

68

968

F.B.
968

FIELD BOOK

360

968

968

KEUFFEL & ESSER CO.

DRAWING MATERIALS
AND
SURVEYING INSTRUMENTS.
NEW YORK.

CHICAGO. ST. LOUIS. SAN FRANCISCO. MONTREAL.

TABLES FOR EXCAVATIONS AND EMBANKMENTS.

DISTANCES FROM CENTER OF ROADWAY FOR CROSS-SECTIONING.
ROADWAY 18 FEET WIDE SIDE SLOPES 1 TO 1.
FOR SINGLE TRACK EXCAVATION.

"Copyright, 1895, by Keuffel & Esser Co."

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

Calculated by Julien A. Hall, M. Am. Soc. C. E.

For Keith's Railroad Curve Tables see end of book.

89-59-20
267 58 00

210
200
207
507
96
905

120
150
3/177
57-50
1.97
66
2.63

389-57-50
3/269-59 30
27

89570-0
230

8915
2/179-30

6173

269-59-30
95-58-30

89 2/177-59-
178

58-30 145
88.50-30

89
2/177-59
59-30
27119

Index

Jorres Wharf

Page

28-34

1st Contact Line.

May 1915

Donnari
Miller
Shard.

Sta.

5+45.32 P.T.

5+21.28 P.C.

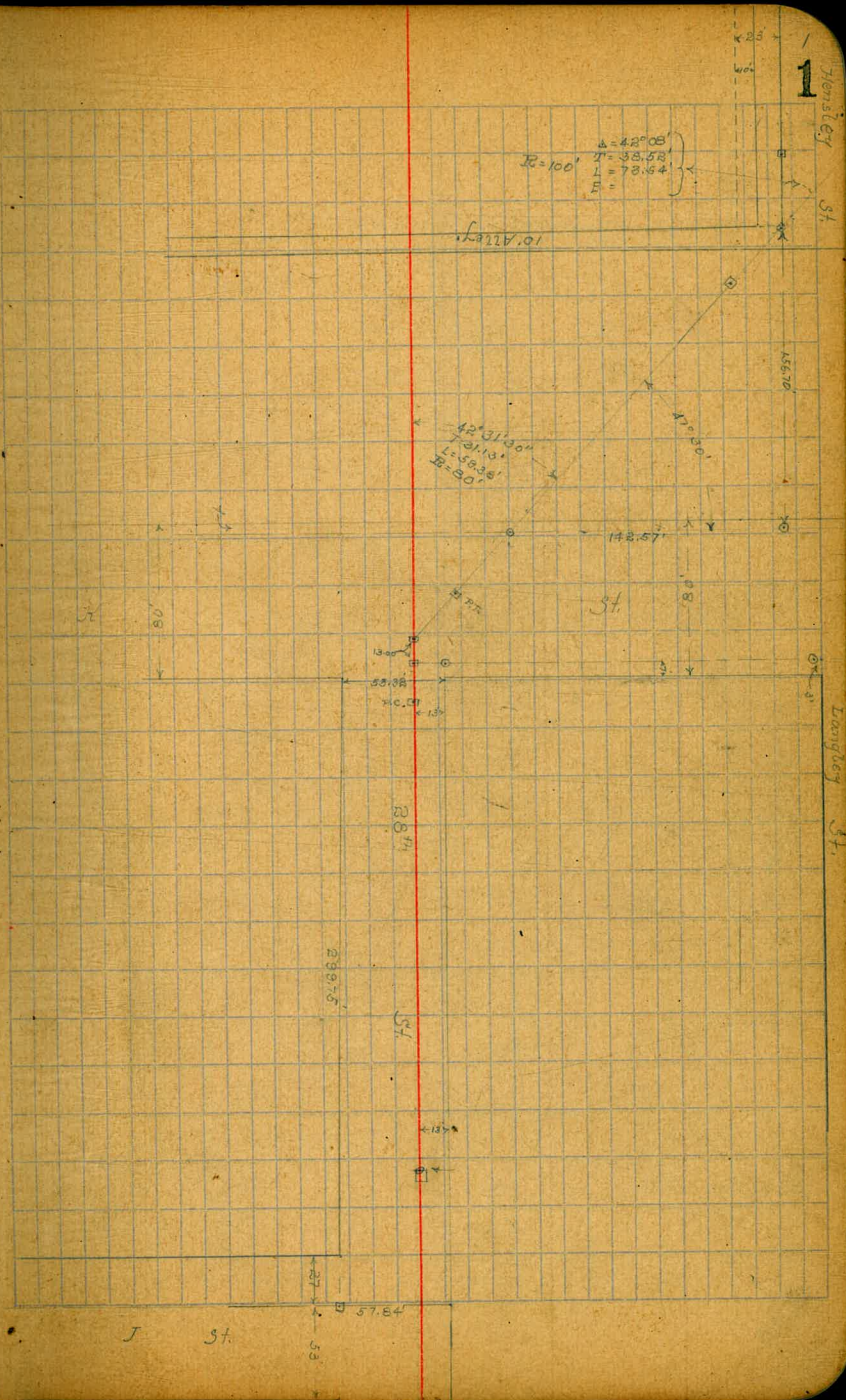
P.O.T.

