354

Return to City Engineers Office
City Hall, San Diego, Cal.

TRANSIT

398

F.B. 354

TRAVERSE TABLE FOR TRANSIT BOOK.

From 1° to 90° for a distance of 10

354

Degrees.	DEGREES.		¼ DEGREE.		½ DEGREE.		¾ DEGREE.		Degrees.
	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	
0			100.00	0.44	100.00	0.87	99.99	1.31	
1	99.98	1.75	99.98	2.18	99.97	2.62	99.95	3.05	89
2	99.94	3.49	99.92	3.93	99.91	4.36	99.88	4.80	88
3	99.86	5.23	99.84	5.67	99.81	6.10	99.79	6.54	87
4	99.76	6.98	99.73	7.41	99.69	7.85	99.66	8.28	86
5	99.62	8.72	99.58	9.15	99.54	9.58	99.50	10.02	85
6	99.45	10.45	99.41	10.89	99.36	11.32	99.31	11.75	84
7	99.25	12.19	99.20	12.62	99.14	13.05	99.09	13.49	83
8	99.03	13.92	98.97	14.35	98.90	14.78	98.84	15.21	82
9	98.77	15.64	98.70	16.07	98.63	16.50	98.56	16.93	81
10	98.48	17.36	98.40	17.79	98.33	18.22	98.25	18.65	80
11	98.16	19.08	98.08	19.51	97.99	19.94	97.90	20.36	79
12	97.81	20.79	97.72	21.22	97.63	21.64	97.53	22.07	78
13	97.44	22.50	97.34	22.92	97.24	23.34	97.13	23.77	77
14	97.03	24.19	96.92	24.62	96.81	25.04	96.70	25.46	76
15	96.59	25.88	96.48	26.30	96.36	26.72	96.25	27.14	75
16	96.13	27.56	96.00	27.98	95.88	28.40	95.76	28.82	74
17	95.63	29.24	95.50	29.65	95.37	30.07	95.24	30.49	73
18	95.11	30.90	94.97	31.32	94.83	31.73	94.69	32.14	72
19	94.55	32.56	94.41	32.97	94.26	33.38	94.12	33.79	71
20	93.97	34.20	93.82	34.61	93.67	35.02	93.51	35.43	70
21	93.36	35.84	93.20	36.24	93.04	36.65	92.88	37.06	69
22	92.72	37.46	92.55	37.86	92.39	38.27	92.22	38.67	68
23	92.05	39.07	91.88	39.47	91.71	39.87	91.53	40.27	67
24	91.35	40.67	91.18	41.07	91.00	41.47	90.81	41.87	66
25	90.63	42.26	90.45	42.66	90.26	43.05	90.07	43.44	65
26	89.88	43.84	89.69	44.23	89.49	44.62	89.30	45.01	64
27	89.10	45.40	88.90	45.79	88.70	46.17	88.50	46.56	63
28	88.29	46.95	88.09	47.33	87.88	47.72	87.67	48.10	62
29	87.46	48.48	87.25	48.86	87.04	49.24	86.82	49.62	61
30	86.60	50.00	86.38	50.38	86.16	50.75	85.94	51.13	60
31	85.72	51.50	85.49	51.88	85.26	52.25	85.04	52.62	59
32	84.80	52.99	84.57	53.36	84.34	53.73	84.10	54.10	58
33	83.87	54.46	83.63	54.83	83.39	55.19	83.15	55.56	57
34	82.90	55.92	82.66	56.28	82.41	56.64	82.16	57.00	56
35	81.92	57.36	81.66	57.71	81.41	58.07	81.16	58.42	55
36	80.90	58.78	80.64	59.13	80.39	59.48	80.13	59.83	54
37	79.86	60.18	79.60	60.53	79.34	60.88	79.07	61.22	53
38	78.80	61.57	78.53	61.91	78.26	62.25	77.99	62.59	52
39	77.71	62.93	77.44	63.27	77.16	63.61	76.88	63.94	51
40	76.60	64.28	76.32	64.61	76.04	64.94	75.76	65.28	50
41	75.47	65.61	75.18	65.93	74.90	66.26	74.61	66.59	49
42	74.31	66.91	74.02	67.24	73.73	67.56	73.43	67.88	48
43	73.14	68.20	72.84	68.52	72.54	68.84	72.24	69.15	47
44	71.93	69.47	71.63	69.78	71.33	70.09	71.02	70.40	46
45	70.71	70.71							45
Degrees.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Degrees
	DEGREES		¾ DEGREE.		½ DEGREE.		¼ DEGREE.		

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Published by H. S. Crocker Company, Stationers, Drawing Materials, Mathematical Instruments, etc., San Francisco.

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Crocker Quality

TRANSIT BOOK

No._____

MANUFACTURED BY

H. S. CROCKER CO.

SAN FRANCISCO AND SACRAMENTO
CALIFORNIA

FROM
LORING'S BOOK STORE
SAN DIEGO, CAL.

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CULVERT

TRAVERSE TABLE FOR TRANSIT BOOK.

From 1° to 90° for a distance of 10

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3	99.86	5.23	99.84	5.67	99.81	6.10	99.79	6.54	86
4	99.76	6.98	99.73	7.41	99.69	7.85	99.66	8.28	85
5	99.62	8.72	99.58	9.15	99.54	9.58	99.50	10.02	84
6	99.45	10.45	99.41	10.89	99.36	11.32	99.31	11.75	83
7	99.25	12.19	99.20	12.62	99.14	13.05	99.09	13.49	82
8	99.03	13.92	98.97	14.35	98.90	14.78	98.84	15.21	81
9	98.77	15.64	98.70	16.07	98.63	16.50	98.56	16.93	80
10	98.48	17.36	98.40	17.79	98.33	18.22	98.25	18.65	79
11	98.16	19.08	98.08	19.51	97.99	19.94	97.90	20.36	78
12	97.81	20.79	97.72	21.22	97.63	21.64	97.53	22.07	77
13	97.44	22.50	97.34	22.92	97.24	23.34	97.13	23.77	76
14	97.03	24.19	96.92	24.62	96.81	25.04	96.70	25.46	75
15	96.59	25.88	96.48	26.30	96.36	26.72	96.25	27.14	74
16	96.13	27.56	96.00	27.98	95.88	28.40	95.76	28.82	73
17	95.63	29.24	95.50	29.65	95.37	30.07	95.24	30.49	72
18	95.11	30.90	94.97	31.32	94.83	31.73	94.69	32.14	71
19	94.55	32.56	94.41	32.97	94.26	33.38	94.12	33.79	70
20	93.97	34.20	93.82	34.61	93.67	35.02	93.51	35.43	69
21	93.36	35.84	93.20	36.24	93.04	36.65	92.88	37.06	68
22	92.72	37.46	92.55	37.86	92.39	38.27	92.22	38.67	67
23	92.05	39.07	91.88	39.47	91.71	39.87	91.53	40.27	66
24	91.35	40.67	91.18	41.07	91.00	41.47	90.81	41.87	65
25	90.63	42.26	90.45	42.66	90.26	43.05	90.07	43.44	64
26	89.88	43.84	89.69	44.23	89.49	44.62	89.30	45.01	63
27	89.10	45.40	88.90	45.79	88.70	46.17	88.50	46.56	62
28	88.29	46.95	88.08	47.33	87.88	47.72	87.67	48.10	61
29	87.46	48.48	87.25	48.86	87.04	49.24	86.82	49.62	60
30	86.60	50.00	86.38	50.38	86.16	50.75	85.94	51.13	59
31	85.72	51.50	85.49	51.88	85.26	52.25	85.04	52.62	58
32	84.80	52.99	84.57	53.36	84.34	53.73	84.10	54.10	57
33	83.87	54.46	83.63	54.83	83.39	55.19	83.15	55.56	56
34	82.90	55.92	82.66	56.28	82.41	56.64	82.16	57.00	55
35	81.92	57.36	81.66	57.71	81.41	58.07	81.16	58.42	54
36	80.90	58.78	80.64	59.13	80.39	59.48	80.13	59.83	53
37	79.86	60.18	79.60	60.53	79.34	60.88	79.07	61.22	52
38	78.80	61.57	78.53	61.91	78.26	62.25	77.99	62.59	51
39	77.71	62.93	77.44	63.27	77.16	63.61	76.88	63.94	50
40	76.60	64.28	76.32	64.61	76.04	64.94	75.76	65.28	49
41	75.47	65.61	75.18	65.93	74.90	66.26	74.61	66.59	48
42	74.31	66.91	74.02	67.24	73.73	67.56	73.43	67.88	47
43	73.14	68.20	72.84	68.52	72.54	68.84	72.24	69.15	46
44	71.93	69.47	71.63	69.78	71.33	70.09	71.02	70.40	45
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FROM
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Getti. Falcon. SW.RRyok. 266 15.C

Clowy L
Colbert
Wordie

Location of Culvert on A st

Bt 27 th & 28 th

Dec 13 08

0.74	207.72		206.98	Bm 28th
00	194.74	12.98	194.74	
1.41	183.57	12.64	182.10	on Grade
N E of old culvert		14.40	169.10	
N end of new		14.5	169.00	
2.40	184.50		182.10	
6.26	178.30	12.46	172.04	
S End of Old culvert		11.20	167.10	
S " " new		12.00	166.3	

POSTED

945
87.73
6.75
3.38
10.13

28th st

Wood See Book 281 P 53

El 169.0
Old Culvert El 169.1
17'
21'
Grade 194.5
81.4
30" Pipe Culvert
38.2
162'
POSTED
A st
Grade 192.5
Old Culvert El 167.00
El 166.3
25'
14.3
39.3
177'

27th st

Location of culvert on A st

Bet Bean & 29 st st.

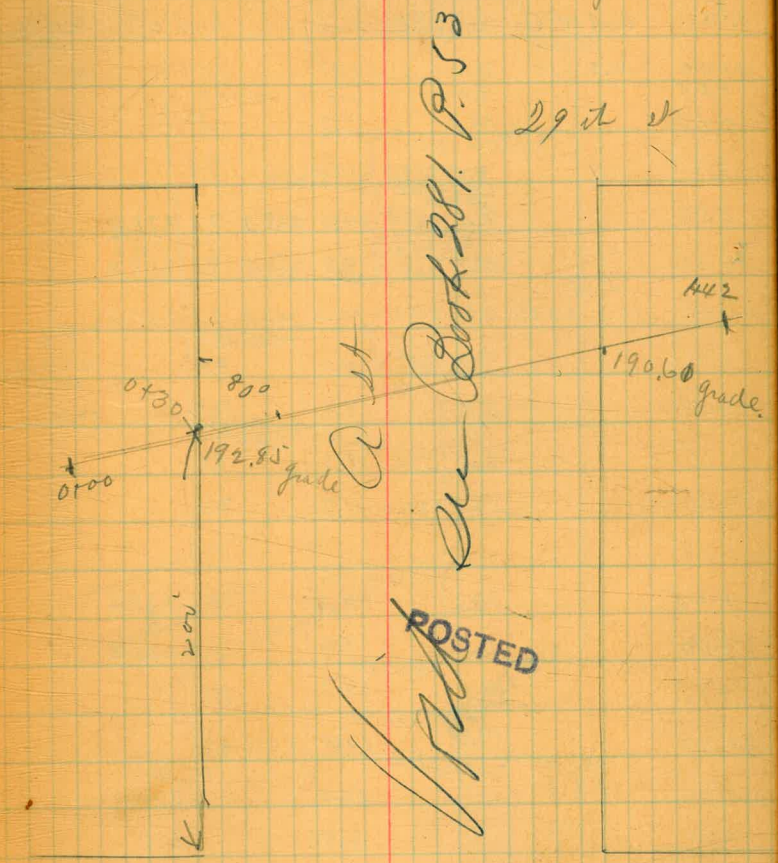
	Sta.	H.I.	Rod	Elev.
205.18 / 2.04 / 207.22	0+00	181.51	9.0	
12.96 / 194.26 / 0.22 / 194.04	+30		9.2	
12.67 / 181.37	+60		9.7	
0.14 / 181.51	+80		10.6	
1.0.2 / 172.3	1+00		11.4	
11.6 / 169.9	+30		12.2	
	+42		11.5	
B.M.	SE. cor. of So. concrete pier		6.35	175.16

middle bent of sewer trestle

POSTED

Dec. 14/08 { Childs, Barber, Rogers

3

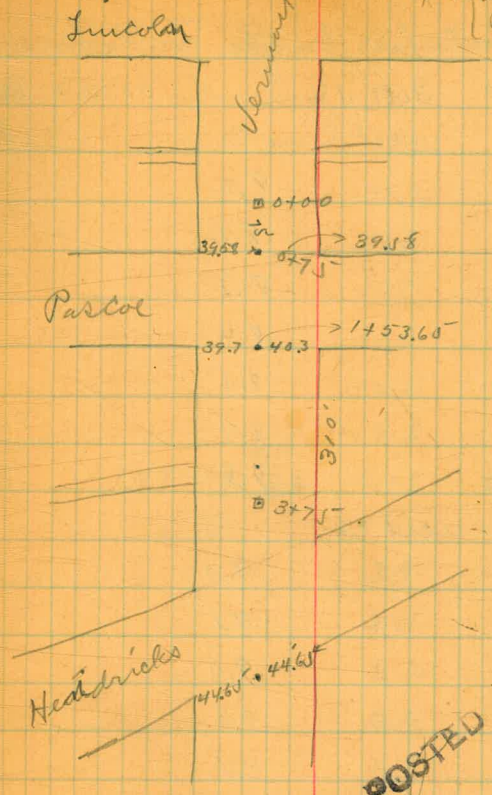


H.I. 290.93

X sect. for foot bridge

Sta.	10' W Rod	10' W Elev	20' W Rod	20' W Elev	C Rod	C Elev	+20 E Rod	+20 E Elev	10' E Rod	10' E Elev
0+00	2.0		6.6		1.7		0.7			
+05			8.7		2.7		1.3			
+10			10.0		7.8		1.81		2.4	
			279.06 H.I.							
+25			6.4	272.7	12.0		7.8			
			266.35 H.I.							
+50			8.5	257.8	10.4	268.7	7.7	271.4		
			253.59 H.I.							
+75			5.1	248.5	9.8	256.5	9.1	257.2		
1+00	12.7	240.9	6.6	247.0	10.7	242.9	6.1	247.5		
						240.53 H.I.				
+25			9.7	243.9	4.7		2.4		6.2	234.3
+50			5.3		9.7		12.8		12.2	
						231.98 H.I.				
+75			3.5		8.3		7.8			
2+00			12.0	220.0	11.3		2.4			
			240.53 H.I.							
+25			13.5		9.6		7.1	233.4		
+50			1.5		0.6		-1.7	242.2		
			266.35 H.I.							
+75			14.1		13.7		11.4			
			279.06 H.I.							
3+00			13.8		10.4		8.2			
	20' W		290.93 H.I.				20' E			
+25	13.8				10.0		10.4			
+50	7.7				6.8		6.0			
+75	4.6				3.6	287.3	2.6		288.3	

on Vermont / Dec. 24/08 Schields Barber Rogers



10' sidewalks on center

Levels for bridge on Robinson

		H.I.		
150	307.12		305.62	B.M.

West line center

N. line	8.2
	8.6
	8.7
C	8.4
	8.5
	8.8
So. line	8.8

West cb.

So line	9.0
	9.1
	9.0
C	9.0
	9.4
	9.7
N line	9.5

West 1/4

N. line	11.3
	10.9
	10.8
C	10.4
	10.3
	10.1
So line	10.0

307.12 Dec. 28/08 { Schilds, Barber, Rogers

center to Park Boulevard.

So Center

		H.I.		
So line			11.2	
			11.2	
			11.6	
C			11.9	
			11.9	
			12.2	
N line			12.8	
T.P.	1.48	293.62	12.98	294.14

E 1/4

N line	3.9
	3.1
	2.2
C	2.2
	2.1
	2.0
So. line	1.9

E. cb.

So. line	3.9
	3.1
	2.9
C	3.1
	4.3
	6.0
N line	5.3

POSTED

295.62

East line

N. line	6.9
	7.9
	7.0
C	5.5
	4.3
	4.6
So line	4.6
19' E	
So line	9.8
	7.7
	7.5
	9.6
	10.3
	11.5
	9.4
N. line	6.3
25' E	
N line	5.7
	9.6
	12.9
C	13.1
	12.1
	11.2
So line	12.5

295.62

50' E

N line		5.0	
		8.9	
N 1/4		12.1	
60' E			
N 1/4		12.0	
		8.6	
N line		5.7	
70' E			
N line		7.1	
		9.2	
N 1/4		12.1	
80' E			
N 1/4		13.5	
		10.9	
N. line		8.9	
T.P.	0.57 283.27	12.92	282.70
50' E			
So line		10.4	
		8.8	
		7.4	
C	Posted	4.5	

583.27

60' E

C	4.5
	7.3
	10.7
So line	13.4

70' E

So line	13.9
	10.0
	6.8
C	3.9

80' E

C	4.8
	7.5
	10.6
So line	13.2

100' E

N line	2.4
	5.0
	6.7
C	9.8
So 1/4	12.3

115' E

C	13.3
	10.9
	9.6
N line	8.1

125' E

N line	10.1
C	12.5

~~135' E~~

~~[illegible]~~	~~11.1~~

~~200' E~~ ~~6.9~~

So line	10.9
	15.3
	11.3
C	8.8
	7.3
	5.7
N line	6.4

~~225' E~~

N line	0.1
	1.3
	4.1
C	6.3
	8.4
	11.0
C6 + 8'	12.0
So line	13.4

Packed

		283.27		
		150' E		
So line			8.8	
			8.1	
Cb + 6'			7.3	
			8.8	
1/4 + 3'			6.4	
C			4.2	
N 1/4			0.9	
		275' E		
C			-0.4	283.7
			0.3	283.0
			0.4	
So. line			2.3	
T.P.	see page 9		0.40	282.87
Low T.P.	3.96	H.I. 274.25	12.98	270.29
		100' E		
So. line			8.6	
So. Cb			5.0	
		115' E		
So 1/4			6.4	
			8.1	
So line			12.1	
		125' E		
So line			9.9	
			11.9	
			11.1	
C			11.0	
N 1/4			5.4	

		274.25	
		150' E	
N line			6.9
			9.2
			7.8
C			7.6
			8.2
1/4 + 7'			10.1
Cb			8.4
So line			5.7
		165' E	
So line			2.7
			7.7
Cb + 4'			9.1
			6.3
C			5.4
			5.7
			6.5
N line			8.9
		175' E	
N line			5.3
			4.6
			3.7
C			4.0
			6.3
1/4 + 7'			8.5
			6.8
So line			2.1

Posted

		H.I.		1	
J.P.	12.24	295.11		282.87	
		250' E			
N line			6.9		
N.C.			9.2		
		275' E			
N. 1/4			9.9		
			6.7		
N line			4.0		
		300' E			
N line			1.6		
			3.1		
			3.6		
C			3.7		
			3.9		
			5.1		
So line			7.0		
		325' E			
So line			0.0		
So line +11'			0.2		
			2.3		
			1.4		
C			1.3		
			0.8		
			0.3		
N line			0.6		

		H.I.		
J.P.	10.22	304.77	0.56	294.55
		350' E		
N line			8.7	
			8.7	
			8.6	
C			9.0	
			8.7	
			9.5	
So line			9.1	
		375' E		
So line			6.9	
			7.4	
			7.3	
C			7.5	
			7.4	
			7.4	
N line			7.2	
		400' E		
N line			6.2	
			6.7	
			6.7	
C			6.5	
			6.5	
			6.7	
So line			6.3	

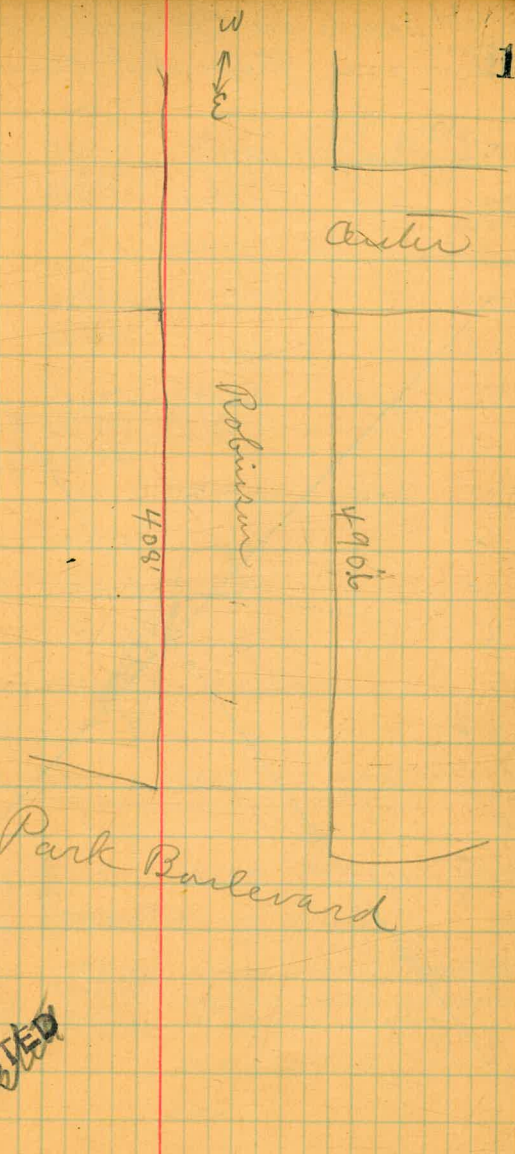
POSTED

408' E

So line	6.2
	6.4
	6.3
C	6.2
	6.0
	6.3
N. line	5.8

496.6 on Northerly West line Park Boulevard

N. line	1.6
	2.2
	3.4
C	4.5
	4.9
	5.8
So. line	6.2



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12/30/08 Hatch Moore Dejul

Levels on Cr Hubs for bridge on Grape Lot Fern and 31st

30th Hawthorn Curb stake SW	1.45	281.45		280.00 ✓
T.P.	0.24	269.14	12.55	268.90 ✓
W. Abutment	0.75	258.52	11.37	257.77 ✓
Bent 1			4.34	254.18 ✓
" 2			11.57	246.95 ✓
T.P.	0.545	245.99	13.075	245.445 ✓
" 3			6.66	239.33 ✓
T.P.	6.45	240.74	11.70	234.29
" 4			8.50	232.24
" 5			11.60	229.24
" 6			10.89	229.95
" 7			8.35	232.49
" 8			1.52	239.32
T.P.	12.06	252.285	0.515	240.225
" 9			5.73	246.55
T.P.	11.285	263.215	0.355	251.93
" 10			9.28	254.03
E Abutment			1.77	261.54
			5.64	257.575

263.215
11.285 −
251.930
0.645 +
252.575
12.355 −
240.220
0.705 +
240.925
6.84 −
234.085

280.0
1.27
281.27
12.65
268.62
0.19
268.81 HI
7.12
261.69
1.80
263.49 HI
12.55
250.94
0.07
251.01
11.69

W.	E	E
9.60	7.12	10.63
259.21	261.69	252.86
258	262	253
1.21	.31	.14

10.42
253.06
253
.06

261.69 239.32 } check.
522.16 239.33 }
8.83

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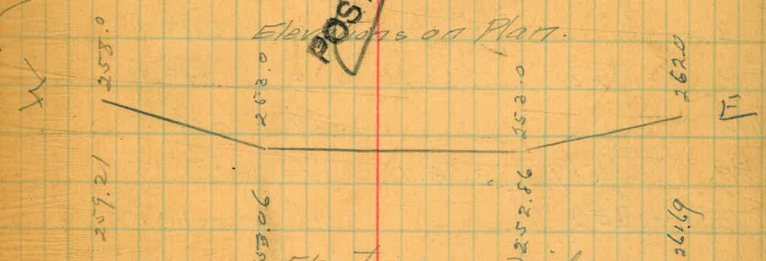
Elevations on Plan.



