6.61	27.96	west Gut
			6.42	28.15	west Pro.
			6.37	28.20	East Pro
			6.53	28.04	East Gut
			5.79	28.78	East curb
			5.70	28.87	East Edge

Sta	+	H.I.	-	Elev	
29+25		34.57	5.26	29.31	East edge
			5.32	29.25	East curb
			6.03	28.54	East Gut.
			5.90	28.67	East Pro
			6.00	28.57	West Pro
			6.07	28.50	West Gut
			5.24	29.33	West Curb
			5.23	29.34	West Edge
29+00			4.79	29.78	West Edge
			4.86	29.71	West Curb
			5.75	28.82	West Gut
			5.46	29.11	West Pro
			5.49	29.08	East Pro
			5.58	28.99	East Gut.
			4.91	29.66	East Curb
			4.81	29.76	East Edge

Sta	+	H.I.	-	Elev	
28+75		34.57	4.41	30.16	East Edge
			4.44	30.13	East Curb
			5.27	29.30	East Gut
			5.14	29.43	E Pro
			5.13	29.44	W Pro
			5.43	29.14	West Gut
			4.51	30.06	West Curb
			4.43	30.14	West Edge
28+50			4.08	30.49	West Edge
			4.15	30.42	Curb
			5.16	29.41	Gut
			4.79	29.78	Pro
			4.82	29.	East Pro
			4.93		Gut
			4.15		Curb
			4.05		Edge

Sta + H.I. - Elev

28+25

3.75

East Edge

3.85

curb

4.67

Gut

4.64

Pro

4.48

west Pro

4.87

Gut

3.80

curb

3.75

Edge

28+00

3.46

west Edge

3.55

curb

4.52

Gut

4.16

Pro

4.38

East Pro

4.45

Gut

3.53

curb

3.48

Edge

Sta + HI - Elev

27+75

32.4

East Edge

332

East curb

3.18

Gut

4.04

Pro

4.05

west Pro

4.12

Gut

3.31

curb

3.22

Edge

27+50

3.01

west Edge

3.12

curb

3.86

Gut

3.83

Pro

3.80

East Pro

4.02

Gut

3.11

curb

3.03

Edge

sta	+	H.I.	-	Elev	
27+25			2.87		East Edge
			2.97		curb
			3.81		Gut
			3.55		Pro
			3.59		West Pro
			3.68		Gut
			2.96		curb
			2.87		Edge
27+00			2.72		west Edge
			2.82		curb
			3.60		Gut
			3.52		Pro
			3.36		East Pro
			3.68		Gut
			2.81		curb
			2.68		Edge

sta	+	H1	-	Elev		
26+75			2.58		East	Edge
			2.66			curb
			3.51			Gut
			3.33			Pro
			3.38		Wes	Pro
26+50			2.48		East	Edge
			2.55			curb
			3.40			Gut

11-8-50

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Check Levels M.H. ABC Plumb

To	Nashville				
Sta	+	H.I.	-	Elev	
B.M.	4.90	15.37		10.47	
T.P.	6.77	16.47	5.67	9.70	
B.M.	6.59	17.78	5.28	11.19	11.16
B.M.			5.98	11.80	11.77

Manhole A.B.C. Plumbing
 Curb midway $\frac{1}{2}$ Nashville
 Head wall

11-9-50

Check Levels South Abut.

(40)

Sta	+	HI	-	Elev	
BM.	6.94	17.37		10.43	Man hole ABC Plumbing
T.P.	11.12	27.43	1.06	16.31	
BM	3.91	30.54	0.80	26.63	26.86 E wing wall S.E. Cor.
BM			2.30	28.24	28.37 W. wing wall Southend
			5.01	25.53	25.64 East end Back wall S. Abut.
			4.34	26.20	26.31 Center " " " "
			3.73	26.81	26.99 West End " " " "
B.M.			9.58	20.96	conc. Nail west end S. Abut.
B.M.			10.22	20.32	" " Center S. Abut
B.M.			10.89	19.65	" " East end S. Abut
G-3			9.99	20.55	20.67 Nail in Lead Plug G-3
G-5			10.44	20.10	20.24 " " " " G-5
G-6			10.67	19.87	20.01 " " " " G-6
G-7			10.91	19.63	19.78 " " " " G-7
BM	0.87	27.50		26.63	E Wing wall S.E. Cor.
T.P.	0.83	20.30	8.03	19.47	
T.P.	4.06	15.94	8.42	11.88	
B.M.			5.51	10.43	Man hole ABC Plumbing

Sta	+	H.I.	-	Elev
B.M.	5.895	17.665		11.77
B.M.	5.64	16.795	6.51	11.155
T.P.	6.215	15.945	7.065	9.730
B.M.	4.460	14.875	5.530	10.415
T.P.	3.685	12.310	6.250	8.625
^{set} B.M.	3.010	12.600	2.720	9.590
T.P.	5.680	15.145	3.135	9.465
B.M.			4.760	10.385
B.M.	5.450	15.865		10.415
T.P.	7.050	16.675	6.240	9.625
BM	6.460	17.585	5.550	11.125
B.M.			5.850	11.735

Head wall

Nashville & Midway

Manhole ABC Plumbing

South west cor of inlet East of south Apron

Manhole ABC

Manhole ABC

Nashville & Midway

Head wall

Entrance to Tidel. F. (w/2)

11/9/50

(Set up @ 89+00)
W. Curb Baseline

(42)

All Angle & Stadia Shots on Azimuth.