3+47.80 Cap. track on S. 7' Line of R. St.

3+07.55 P.T.

2+47.67 P.C. 80' Radius.

00 Capes track & lead plug in South wall of intake.

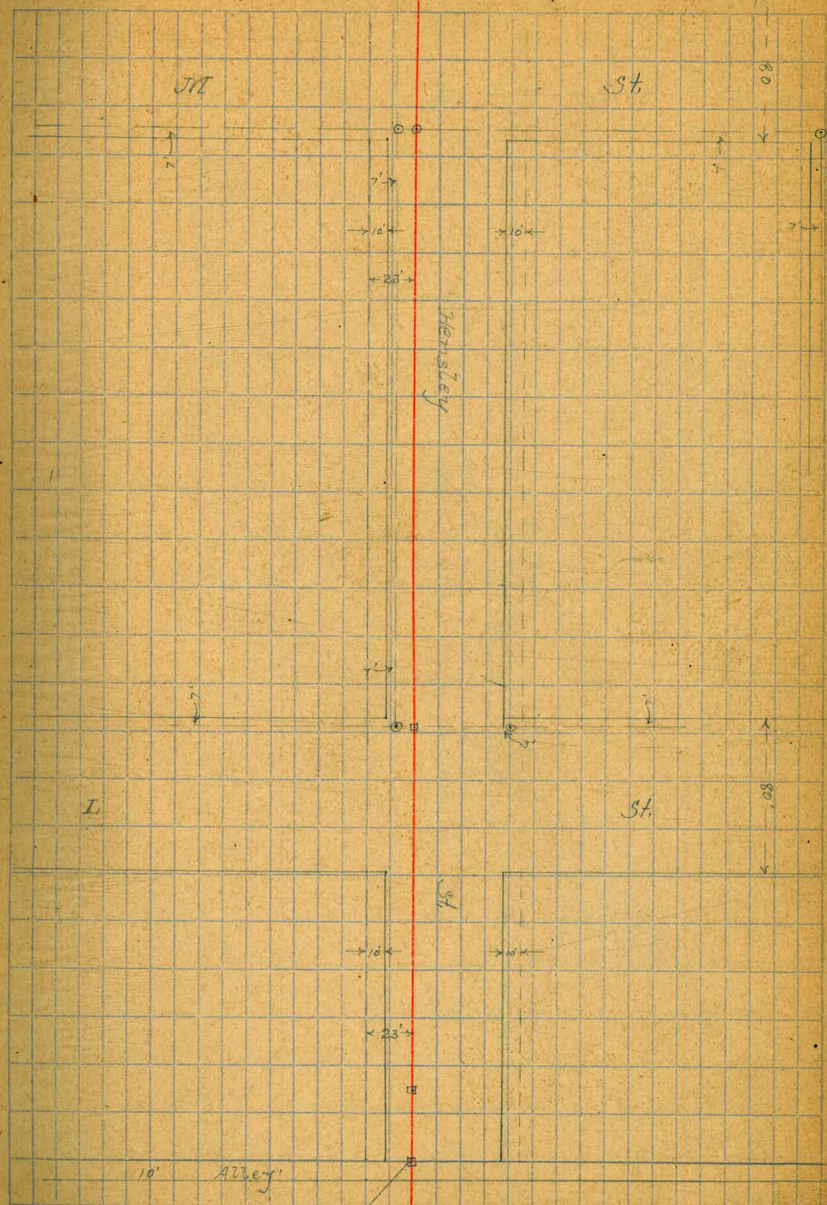


ROT
10+93⁵⁵ next in pavement, North 7' line of 31st

7+79²⁸ ROT

5+95²² RT

2