Elevations on Bridge

Check 1/25/09 Hatch Moore

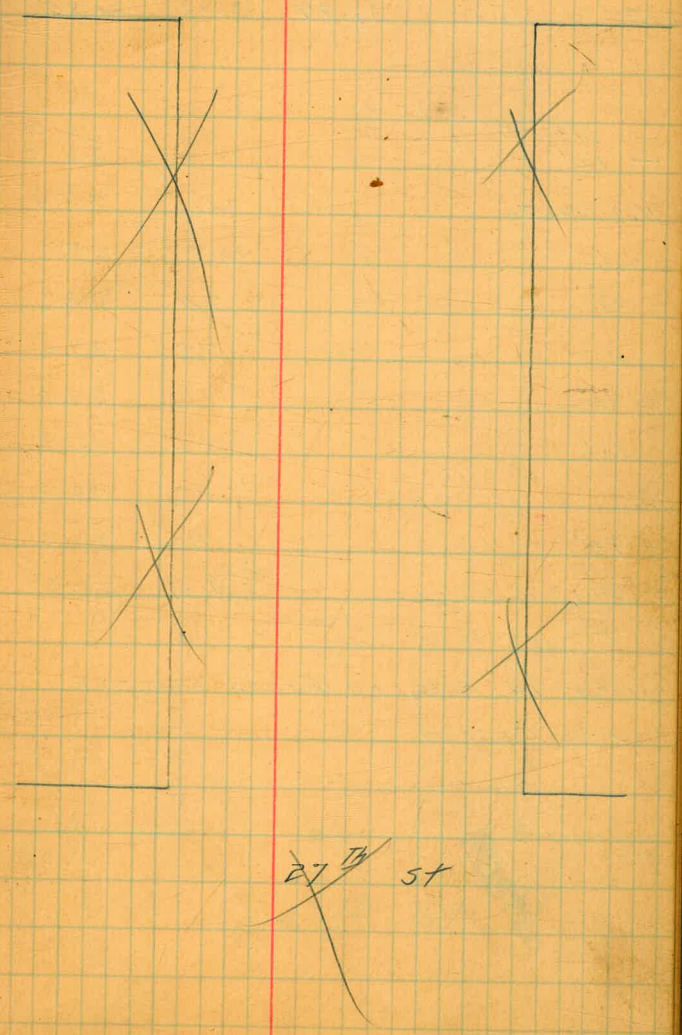
10' and 12' Wing Fences built on ends of Bridge not shown on plan.

all timbers used are correct size.

West end raised to meet ground better.

Cont. from P 11

Abutment (W)	0.33	258.10		257.77
Bent 1			3.92	254.18
" 2			11.16	246.94
TP.	1.04	246.37	12.77	245.33
" 3			7.04	239.33
TP.	6.60	240.89	12.08	234.29
" 4			8.75	232.14
" 5			11.75	229.14
" 6			11.04	229.85
" 7			8.80	232.39
" 8	10.09	249.31	1.67	239.22
" 9			2.54	246.77
TP.	12.35	260.94	0.72	258.57
" 10			6.79	254.15
TP.	5.17	264.76	1.35	259.59
Abutment (E)			3.11	261.65
			7.00	257.76



Levels for culvert see opp. page.

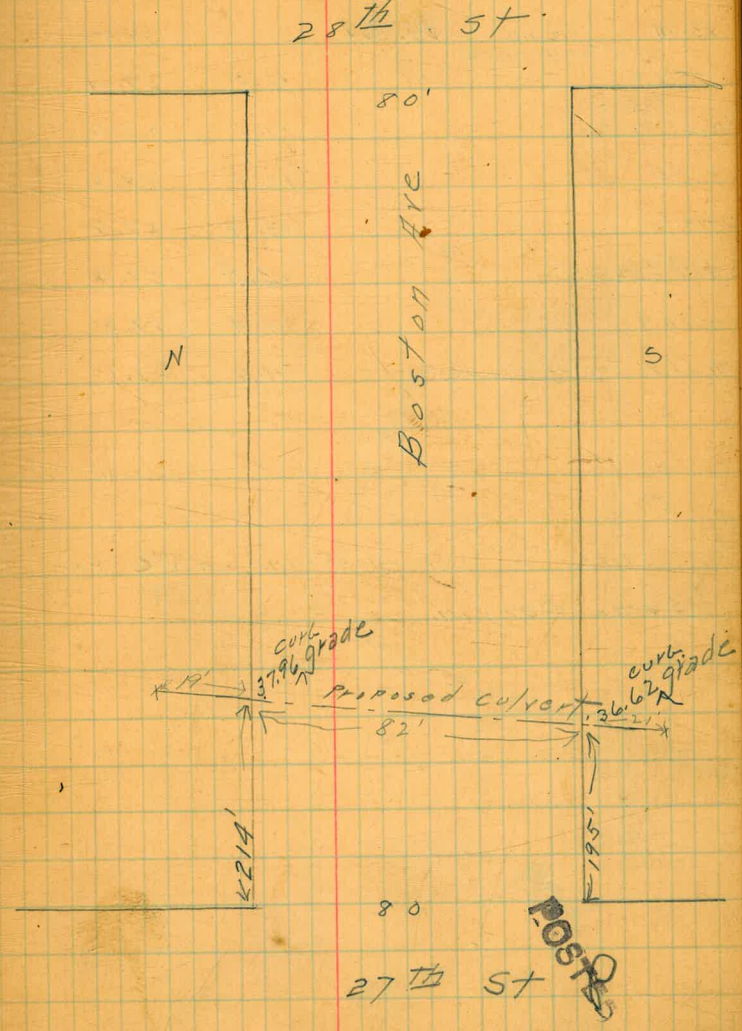
B.M. 28th & Boston		39.59		
B.M.	4.06	43.65		39.59
T.P.	1.21	31.97	12.89	30.76
		32.00		

1+95 & 2+19

— 19' = Toe of slope	5.6	26.4
— 10'	6.0	26.0
N.L. Boston	6.6	25.4
crb	6.7	25.3
1/4	7.4	24.6
M	7.8	24.2
1/4	8.0	24.0
crb	8.1	23.9
S.L.	9.0	23.0
+ 10'	9.2	22.8
+ 21 = Toe of Slope	9.4	22.6

Note. 14" pipe on Grand Ave for same Canyon.

7/21/39 Dunkle Shaw Thomas.



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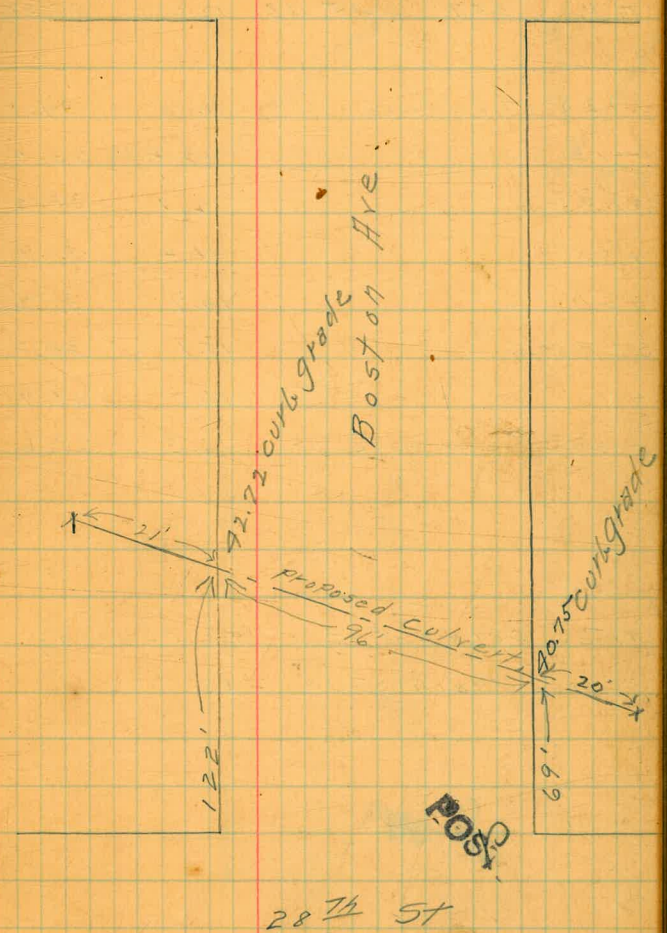
Levels for culvert sec opp. page

B.M. spk Cor 28th & Boston				39.59
B.M.	2.10	41.69	1	39.59
— 21 = Toe of slope			13.5	28.2
— 1.0			13.3	28.4
0+0 = N.L. Boston			13.1	28.6
+ 30			13.5	28.2
+ 60			13.8	27.9
+ 99 S.L. Boston			14.3	27.4
+ 109			14.4	27.3
+ 119 = Toe of slope			14.6	27.1

Note — 10" pipe on Grand Ave for same Canyon.

1/21/39 Dunkle
Shaw
Thomas

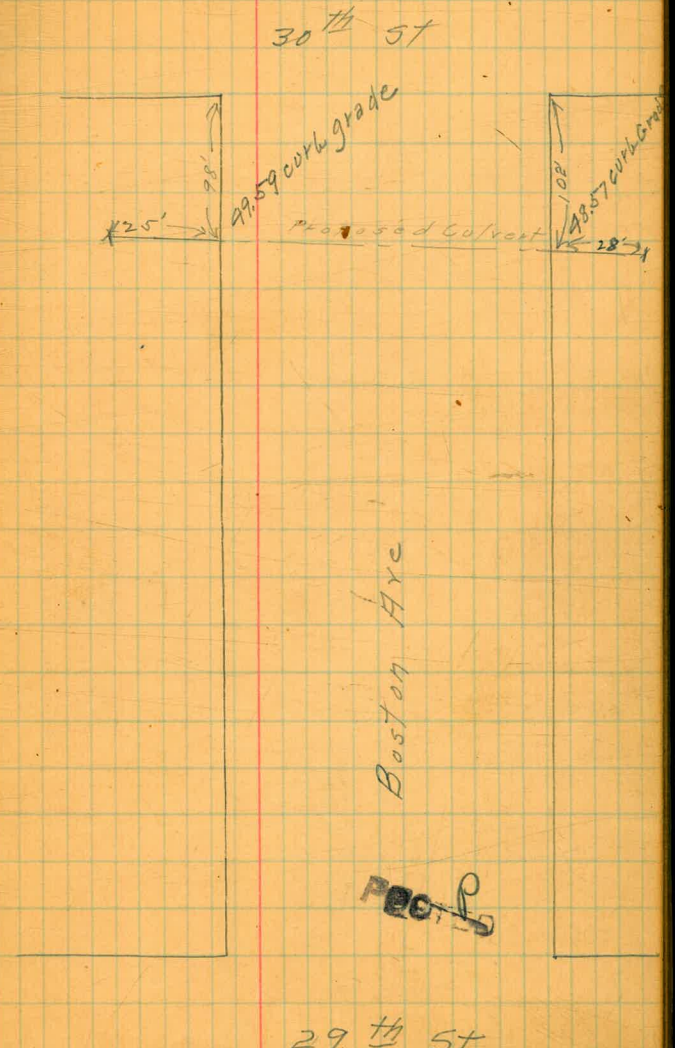


Levels for Culvert see opp. page

B.M. SPK Cor 31st & Boston				50.52
B.M.	7.62	58.14	50.52	
T.P.	0.57	45.88	12.83	45.31
−25 = Toe of slope			11.8	34.1
−10			12.2	33.7
0+00 N.L. Boston			12.7	33.2
+30			14.2	31.7
+60			14.7	31.2
S.L. Boston			15.7	30.2
+10			16.0	29.9
+28 = Toe of slope			16.3	29.6

Note - Culvert for this canyon across Main St is 2'x3'

7/21/09 Dunkle
Shaw
Thomas



Levels for culvert Alabama see opp. page 3/1/09 Dunkle Shaw Lambert

B.M. N.E. Mon. brass plg				265.57
B.M.	12.50	278.07		265.57
T.P.	5.44	282.01	1.50	276.57
T.P.	1.56	271.33	12.24	269.77
−25			7.5	263.8
−10			7.8	263.5
0+0 = E.L. Alabama			8.0	263.3
crb			7.2	264.1
1/4			6.9	264.4
M			7.5	263.8
1/4			8.2	263.1
crb			9.0	262.3
W.L. Alabama			10.2	261.1
+10			10.3	261.0
+25			11.3	260.0

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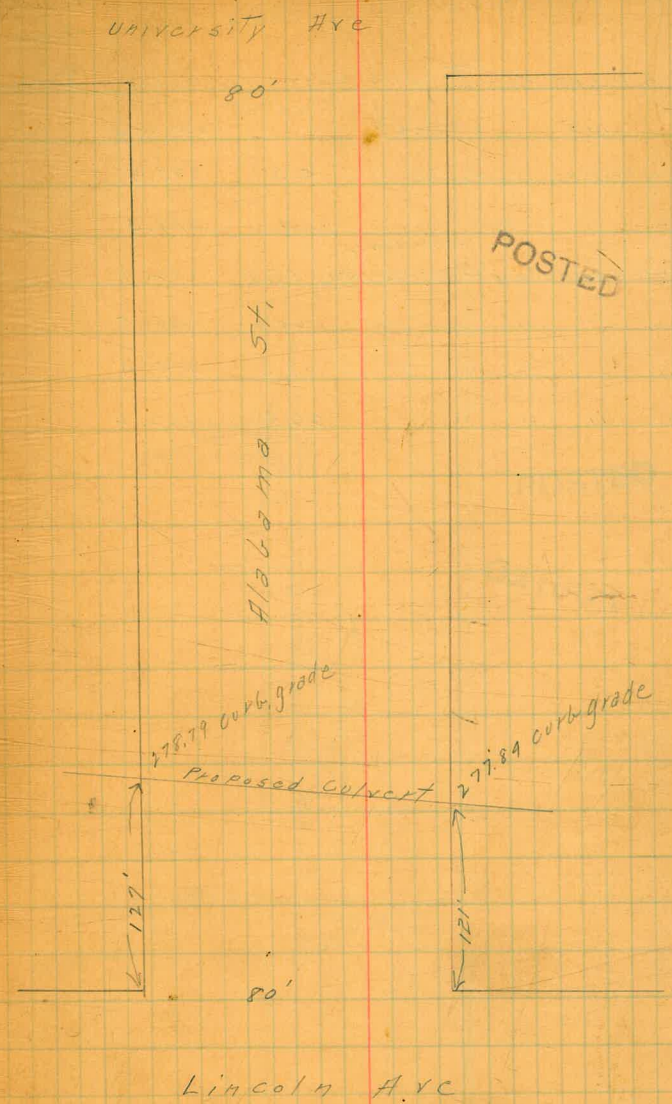
Note. This is the only culvert on Alabama between Adams & University.



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Levels for storm sewer Third St 3/6/09

Dunkle
Shaw
Thomas,

B.M. R.R. spk Cor. Third & Broadway				287.54
B.M	1.15	288.69	-	287.54
1+50 N. of Broadway on curb line			5.3	283.4
1+50 " " " " Prop "			11.4	277.3
W 10' from W. Prop Line of 3rd st at Sta 1+50 from Broadway			15.8	272.9
" 20 " " " " "			20.2	668.5
" 30 " " " " "			23.3	265.4
" 40 " " " " "			26.5	262.2

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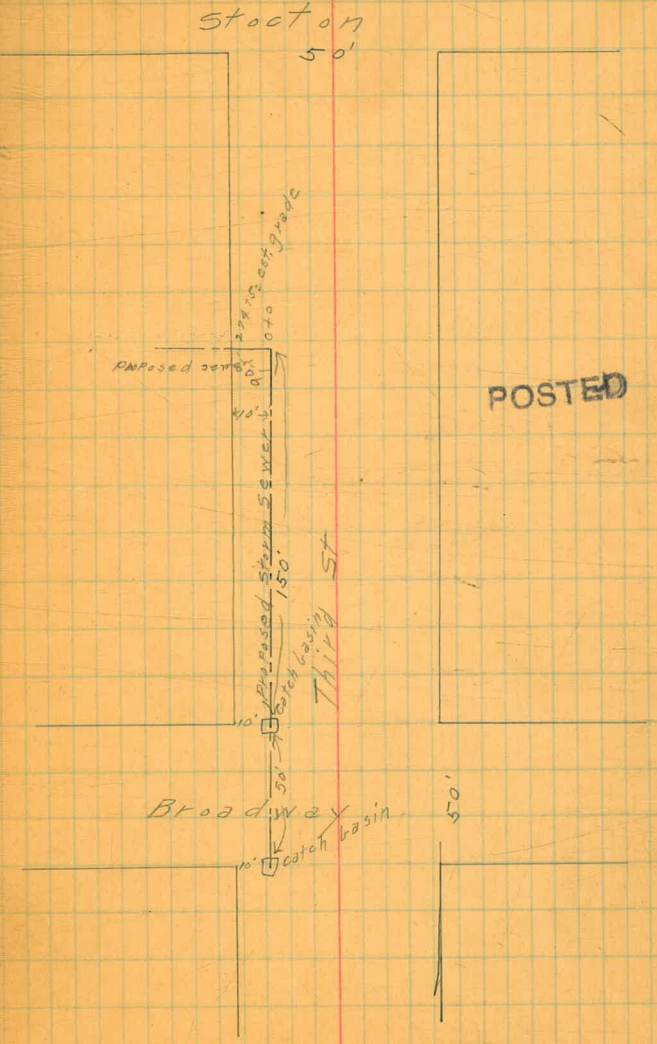

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Levels for Proposed Culvert 5/26/09 Dunkle
Arch St Shaw

B.M. R.R.	SPK.	S.E. Maryland & Monroe		344.96	Dizier
B.M.	2.05	347.01			
0+0			5.9		
0+12 = S.L. Arch St			10.50		
0+32			11.2		
0+52			11.3		
0+70			11.5		
T.P.	1.83	337.71	11.13	335.88	
0+79¼ N.L. Arch St			6.1		
1+21¼			25.8		

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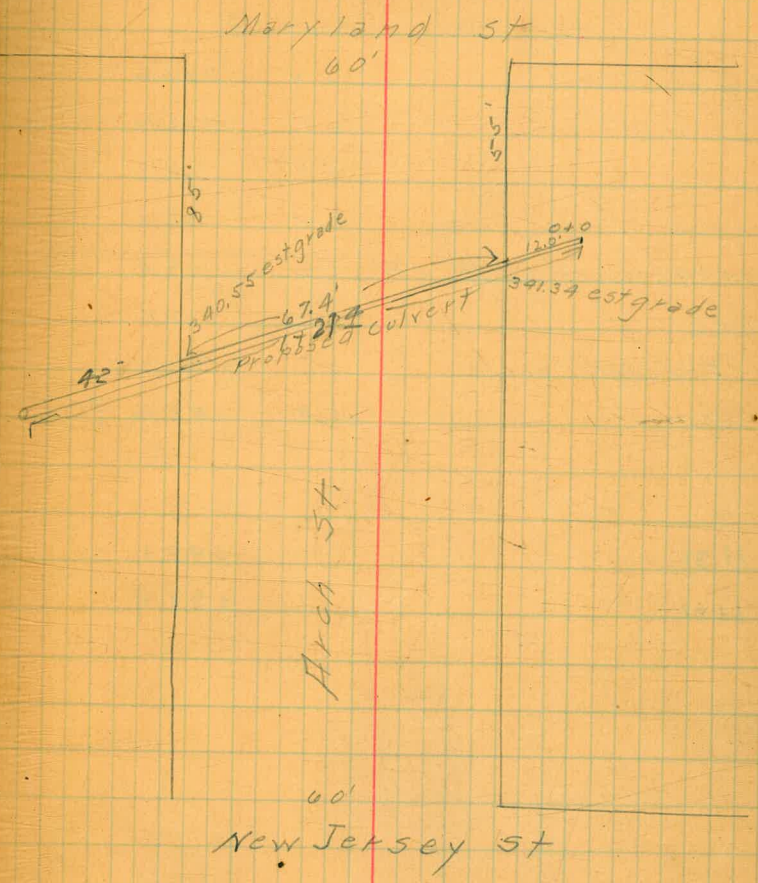
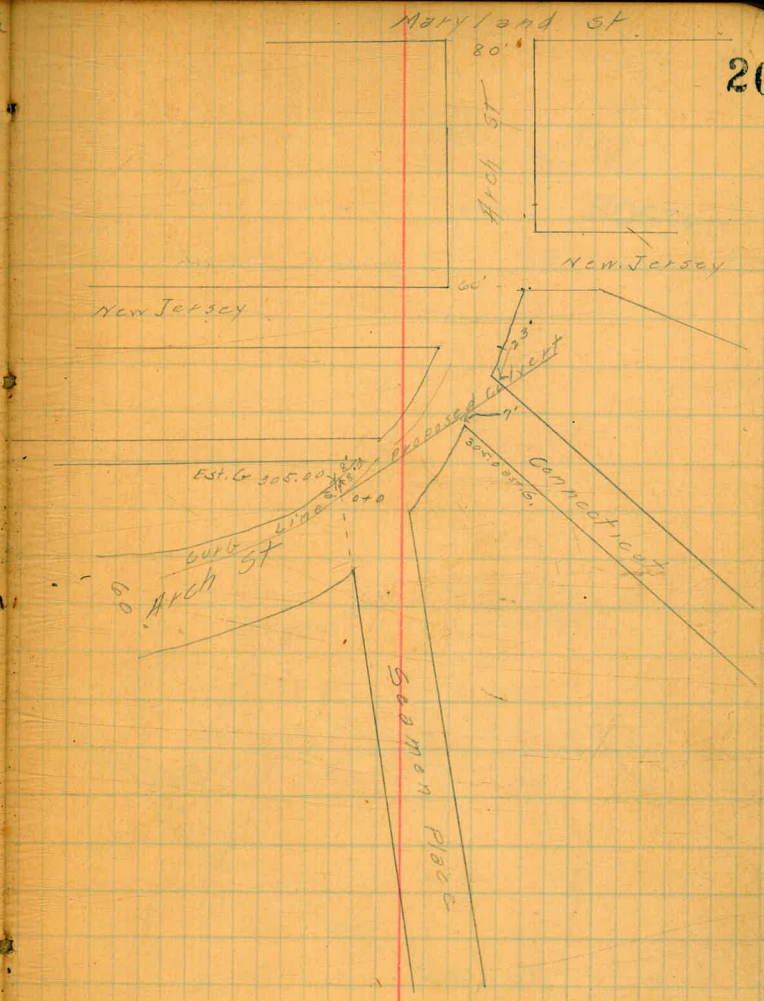


Levels for Culvert Arch St 6/1/09 Dunkle Shaw

B.M. hub cor. Arch & Connecticut		303.45	Dizick
B.M	5.17	308.62	
0+0 = Curb Line Arch St			
0+0	4.2	304.4	
0+20	3.9	304.7	
0+40	3.8	304.8	
0+60	4.5	304.1	
0+74 = W. curb Arch St	5.2	303.4	
1+0	6.2	302.4	
1+21 = edge canyon	6.6	302.0	
1+55	15.4	293.2	?
1+31		295.1	
1+41		288.9	



6/23/09 Hatch Moody Thomas

Measurements for Culvert on Newton at S.L. Hortons Addt

	.043	11.50			
BM SE 7 Tack 16th N.				11.07	
	1.80	4.80	8.50	3.0	
Bottom of present Box			8.06	-3.26	grade- 2.75

6.0 below grade

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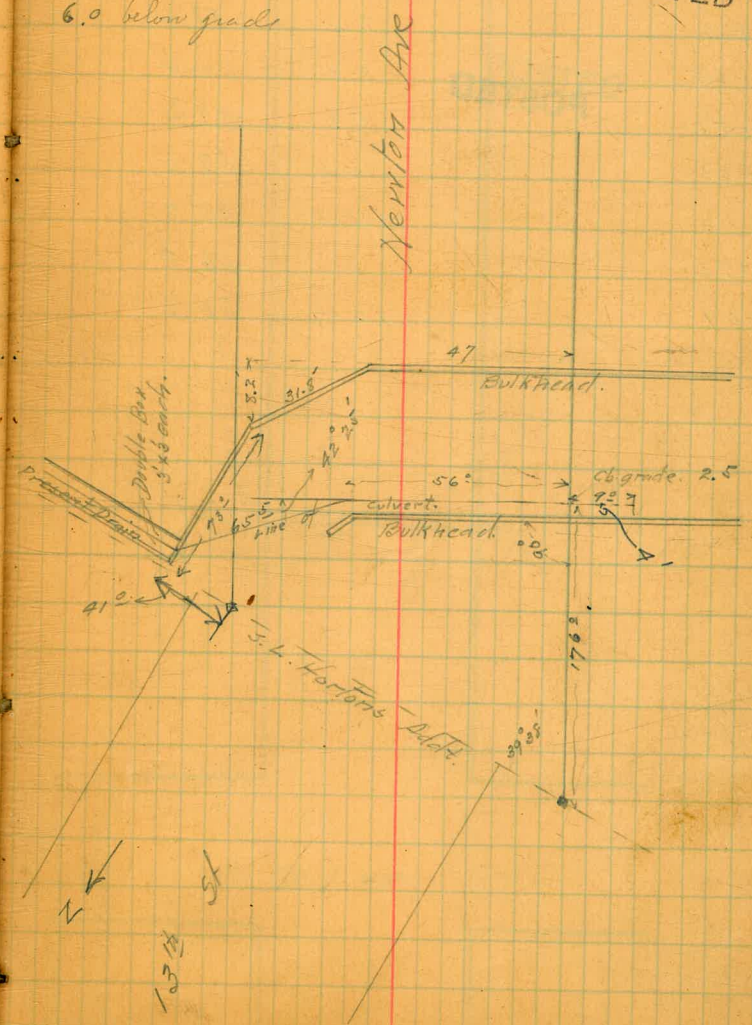