Pt.	Az.	Dist.	Object.	Pt.	Azimuth	Dist.	Object
				18	282°25'	150'	Edge Pavement
1	169°15'	27'	End	19	247°50'	105'	" "
2	206°35'	50'	Spr. Head	20	223°15'	121'	" "
3	201°20'	83'	Phone Marker	21	206°20'	91'	" "
4	186°15'	112'	Spr. Head	22	189°35'	184'	Cor. Pavement
5	179°55'	167'	" "	23	178°50'	181'	" "
6	177°15'	229'	" "	24	190°30'	79'	" "
7	169°45'	262'	So. Curb End	25	148°55'	113'	Curb Inlet
8	18°25'	290'	Phone	Sta. 88+93			Water Main Cross Midway
9	188°35'	331'	E Edge Pavement				
10	193°55'	337'	W " "				
11	201°35'	218'	L Pt. " "				
12	216°45'	274'	" " "				
13	223°45'	243'	Sign				
14	230°10'	277'	Palm.				
15	240°00'	212'	Cor. Pavement				
16	228°40'	140'	" "				
17	273°55'	170'	Edge Pavement				

check Levels South Abut

Sta	+	H.I.	-	Elev.	
B.M.	4.62	15.78		11.16	Curb midway & Nashville
T.P.	8.19	18.19	5.78	10.00	
side sl. + B.M.			7.76	10.43	conc nail H ₂ O vault ABC Plumbing
TP	12.07	28.50	1.76	16.43	
B.M.			1.87	26.63	26.50 South East Cor. E wing wall South Abut
B.M.			0.27 ^{10" (8.5")}	28.23	South end west wing wall " " "
B.M.			7.53	20.97	West End S. abut "Conc Nail"
			8.19	20.31	20.30 Conc Nail Center S. Abut
			8.85	19.65	Conc Nail East end Abut.
			2.98	25.52	East end Back wall
			2.30	26.20	26.20 Center Back wall
			1.70	26.80	West end Back wall
16+90.91			2.04	26.46	26.50 End steel 4 Bearing G-4 (Lodd Plug)

11-15-50

Check Levels South Abut (cont)

(44)

Sta	+	H.I	-	Elev	
BM	1.59	28.22		26.63	South east cor. East wing wall S. Abut.
T.P.	1.80	17.97	12.05	16.17	
side shot BM			7.53	10.44	Conc. Nail H ₂ O Valt A.B.C. Plumbing
T.P.	5.47	15.57	7.87	10.10	
BM			4.90	11.17	Curb Nashville & Midway

11-20-50

FINISH GRADES MIDWAY

DRIVE BRIDGE N. APPROACH

Grade
Top Cor.
outside

Sta	+	H.I	-	Elev.
B.M.				10.74
T.P.	12.63	23.37	2.49	20.88
	7.08	27.96		

Conc. Nail S.W. Cor.
 H₂O Valve Vault @ N. End Detour Rd, E. Side Midway
 Guinea over east bank

30+00				27.71	0.25	✓
+39.96				26.77	1.19	✓
+75				25.86	2.10	✓
31				25.17	2.79	✓
+25				24.43	3.56	✓
+50				23.66	4.30	✓
+75				22.85	5.11	
32				22.00	5.96	✓
+25				21.11	6.85	✓
+50				20.19	7.77	✓
+75				19.23	8.73	✓
33+00				18.23	9.73	✓
33+25				17.23	10.73	

11-20-50

Sta + H.I. - ELEV

27.96

33+50 16.24 11.72 ✓

33+75 15.32 12.64 ✓

34+00 14.51 13.45

34+25 13.79 14.17

34+50 13.16

34+75 12.64

TP 12.63 15.33

Finish Grades
N. Approach Midway Bridge
East Side

21 Nov 1950

Sta	+	H.I.	-	Grade	M.H. See Page (45)
BM				10.74	
	5.48	16.22			
34+00			1.71	14.51	✓
+25			2.43	13.79	✓
+50			3.06	13.16	✓
+75			3.58	12.64	✓
35+00			4.02	12.20	✓
+25			4.38	11.84	✓
+50			4.68	11.54	✓
+75			4.90	11.32	✓
36+00			5.05	11.17	✓
+25			5.13	11.09	✓
+40			5.14	11.08	✓
T.P.					

Finish Grades
N. Approach Midway Bridge
West Side

(47)

21 Nov. 1950

Sta	+	H.I.	-	Grade
T.B.M.				20.87
	7.41	28.28		
30+00			0.57	27.71
30+39 ²⁵			1.51	26.77
+75			2.42	25.86
31+00			3.11	25.17
+25			3.85	24.43
+50			4.62	23.66
+75			5.43	22.85
32+00			6.28	22.00
+25			7.17	21.11
+50			8.09	20.19
+75			9.05	19.23
33+00			10.05	18.23
+25				17.23
+50				16.24

Finish Grades Cont 21 Nov, 50
 West Side
 N. APPROACH Midway Bridge

Finish Grade W. Curb
 from 36+40 North to End of Job

(48)

Sta	+	H.I.	-	Grade	
	0.10	28.28			
T.P.	0.10	18.33		18.23	
33+00				18.23	
+25			1.10	17.23	✓
+50			2.09	16.24	✓
+75			3.01	15.32	✓
34+00			3.82	14.51	✓
+25			4.54	13.79	✓
+50			5.17	13.16	✓
+75			5.69	12.64	✓
35+00			6.13	12.20	✓
+25			6.49	11.84	✓
+50			6.79	11.54	✓
+75			7.01	11.32	✓
36+00			7.16	11.17	✓
+25			7.24	11.09	✓
+40			7.25	11.08	✓
			7.58	10.75	✓

Sta + H.I. - Grade

BM,

10.74

M.H. See
 Page (45)

4.47 15.21

4.13 11.08

Finish Grades
Center Strip N APPROACH
Midway Drive Bridge

21 Nov 50

(49)

Sta.	+ 16.22 H.I.	-	Grade	
33+50		.06	16.16	✓
+75		.98	15.24	✓
34+00		1.79	14.43	✓
+25		2.51	13.71	✓
+50		3.14	13.08	✓
+75		3.66	12.56	recheck
35+00		4.10	12.12	✓
+25		4.46	11.76	✓
+50		4.76	11.46	✓
+75		4.98	11.24	✓
36+00		5.13	11.09	✓
+25		5.21	11.01	✓
³⁸ +40		5.22	11.00	✓

Nov. 21, 1950

Sta	+	H.I	-	Grade
T.P.		16.22	0.98	15.24
	10.81	26.05		

33+25			8.90	17.15	✓
33+00			7.90	18.15	✓
+75			6.90	19.15	✓
+50			5.94	20.11	✓
+25			5.02	21.03	✓
32+00			4.13	21.92	✓
31+75			3.28	22.77	✓
+50			2.47	23.58	✓
+25			1.70	24.35	✓
31+00			0.96	25.09	✓
T.P	4.30	29.39			
+75			3.61	25.78	✓
30+40			2.70	26.69	✓
30+17			2.15	27.24	✓

Sta	+	H.I	-	Grade	
		29.39			
30+00			1.76	27.63	✓
29+85 ²¹			1.45	27.94	

BENCH LEVELS MIDWAY

Nov. 24, 1950

(51)