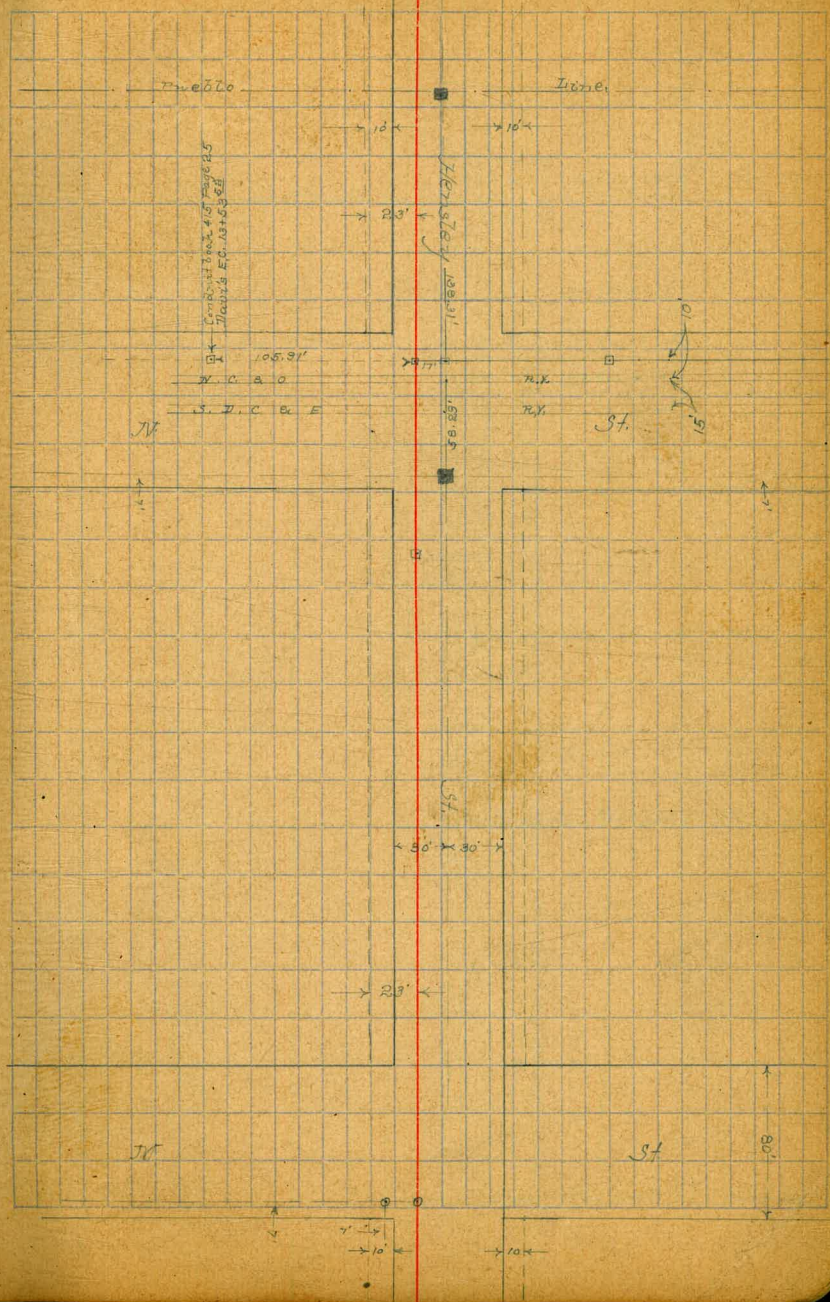
24.928
14.9.61

15+89.08 P.T. = 15+08.21 Davie's Line, Book #15 Page 20.

14+32.50 = P.C.

$\begin{cases} A = 89^\circ 42' \\ T = 99.48' \\ R = 100' \\ L = 156.56 \\ 6 \text{ Chords of } 26.02 \end{cases}$

P.O.T. 10+93.05 Nail in pavement North 27 line of 27 St