Levels for Culvert Clay Ave 6/27/09 Dunkle
bet 30th & 31st St. Shaw
B.M. R.R. SPK 30th & Clay 74.81 Dizel

B.M.	1.27	76.08		
T.P.	1.0	65.19	11.89	64.19
0+0			7.6	57.6
0+25			8.8	56.4
0+51			5.8	59.4
0+61			5.6	59.6
0+76			10.0	55.2
0+96			8.7	56.5
1+09			12.4	52.8

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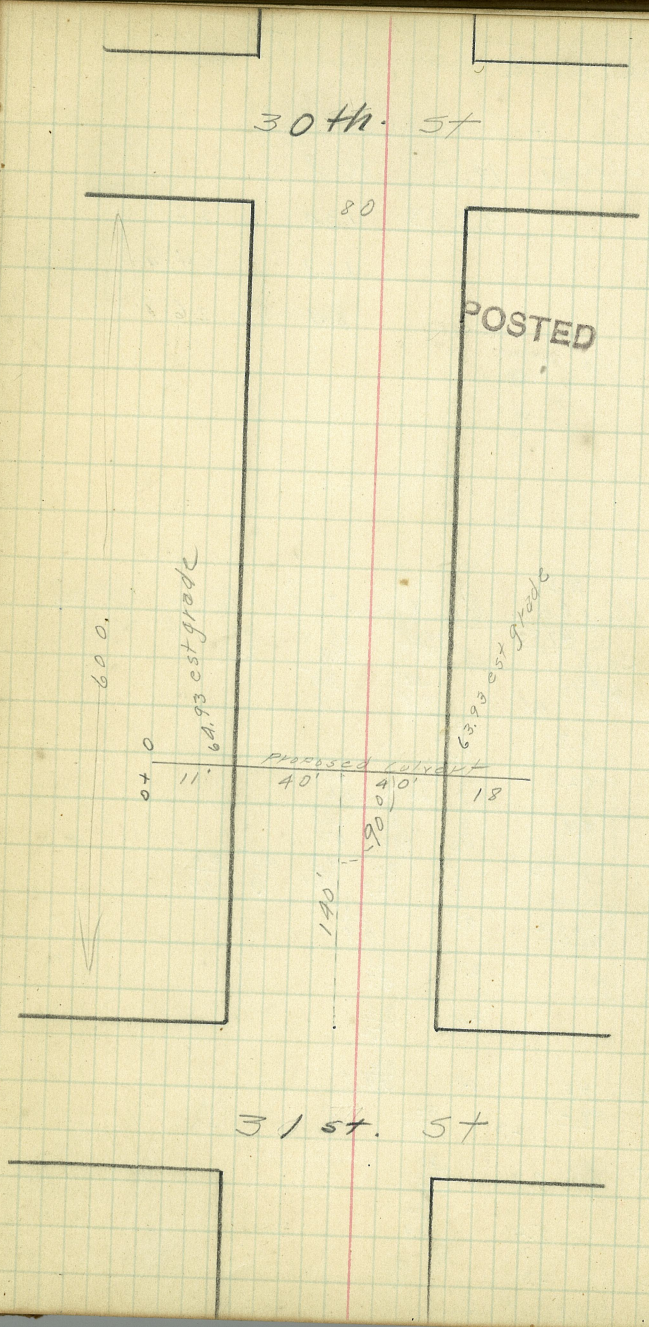


measurments for culvert at Columbia & Laurel.

levels for culvert	H.I.	Rod	
0+00	35.73	13.0	22.7
+94		11.1	24.6
1+65		8.9	26.8

1.36 " Pipe

West line Columbia X. sect. for toe of Slope

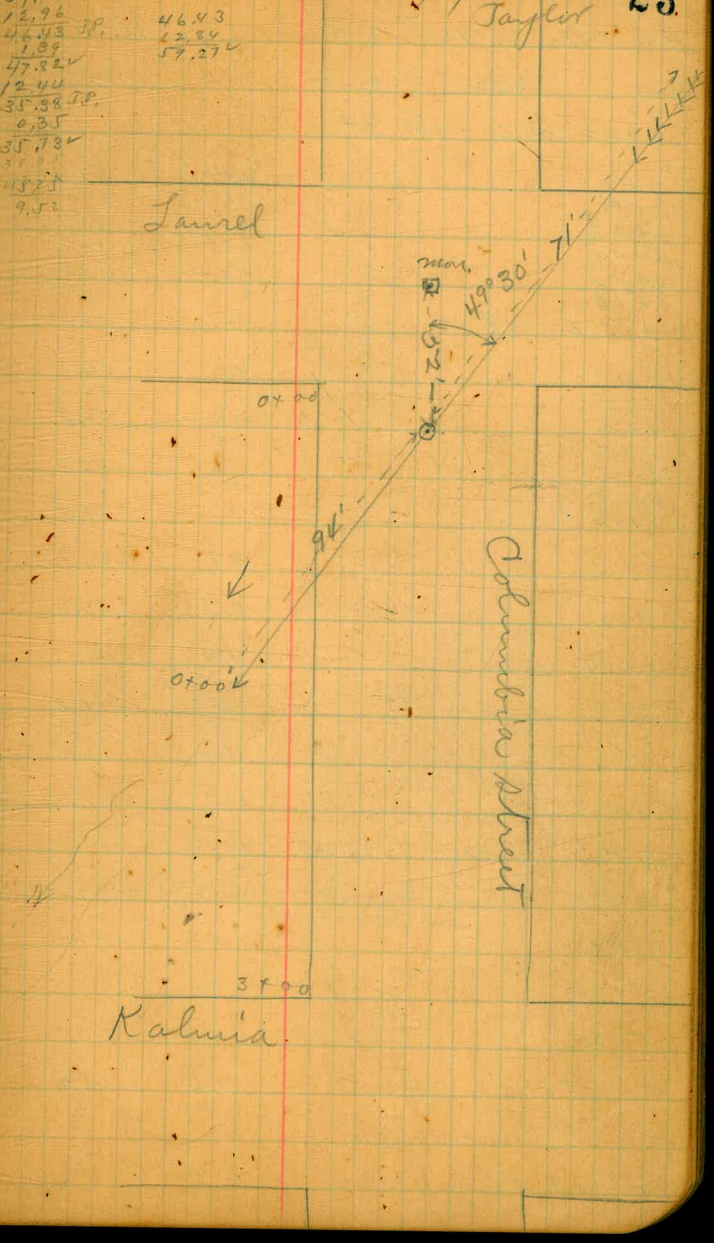
0+00	H.I. 47.82 So. line Laurel	14.2	18/7.7	30/7.4		
+25	H.I. 35.73 4.8	19/0.9	35/1.7			
+38	6.3	35/4.5				
+45	12.0	10/8.7	12/6.0	35/5.6		
+50	8.4	3/11.5	8/13.0	35/5.8		
+75	1.2	19/3.1	30/12.3	43/12.4	45/7.1	56/1.9
1+00	H.I. 47.82	5.1	25/5.9			
+25		3.7	30/5.7			
+50		2.6	30/5.2			
+75		1.9	30/5.4			
2+00	H.I. 59.27 12.3	30/14.5				
+25	9.7	30/11.3				
+50	5.4	30/6.9				
+75	3.3	13/3.6				
+92	2.3	13/3.6				
3+00	No. line Kalmia					

56.33 B.M.
3.06
59.39
12.96
46.43 T.P.
1.39
47.82
12.44
35.38 T.P.
0.35
35.73
38.25
45.25
9.52

49°30'

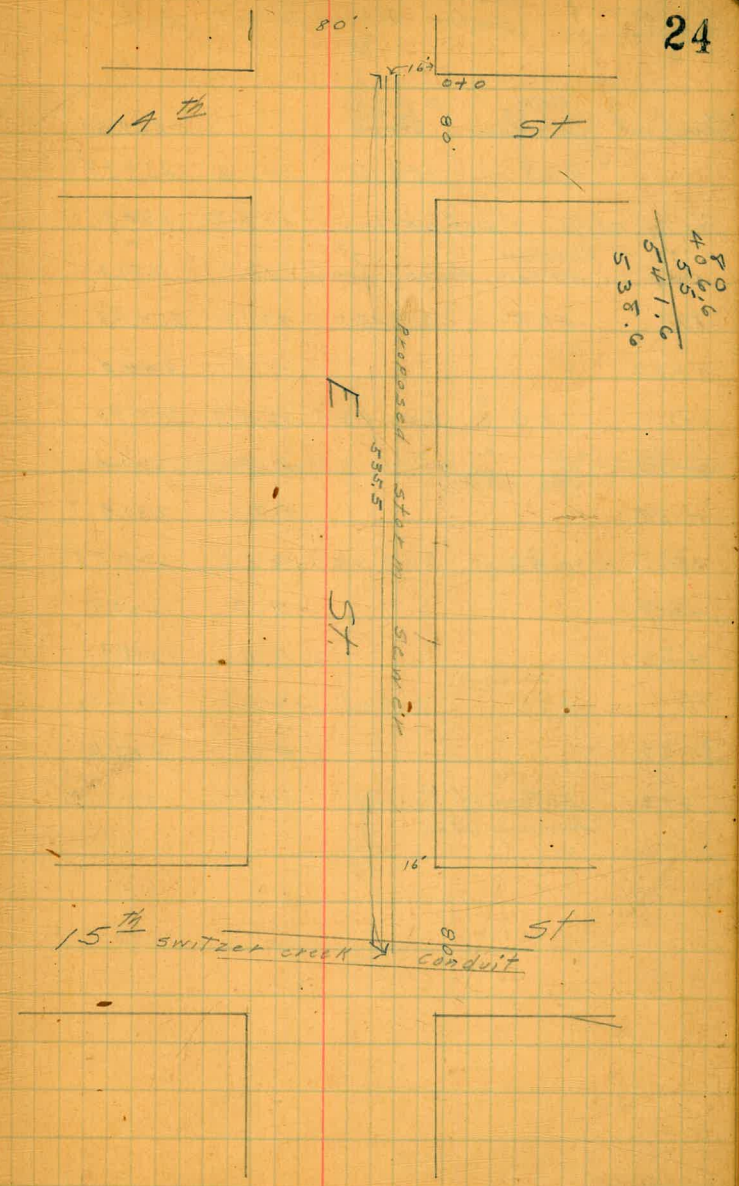
46.43
62.84
59.27

Nov. 10/09 Childs Barber Taylor



Levels for storm sewer 14th to conduit. 1/20/10 Dunkle Shaw Evans.
" taken 2' S. of N. curb.

B.M. brass plg 14th & E.				50.95
B.M	4.62	55.57		
0+0 = W.L. 14th St				
0+0			4.5	51.1
0+14			4.6	51.0
0+27			4.7	50.9
0+40			4.7	50.9
0+53			5.1	50.5
0+66			5.2	50.4
0+80 = E.L. 14th St			5.1	50.5
1+0			4.9	50.7
1+25			5.2	50.4
1+50			5.3	50.3
1+75			5.4	50.2
2+0			5.6	50.0
2+25			5.9	49.7
2+50			6.1	49.5
2+75			8.8	46.8
3+0			9.3	46.3
3+25			9.4	46.2
3+50			10.8	44.8
3+75			10.1	45.5
4+0			11.6	44.0
4+25			12.8	42.8
T.P.	5.83	48.67	12.73	42.84
4+50			6.3	42.4
4+80			7.7	41.0
5+05			9.9	38.8
5+30			9.8	38.9
5+35.5 = top of Conduit			9.6	38.1
12" hole cut in side of conduit 3' N of N. curb Line "E" st bottom of hole =			11.1	37.6

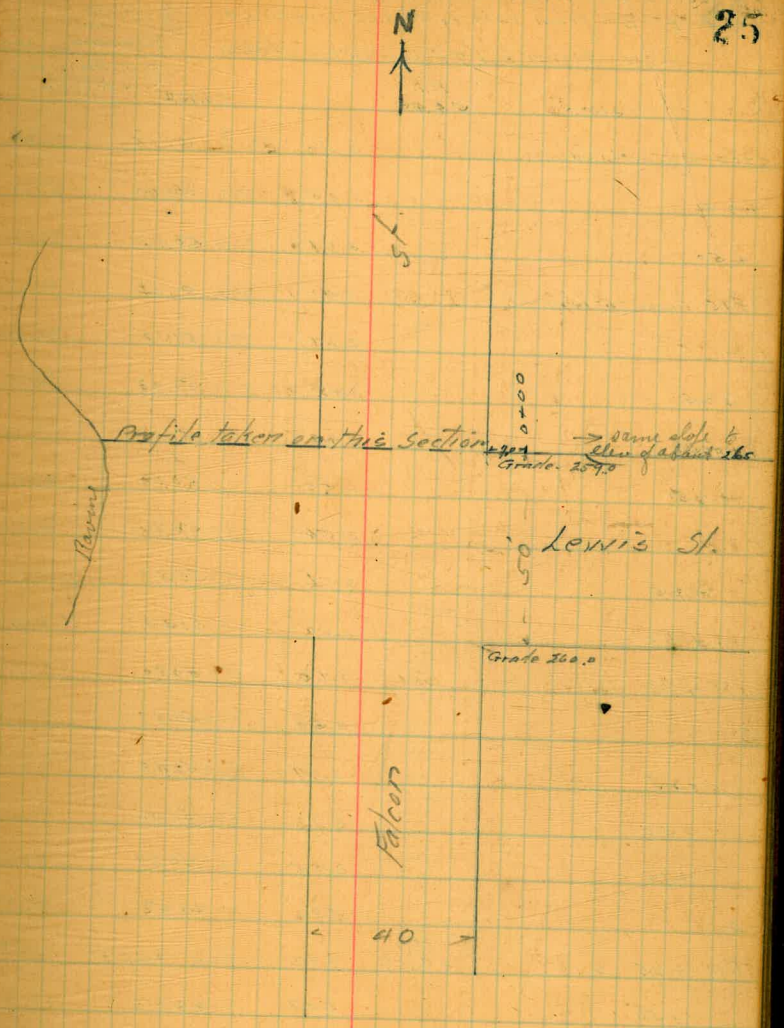


80
406.6
55
541.6
538.6

2 Hatch
10 Moore
10 Homes

Location for drain pipe
Under Falcon St at Lewis

	3.40	272.00		
Curb at Goldfinch Gett				268.60
	3.28	263,05	12.23	259,77
Toe of slope. 7' E of NE Cor =			8.3	254.7
0+00 of X section				
0+7 = NE Cor Falcon - Lewis.			12.1	251.0
T.P.	0.28	251,21	12.12	250,93
0+22			7,2	244.0
T.P.	1.30	240.08	12.43	238,78
+37			2.7	237.4
+52			8,2	231.9
T.P.	0.42	227.92	12.58	227,50
+67			2.0	225.9
+87			9.0	218.9
T.P.	2.76	218.08	12.60	215,32
+02			4,5	213.6
+12	bottom of Raving running NW		10.6	207.5



Levels over offset stakes along line of storm sewer on "E" St from 14th to Conduit in 15th St

Note- Stakes set 9.0' N. of ctr line of Sewer

2/14/09 { Davis, Williams, Churchman.

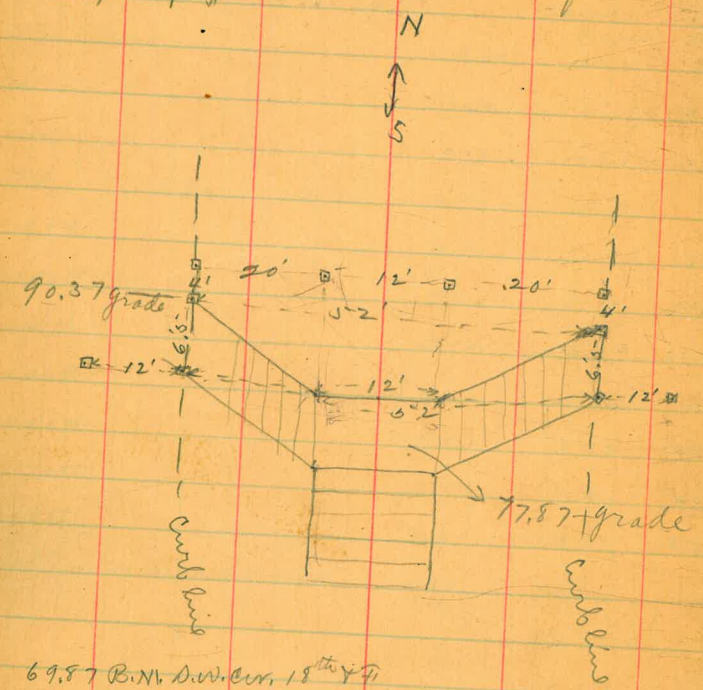
B.M. Pig in return N. W 14th & E

		H.I.			Elev. of bottom	Cut.
	3.50	54.45		50.95		
0+00. Cross cut in sidewalk.			3.30	51.15	48.00	+ 3.15
+25			3.55	50.90	47.46	+ 3.44
+50			3.91	50.54	46.92	+ 3.62
+75. Cross cut in sidewalk.			3.41	51.04	46.38	+ 4.66
1			3.27	51.18	45.85	+ 5.33
+25			3.42	51.03	45.31	+ 5.72
+50			3.45	51.00	44.77	+ 6.23
+75			3.55	50.90	44.23	+ 6.67
2			3.54	50.91	43.69	+ 7.22
+25			3.56	50.89	43.16	+ 7.73
+50			3.62	50.83	42.62	+ 8.21
+75			3.65	50.80	42.08	+ 8.72
3			3.58	50.87	41.54	+ 9.33
+25			3.97	50.48	41.00	+ 8.52
+50			3.73	50.72	40.47	+ 10.25
+75			3.88	50.57	39.93	+ 10.64
4			5.92	48.53	39.39	+ 9.14
T.P. +25	2.16	H.I. 47.59	9.02	45.43	38.85	+ 6.58
+50			4.07	43.52	38.31	+ 5.21
+75			5.83	41.76	37.78	+ 3.98
5			6.01	41.58	37.24	+ 4.34
+34.3 = Hole in side of Conduit			10.05	37.54	36.50	+ 1.04

Cuts for Storm drain 19th and A to Conduit.

	9.06	H.I. 69.79		60.73 B.M.		
				Ground	Grade	Cut
0+00 End pipe			9.79	60.00	60.00	
+25			6.80	62.99	61.45	1.54
+50			3.17	66.62	62.91	3.71
T.P.	7.42	76.23	0.98	68.81		
+75			4.81	71.42	64.36	7.08
+92.28 PC			4.52	71.71	65.36	6.35
1+13.04			5.84	70.39	66.57	3.82
+33.04			6.50	69.73	67.73	2.00
+53.04			5.55	70.68	68.89	1.79
+73.04			3.53	72.70	70.06	2.64
+83.04			2.01	74.22	70.64	3.58
+85.78 Inside end of present culvert			5.47	70.96	70.80	

Tie out stakes & grades for 17th & H



69.87 B.M. S.W. cor. 18th & H
12.73
82.60 H.I.
77.87
4.73

0.27
82.33 T.P.
12.60
94.93 H.I.
90.37
4.56

steps at June 14/10 { Childs, Barber, Taylor

69.87
.55
78.42 H

77.87
90.55

67.25
11.17

66.50
11.92

line and grade stakes set for corner stairway 6/21/10 Hatch.

7/27/10 Hatch
Moore
Fitzpatrick

Elevation of joints indicated on sketch relating to bridge footings Spruce St between Front and Brand

BM	0.89	255.89		255.004	NW 1st Thom
TP	0.48	244.16	12.21	243.68	
		W.L. Front St.			
N			11.9		232.26
11			12.3		231.86
21			12.9		231.26
31			12.5		231.66
TP	0.30	232.50	11.96	232.20	
		10' W			
N			1.1		231.40
11			1.5		231.00
21			2.0		230.50
31			2.5		230.00
		20' W			
N			2.1		230.40
11			2.2		230.30
21			2.5		230.00
31			3.5		229.00
		30' W			
N			2.8		229.70
11			2.7		229.80
21			3.0		229.50
31			3.7		228.80

	232.50		
	40' W		
N		3.5	229.00
11		3.5	229.00
21		3.7	228.80
31		4.1	228.40
	50' W		
N		3.9	228.60
11		4.1	228.40
21		4.2	228.30
31		4.6	227.90
	60' W		
N		4.7	227.80
11		4.8	227.70
21		4.7	227.80
31		5.1	227.40
	70' W		
N		5.4	227.10
11		5.4	227.10
21		5.6	226.90
31		5.9	226.60
	80' W		
N		6.1	226.40
11		6.1	226.40
21		6.4	226.10
31		6.4	226.10

		222.50			
		90 W			
N			6.8		225.70
11			6.7		225.80
21			7.0		225.50
31			7.2		225.30
		100 W			
N			7.8		224.70
11			7.7		224.80
21			7.8		224.70
31			7.7		224.80
		110 W			
N			9.6		222.90
11			9.2		223.30
21			9.1		223.40
31			8.9		223.60
		120 W			
N			12.5		220.00
11			11.4		221.10
21			10.7		221.80
31			10.4		222.10
TP	0.80	221.28	11.52	220.98	
		130 W			
N			5.2		216.10
31			4.0		217.30

		221.28			
31			2.8		218.50
31			1.7		219.60
		140 W			
N			8.2		213.10
11			6.8		214.50
21			5.9		215.40
31			4.4		216.90
TP	4.39 1.83	225.37 226.74	0.30 0.46		220.98 224.91
		Cr. Brant St.			
N			0.9		225.84
11			4.1		222.64
31			7.1		219.64
31			10.6		216.14
		10 E			
N			1.5		224.94
11			5.2		221.54
21			9.5		217.24
		20 E			
N			2.7		224.04
11			7.5		219.24
21			12.4		214.34
		30 E			
N			4.0		222.74
11			9.8		217.54

		226.74			
		40' E = El. Brant St			
N			6.0		220.74
"			11.1		215.64
		10' E of Brant			
N			7.2		219.54
"			12.5		214.24
		20' E			
N			10.8		215.94
TP	0.10	214.66	12.8	214.56	
		10' E of Cr. of Brant			
31			2.3		212.36
		20' E of Cr.			
31			4.7		209.96
		30' E of Cr.			
21			2.2		212.46
31			6.7		207.96
		40' E of Cr. = El. Brant			
21			3.7		210.96
31			9.5		205.16
		10' E of Brant			
21			6.7		207.96
31			12.9		201.76

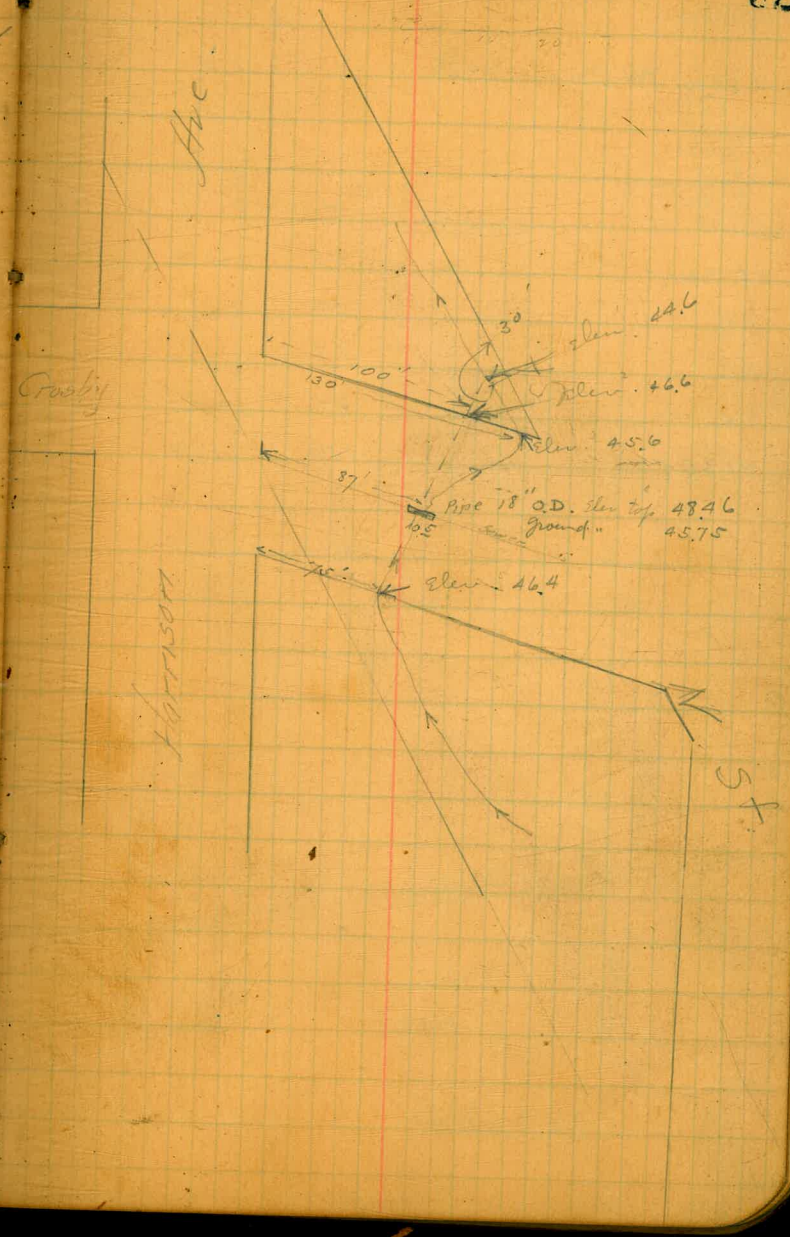
		214.66		
		20' E		
"			3.8	210.86
21			9.6	205.06
		30' E		
N			3.7	210.96
"			8.9	205.76
21			13.7	200.96
		40' E		
N			10.3	204.36
"			13.3	201.36
TP	0.80	202.66	12.80	201.86
		20' E		
31			4.3	198.36
		30' E		
31			7.9	194.76
		40' E		
21			5.7	196.96
31			12.6	192.06
		50' E		
N			1.6	201.06
"			6.5	196.16
21			10.3	192.36
31			14.1	188.56

		188.66			
		60' E			
N			4.7		197.96
"			8.7		193.96
21			12.2		190.46
		70' E			
N			7.4		195.26
"			10.8		191.86
		80' E			
N			10.3		192.36
"			13.5		189.16
T.P.	0.65	191.40	12.31	190.85	
		60' E			
31			4.4		186.60
		70' E			
21			3.2		187.80
31			6.1		184.90
		80' E			
21			5.3		185.70
31			8.2		182.80
		90' E.			
N			2.5		188.50
"			5.4		185.60
21			8.2		182.80
31			11.0		180.00

		191.00			
		100' E			
N			6.0		185.00
"			9.0		182.00
31			11.5		179.50
		110 E			
N			10.9		
"			13.0		
TP	0.10	178.57	12.53		178.47
		100' E			
31			1.8		
		110 E			
21			3.2		
31			4.7		
		120 E			
N			3.7		
"			5.9		
21			7.4		
31			9.4		
		130 E			
N			8.1		
"			9.4		
21			10.6		
31			11.6		167.0

5/26/10 Hatch
Moore
Rogers.