DRIVE BRIDGE PROJ #40

~~T~~ T. Stamper
 T E. Watson
 φ W. Carter
 T H. Brown
 φ A. Sherry

Sta	+	H.I.	-	Elev.	
B.M.				11.77	Brass Plug Triple Hd Wall Culv. W. Side Midway
	4.79	16.56			& N. of W. Pt. Loma Blvd. Approx 100'
T.B.M.			5.47	11.09	N.W. Cor. Conc. Walk front of Miss. Bay Liquor Store
	4.24	15.33			
T.B.M.			4.61	10.72	Top 1" I.P. S.W. Cor. Mission Bay Boat Works L.S. 2486
	5.09	15.81			
T.B.M.			5.36	10.45	10.47 Top Conc. Nail & M.H. Front & W. of A.B.C. Plumbing Co.
T.B.M.			4.56	11.25	S.W. Cor. Top Conc. Step A.B.C. Plumbing Co.
T.B.M.			4.33	11.48	S.W. Cor. Top Conc. Square Flower Pot Front of
TP			2.08	13.73	Delicatessen Sly. from S.D. Fence Co.
	10.17	23.90			
TP			2.09	21.81	
	8.33	30.14			
T.B.M.			3.64	26.50	26.50 L. Plug & Bearing South Abutment Top Steel Girder
T.B.M.			3.91	26.23	Center Top Backwall
T.B.M.			4.59	25.55	E. End Top Backwall
T.B.M.			3.31	26.83	W. End Top Backwall
T.B.M.			2.35	27.79	Set 2"x2" on W. Top appr. fill at S. End Bridge

30.14
 8.16
 21.98

CROSS SECTIONS SOUTH
APPROACH. MIDWAY BRIDGE

Nov. 24, 50

Sta + H.I. - Elev.

NOTE: Elevations in Red are True
Theoretical Subgrades; Elev's in
Pencil indicate Subgrades as found
by Cross Sections

30.14			
Sta 16+33.36			DIFF
	5.4	25.11 24.7	0.41
	5.5	25.36 24.6	0.76
	5.9	25.11 24.2	0.91

E. GUTTER
E. Gutter
W. "

Sta 16+00

	6.4	24.31 23.7	0.61
	6.2	24.57 23.9	0.67
	6.5	24.31 23.6	0.71

E. Gutter
E. Profile
W. Gutter

Sta 15+75

	7.2	23.63 22.9	0.73
	7.0	23.88 23.1	0.78
	7.3	23.63 22.8	0.83

E. Gutter
E. Profile
W. Gutter

Sta 15+50

	7.8	22.90 22.3	0.60
	7.9	23.15 22.2	0.95
	7.9	22.90 22.2	0.70

E. Gutter
E. Profile
W. Gutter

X-SEC. CONTD

Nov. 24, 1950

Sta	H.I.	Elev		
	30.14			
Sta 15+25			DIFF	
	8.6	22.13 21.5	0.63	E. Gut
?	8.7	22.38 21.4	0.98	E. Profile
.	8.6	22.13 21.5	0.63	W. Gut
Sta 15+00				
	9.3	21.32 20.8	0.52	E. Gutter
?	9.2	21.57 20.9	0.67	E. Profile
.	9.2	21.32 20.9	0.42	W. Gutter
Sta 14+75				
	9.9	20.47 20.2	0.27	E. Gutter
	9.8	20.72 20.3	0.42	E. Profile
	9.9	20.47 20.2	0.27	W. Gutter
Sta 14+50				
	10.8	19.59 19.3	0.29	E. Gutter
	10.6	19.84 19.5	0.34	E. Profile
	10.9	19.59 19.2	0.39	W. Gutter
TP.	10.83	19.31		

X-SEC. CONTD

NOV. 24, 1950

(54)

Sta	+ H.I	- Elev	DIFF.
2.10	21.41	19.31	

Sta 14+25

2.9	18.67	18.5	0.17	E. Gutter
2.7	18.92	18.7	0.22	E. Profile
3.1	18.67	18.3	0.37	W. Gutter

Sta 14+00

3.9	17.71	17.5	0.21	E. Gutter
3.7	17.96	17.7	0.26	E. Profile
4.1	17.71	17.3	0.41	W. Gutter

Sta 13+75

4.9	16.71	16.5	0.21	E. Gutter
4.8	16.96	16.6	0.36	E. Profile
5.0	16.71	16.4	0.31	W. Gutter

Sta 13+50

5.9	15.71	15.5	0.21	E. Gutter
5.7	15.96	15.7	0.26	E. Profile
5.9	15.71	15.5	0.21	W. Gutter

X-SEC. CONTD

Nov. 24, 1950

(55)

Sta + H.L. - Elev. DIFF.

2141

Sta 13+25

		14.74		
6.8	14.6	0.14	E. Gutter	
	14.99			
6.6	14.8	0.19	E. Profile	
	14.74			
6.9	14.5	0.24	W. Gutter	

Sta 13+00

		13.84	GRADE	
7.5	13.9	0.06	E. Gutter	
	14.09			
7.6	13.8	0.29	E. Profile	
	13.84			
7.8	13.6	0.24	W. Gutter	

Sta. 12+75

		13.03		
8.5	12.9	0.13	E. Gutter	
	13.28			
8.3	13.1	0.18	E. Profile	
	13.03			
8.6	12.8	0.23	W. Gutter	

Sta 12+50

		12.31		
9.3	12.1	0.21	E. Gutter	
	12.56			
8.9	12.5	0.06	E. Profile	
	12.31			
9.1	12.3	-	W. Gutter	

X-SEC. CONTD

Nov. 24, 1950

(50)

Sta + H.I. - Elev

21.41

Sta 12+25

9.8	^{11.66} 11.6	0.06	E. Gutter
9.6	^{11.91} 11.8	0.11	E. Profile
9.8	^{11.66} 11.6	0.06	W. Gutter

Sta 12+00

10.3	^{11.00} 11.1	C-0.10	E. Gutter
10.3	^{11.25} 11.1	0.15	E. Profile
10.4	^{11.00} 11.0	-	W. Gutter

Sta 11+75

10.9	10.5		E. Gutter
10.6	10.8		E. Profile
10.9	10.5		W. Gutter

Sta 11+50

11.1	10.3		E. Gutter
10.9	10.5		E. Profile
11.2	10.2		W. Gutter

X-SEC. CONTD

Nov. 24, 1950

(57)

Sta + H.I. - Elev

21.41

Sta 11+25

11.2 10.2

E. Gutter

11.0 10.4

E. Profile

11.4 10.0

W. Gutter

Sta 11+15

11.1 10.03
10.3

E. Gutter

11.0 10.27
10.4

E. Profile

11.3 10.03
10.1

W. Gutter

T.B.M.