(Note) For topography & ties see Davis line Book 415.

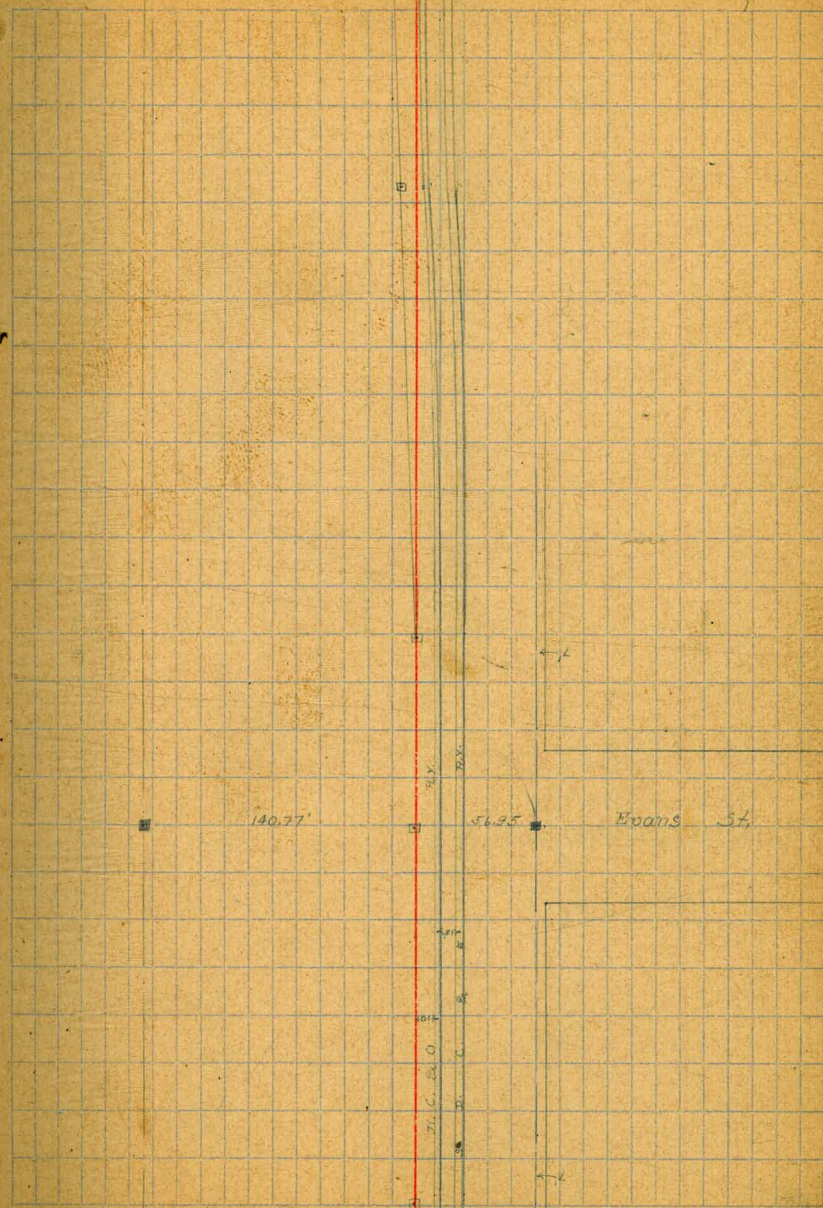
27+19.29 P.T.C. = 15+99.18 $\left\{ \begin{array}{l} D=1^{\circ}30' \\ R=3819.83 \\ L=466.68 \\ A=3^{\circ}30' \end{array} \right\}$ From Davis notes.