PM	228	56.60		5482	25 11 N
			12.0	44.6	
			10.0	46.6	
		ground	11.0	45.6	
			10.85	45.75	
			8.14	48.46	
			10.2	46.4	

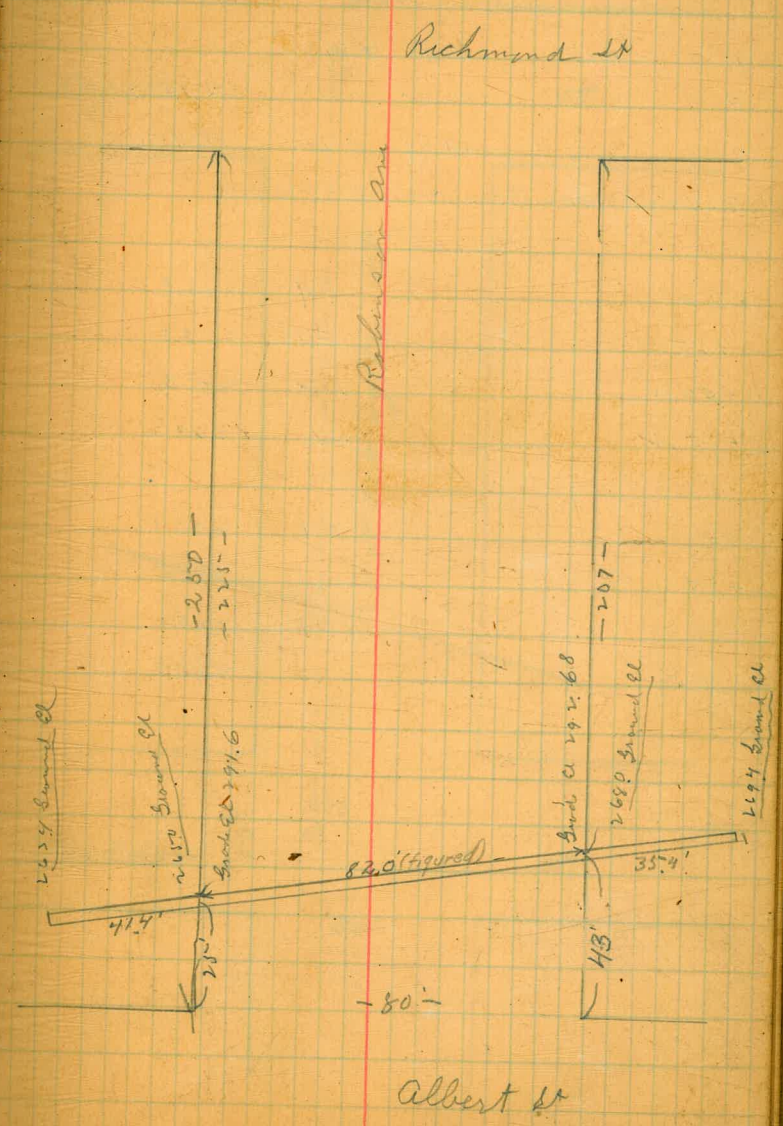


9 | Clough
8 | Dunn
10 | Fitzpatrick

Location of Culvert on Robinson ave Bet Richmond & Albert

280.99 TP Bm			TP
0.38			
281.37			
1.26			
269.11			
4.28			
273.39	273.40		
35' n of n S		4.0	269.4
n S		5.4	268.0
Ctr		7.7	265.7
S S		8.4	265.0
41.0 S of S S		10.0	263.4

(a 4' Pipe will carry all the water)
a 12' " is OK



Levels for culvert Washington st between Jackdaw & Ingalls.

Drinkle
Shaw
Evans.

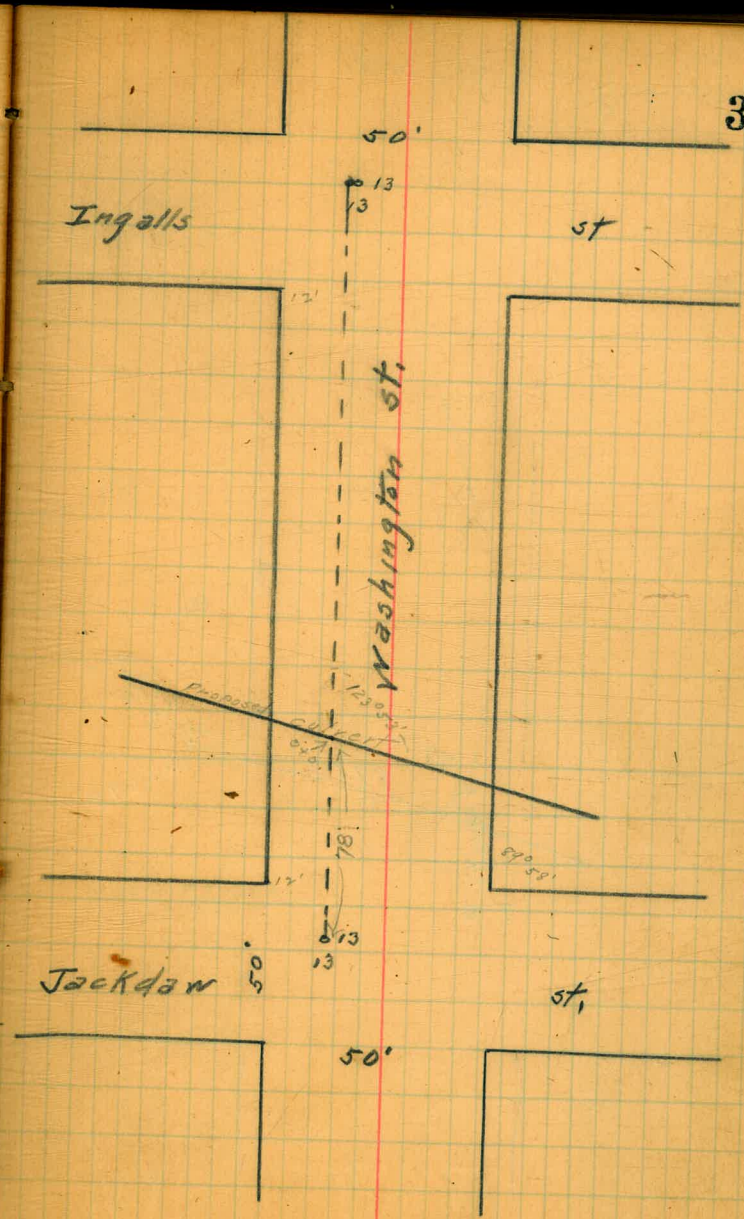
B.M. brass plg Hank & Washington				263.03
B.M.	4.96	267.47		
T.P.	1.07	256.58	11.99	255.48
T.P.	9.31	249.26	12.60	243.95

note - Levels are taken N 85. from 13' line

244.26

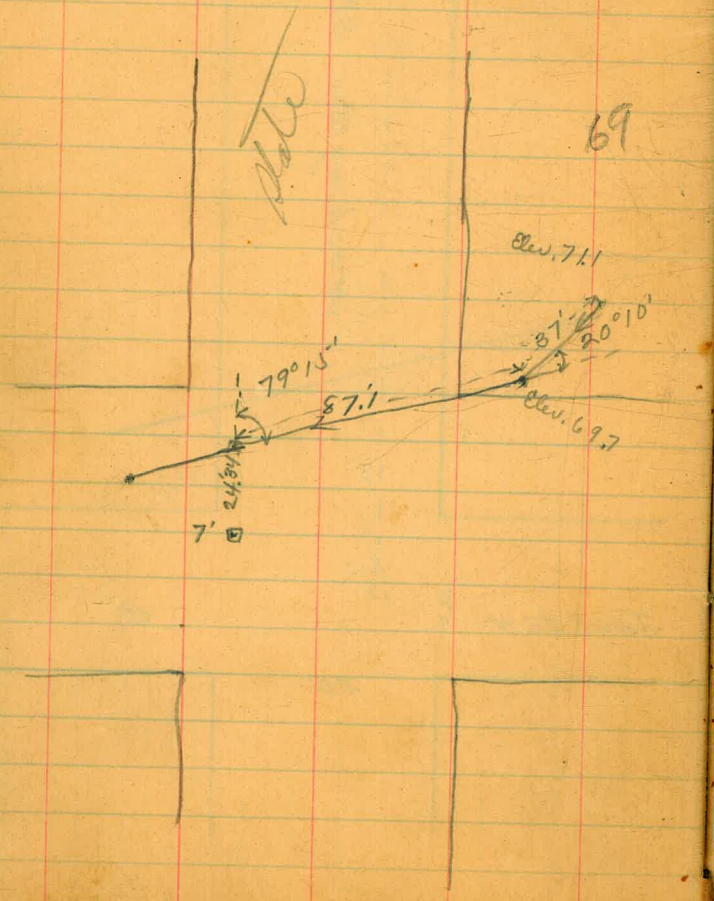
0+0	9.4	233.9
0+25 N	5.5	238.8
0+50 N	3.2	241.3
0+75 N	1.1	243.2

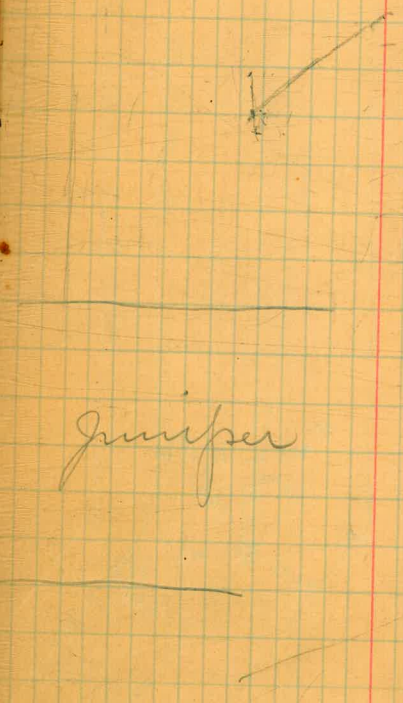
0+0	9.4	233.9
0+25 S	13.8	230.5
0+50 S	18.4	225.9
0+75 S	23.0	221.3



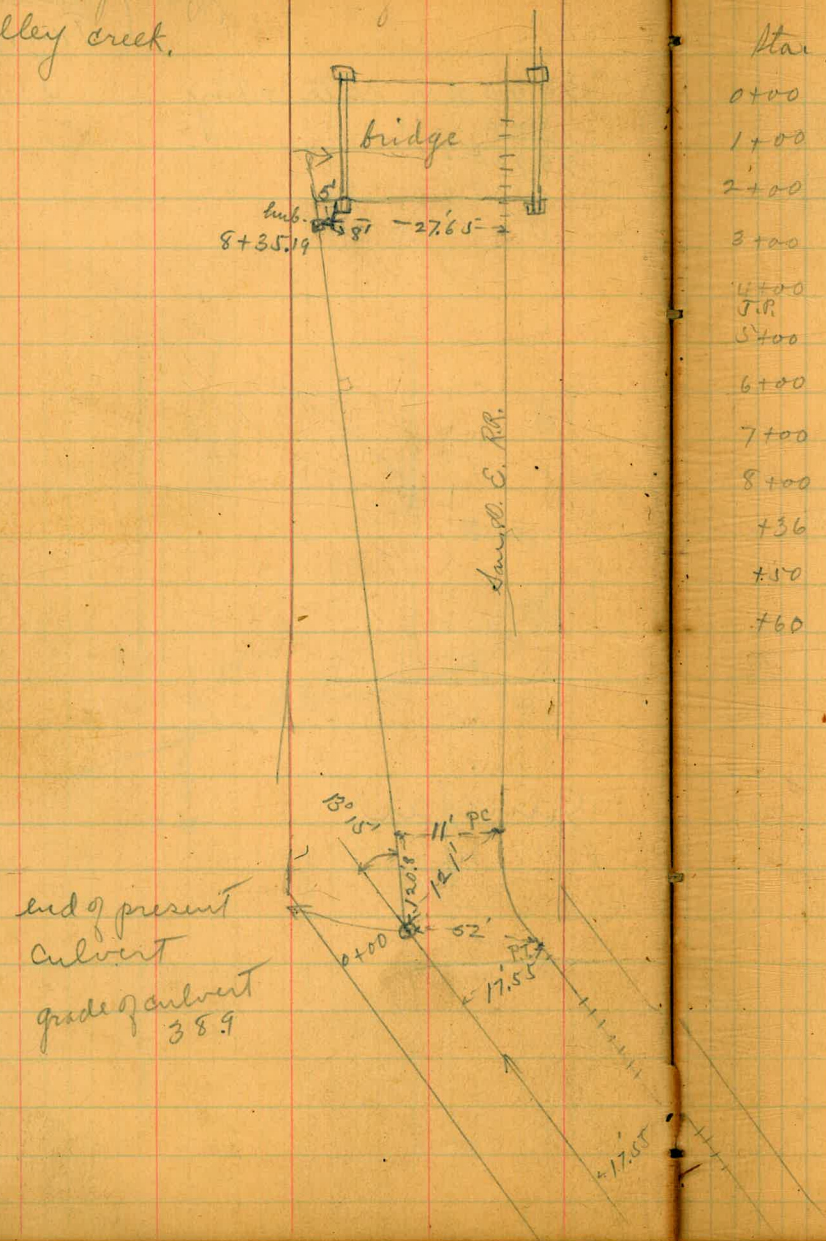
Nov. 29/10 { Childs
Barber
Taylor

74.90 B.M. Stake v Guy
5.00
79.90 H.I.



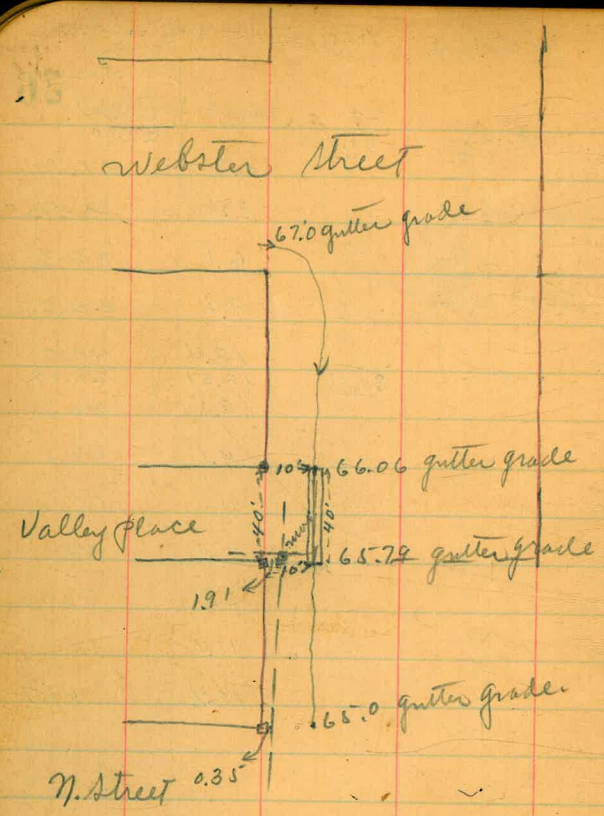


Culvert, from near 33rd to Cholla Valley creek.



Levels. Dec. 13/10 Childs Taylor Brunker

Sta.		HI	Rod	Elev.
	11.71	41.41		29.70
0+00			0.3	41.1
1+00			3.4	38.0
2+00			6.1	35.3
3+00			9.4	32.0
4+00			12.4	29.0
T.P.	1.0.5	30.15	12.31	29.10
5+00			3.5	26.7
6+00			4.1	26.1
7+00			4.6	25.6
8+00			5.1	25.1
+36			3.8	26.4
+50			11.4	18.8
+60			12.4	17.7



Culvert at 28 + Valley place

68 66

20 / B.M. N.E. cor. 28th + Webster
71.58
300 / 20 / .67 73.59 H.I.
18
26
68.0
5.59

67
40
.2680

67.67 / 5.92 67.33 / 6.26

67.06 / 6.53 66.79 / 6.80

68.0
67.67
67.33
67.06
66.79

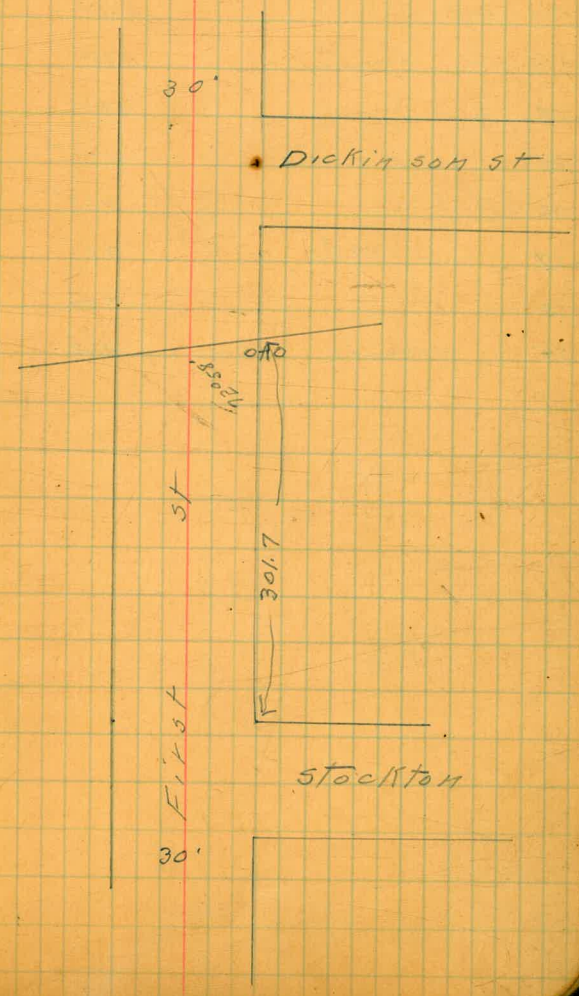
Childs
Taylor
Bunker

Dec. 30/10

T.P.		12.17	41.87		29.70	B.M.	
Sta.			H.I.	Rod	Ground	Grade	Cut
0+00	end gold pipe		41.87			38.8	
+50				1.9	40.0	37.3	2.7
1+00				3.4	38.5	35.8	2.7
+50				5.2	36.7	34.3	2.4
2+00				6.5	35.4	32.8	2.6
+50				8.1	33.8	31.3	2.5
3+00				9.8	32.1	29.8	2.3
+50				11.3	30.6	28.3	2.3
4+00				12.73	29.14	26.8	2.3
T.P.		1.70	30.84				
+50				3.2	27.6	25.3	2.3
5+00				4.1	26.7	23.80	2.9
+50				4.5	26.3	22.93	3.4
6+00				4.6	26.2	22.07	4.1
+50				4.6	26.2	21.21	5.0
7+00				4.7	26.1	20.35	5.8
+50				4.4	26.4	19.49	6.9
8+00				3.8	27.0	18.63	8.4
+35				3.3	27.5	18.03	9.5
+60				13.25	17.6	17.60	0.0

Levels for culvert 1st st bet Stockton 1/11/11 Dunkle & Dickinson Shaw

B.M.				292.00
B.M.	4.70	296.70		
T.P.	1.54	286.52	11.72	284.98
T.P.	0.70	274.63	12.59	273.93
0+0			11.3	263.3
0+10 W of E.L. 1st			8.6	266.0
0+20 W "			7.1	267.5
0+30 W "			6.5	268.1
0+40 W "			5.6	269.0
0+50 W "			1.5	273.1
0+0			11.3	263.3
0+10 E of E.L. 1st			16.6	258.0
0+20 E "			18.3	256.3
0+30 " "			18.7	255.9
0+40 " "			19.4	255.2
0+50 " "			19.2	255.4



3/2/11 H M R. Bottom Stakes for Culvert on Crosby St -

BM	0.17	5449		54.32	25th-N
	1.14	49.62	601	48.48	
			bottom	sides	
East end			362 -	329	46.0
+15	4' wide		380	347	45.82
+32			397	364	45.65
+37	8'4" wide		403	370	45.59
+42			409	376	45.53
+57	4' wide		427	394	45.35
+72			445	412	45.17
+86	west end.		462	429	45.00

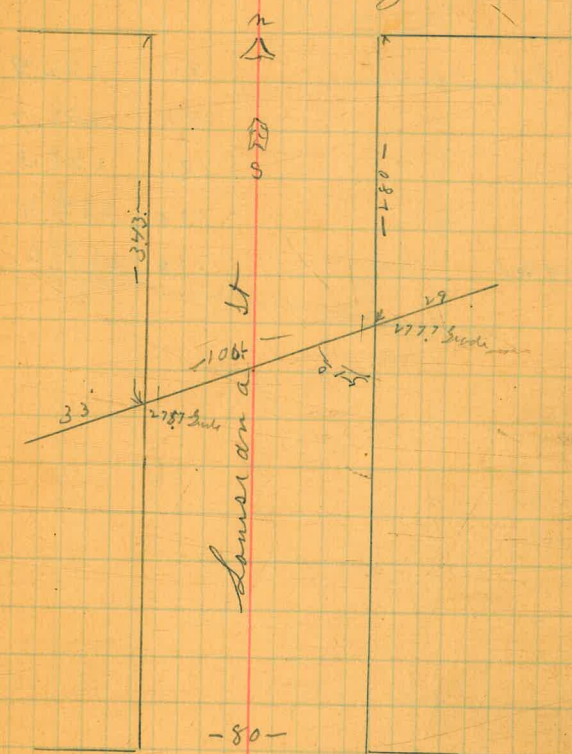
4/7/11 Clough Location of Culvert on Louisiana st
Dunnan
Fitzpatrick Bet Wightman + Sandis st

263.46 from Book 515 P78

33' W of W S = End of Culvert	10.7
10' W " "	12.6
W S of { Louisiana st at 343' S of Wightman	9.0
30' E of W Line	4.4
Center of Louisiana	5.7
37' W of E Line	5.8
22' W of E Line	8.2
13' W of E Line	8.1
E Line of Louisiana at 280' S of Wightman	6.1
29' E of E Line = E End	5.2