10.96 10.45 10.45

M.H. opposite A.B.C. Plumbing

TOP OF CURB MEDIAN STRIP
REVISED GRADES SOUTH APPROACH

Nov. 27, 1950

MIDWAY DRIVE BRIDGE PROJ N^o 40

Sta	+	H. I.	-	Elev.
B.M.	1.19			27.79
		28.98		
16+87.41		1.42		27.82
16+75		1.42		27.56 ✓
16+56.36		1.91		27.07 ✓
16+33.36		2.53		26.45 ✓
16+00		3.53		25.45 ✓
15+75		4.35		24.63 ✓
15+50		5.20		23.78 ✓
15+25		6.07		22.91 ✓
15+00		6.91		22.07 ✓
14+75		7.78		21.20 ✓
14+50		8.65		20.33 ✓
14+25		9.52		19.46 ✓
14+00		10.37		18.61 ✓
13+75				17.72
TP.		11.68		17.30

2x2 Hub on W. Side Top South Approach @ S. End Bridge

Nov. 27, 1950

MEDIAN STRIP TOP OF CURB

REVISED GRADES S. APPROACH

Sta	+ H.I	-	Elev	✓
T.P.			17.30	
	0.94	18.24		
13+75		.52	17.72	✓
13+50		1.37	16.87	✓
13+25		2.23	16.01	✓
13+00		3.04	15.20	✓
12+75		3.81	14.43	✓
12+50		4.55	13.69	✓
12+25		5.17	13.07	✓
11+95		5.76	12.48	✓
11+70		6.17	12.07	✓
11+45		6.48	11.76	✓
11+15		6.72	11.52	✓
B.M.		7.79	10.45	Top M.H. front of ABC

NOV. 27, 1950

REVISED GRADES TOP OF OUTSIDE
WEST CURB
CURBS MIDWAY DRIVE S. APPROACH

Sta.	+	H.I.	-	Elev.
B.M.				27.79
	0.26	28.05		
16+87.41			0.15	27.90 ✓
16+75			0.41	27.64 ✓
16+56.36			0.90	27.15 ✓
16+33.36			1.52	26.53 ✓
16+00			2.52	25.53 ✓
15+75			3.34	24.71 ✓
15+50			4.19	23.86 ✓
15+25			5.06	22.99 ✓
15+00			5.90	22.15 ✓
14+75			6.77	21.28 ✓
14+50			7.64	20.41 ✓
14+25			8.51	19.54 ✓
14+00			9.36	18.69 ✓
13+75			10.25	17.80 ✓
T.P.			10.65	17.40

(ex 2" see pg. 58)

28.05
27.82

0.23

0.23

1.52

2.52

3.34

4.19

5.06

5.90

6.77

7.64

8.51

9.36

10.25

10.65

REVISED GRADES TOP OF CURBS
WEST CURB
(OUTSIDE) SOUTH APPROACH

NOV. 27, 1950

(67)

Sta.	+	H.I.	-	Elev.
T.P.				17.40
	0.49	17.89		
13+75				17.80
13+50			0.94	16.95 ✓
13+25			1.80	16.09 ✓
13+00			2.61	15.28 ✓
12+75			3.38	14.51 ✓
12+50			4.12	13.77 ✓
12+25			4.74	13.15 ✓
11+95			5.33	12.56 ✓
11+70			5.74	12.15 ✓
11+45			6.05	11.84
11+15			6.39	11.50
11+00				11.37
10+80				11.22
10+45				11.02
10+00				10.92

BM

6.63

Elev

11.26

South West
car step
ABC

REVISED GRADES TOPOF CURB (outside)

SOUTH APPROACH WEST CURB PROJ^{NO}

Sta	+	H.I.	-	Elev.
10+00				10.92
9+50				10.86
9+00				10.81
R=10'				
8+53.75				10.77
8+43.75				10.75

REVISED GRADES TOP OF CURB (OUTSIDE)

SOUTH APPROACH EAST CURB Proj #40

STA.	+	H.I.	-	ELEV.
TBM				27.79
	0.57	28.36		
16+56	³⁶		1.21	27.15 ✓
16+33	³⁶		1.83	26.53 ✓
16+00	-		2.83	25.53
15+75			3.65	24.71 ✓
15+50			4.50	23.86 ✓
15+25			5.37	22.99 ✓
15+00			6.21	22.15 ✓
14+75			7.08	21.28 ✓
14+50			7.95	20.41 ✓
14+25			8.82	19.54 ✓
14+00			9.67	18.69 ✓
T.P.			9.46	18.90

2x2" Hub
See Page
58

F H BROWN
A SHERRY
W CARVER

(64)

REVISED GRADES Top of CURB (OUTSIDE)

Nov. 29-60

SOUTH APPROACH EAST SIDE Proj #40

Levels Causeway to E. Curb Inlet. App. Sta 38+00

STA	+	H.I.	-	ELEV.	
TP				18.90	Sec Page (63)
	0.62	19.52			
13+75			1.72	17.80	✓
13+50			2.57	16.95	✓
13+25			3.43	16.09	✓
13+00			4.24	15.28	✓
12+75			5.01	14.51	✓
12+50			5.75	13.77	✓
12+25			6.37	13.15	✓
11+95			6.96	12.56	✓
11+70			7.37	12.15	✓
11+45 BC			7.68	11.84	✓
R=3.85	Δ=176°47'14"				
11+45 EC			8.22	11.30	✓
TBM			8.26	11.26	SW Cor of Step A, B, C Plumbing

Sta	+	H.I.	-	Elev	
5.38	16.22	5.06	10.84	Causeway	
T.P.	5.11	16.27	4.89	11.16	
T.P.	5.25	16.63	5.69	11.38	Chisled D
			10.94	N.W. Conduit	
T.P.	5.39	16.33		10.94	"
T.P.	5.32	16.63	5.02	11.31	
T.P.	4.91	16.22	5.32	11.31	
			5.39	10.83	Causeway

CHECK LEVELS ON CITY DATUM

AT OLLIE ST. & MIDWAY

Sta	+	Hil	-	Elev	Grade
B.M.				10.72	1" Pipe (See pg 5)
	4.62	15.34			
T.B.M.			5.45	9.89	
			5.30	10.04	10.35
	4.62	10.72		9.67	

city Datum

Mkd. El. 1.14

Mkd Fill 0.31 To Top Curb E.C.