Sta	α
18+95.25 P.C.	0 1 11
19	0 6 20"
20	0 51 20
21	1 36 20
27+19.29 P.T.C.	1 45
22	0 36 20
23	1 21 20
29+52.63 P.T.	1 45

19+95.25 P.C. = Davis P.C. 18+56.85

P.O.T.
17+86.25 = 17+56.25 Davis line.

15+99.28 P.T. = 15+58.28 Davis line.



20 + 52⁶³ P.T. = Davis 23 + 22⁵³

21 + 19²² = Davis 20 + 89¹⁸

→ 104
→ 150

→ 104
→ 150

→ 104
→ 150

→ 104
→ 150

→ 104
→ 150

→ 104
→ 150

82+52.75 P.O.T. = 1000's 82+52.65

80+87.27 P.O.T.

6

Sta 34

67.98' - 80

25th ST.

R.V.
P.V.

S.T.C.E.S.E.

10'
15'

51+39.83 P.C. $\left\{ \begin{array}{l} R=200' \\ T=96.01' \\ L=179.60' \\ P=22.00' \\ \Delta=31.27' \end{array} \right\}$ From Davis notes, except lengths

50+26.13 P.T. - Davis P.O.T. 49+32.25

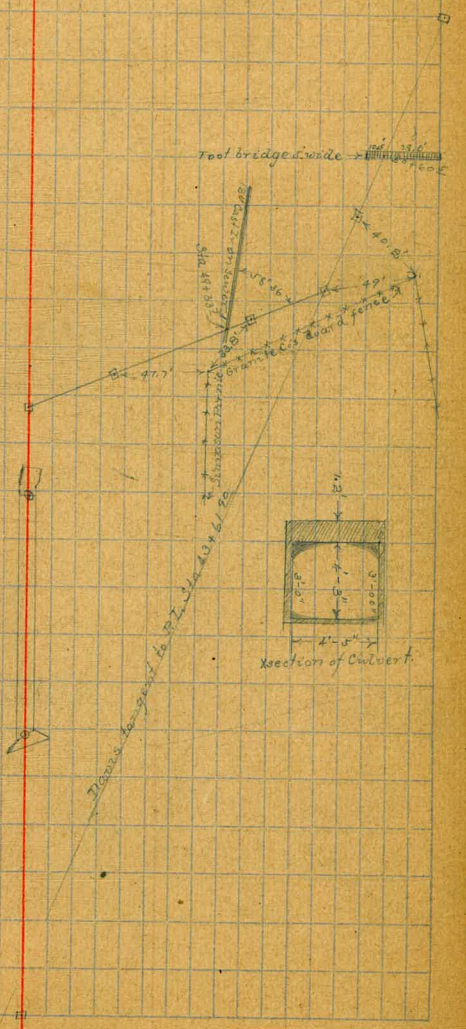
49+47.81 P.C. $\left\{ \begin{array}{l} \Delta=44^{\circ}52'30'' \\ R=100' \\ T=41.29' \\ L=79.32' \end{array} \right\}$

48+71.82 P.T.

47+81.25 P.C. $\left\{ \begin{array}{l} T=45.47' \\ \Delta=67^{\circ}46'30'' \\ R=67.33' \\ L=90.12' \end{array} \right\}$ Cop track bottom Culvert.

46+66.86 P.O.T. Cop track bottom Culvert.

45+18.56 P.T.