30' Pitch 0.7

Wightman st

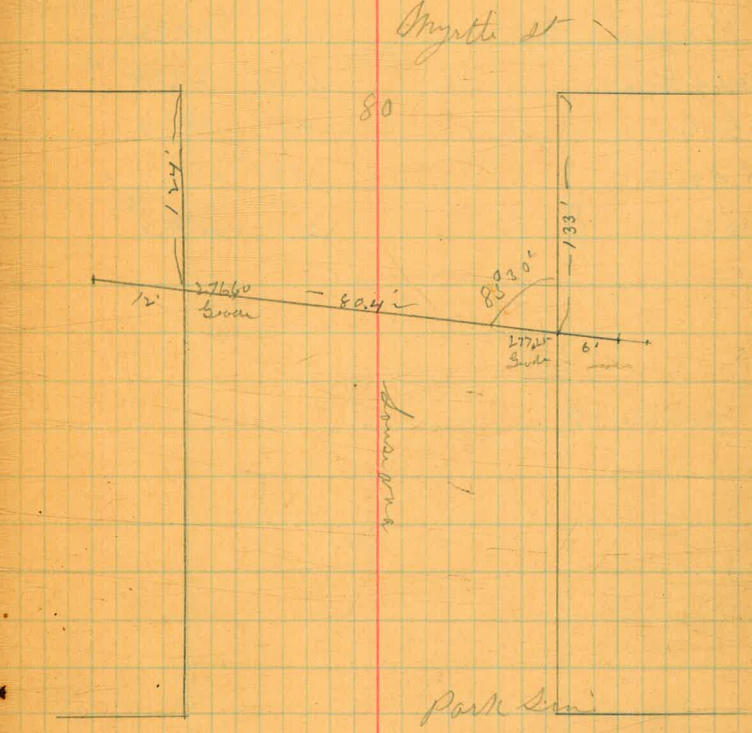


Sandis st

4/13/11 [Clough, Inman, Fitzpatrick] Levels for Culvert Louisiana St Bet Myrtle St & Park Line

	3.07	281.39	278.32	SE ⊕ at Park Line
6' E of E Line of Louisiana		8.5	272.9	
E L	"	8.7	272.7	
Center	"	10.1	271.3	
W L	"	13.0	268.4	
12' W of W L	"	12.8	268.6	

8' Pipe is large enough



4/13/11 Clough Dinner Fitz

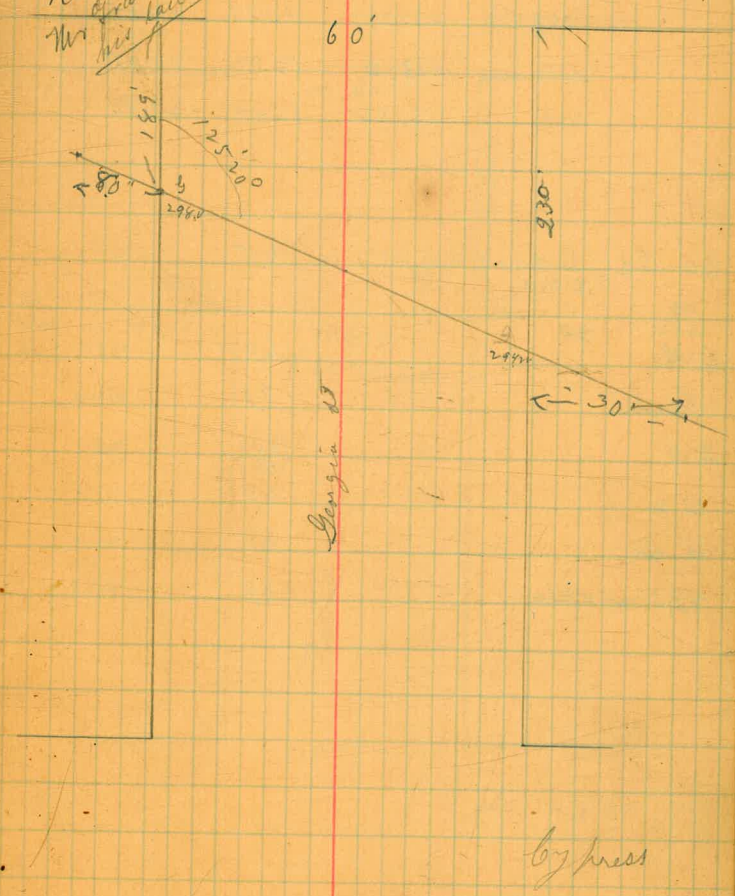
Levels for Culvert on Georgia St (60')
Bet Robinson + Cypress

	1.84	294.20		292.36
8' N of W Line of Georgia			1.6	292.6
W L of Georgia			4.2	290.0
Cent "			9.8	284.4
E L of "			15.0	279.2
30' E of "			20.0	274.2

Bm Post

8" Pipe is large enough
-115' long

Not to be put in Grahame will fill his land up

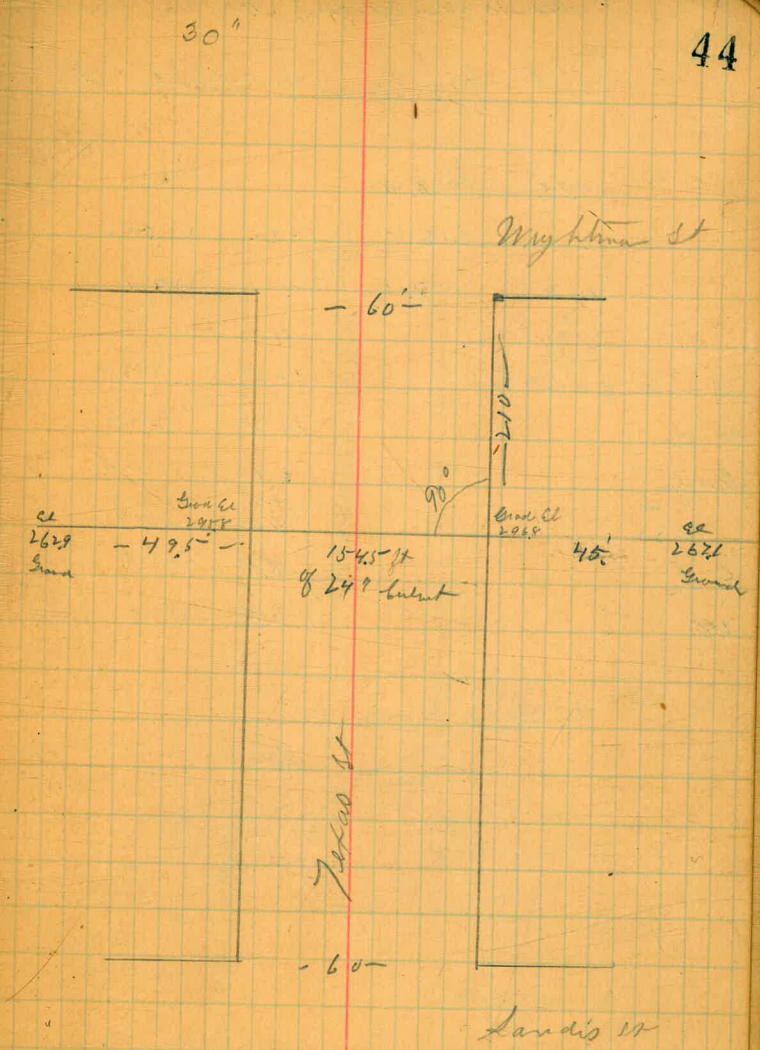


4 | Clough
29 | Inman
11 | Fitzpatrick

Levels for Culvert on Texas St (60)
Bet Wightman & Landis

1.20	307.40		306.20	SW Ct Wightman & Texas
0.18	294.55	13.03	294.37	
1.51	283.26	12.80	281.75	
0.80	271.66	12.40	270.86	

30' Eq = E Line of Texas (60) = E End	4.5	267.2
E L	6.0	265.7
Center	7.7	264.0
W L	(8.0) 9.6	263.7 262.1
10' W	9.6	262.1
11' W	8.5	263.2
49.5' W = End	8.8	262.9



Levels for Culvert on Mississippi st (60)

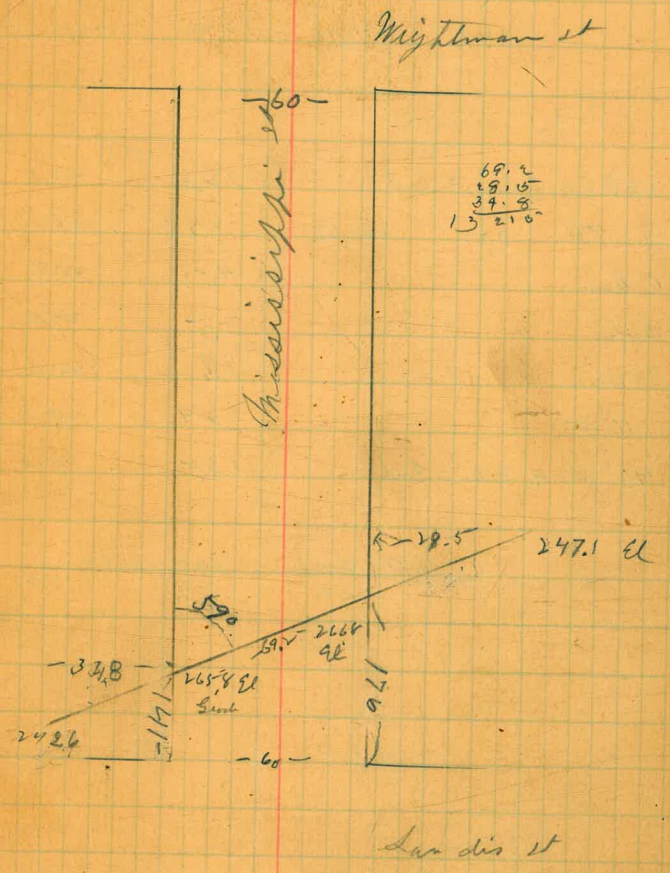
Bet Wightman & Sandis st

1.78	278.76		276.98	Bm SE Sandis
0.22	266.15	12.83	265.93	
0.02	253.11	13.06	253.09	

33.3' W of WL = End		10.5	242.6
W L		10.2	242.9
Center		6.7	246.4
+ 20		4.6	248.5
+ 22		8.2	244.9
E L		8.2	244.9
~~28~~		6.0	247.1

No Slopes Required

30"



This culvert is 122' long as constructed, should be 134'.

Mar 14-12.

5/1/11 } Clough Denman Fitzgerald

Levels for Culvert on Mississippi (60)

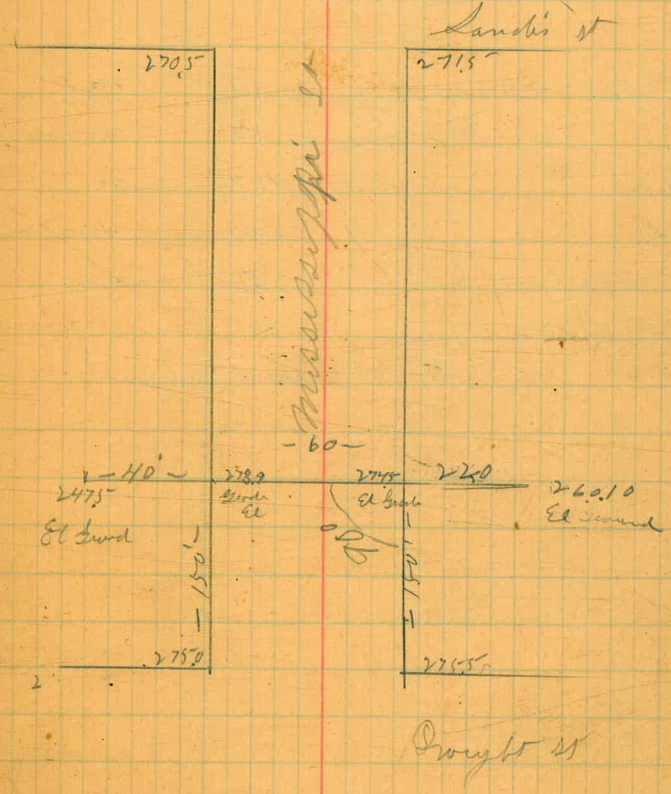
Bet Sandis + Dwight St

6.63	283.61		276.98	Bm SE Sandis
1.49	272.70	12.40	271.21	

22.0 E of E Line = End			12.6	260.1
TP	0.86	260.69	12.87	259.83
E Line			4.2	256.5
Center			5.5	255.2
W Line			8.9	251.8
10' W			12.4	248.3
40' W of V.L = End			13.2	247.5

no Slopes Required

8" Pipe



5 / 3 / 41 — Clough, Donnan, Fitzgerald

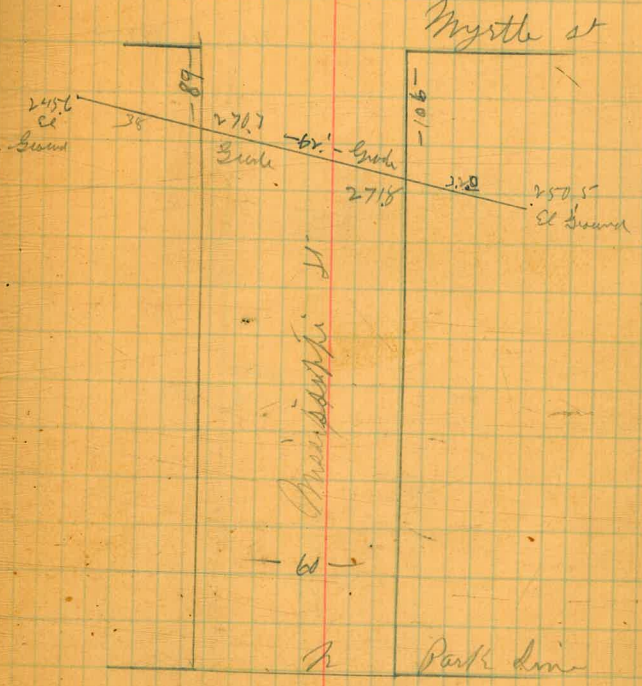
Levels on for Culvert on Mississippi St (60)

Bet Myrtle + Park Line

1.85	280.92		279.06	Bm
0.31	269.69	11.54	269.38	
0.08	257.22	12.55	257.14	

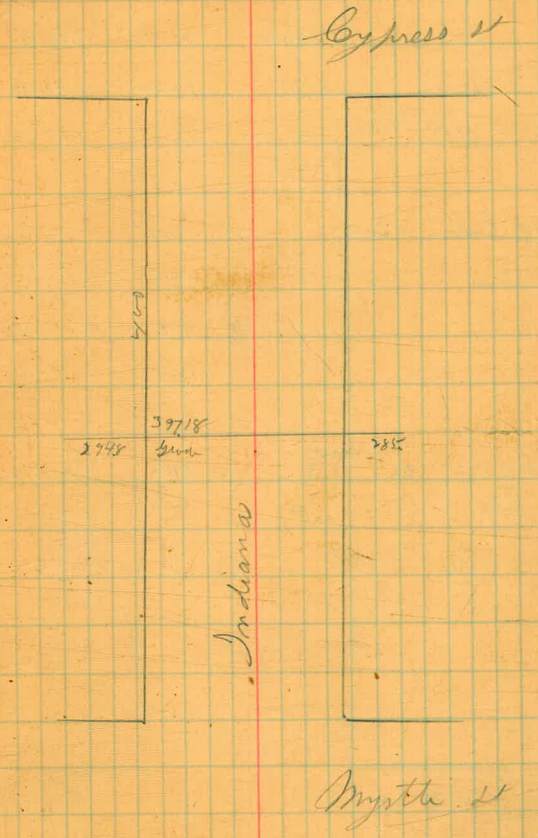
32' E of EL = End of Cul	6.7	250.5
13' E " "	8.8	248.4
EL	8.0	249.2
Center	10.4	246.8
WL	12.0	245.2
38' W of WL End of Cul.	12.7	245.5

No Slopes Required



5/9/11	Clough. Doman Fitzpatrick	Levels for Culvert on Indiana St Between Cypress & Myrtle St				(60)
		1.30	301.89		300.59	
	WL			7.10	294.79	

No Culvert Required 7/5/6



5/9/11

5/10/11 Clough, Dorman, Zitzhatuch

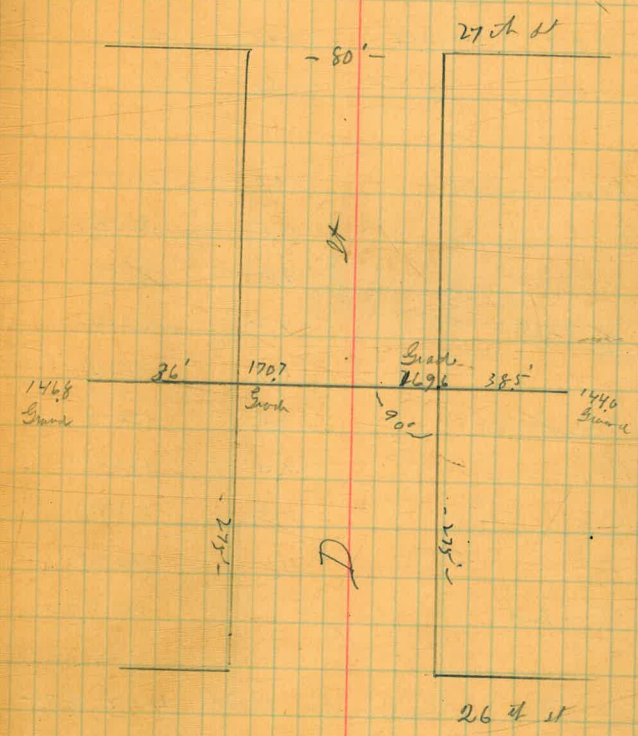
Levels for Culvert on D St
Bet 26 & 27th St

1.72	190.67		188.95	Bm
0.53	178.72	12.48	178.19	
0.20	166.10	12.82	165.90	
1.12	154.35	12.87	153.23	

38.5' S of S Line = End	10.4	144.0
S L of D st	9.0	145.4
Center "	8.8	145.6
C + 25'	7.6	146.8
+ 30'	6.7	147.7
N Line	6.5	147.9
36' N of N L = End	7.5	146.9

(No Slopes Required)

(30" ~~18"~~ Culvert)



5 Clough
10 Dorman
11 Fitzpatrick

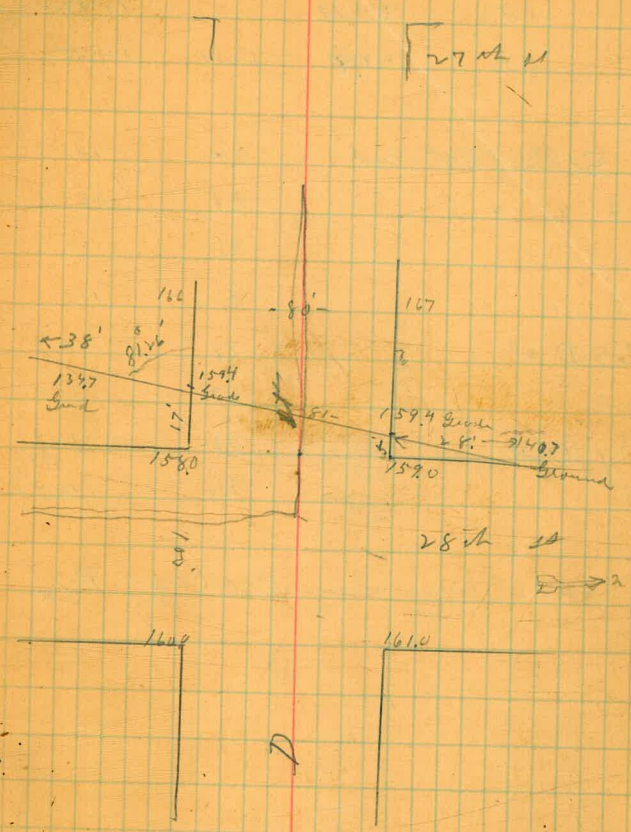
Levels for Culvert on D St (80') at 28th St

4.86	189.55		184.69
0.56	177.14	12.97	176.58
0.0	164.29	12.85	164.29
0.27	151.58	12.98	151.31
6.06	144.75	12.89	138.69

38' S of S Line = End of Pipe	10.0	134.75
35 S of S L	10.5	134.25
30 " "	9.2	135.55
S Line of D St	7.2	137.55
Center	5.7	139.05
N Line of D St	6.0	138.75
6' N " "	7.3	137.45
12' N " "	5.8	138.95
25' N " "	4.1	140.65
28' N " " = End		140.7

For Stakes See Book (443 P75)

(30" Culvert)



5 | Clough
10 | Dow
11 | Fitzpatrick

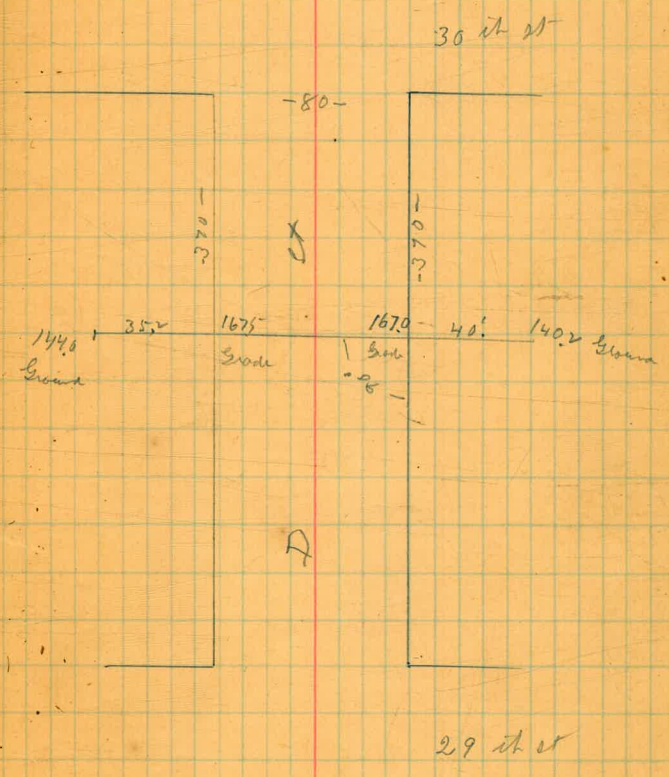
Levels for Culvert in D St (80)
Bet 29th + 30th St

0,73	155.49		154.76
5,58	148.78	12.34	143.15

40' S of S line of D St = Ent	8.6	140.1
24' S " "	8,8	139.9
10' S " "	9,5	139.2
8' S " "	8,6	140.1
S L of D St	7,8	140.9
Center "	6,9	141.8
N L of D St	6,0	142.7
35.0	4,8	143.9

For Slopes See Book 443 P 76

30" PIPE



5/9/11

5/13/11 Clough Donnan Fitzpatrick

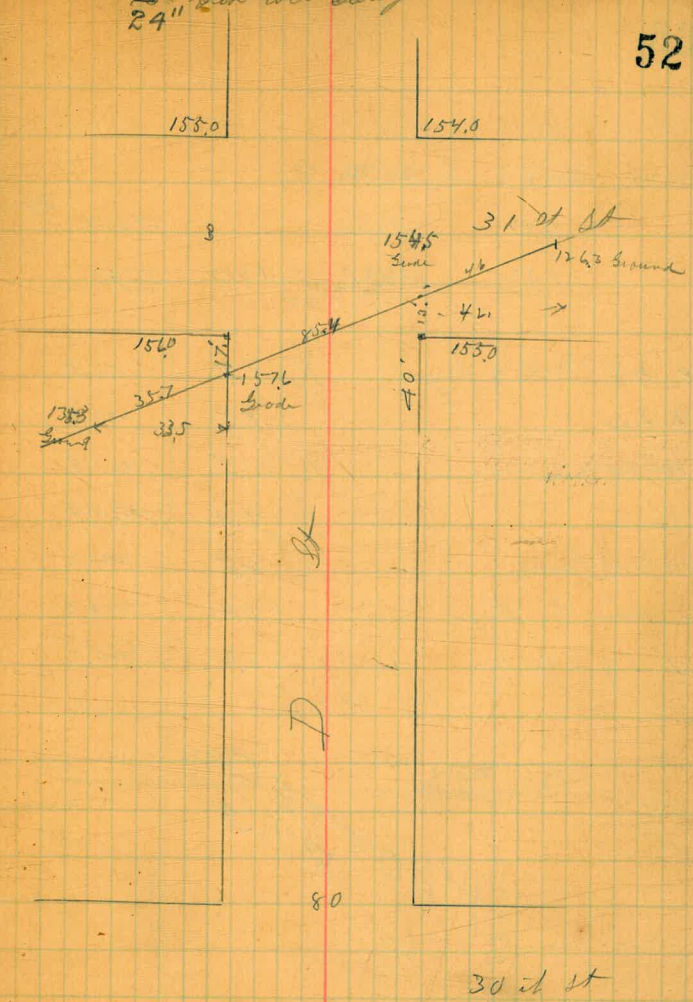
Levels for Culvert on D st at 31 st st

5.54	142.30	136.76	BM NW 31 + D

36' N of NS = End	7.0
N S of D st	8.0
NS + 12	9.3
Center	9.2
S S of D st	10.5

Levels for Slopes Book 4.45 P 77

~~18~~" 24" Pipe will carry



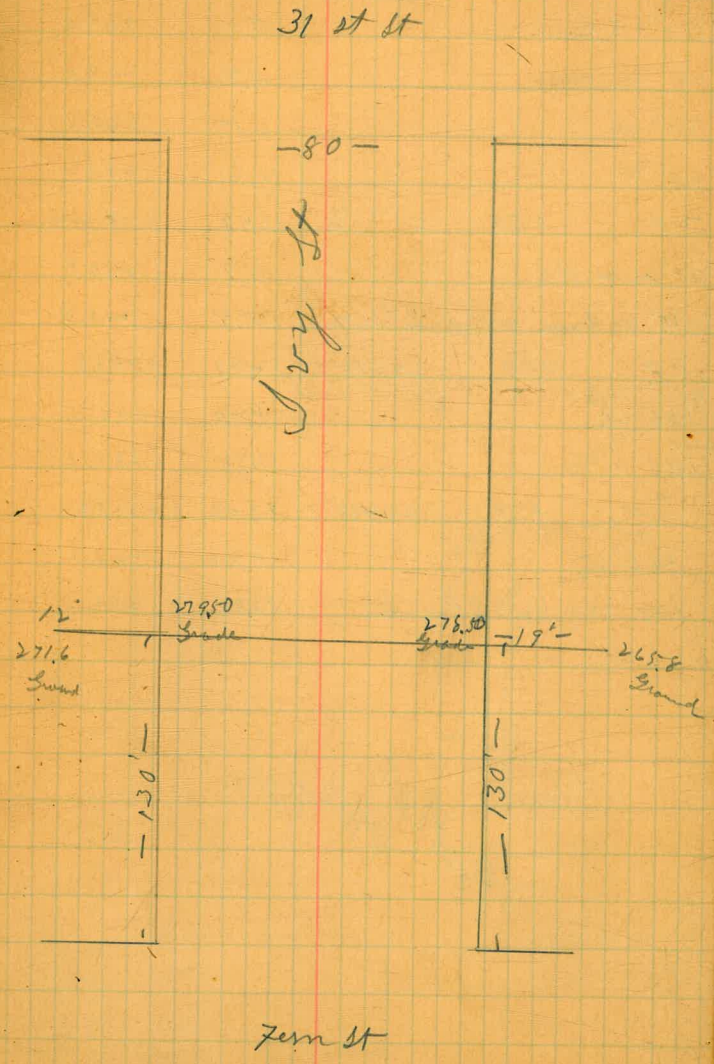
(8" or 10" pipe)