Mkd. C. 1.05 To Top of Conc. Pad

1.4
0.88
0.26

Dec. 4, 1950

(65)
T. Stamper
E. Watson
A. Sherry
W. Carver

10.35
26
10.61
9.01
1.60

3.00

9.01
24
8.77

8.73
1.10
9.83

0.79
~~8.73~~

~~9.12~~

9.52

8.73
1.77
10.50
9.8

0.79
8.73
9.52

9.34

10.35
1.62
8.73

10.63
10.35
.28

10.35
9.01
1.34
0.28

1.62
9.01
10.63

0.79
0.28
0.51
9.01
0.51

1.62
10.35
9.04
1.62
1.34
0.79
24
1.03
0.28

10.35

1.62

8.73

0.79

9.52

5.1
10.8
15.9

11.0
15.0
26.0
1.0
27.0

10.35
28.01
38.36

GRADES TOP OF WEST CURB

Dec. 6, 1950

T. Stampler

H. Brown

A. Sherry

W. Carver

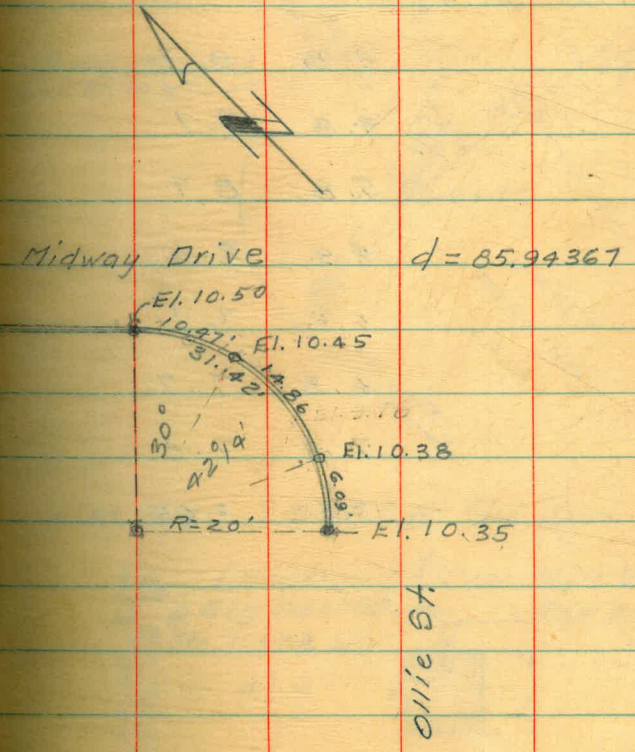
MIDWAY DRIVE OLLIE ST. NORTH

Sta.	+ H.I.	-	Grade #	Elev
B.M.				10.72
	4.05			14.77
E.C.				
8+43.75		4.42		10.35
B.C.				
8+63.75		4.27		10.50 ✓
8+80		4.21		10.56 ✓
9+00		4.14		10.63 ✓
9+25		4.05		10.72 ✓
9+50		3.96		10.81 ✓
9+75		3.86		10.91 ✓
10+00		3.77		11.00 ✓
10+25		3.68		11.09 ✓
10+45		3.62		11.15 ✓
10+80		3.48		11.29 ✓
11+00		3.38		11.39 ✓
11+15		3.27		11.50 ✓
11+45		2.93		11.84 ✓
11+70		2.62		12.15

Top 1" I.P. S.W. Cor. Prop. Mission Bay Boat Works

11.77
 900

 2.76



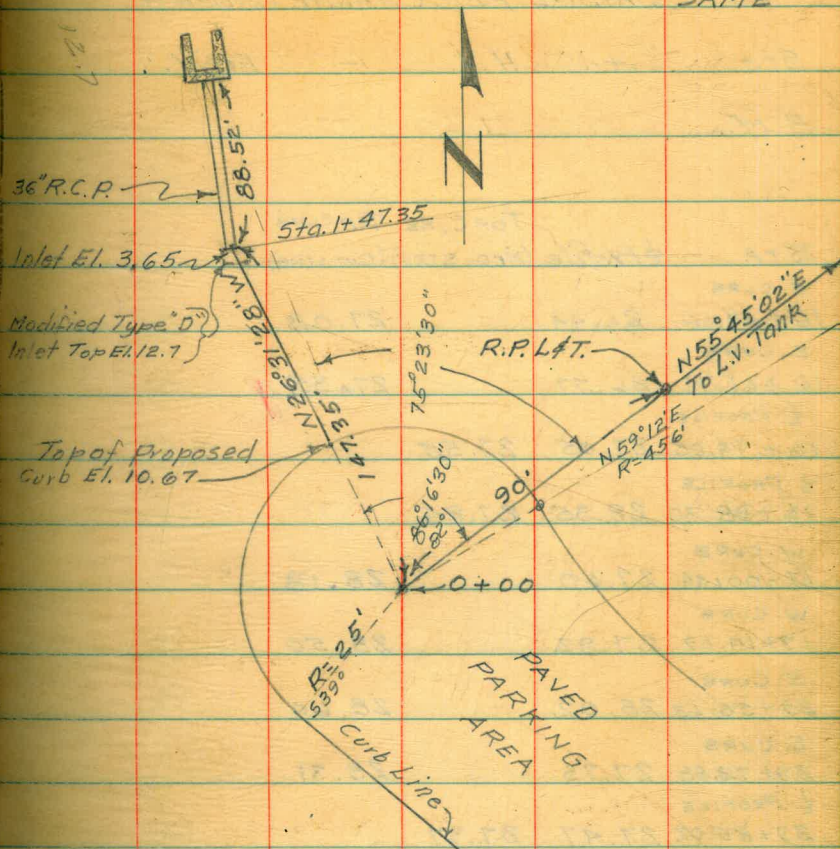
PROFILE ALONG ϕ OF "
 PROPOSED 18" R.C.P. STORM
 DRAIN ELY OF S. APPROACH
 MIDWAY DRIVE BRIDGE

Dec. 6, 1950

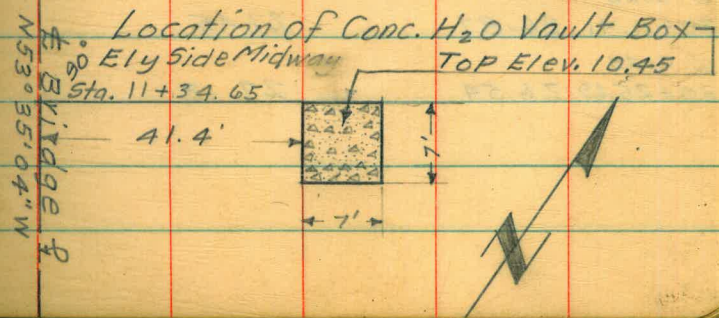
PARTY
 SAME

0+00 = Center 25' Radius Sta's Nly.