58+67¹² P.C. = Davis P.C. 57+73⁰⁰

57+20⁷⁴ P.T. = Davis P.T. 56+26⁹²

55+95⁸⁰ P.C. = Davis P.C. 52+91⁸⁸

$R = 100'$
 $T = 90'$
 $L = 102.98'$
 $E = 28.06'$
 $A = 77.19'$

55+14⁸⁵ P.O.T. Copper tack in paracet of Culvert. Replaced c.t. in Board over Culvert.

53+22⁶⁵ P.O.T. Copper tack in paracet of Culvert.
53+18⁵³ P.T. = Davis P.T. 52+24²⁵

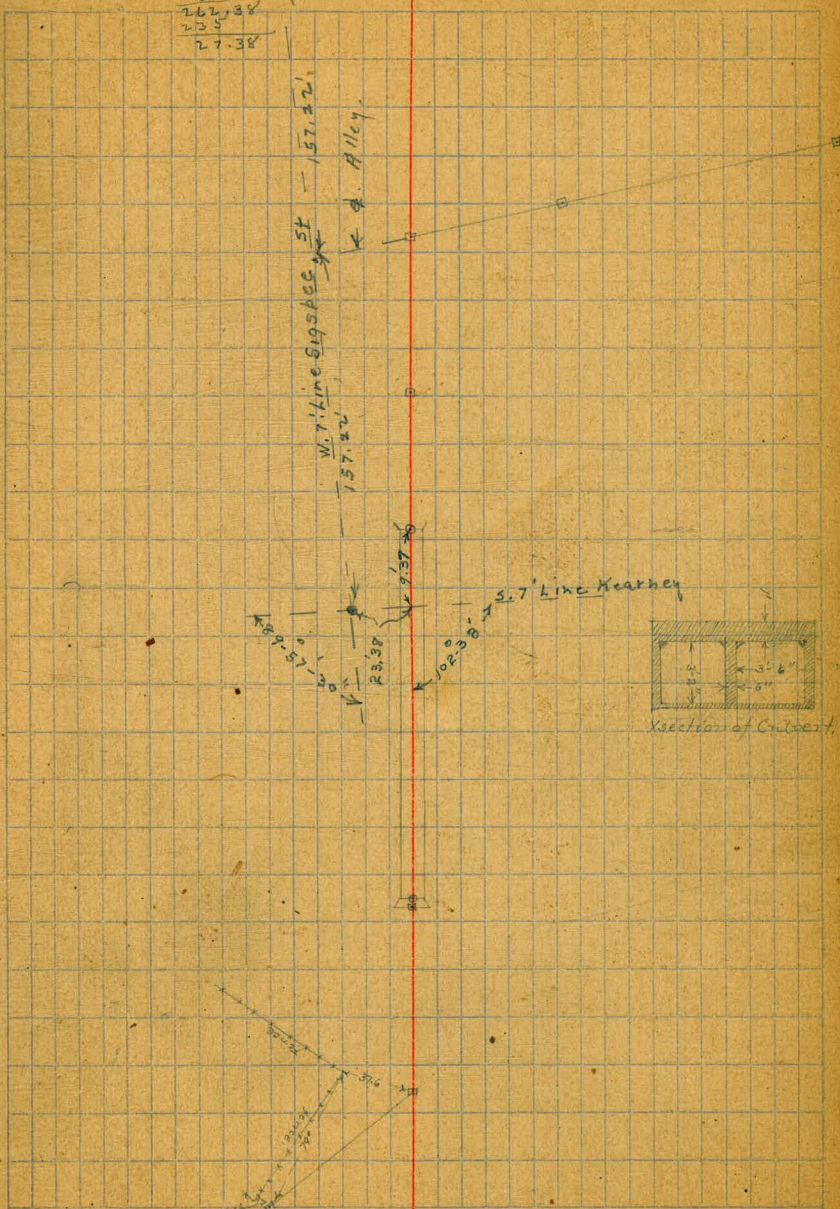
51+39⁵⁰ P.C. = Davis P.C. 50+45⁰⁵
(For notes see Page 9)