286.24	Bm N E Ivy + 30			
	4.07	290.30		286.24 Bm
	1.34	278.97	12.67	277.63

12' N of N L of Ivy	7.5	271.5
N Line	8.2	270.8
15' S of N L	11.5	267.5
Center	4.6	274.4
20' S of Center	4.8	274.2
S Line of Ivy	13.0	266.0
19' S of S L "	13.3	265.7

No Slopes Required

PLOTTED RMG



8 / Clough
18 / Dimer
11 / Bunker

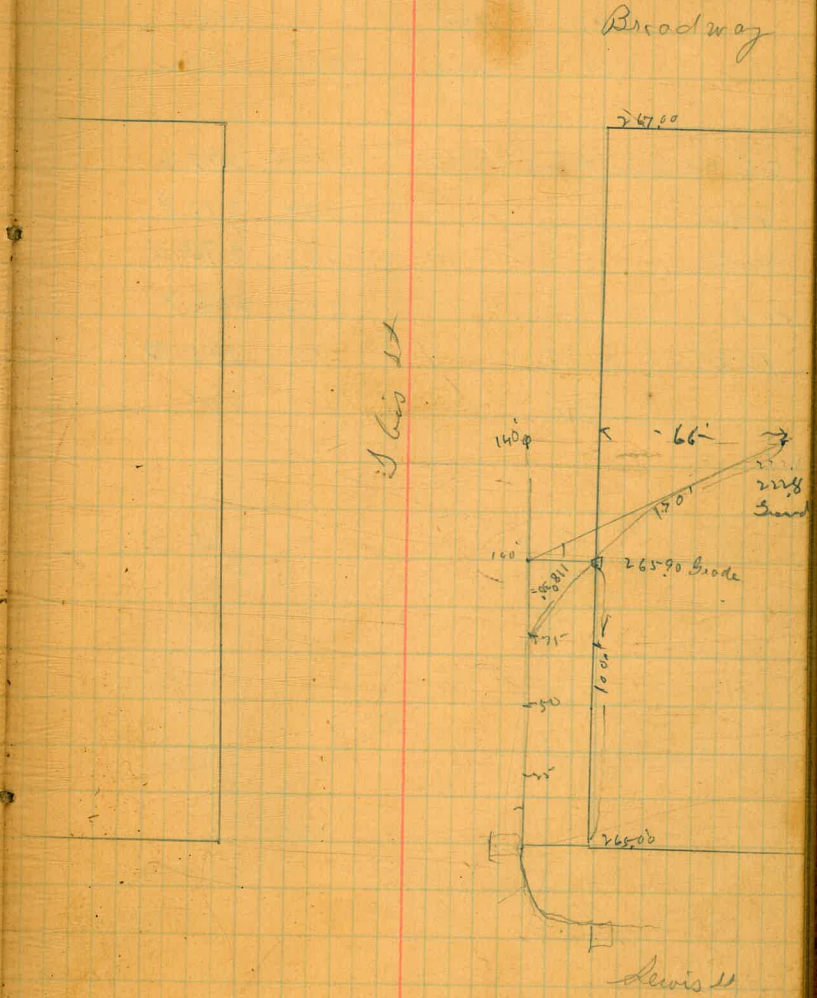
Levels for Culvert N E Cor of Ibis & Lewis St

	4.70	269.70		265.00 Curb
00 = N E Curb			5.2	264.5
25' n			4.7	265.0
35' n			4.5	265.2
43' n			11.6	258.1
TP	0.34	257.56	12.48	257.22
75' n = P.C.			6.7	250.9
104' on Curve = Prop. ℄ 100' n			15.4	242.2
TP	0.90	245.56	12.90	244.66
120' n E			9.00	236.6
130 "			14.0	131.6
TP	1.50	234.06	13.00	232.56
160' n E			9.00	225.1
170' n E = 66 E of Prop Line			12.00	222.1

plotted RMG 8/22/11

~~12" Pipe~~ Est

16"



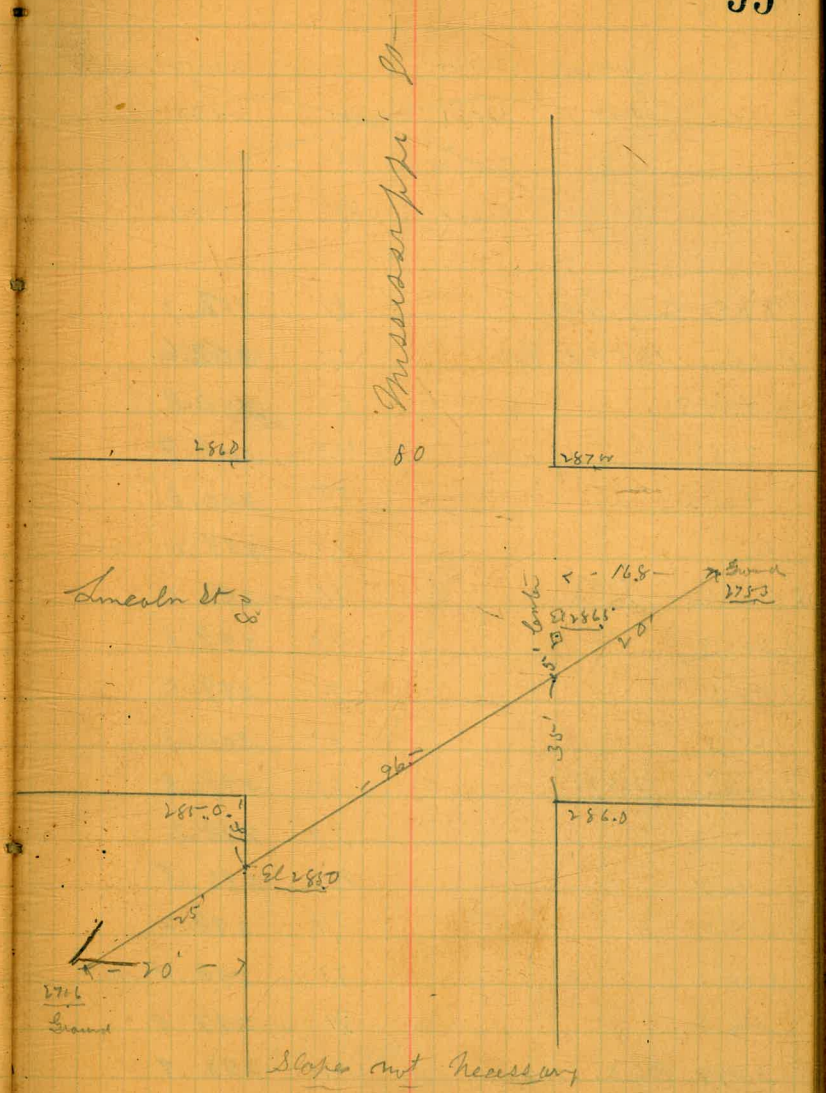
5 Clough
9 Dorman
11 Fitzpatrick

8 Clough Levels for Culvert Mississippi St
26 Dorman + Lincoln St
11 Fitzpatrick

11.92	295.07		283.15	Bm NE University
0.64	284.96	10.75	284.32	
	285.0			

20' W of W Line = End of Culvert	13.4	271.6
W Line	13.2	271.8
Center	12.0	273.0
E L	10.3	274.7
16.8 E of E L = End	9.7	275.0

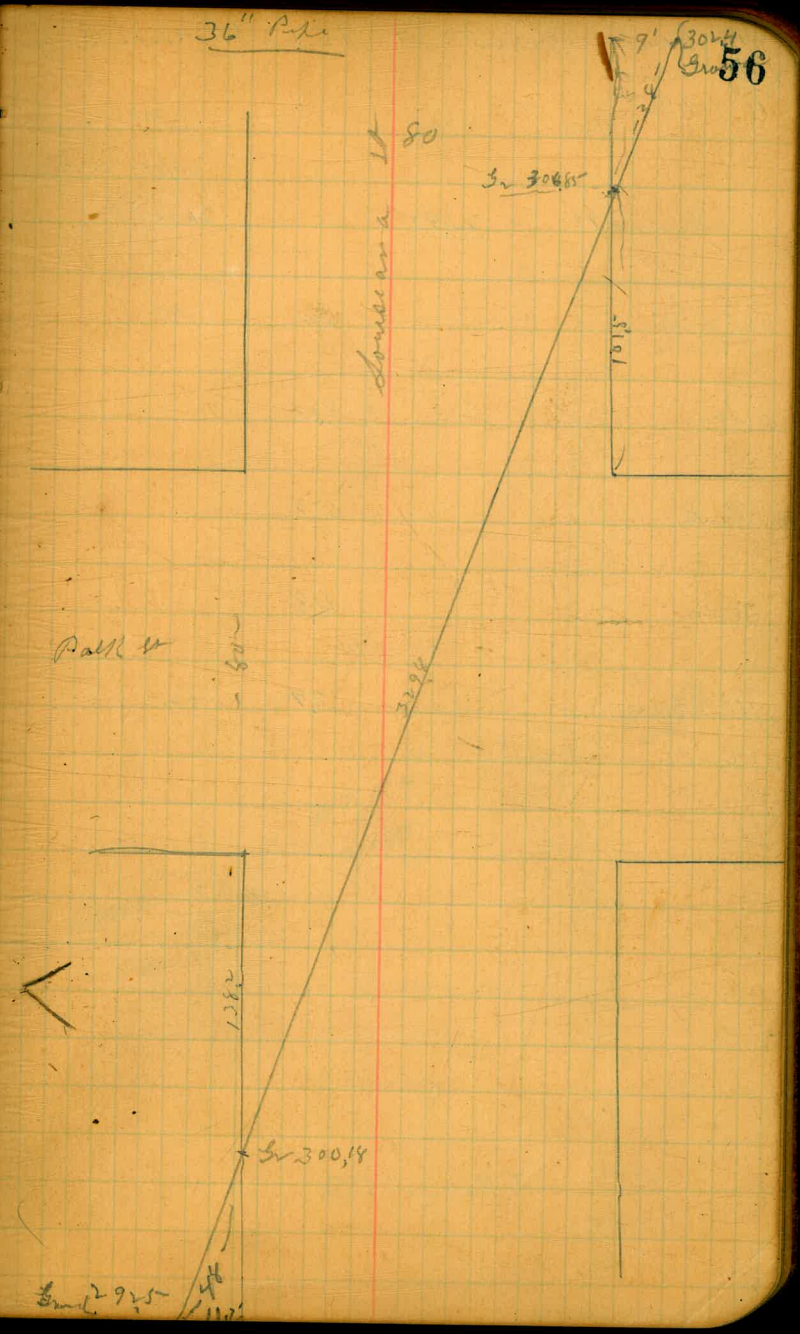
36' Pipe Est



9/19/11 Clough Sends for Culvert on Louisiana st (80) Ring at Polk St

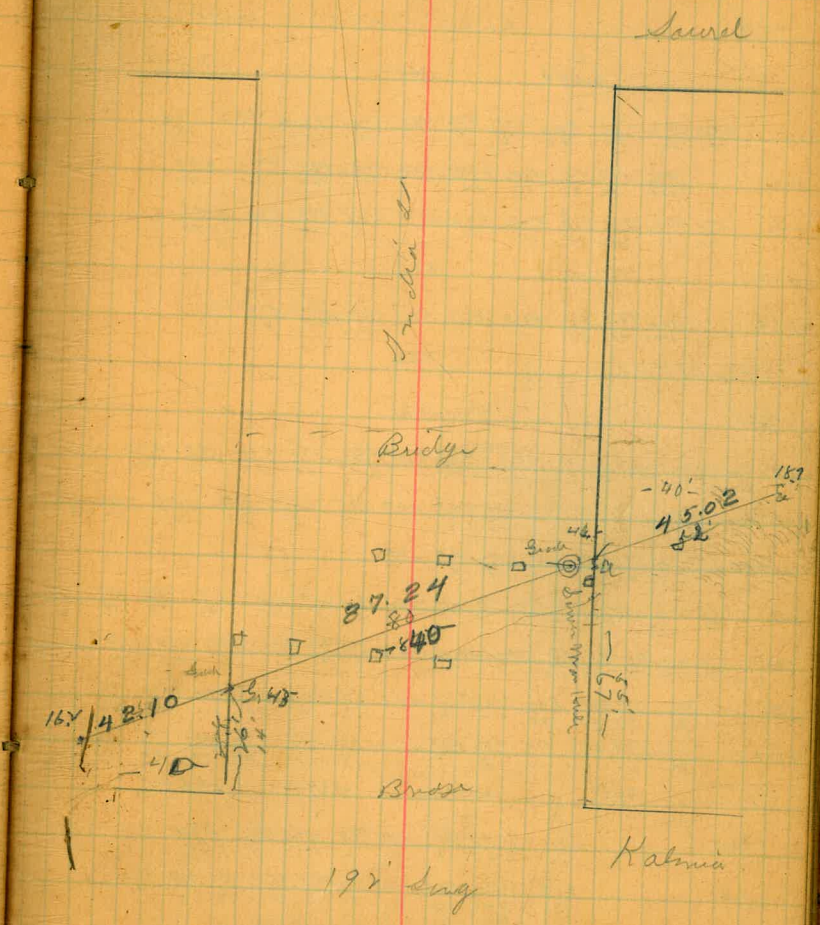
8.00	307.14		297.14	N W S Mon at Louisiana
5.68	310.01	2.81	304.33	
5.33	306.32	9.02	300.99	
8.52	306.09	8.75	297.57	

38' N E End of Culvert		3.7	302.3
Prop Line 1015 N of Polk		3.5	302.6
+25 S		5.3	300.8
+50' S		4.2	301.9
+60' S		5.5	300.6
100'		7.1	299.0
N Prop Line	(105' S)	7.1	299.0
130' S		8.0	298.1
150' S		7.1	299.0
165' S		6.0	300.1
S Prop Line	(187' S)	6.8	299.3
200' S		7.9	298.2
240' S		9.6	296.5
250' S		7.9	298.2
275' S		7.7	298.4
300' S		9.1	297.0
329.8 Prop Line 138.2 S of Polk		12.2	293.9
48' S N of Prop Line End of Culvert		13.6	292.5



11 | Clough Culvert at India St under Bridge
4 | Dunn
11 | Fitz

	4.20	47.20		4.310
			1.6	45.6 − 25.6 = 20.0
	3.90	23.90		20.00 TP
W. 40' E of E Sin } 5.6 in Pipe			5.0	18.9
E Sin			4.00	
Centre			5.3	
W Sin			4.8	
40' W of W S 5.6 in Pipe			7.7	16.2



EST. ..... F.K. ..... ADD. .....
C.....
C.....
PERMIT NO.

5/9/11

H.

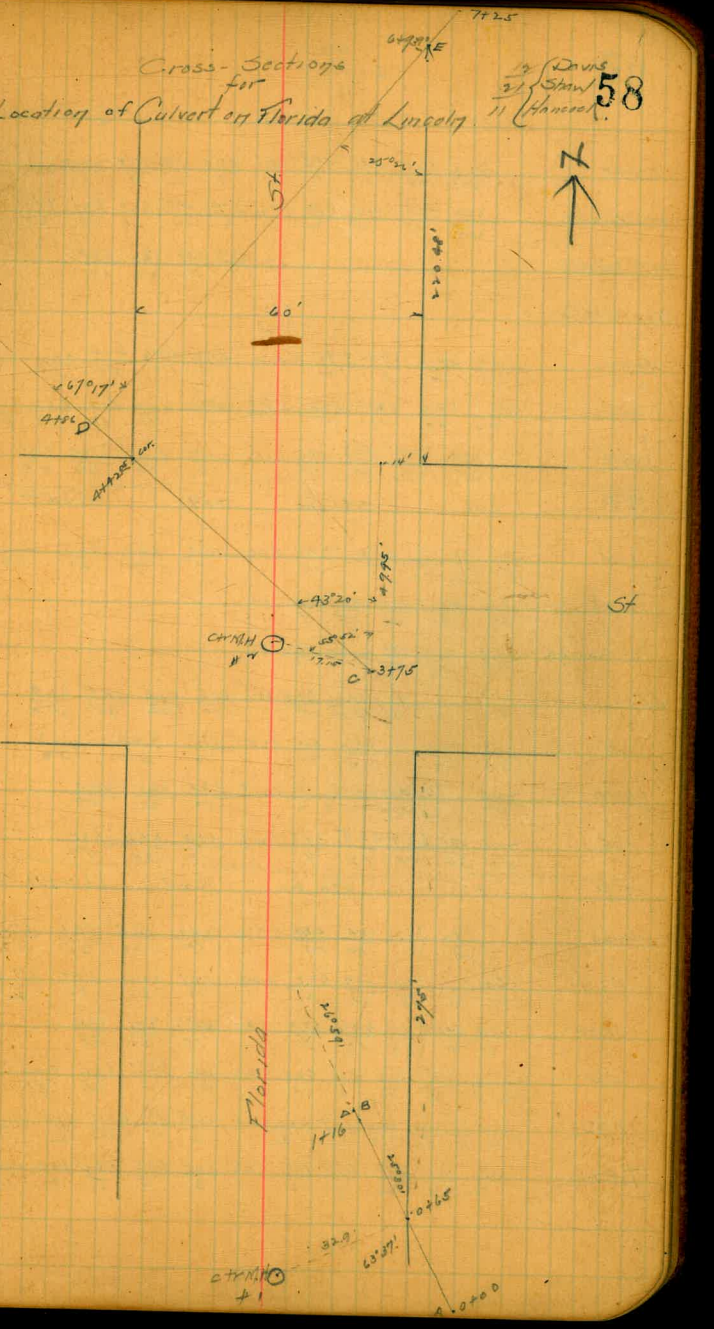
	3.72	269.29		265.57
TP	4.81	261.54	12.56	256.73

	Left									Ctr	Right
0+00	58.2 / 40	56.3 / 30	53.5 / 30	57.2 / 10	51.8 / 6	51.0 / 5	49.9	51.2 / 10	52.7 / 20	58.2 / 30	53.9 / 40
+20	58.6 / 40	56.7 / 30	53.1 / 21	51.0 / 19	51.4 / 10	51.7	52.9 / 10	53.4 / 20	54.3 / 30	55.0 / 40	
+40	57.2 / 40	56.3 / 37	57.5 / 24	51.8 / 20	51.4 / 15	52.6 / 10	53.1	53.7 / 10	54.6 / 20	56.0 / 30	57.7 / 40
+50							52.3				
0+65	62.0 / 50	57.3 / 41	53.6 / 38	53.2 / 20	53.1 / 10	53.4	54.6 / 10	55.4 / 20	56.5 / 30	57.1 / 40	
Top MH #1							56.2				
+75							53.1				
+90	62.2 / 60	58.8 / 52	54.6 / 47	53.7 / 40	54.2 / 35	55.2 / 30	53.0 / 20	53.7 / 10	53.8	54.0 / 10	54.2 / 20
1+16 R.&L.	55.4 / 67	55.4 / 54	55.7 / 40	55.1 / 30	54.7 / 20	54.1 / 16	53.2 / 13	52.8 / 8	54.7	55.2 / 10	55.2 / 20
1+16 Rate	56.0 / 80	57.4 / 71	57.3 / 60	55.1 / 30	53.5 / 20	53.9 / 10	53.0 / 7	54.7 / 5			
+35	59.5 / 80	57.1 / 60	57.3 / 45	55.4 / 20	54.6 / 10	54.0 / 7	53.1 / 5	53.2	54.2 / 3	55.5 / 8	56.5 / 20
+60	59.5 / 80	57.9 / 60	56.9 / 40	55.3 / 20	55.0 / 10	55.1 / 6	53.4 / 2	53.3	53.3 / 2	54.5 / 4	55.3 / 11
+85	62.0 / 90	59.9 / 70	57.7 / 53	57.2 / 30	57.0 / 10	55.4 / 2	54.1	53.7 / 3	55.2 / 6	56.0 / 15	57.0 / 20
2+00	63.0 / 80	59.8 / 60	58.7 / 40	57.6 / 20	57.0 / 8	53.9 / 2	53.9	54.0 / 4	55.5 / 7	57.2 / 20	58.0 / 25
T.P.	7.86			265.39			4.07			257.47	
+25		60.3 / 40	58.7 / 20	58.3 / 18	53.8	54.1 / 2	55.1 / 4	56.1 / 7	57.2 / 15	58.1 / 27	57.8 / 40
+50		61.8 / 30	61.0 / 20	59.5 / 12	54.5	55.0 / 3	56.6 / 7	57.8 / 13	58.4 / 20	58.6 / 30	59.3 / 40
+75		62.8 / 30	61.3 / 18	59.9 / 14	54.6	54.7 / 3	56.8 / 5	58.6 / 12	59.1 / 20	59.5 / 30	
3+00	62.3 / 30	61.6 / 25	59.7 / 20	58.8 / 14	57.0 / 3	54.9	54.9 / 4	57.3 / 6	59.0 / 12	59.5 / 20	59.7 / 30
+10							57.1				
+25		61.9 / 30	60.1 / 20	59.2 / 10	58.3	57.9 / 2	55.1 / 5	56.3 / 9	57.1 / 11	57.9 / 14	60.0 / 17	60.5 / 20