Sta	+ H.I	- Elev.	See Pg.
B.M.		11.48	51
	2.99	14.47	
0+00	4.8	9.7	
+25	4.8	9.7	
+50	5.8	8.7	
+75	5.9	8.6	
1+00	6.8	7.7	
+25	6.8	7.7	
1+47.35	7.1	7.4	
1+47.35	10.82	3.65	



Inlet Elev. 36" R.C.P. Sly. End



FINISH GRADES MIDWAY DRIVE

Jan. 4, 1951

(69)

BRIDGE PER. CHANGE ORDER #8

Sta. + H.I. - Elev.

B.M.

STA	± Profile	TOP CURB (MED. STRIP)	TOP CURB (OUTSIDE)
E. CURB			
16+47.66	26.44		27.02
E. CURB			
16+61.91	26.77		27.35
± PROFILE			
16+74.05	27.05	27.55	
± PROFILE			
16+88.30	28.35	27.85	
W. CURB			
17+00.44	27.60		28.18
W. CURB			
17+14.69	27.92		28.50
E. CURB			
29+58.63	28.02		28.60
E. CURB			
29+72.88	27.73		28.31
± PROFILE			
29+85.02	27.47	27.97	
± PROFILE			
29+99.27	27.15	27.65	
W. CURB			
30+11.41	26.87		27.45
W. CURB			
30+25.69	26.54		27.12

22 Dec 50

(70)

Grades set

Pavement Transition at 36+40 N.Wly

side Midway Drive Bridge

STA	+	H.I	-	Grade	
BM				10.74	water MH N End Deform
	5.05	<u>15.79</u>			5.58 10.21
36+50			5.64	10.15	✓
+75			5.79	10.00	✓
37+00			5.74	10.05	✓
37+27.23			5.69	10.10	✓
37+50		5.61	5.66	10.13	✓
37+76.63		5.62	5.65	10.14	✓
38+00		5.57	5.59	10.20	✓
+25		5.58	5.59	10.20	✓
+50		5.39	5.39	10.40	✓
38+63.86					

FINISH GRADES MIDWAY

Dec. 28, 1950

(71)

DRIVE WLY. EDGE OF EXISTING

PAVEMENT & E. BRIDGE GUTTER

STA	+	H. I.	-	ELEV.	TOP 1" IR.
B.M.				10.72	See pg. 61
	5.04	15.76			PAVING PAVING W. EDGE E. BRIDGE GUTTER
8+43.75			5.61	10.40	5.61, 5
8+63.75			5.60	10.41	16
8+75			5.57	10.44	19
9+00			5.55	10.46	21
9+25			5.52	10.49	24
9+50			5.48	10.53	28
9+75			5.45	10.56	31
10+00			5.42	10.59	34
10+25			5.39	10.62	37
10+44 ⁶⁶			5.13	10.66	41
			5.35	10.66	10.63
			5.09	10.77	52
10+80			5.24	10.77	10.67
			5.00	10.97	72
11+15			5.04	10.97	10.76

11.29

45
5.13

32

11+15

10+94.66

70.34

Fill
E Edge Crown W. Edge
F 0.32 0.36
0.40

CHECK LEVELS ON SUBSIDENCE
OF SOUTH ABUTMENT MIDWAY
DRIVE BRIDGE PROJ NO 65040

Jan. 4, 1951

87
86
31

Sta	+	H. I.	-	Elev.
B.M.	3.83	31.62		27.79 See Pg. 51

→ 3.17	26.50	Nov. 24, 50
5.08	26.54	26.50
3.45	26.22	
5.35	26.27	26.23
4.12	25.55	
6.02	25.60	25.55
2.83	26.84	
4.74	26.88	26.83

Lead Plug top & bearing G-4, S. Abutment
Center top backwall
E. End top backwall
W. End top backwall