Cross-Sections for Location of Culvert on Florida at Lincoln

Davis / Stout / Hancock

58



Hy.
265.33

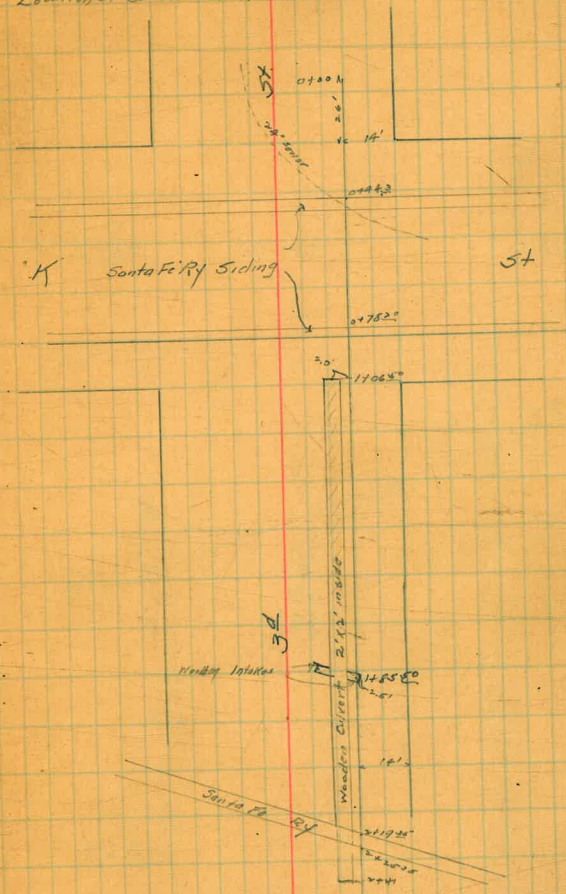
	Left					Ctr			Right	
3+50	62.1 / 30	60.5 / 20	59.1 / 10	58.9 / 2	58.3	56.7 / 7	57.3 / 13	61.9 / 19	62.9 / 30	
3+75 Rat to BC	64.5 / 40	61.4 / 25	60.8 / 15	57.8 / 2	57.0	57.4 / 6	59.7 / 12	62.0 / 17	63.0 / 18	64.0 / 30
3+75 Rat to CD					57.0	57.7 / 7	58.9 / 10	63.0 / 22	63.8 / 30	
Top MH #2					61.2					
+90					59.5					
4+00	62.0 / 40	62.2 / 20	61.3 / 8	59.5 / 2	58.2	59.2 / 6	59.6 / 10	60.2 / 20	61.4 / 30	62.8 / 40
+25	65.6 / 40	64.2 / 30	62.5 / 17	59.2 / 5	58.9	59.0 / 8	60.0 / 4	61.0 / 10	61.3 / 20	61.2 / 30	62.4 / 50
+42.05	65.5 / 25	65.0 / 23	59.9 / 20	59.3 / 5	60.4	61.7 / 10	62.1 / 20	61.5 / 40	62.1 / 50	
T.P.	8.19		271.73		1.79			263.54		
+65	70.0 / 40	67.9 / 29	60.2 / 23	60.0 / 18	61.3 / 10	61.6	62.0 / 10	62.3 / 20	62.5 / 30	62.1 / 50
+86 Rat to CD	74.4 / 50	73.0 / 30	72.0 / 24	60.4 / 15	60.2 / 5	61.4				
+86 Rat to DE	74.7 / 50	73.2 / 28	71.8 / 24	66.0 / 15	60.2 / 9	60.2 / 4	61.4			
5+00	74.5 / 50	73.4 / 40	71.9 / 31	62.2 / 17	60.2 / 15	62.1 / 10	62.6	62.5 / 23	62.4 / 35	61.9 / 50
+25	72.3 / 50	71.2 / 37		64.2 / 22	60.4 / 10	62.5	62.7 / 10	62.2 / 30	62.3 / 50	
+50	72.4 / 50	71.2 / 38	70.4 / 30	62.7 / 11	60.6 / 7	61.9 / 6	62.7	62.0 / 10	62.3 / 30	64.3 / 50
+75	70.4 / 50	67.2 / 34	63.7 / 24	62.5 / 12	61.6 / 7	62.6	63.3 / 10	64.5 / 30	66.1 / 50	
T.P.	8.32		270.81		9.24			262.49	Top Water Meter	
6+00	68.3 / 60	66.2 / 30	63.4 / 20	61.9 / 10	63.2	64.0 / 10	64.4 / 20	65.6 / 30	67.3 / 50	
+25	69.9 / 40	65.2 / 30	63.9 / 18	61.7 / 10	62.6 / 6	63.5	64.7 / 18	65.3 / 20	67.0 / 30	67.9 / 40
+50	65.9 / 40	64.9 / 30	64.3 / 20	63.2 / 10	62.0 / 5	62.0	65.3 / 10	67.1 / 20	68.4 / 30	
+75	66.3 / 40	65.4 / 30	64.8 / 20	63.9 / 10	63.8 / 4	62.5 / 3	62.2	63.0 / 3	65.5 / 10	68.2 / 20	70.3 / 30
+93.90	66.0 / 40	65.8 / 30	65.3 / 20	65.0 / 10	63.7 / 3	62.2 / 2	62.1	62.4 / 2	63.1 / 4	64.2 / 10	67.8 / 20	69.6 / 25	70.5 / 30
7+25	66.8 / 40	66.0 / 30	65.7 / 20	65.6 / 8	63.8 / 2	62.6	62.6 / 3	63.6 / 5	64.8 / 10	66.3 / 20	67.5 / 30	68.9 / 40	

12 / 29 / 11 { Davis / Shaw / Hancock

Levels along East Gutter of 3d St - 26' No of No line "K" St to Bay

	M.		
3.87	5.35		1.488 M.S. w/ 3d J plg rt.
0+00		4.30	1.0
+44.3 No Rail No siding Top rail		4.94	0.4
+65		4.6	0.7
+78.2 No rail So siding " "		4.74	0.61
1+06.5		5.2	0.1
Inside Culvert No end - (bot)		7.7	-2.4
+50		5.3	0.0
+85.50		5.3	0.0
2+19.35	Top rail	4.2	1.1
		3.76	1.59
	" "	3.80	1.53
+25.35		4.40	0.9
+30		4.7	0.6
+41		10.1	-4.8
Inside Culvert So End (bot)		9.28	-3.93
+50		10.9	-5.6

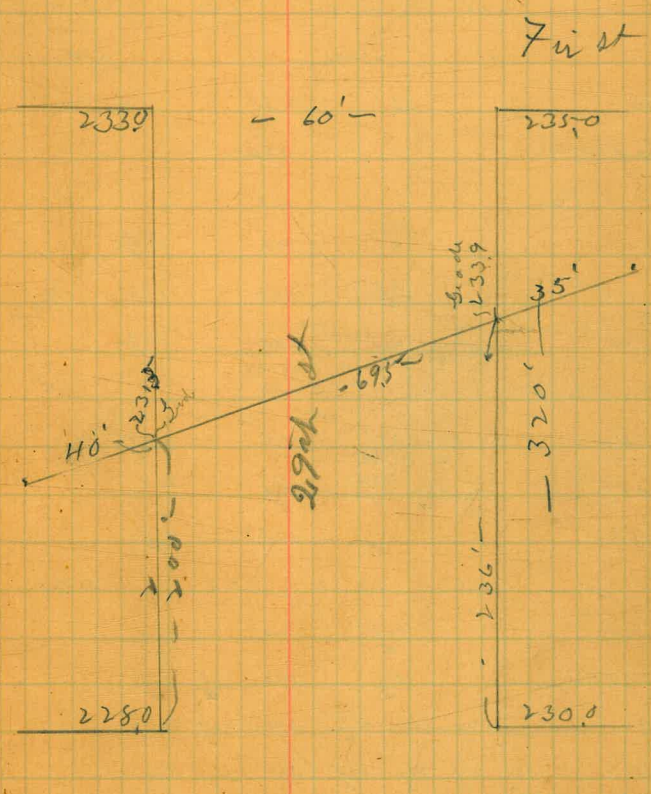
Location of Culvert at K and 3d St s.



Note Sewer runs as shown in sketch. Top of pipe is about 2" below bottom of ties - So say the natives.

2/24/12 | Clough Dunn Fitz

Survey for Culvert
29th st Bet Fir & Elm st



3.20
2.36
.84

2/8/12 { Davis Hancock Tex.

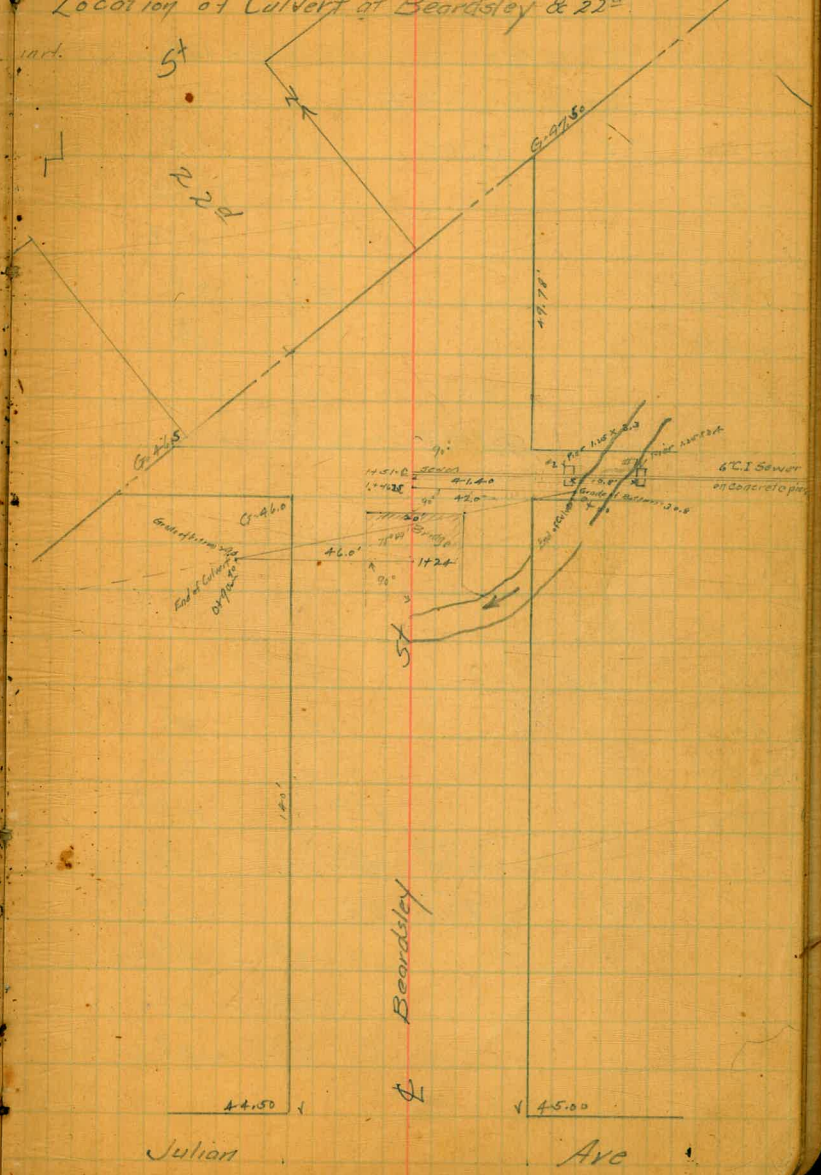
Levels for Culvert.

+	N.I.	—	
1.45	57.89	12.16	56.44 B.M. N.W. 22d M. Pg. inrt.
0.52	46.25		45.73
3.25	41.40	8.10	38.15 - T.P. on pipe
3.81	41.96		38.15

Sta	No	Ctr	So
Top of Pier #1		37.2	
" " " #2		36.8	
0+00	31.7/5	30.8	30.7/5
+14	33.5/5	32.9	32.3/5
+32	45.6/10 45.5/5.5 42.0/5	40.0	37.8/5
Floor of Bridge		44.3	
+40	44.3/5 44.3/25 39.7/2.5	39.3	35.5/5
+47	44.3/5 44.3/4 39.4/4	36.3	33.8/5
+60	36.1/5	32.4	31.5/5
T.P.	4.50 36.27	10.19	31.77
+80	30.8/5	30.3	28.9/5
+90.7 End Culvert	30.5/5	29.0 28.9/2	30.6/5
+7 W of W end	33.0/10 31.9/7 28.8/5 28.6/2	30.3	30.7/5 31.3/10
+14	33.0/10 28.7/8 28.6/5 29.4/3	30.0	30.3/5 31.3/10
+20	34.0/10 28.6/8 28.8/2	29.6	30.0/5 31.0/10
+23	39.0/15 36.0/10 29.1/9	28.5	29.2/7 30.4/10

Note - Put collars on ends of culvert high enough to catch fill - Ditch 23' from west end of culvert for outlet. bottom of ditch at end to be 28.5 elev.

Location of Culvert at Beardsley & 22d



5/9/11

Profile of Channel of Culvert on Logan near 16th

				11.139	B.M. br. plg in end of return "abt. 50' S of E St intersection"
				12.521	" " " " " " " N.E cor 16th & N.
0+00	5.57	18.09	6^{8}	11^{3}	
+50			7^{5}	10^{6}	
1			7^{8}	10^{3}	
+87			8^{3}	9^{8}	E end of Culvt in channel
+50			7^{8}	10^{3}	
+87			6^{1}	12^{0}	" " " " on top
				12.52 – B.M.	
2	2.81	15.33	3^{3}	12.0	on top of Culv. East end.
+50					
3					
+50					
+55	angle.				
$+86^{6}$	w. end.		7^{2}	8^{1}	on Top
dr.			10^{3}	5^{0}	Channel
$4+53^{6}$			10^{9}	4^{4}	"
T.P.			9^{64}	5^{69}	
T.P.	1^{12}	6^{81}	4^{19}	2^{62}	Grade stk S.O. Cb Newton 250' W of 16th ~~Cor 16th & Newton~~
	5^{90}	8^{52}	5^{88}	2^{64}	" " " " " 600 " " "
			13^{6}	– 5^{1}	Bottom of S.R. & A. drain
			12^{2}	– 3^{7}	" of Wood box Culv't.
			9^{2}	– 0^{7}	top of 15th st Conduit.

1

"

depth, - top to invert = 4.28 (Comly)

Rate = 1.87/90 = .0208

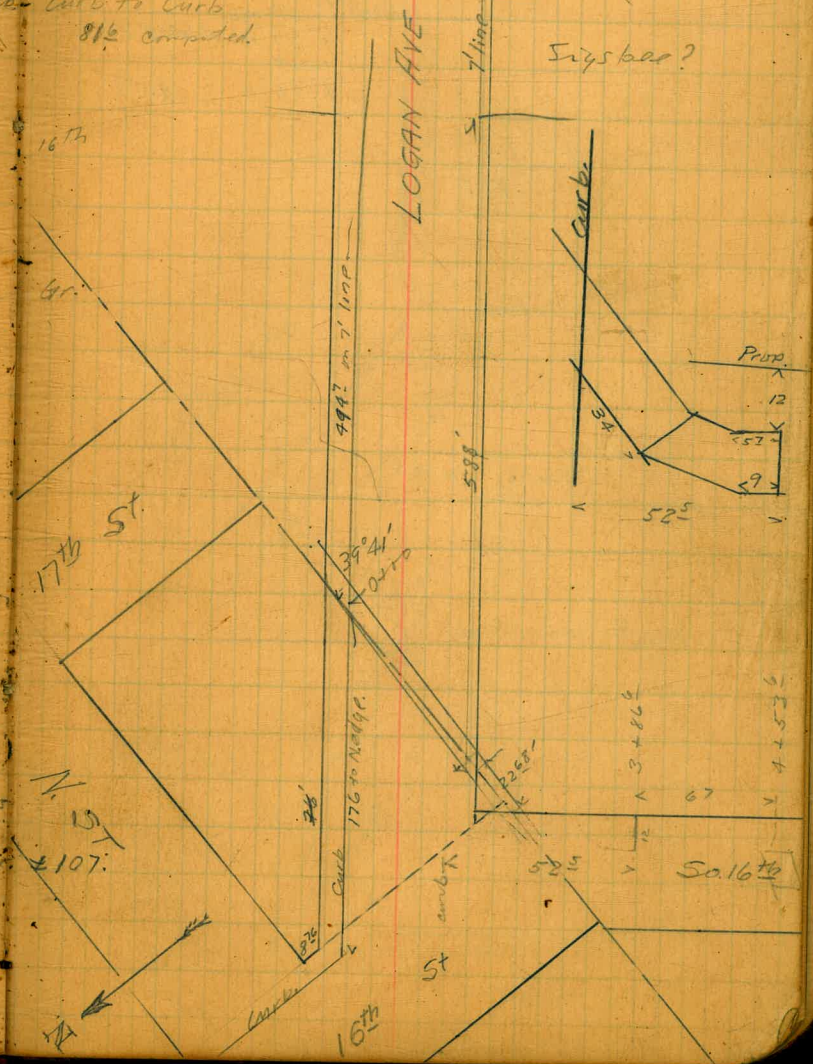
11.54
4.28
7.26

Grades for Culvert, 16th & Logan.

				11.79	Curb at E.N.
	4.33	16 L2		11.54	top Gr at E
				7.26	bot Gr at E Cb
			5.84		
			6.20		9.92
			7.60	8.52	Gutter
				11.79	
0+00	0.74	12.53	5.27	7.26	Gr.
-35			4.54	7.99	"
+20			5.69	6.84	
				11.79	
	0.05	11.84	4.56	7.28	
				11.79	
	2.16	13.95	8.04	5.91	Gr. 0+65
			8.56	5.39	Gr. +90
			9.31	4.64	Gr. 1+26
			(9.55)	4.40	Gr. in St. 1+37.5
			6.58		Top Sewer ±107.

E side of S.D. & A drain is 635 ft W of W line of S. 16th st + is 32' wide (out to out.)

Curb to Curb 81.6 computed.



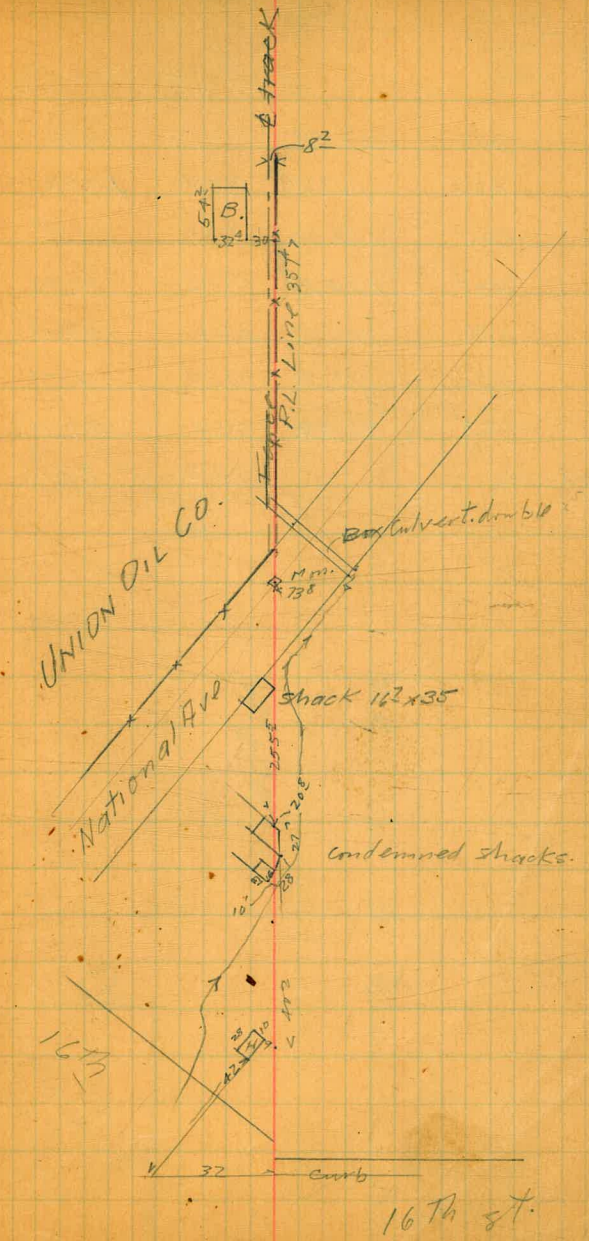
52
.021
52
104
1.092

.0208
35.
1040
624
7.280

4.16

9.92
.25 top.
9.67 Gr. at West Cb.
1.09
8.58 G. 8.52

11.54
967
9.0 | 1.872
.021

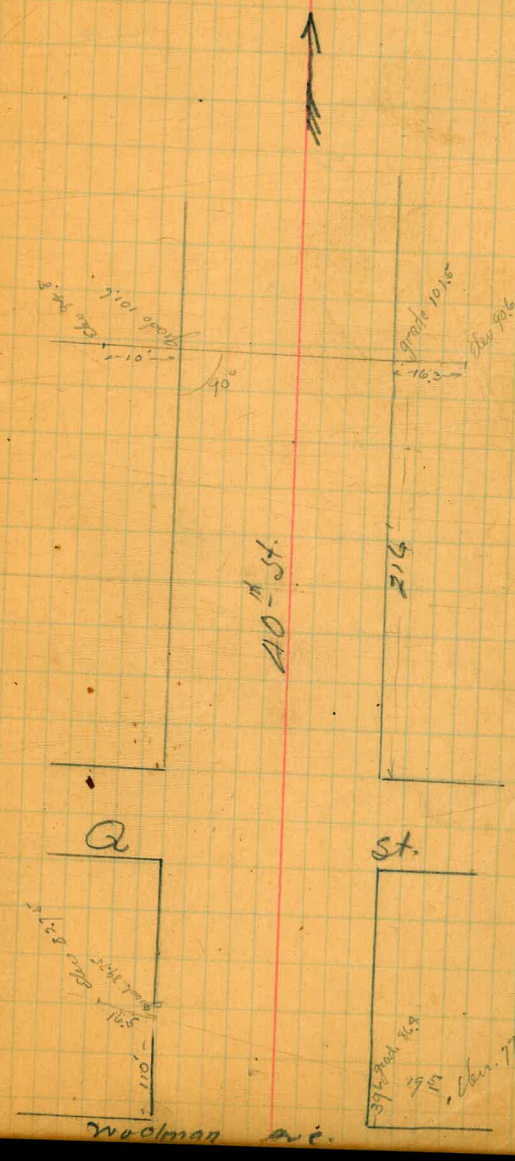


6/8/12 Hatch Home Hall

Culvert Measurements

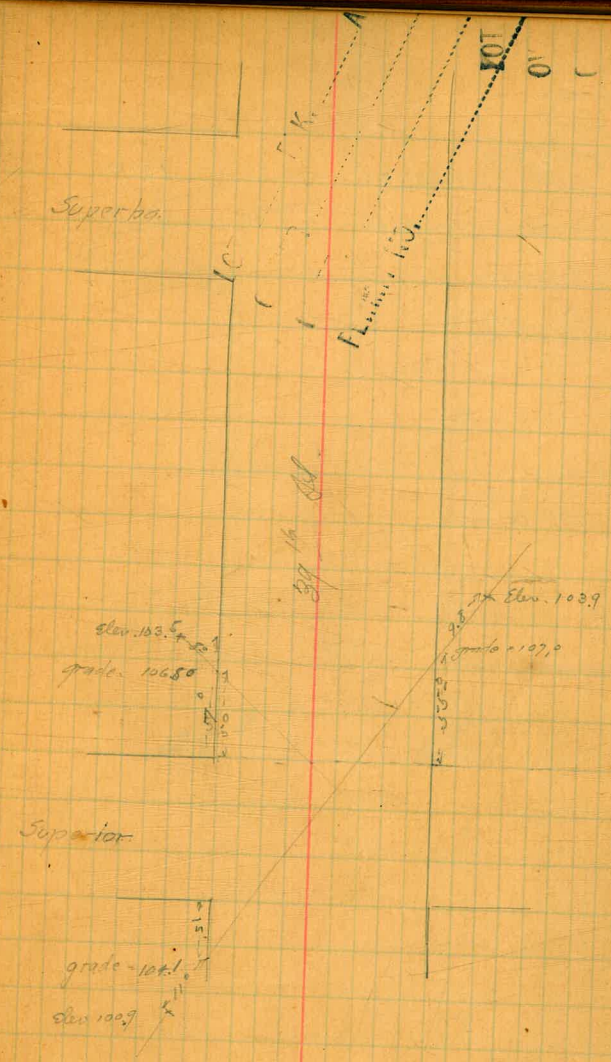
40th St. Near Q St.

BM	7.57	127.39		119.82	Mon at 39th Siegel
	0.25	117.67	9.97	117.42	
	0.65	112.00	6.32	111.35	
	4.64	104.39	12.25	99.75	
	0.94	105.07	0.26	104.13	
	0.75	93.02	12.80	92.27	
	1.78	86.42	8.38	84.64	
T.P. nail in Pole,			3.32	83.10	



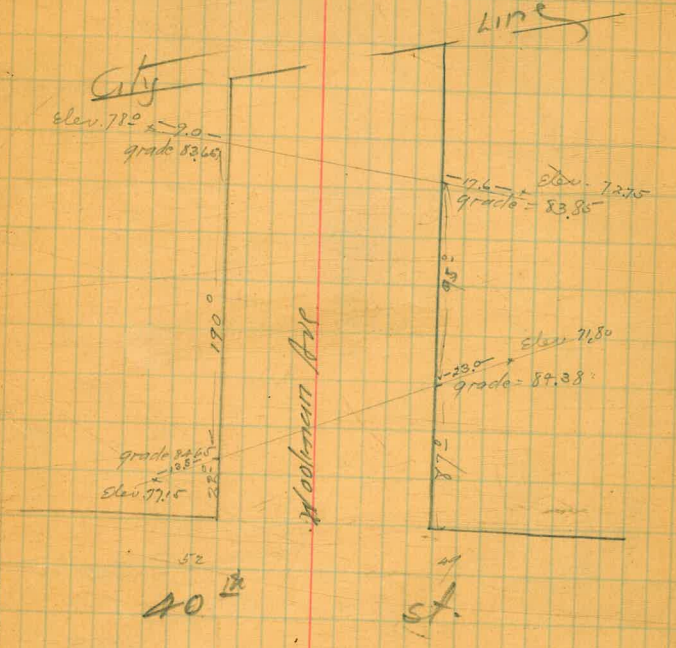
6/11/12 Hatch Moore Hall — Culvert measurement on 39th St at Superior

BM	0.58	120.40		119.82
	0.25	109.99	10.66	109.74



6/24/12 Hatch Moore Hall

0.15	83.25	83.10
0.56	83.66	83.10



Hatch Moore Hall

Culvert measurements on C.A.

1.47	198.43		196.96	RM SE 28-13
0.10	186.38	12.15	186.28	
0.78	174.91	12.25	174.13	
0.09	163.19	11.81	163.10	
3.73	154.52 ht	12.40	150.79	6/22/12

4.72	201.68		196.96	6/22/12
1.60	195.98	7.30	194.38	
0.82	184.16	12.64	183.34	
0.25	171.67	12.70	171.46	
1.84	160.81	12.70	158.97	

0.83	197.80		196.97
0.75	185.87	12.68	185.12
0.10	173.01	12.96	172.91

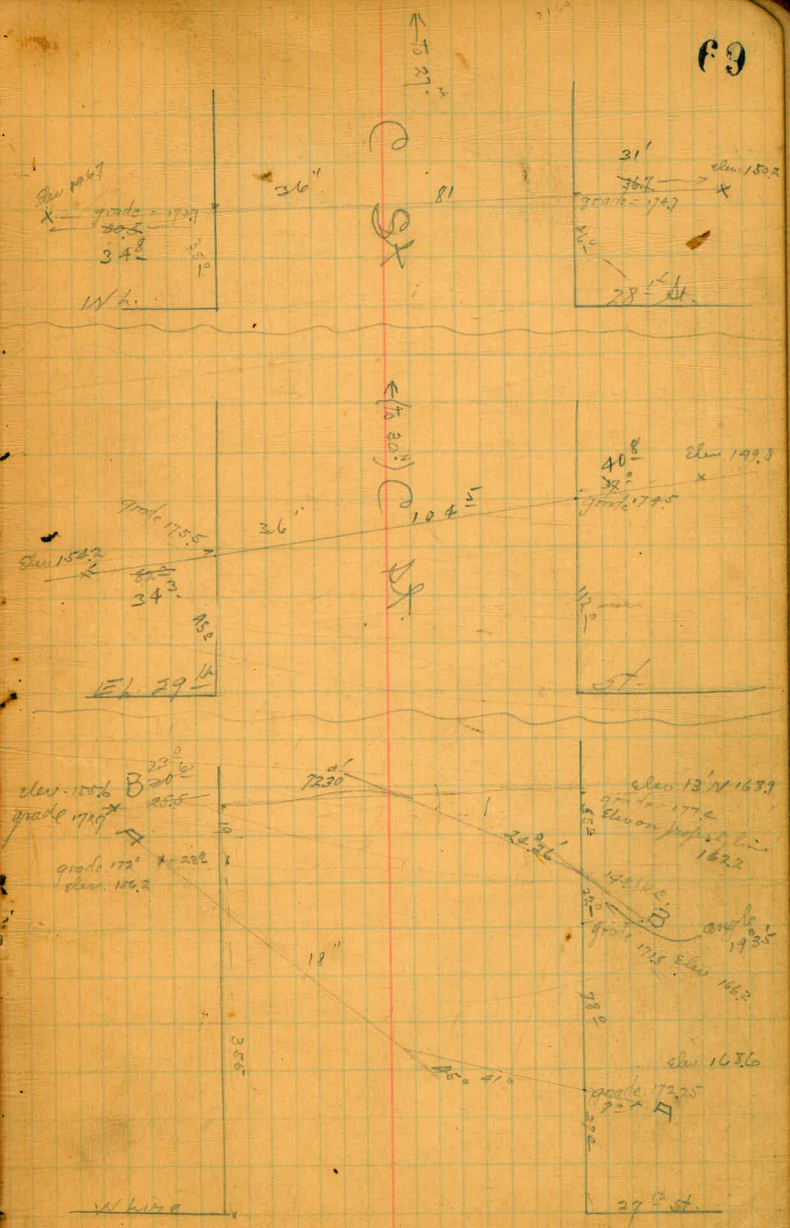
Profile of A-A

6/24/12

N end		3.4	
+7		4.9	
+25		5.0	
+48		6.1	
+68		8.1	
		10.7	
+20		12.1	
+25		15.3	
+45		16.8	
7.40	168.15	12.26	160.75

Profile B-B

N end		2.0
+23	property line	6.4
+53		8.6
+72		9.1
+97		8.2



168.15

113

130

~~103~~

86

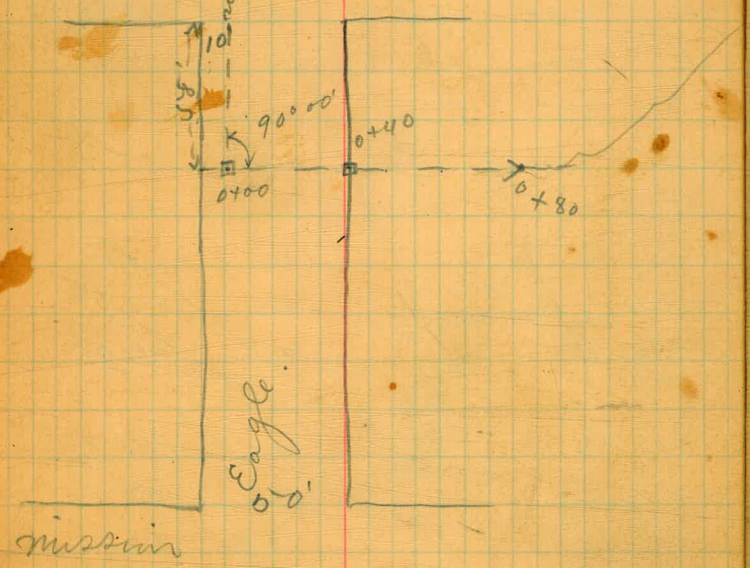
120

12.55

Levels for culvert at Market.

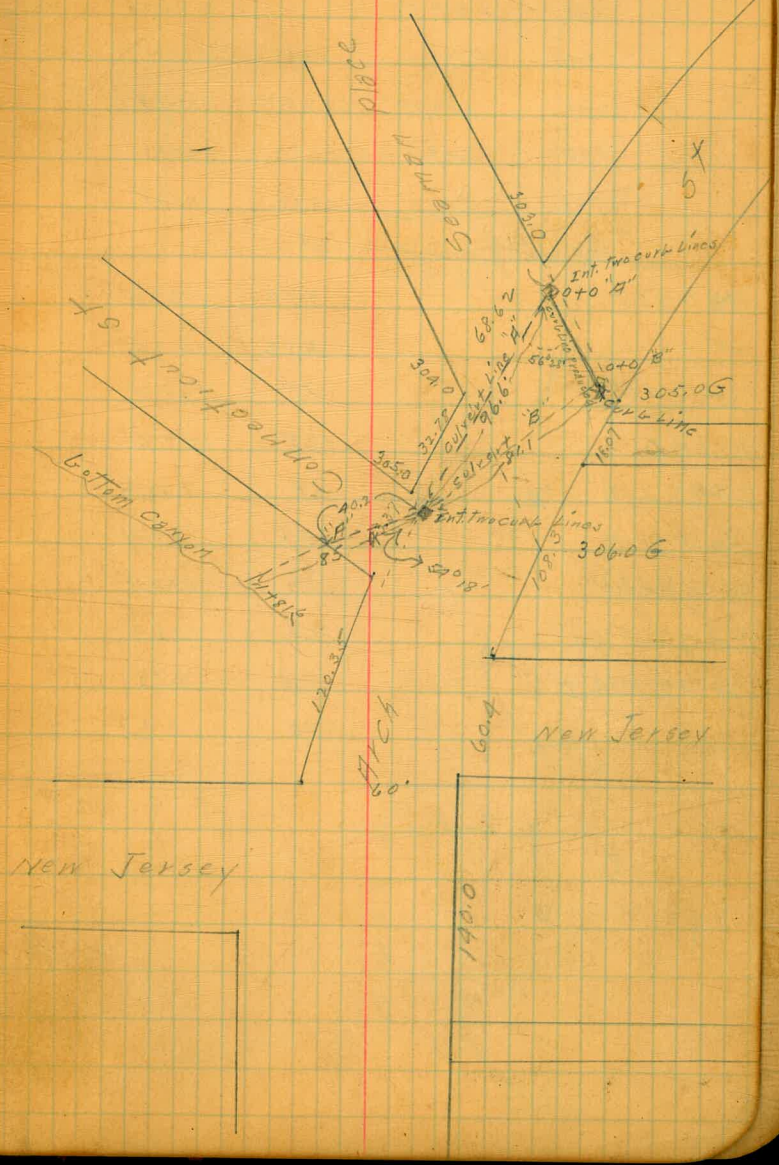
			H.I.		
T.P.		1.03	257.03		256.00
Sta.			255.00		
0+00	West curb of			1.97	255.0
+13	Eagle & 58' so. of market.			11.4	245.6
T.P.		0.36	244.46	12.93	244.10
+40	East line of			7.12	237.34
T.P.	Eagle Street 58' so. Market.	3.48	235.39	12.55	231.91
+80				9.4	226.0

Eagle & Sept. 7/12 { Childs, Taylor, Otten, Bunker



Levels for culverts Secopp Page 10/11/12 Drinkle Evans Kerr

B.M. curb stk S.W. Meade & Maryland.				331.00
B.M.	1.90	332.90		
T.P.	0.98	320.93	12.95	319.95
T.P.	0.0	307.87	13.06	307.87
0+0 on "B" Line			2.2	305.7
0+25			3.0	304.9
0+50			3.1	304.8
0+75			4.2	303.7
0+81½ = 0+96½ on "A" Line			4.5	303.4
		307.87		
0+0 on "A" Line			4.5	303.4
0+25			4.3	303.6
0+50			4.3	303.6
0+75			4.3	303.6
0+96½			4.5	303.4
1+0			5.3	302.6
1+31 break			5.9	302.0
1+36½ S.L. Connecticut			9.5	298.4
1+50			17.0	290.9
1+81½ = bottom of Canyon.			33.1	274.8



10 Clough
15 Fitz
12 Shaw

Levels for Culvert 28 & D St

See P 49

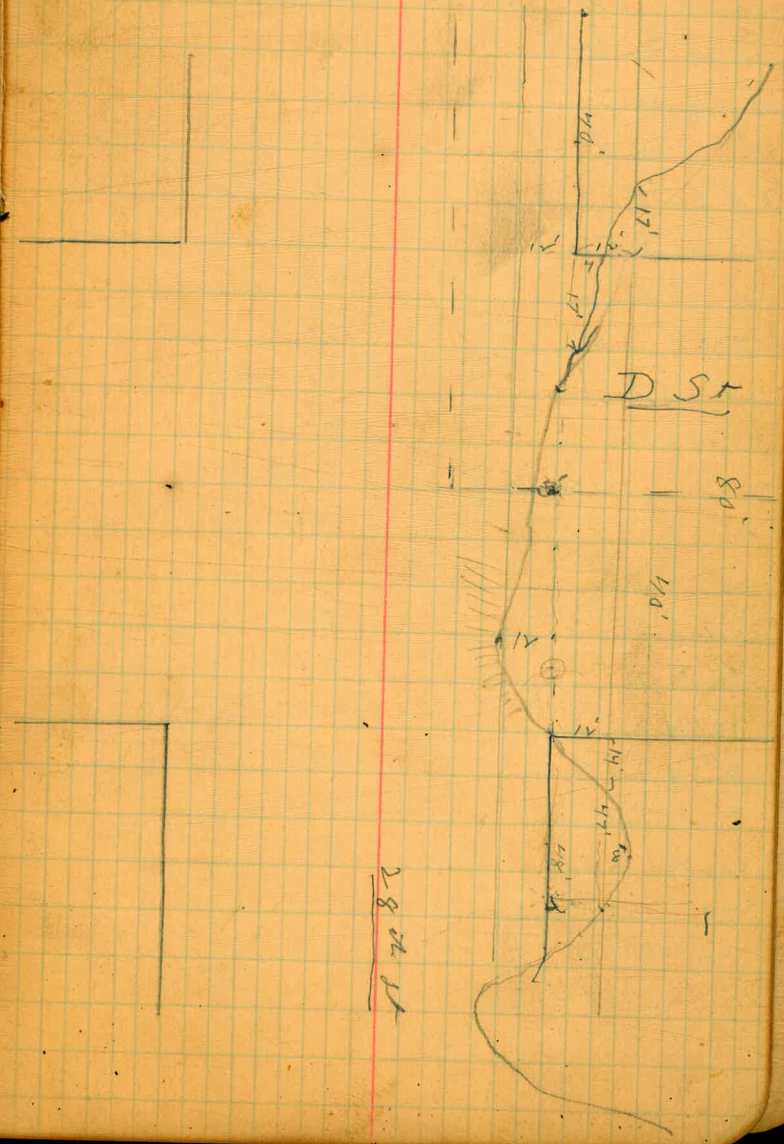
SE B&28

0.50	197.76		196.96
0.40	185.51	12.65	185.11
0.20	172.79	12.92	172.59
0.10	160.23	12.66	160.13
0.25	147.50	12.98	147.25

W L of 28th st
147.50

48' N of D st	8.50	139.0
45' " " "	6.10	141.4
25' " " "	7.0	140.5
N L of D	10.5	137.0
3' S of N L of D	8.9	138.6
Cent D st	10.1	137.4
63' S of N L D st	11.6	135.9
S L of D st (80)	11.0	136.5
20' S of S L D	10.0	137.5
	7.8	139.7

See next Page

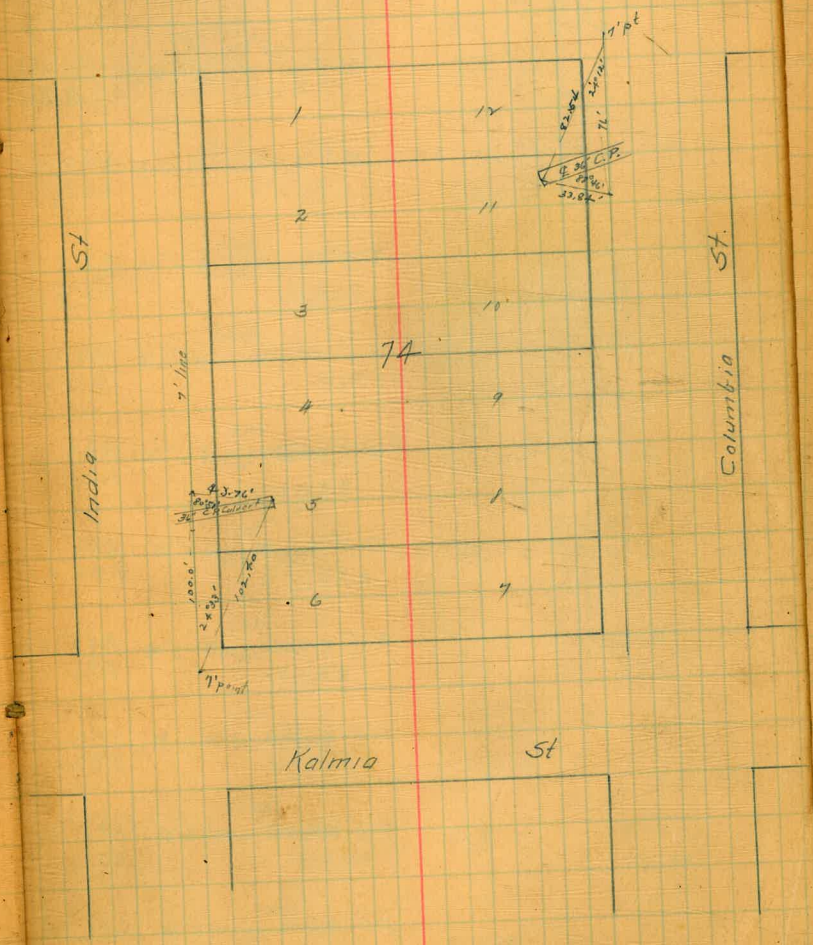


14750

12'	w of	W L of 28th st
47' n of N L D st		8,5
41' n of N L D		7,0
14' n of D st		9,8
N L of D st		8,3
Center D st		8,1
S L D st (81)		10,5
17' S of D st		12,5
25' S of D		11,7
40' S of D		9,5
12'	E of W L of	28th st
40' S of D st		5,6
20' " " D st		7,4
S L of D		9,0
Cent D		8,9
20' S of N L D		10,7
8' S of N L D		10,6
N L D st		8,8
25' n of N L D		5,5
49' " " " "		5,1
55' " " " D		8,3

2/26/13 { Davis, Hancock, Herrick

Location of ends of Culverts



292.06 Lincoln + Vermont.
288.11 N.W. cor. Cleveland.

6.56
294.67 H.I.
13.07
281.60 T.P.
1.33
282.93 H.I.
12.75
270.18 T.P.
0.28
270.46 H.I.
12.49
257.97 T.P.
0.27
258.19 H.I. 14.0
10.79
247.40 T.P.
0.13
247.53 H.I.
7.29 25.0
235.24 T.P.
0.01
235.25 H.I. 35.0
6.68
228.57 T.P.
2.86
231.43 H.I. 47.5
0.36
231.07 T.P.
12.92
243.99 H.I. 54.5
0.34
243.65 T.P.
11.90
255.55 H.I. 61.5
1.81

36" to Hendricks

no.1
5 3 5 — 282.90

no.2
3.5 2.83 5 3 5 — 283.23
277.90 — 276.90

no.3
5 4.5 4.5 5 — 283.57
267.74 — 267.74

no.4
5 6.42 6.33 5 — 283.90
256.57 — 257.57

no.5
5 8.08 8.08 5 — 284.23
247.40 — 247.40

no.6
5 9.92 5 — 284.57
236.24 — 236.74

no.7
5 11.33 11.25 5 — 284.90
228.57 — 226.07

no.8
5 12.58 12.75 5 — 285.23
221.90 — 220.40

no.9
5 12.33 5 — 285.57
223.74 — 223.24

no.10
5 11.08 11.08 5 — 285.90
231.07 — 231.07

no.11
5 10.08 9.75 5 — 286.23
237.40 — 239.40

no.12
5 9.25 8.50 5 — 286.57
242.74 — 247.24

60.0
53.0
47.0
42.0

Foot Bridge on Vermont. Fields at 76 Bunker
Vermont.
Aug. 25 to 27

13.8
9.2

floor grade
286.57
1.83
284.74
24.74
42.00

floor pier 4.5

14.0

24.5

35.0

46.06

57.0

63.0

60.5

53.0

45.0

37.5

285.23
1.83
283.40
221.90
61.50
220.40
63.00
285.57
1.83
283.74
223.74
60.50
247.40
10.79
236.74
10.5
235.24
12.29
284.90
1.83
283.07
226.07
57.00
226.07
9.18
225.8
123
10.8
9.83
22.90
92
11.33
8.7
8.19
1281
8.31
223.24
0.36
23.07

283.23
1.83
281.40
278.9
3.5
276.90
6.03
283.57
1.83
281.74
283.90
1.83
282.07
257.57
24.50
286.23
1.83
284.40
237.40
647.00
1.62
1.12
284.57
1.83
282.74
236.74
46.00
47.50
2 3
7
9.11
73
2 3
6 3
6.60 8 84
126 2
7
9.25
2 3
10 6
12.75
285.90
1.83
284.07
231.07
53.00
2 3
8 10
11.08
2.764
48
1.00
3.0
2 3
2 1
2 3
4 2
2 3
5 1
8 1
92
90
111
2 3
7 6
9.75
9 6
11.75
12.0
12.25
106
2 3
8 10
11.08

H.I.
255.55
0.12
255.43 J.P.
11.75
267.18 H.I.
0.15
267.03 J.P.
12.36
279.39 H.I.
0.32
279.07 J.P.
11.47
290.54 H.I.
1.64
288.90 J.P.
8.17
297.07 H.I.

38.5 | no 13 | 286.90
□ 5 □ 8.67 □ 7.50 □ 5 □
246.57 | 253.57

38.5 | no 14 | 287.23
□ 5 □ 8.67 □ 7.08 □ 5 □
246.90 | 256.40

32.5 | no 15 | 287.57
□ 5 □ 7.67 □ 7.25 □ 5 □
253.24 | 255.74

25.0 | no 16 | 287.90
□ 5 □ 6.42 □ 5.83 □ 5 □
261.07 | 264.57

15.0 | no 17 | 288.23
□ 5 □ 4.75 □ 5.0 □ 5 □
271.40 | 269.90

5.0 | no 18 | 288.57
□ 5 □ 3.08 □ 3.08 □ 5 □
281.74 | 281.74

no 19 | 288.90
□ 5 □ 3' □ 3' □ 5 □

31.5
29.0
30.0
21.5
16.5
5.0
floor grade

287.23
1.83
285.40
256.40
29.00
8.65
3.2

9.5

630
77

2 3
5 3
7.50

74
33

58 2 3
6 5
2 3
4 10 8 .67
7.08
12.2
287.90
1.83
286.07
261.07
25.00
264.57
21.50
1.64

#998

.0208
65
1040
1248
1.3520

.0208
90
1.8720

726
187
5.39

12.6
.0208
1008
252
2.6208

726
262
4.64

137.5
.0208
11000
2750
2.86000

726
286
4.40

6400
64
6464 (80.4
64
1604 .6400
416

13.0
2.2
11.2

12.3

302.
5.4
307.4 HI
12.3
295.1
3.8
298.9
10
288.9

11.2
5.6
2.25
3.35

294.2
1.6
298.6
54
23
801

734
4
69.4

92
69.4
2) 23.6
11.8
35.4
47
19
26

196.96
80
197.76
12.65
185.11
40
185.51
12.92
172.79
12.86
160.23
12.98
147.25

294.2
19.2
275.0
.98
29.5

22

281.40
26.40
269.40
7.2
3.7
10.9

466
189
255
18.9

19.1
239
74
16.5

46.6

43
16
27
13.5
40.5

239
33
16.2
451
162
289
14
3.3

191
25
45.1
165
286
142
429
1

191
24
43.1
162
269
132
40.5

Published by H. S. CROCKER COMPANY, Stationers, Drawing Materials, and Mathematical Instruments, San Francisco.

Table showing the difference of latitude and departure in running 80 chains at any course from 1 to 60 minutes.

MINUTES.	LKS.	MINUTES.	LKS.	MINUTES.	LKS.
1	$2\frac{1}{3}$	21	49	41	$95\frac{2}{3}$
2	$4\frac{2}{3}$	22	$51\frac{1}{3}$	42	98
3	7	23	$53\frac{2}{3}$	43	$100\frac{1}{3}$
4	$9\frac{1}{3}$	24	56	44	$102\frac{2}{3}$
5	$11\frac{2}{3}$	25	$58\frac{1}{3}$	45	105
6	14	26	$60\frac{2}{3}$	46	$107\frac{1}{3}$
7	$16\frac{1}{3}$	27	63	47	$109\frac{2}{3}$
8	$18\frac{2}{3}$	28	$65\frac{1}{3}$	48	112
9	21	29	$67\frac{2}{3}$	49	$114\frac{1}{3}$
10	$23\frac{1}{3}$	30	70	50	$116\frac{2}{3}$
11	$25\frac{2}{3}$	31	$72\frac{1}{3}$	51	119
12	28	32	$74\frac{2}{3}$	52	$121\frac{1}{3}$
13	$30\frac{1}{3}$	33	77	53	$123\frac{2}{3}$
14	$32\frac{2}{3}$	34	$79\frac{1}{3}$	54	126
15	35	35	$81\frac{2}{3}$	55	$128\frac{1}{3}$
16	$37\frac{1}{3}$	36	84	56	$130\frac{1}{3}$
17	$39\frac{2}{3}$	37	$86\frac{1}{3}$	57	133
18	42	38	$88\frac{2}{3}$	58	$135\frac{1}{3}$
19	$44\frac{1}{3}$	39	91	59	$137\frac{2}{3}$
20	$46\frac{2}{3}$	40	$93\frac{1}{3}$	60	140

TABLE FOR RUNNING ON SLOPES.

In the following table the first column shows the angle, the second the number of links to be added to a chain on the slopes, to make one chain, horizontal measurement.

ANGLE	COR. IN LINKS	ANGLE	COR. IN LINKS	ANGLE	COR. IN LINKS	ANGLE	COR. IN LINKS
°		°		°		°	
4	0.24	11	1.88	18	5.14	25	10.54
5	0.38	12	2.24	19	5.76	26	11.26
6	0.55	13	2.63	20	6.42	27	12.24
7	0.76	14	3.06	21	7.11	28	13.37
8	0.98	15	3.53	22	7.85	29	14.34
9	1.24	16	4.02	23	8.64	30	15.47
10	1.55	17	4.56	24	9.47	35	22.07