B.M.		11.25	See Pg 51
------	--	-------	-----------

7.495 18.745

8.18 10.56

Top M.H 15' E.E. Profile

TP.	0.65	18.095
-----	------	--------

11.580 29.675

1.92 27.75

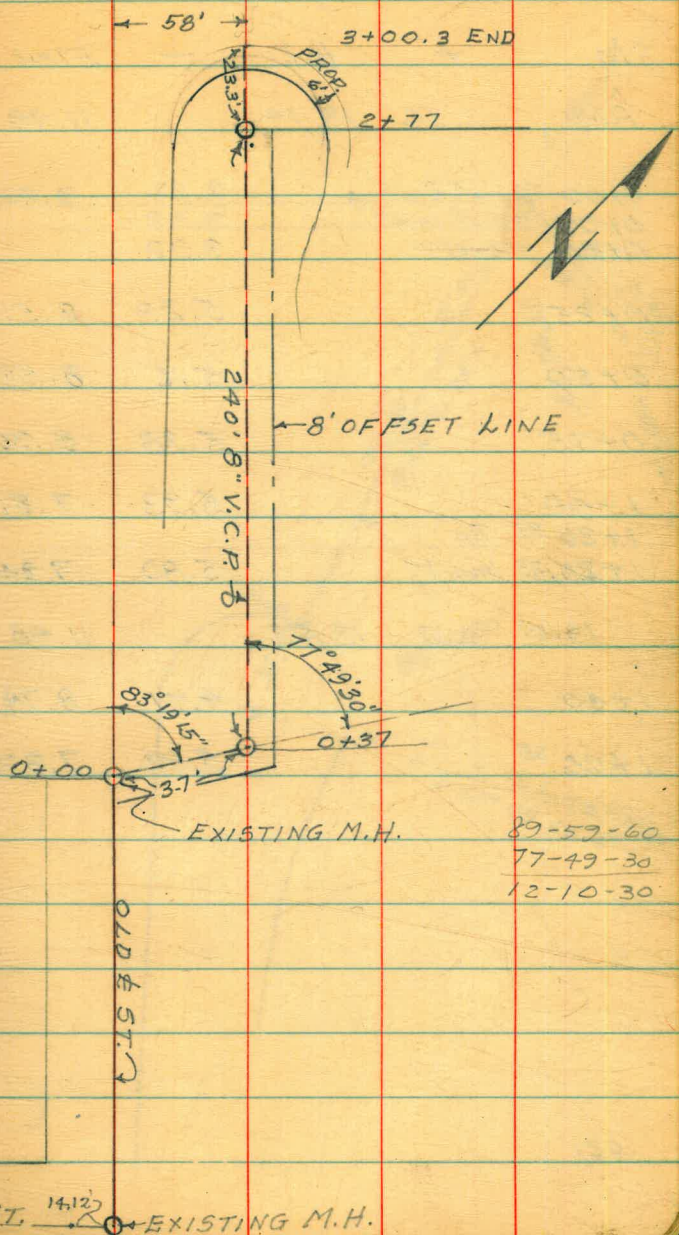
LAYOUT OF 8" SEWER

2-6-51

(73)

MIDWAY DRIVE W.O.N^o 20753

STA.	+	H.I.	-	Elev.	GRADE	CUT
B.M.				10.72	See Pg. 61	
	5.26	15.98				
0+00			5.19	10.79	5.09	5.70
0+25			5.77	10.21	5.19	5.02
TOP 0+37					10.42	0.51
0+37	5.00	15.72	5.05	10.93	5.24	5.69
0+50			5.22	10.50	5.29	5.21
0+75			5.30	10.42	5.39	5.03
1+00			5.87	9.85	5.49	4.36
1+25			5.67	10.05	5.59	4.46
1+50	5.25	15.18	5.79	9.93	5.69	4.24
1+75			5.79	9.93	5.79	4.14
2+00			5.21	9.97	5.89	4.08
2+25			5.35	9.83	5.99	3.84
2+50			5.30	9.88	6.09	3.79
TOP 2+77			5.54	9.64	10.20	FILL 0.56
2+77	5.37	15.01			6.20	3.44
3+00.3			5.32	9.69	6.67	3.02



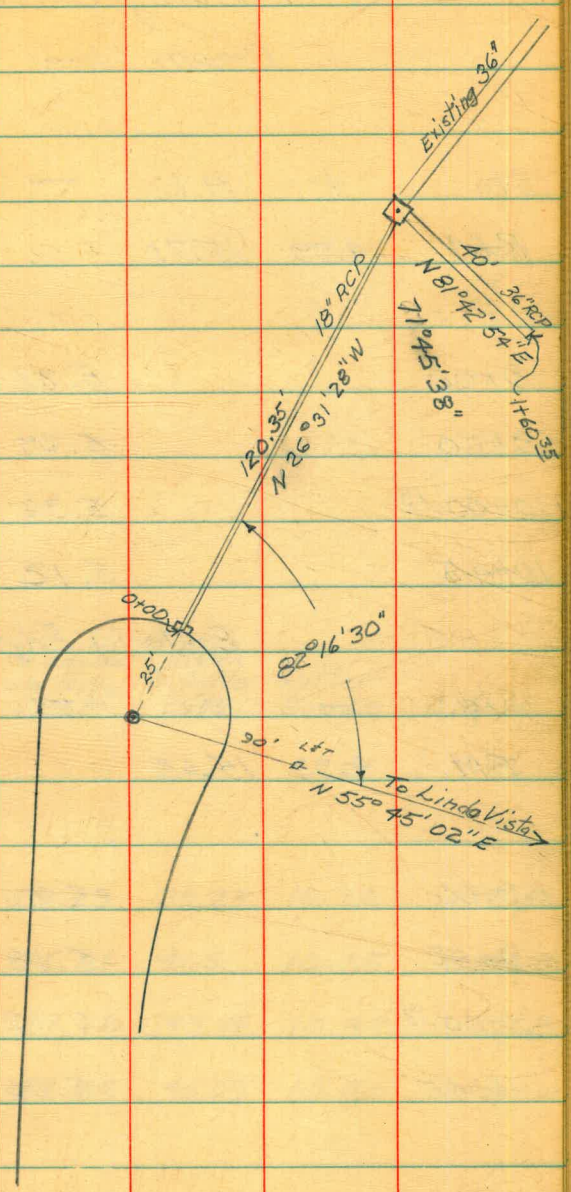
OLLIE ST. 14.122 EXISTING M.H.

7 Feb 51

(74)

Layout of 18" Storm Drain
Midway Drive W/O. 20753

Sta	+	H.I.	-	Elev.	Grade	Cu To Fill
BM	2.26	13.74		11.48		
0+00	Top of Grating	3.92	9.82	9.84	F 0.02	
0+00	Top of Inlet	3.92		10.67	F 0.85	
0+00	Invert	3.92		6.17	C 3.65	
0+25		5.23	8.51	5.65	C 2.86	
0+50		5.16	8.58	5.12	C 3.46	
0+75		5.38	8.36	4.60	C 3.76	
1+00		5.93	7.81	4.07	C 3.74	
1+20.35	Top			12.65	F 4.71	
1+20.35	Invert	5.80	7.94	3.65	C 3.29	
19.65	2.17	13.65		11.48	BM flower- P&T	
1+40		4.91	8.74	3.75	C 4.99	
1+60.35		5.82	7.83	3.85	C 3.98	



7 Jan 51

(75)

Grades For Paving
Midway Drive
Crown Line

Sta	+	H.I.	-	Elev	Grade	Fill		
BM	4.99	15.71		10.72	Top 1" I.P. Boatworks	see Page No 67	15.65	15.65
							5.10	5.25
							10.55	10.90
9+00			5.32	10.39	10.63	0.24		
9+50			5.29	10.42	10.66	0.24	10.72	
							4.44	
10+00.13			5.36	10.35	10.69	0.34	15.16	
							10.45	
10+45			5.12	10.59	10.73	0.14	4.71	

Easterly Edge

Sta	+	H.I.	-	At edge of old Paving Grade	Top 1" I.P. Boatworks	SW Cor. of see Page No 67	Crown Grade	To edge of old Paving Dist	Crown To Gutter Dist	Gutter Grade	Slope
BM.	4.93	15.65		10.72							
9+00			5.20	10.45			10.63	23.23	39.23	10.32	.0079/ft
9+50			5.18	10.47			10.66	25.51	41.51	10.35	.00746/ft
10+00.13			5.12	10.53			10.69	27.78	43.78	10.44	.0057/ft.
10+45			5.06	10.59			10.73	29.83	48.09	10.50	.00478/ft.

100-2-13-51

3.00
9.01
12.01
11.77
0.24
76

GRADES TOP OF E. CURB

MIDWAY DRIVE BRIDGE

Sta	+ H.I	-	Elev.	GUTTER GRADE See P9.	TOP CURB GRADE	TOP CURB
BM			10.72	75		
	5.50	16.22				
B+53 ⁷⁵			6.20	10.02	10.02	10.65
B+75			6.54	9.68	10.10	10.60 F0.92
9+00			5.97	10.25	10.19	10.69 F0.44
9+25			5.45	10.77	10.27	10.77 0.0
9+50			5.51	10.77	10.35	10.85 F0.14
B.C.Rt 9+87 ³⁴			5.54	10.68		10.89 F0.21
P.O.C. 10+00			5.68	10.54		10.92 F0.38
E.C. 10+12 ⁶⁵			5.77	10.45		10.94 F0.49
10+45			5.27	10.95		10.97 F0.02
10+80			4.87	11.35		10.93 C.0.42
B+53 ⁷⁵			5.57	10.65		
E.C. 11+45			4.80	11.42		

FINISH GRADES FOR CURB

AND GUTTER, CUL-DE-SAC

MIDWAY DR PROJ # 65400

STA	+	H.I.	-	ELEV	WEST GUTTER GRADE	W. TOP CURB GRADE	EAST GUTTER GRADE	E. TOP CURB GRADE
B.M.	3.81	15.39		11.48	Flower Pot at Quincey's			
11+15							10.40	10.90
11+45					10.65	11.40	10.36	10.86
11+60						11.27		
11+80					10.61	11.11	10.31	10.81
11+70.26								
12+00					10.59	11.09	10.28	10.78
12+20					10.57	11.07	10.25	10.75
12+40					10.53	11.03	10.22	10.72
12+60					10.49	10.99	10.19	10.69
12+80					10.43	10.93	10.16	10.66
13+00					10.38	10.88	10.13	10.63
13+10								
13+20					10.32	10.82	10.11	10.61
13+40					10.25	10.75	10.09	10.59
13+60					10.17	10.67		
13+67.76							9.84	10.67
13+86.68					9.84	10.67		

Void

Void

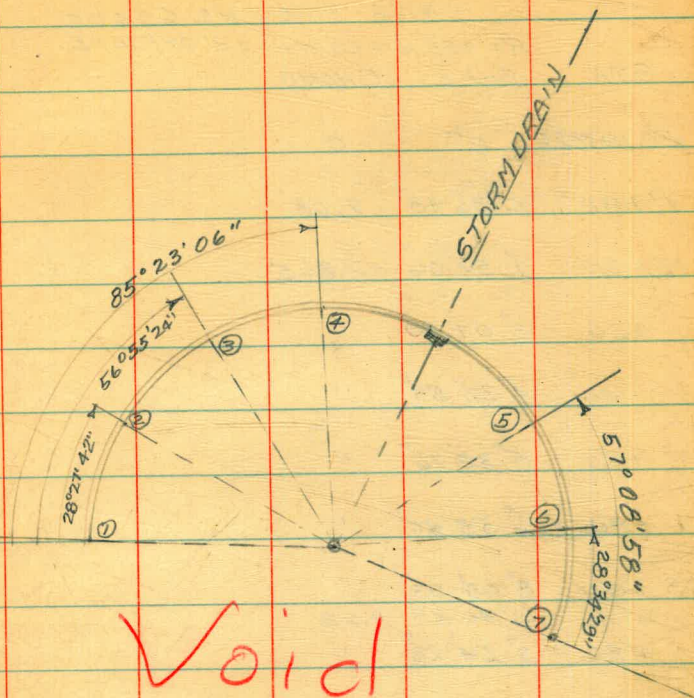
IDENTICAL PTS.

CULDESAC GRADES

2-28-51

MIDWAY DRIVE PROJ N^o 65400

Sta	+ H.I	- Elev	TOP CURB GRADE	GUTTER GRADE
B.M.				
1.			10.86	10.36
2.	Void		10.81	10.31
3.			10.76	10.26
4.			10.70	10.20
5.			10.68	10.18
6.			10.69	10.19
7.			10.70	10.20



(79)

CURVE DATA MIDWAY

DRIVE PROJ N^o 65400

R=453'4" = 20°07' = 3' OFFSET E.

STA	DEFL	CHORD
BC. 11+70.26	0°	0
11+80	0°36'43"	9.68
12+00	1°52'06"	19.865
+20	3°07'30"	"
+40	4°22'53"	"
+60	5°38'16"	"
+80	6°53'40"	"
13+00	8°09'03"	"
+10	8°46'49"	9.93
+20	9°24'26"	"
EC. 13+30.36	10°03'30"	10.29

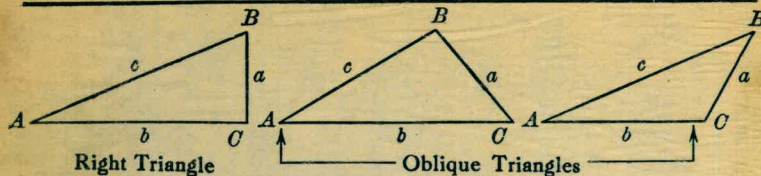
33.58 FROM HUB EAST OF
EAST CURB BR. TO B.C. 3' OFFSET

55-44-62
~~39-37-42~~
 180
 19-07-20
 196-07-20
 924 26
 809 03
 17 33 29
 8 16 30
 8 16 17
 8 46 41



31.62
 37.6
 27.86
 8.03
 5.62
 5.40
 22
 20
 8.54
 101
 7.53
 10.79
 5.09
 5.70
 10.72
 4.17
 14.89
 7.25
 10.64
 5.07
 15.65
 5.15
 10.50
 5.09
 15.59
 5.23
 10.36
 3.79
 3.79
 27.83
 34.94
 24.81
 59.75

TRIGONOMETRIC FORMULÆ



Solution of Right Triangles

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

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

Solution of Oblique Triangles

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

REDUCTION TO HORIZONTAL



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