5514.30
5327.65
191.65

5867.12
5720.74
146.38
36.00
✓ 182.38
80
262.38
235
27.38

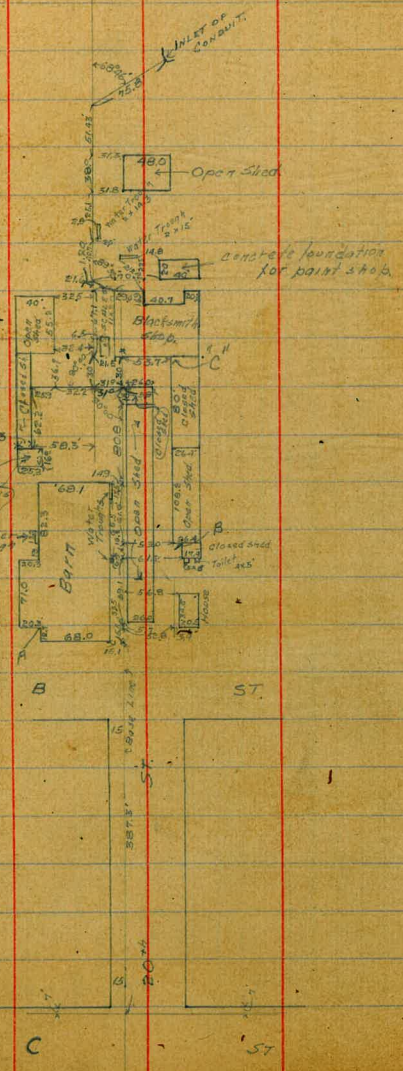
5525.80
80
5665.80
5514.30
151.50

10



Dragon Moore M. Ver

LOCATIONS OF BUILDINGS ETC AT THE CITY STABLES & ELEVATIONS OF SAME FOR DRAINAGE.



on B.M.	105	95.89'		74.84	SW 20' of Blkwy.
T.P.	098	84.23'	1259	83.30	
T.P.	313	74.80'	1256	71.27	
SE cor. House			3.2		71.6
SW			4.5		70.3
NW			5.2		69.6
SE cor. open shed th. of House			6.8		68.0
SW			9.2		65.6
SE - Barn			10.0		64.8
Floor at So. end of Barn			11.2		63.6
SW cor Barn			12.4		62.4
Elev. in cor. of jog at SW cor Barn "A"			12.9		61.9
Floor of outbuild on W side Barn			12.9	61.9	
SW cor			13.1		61.7
SW			13.8		61.0
T.P.	206	49.82'		7.64	67.16
NE cor. House			+ 1.1		70.9
Floor of Toilet No. of House			2.8		67.0
SE. cor. of 5x6' outbuild No. of House			2.9		67.1
SW			2.9		66.9
NW cor. of "closed shed" - "B"			3.9		65.9
SW - "open shed" - "B"			4.3		65.5
SE			3.7		66.1
20' N. of Sand at - N. of House & side			3.0		66.8
W. of House at No. end of House			0.3		69.5
			1.7		68.1

E. M. B.

N.W. of House at So. end of House	+0.4 -1.1	70.2 68.7 ✓
20' N. of S end of Open shed N. of House W. side	4.9	64.7 ✓
50' - - - - Barn E. side	5.0	64.8 ✓
88' - - - - - - - - - -	5.2	64.6 ✓
✓ - - - - - 21' East of Barn	5.6	64.2 ✓
✓ - - - - - East side - open shed	5.0	64.8 ✓
166' - - - - - W side of open shed N. of House	5.1	64.4 ✓
- - - - - E - - - - -	5.0	64.8 ✓
- - - - - E - - - - - N. of House	6.0	63.8 ✓
- - - - - W - - - - -	6.3	63.5 ✓
5' E. of NE. cor. Barn	5.9	63.9 ✓
N.E. - - - on floor	5.0	64.8 ✓
5' N. - - - closed shed N. of House	5.3	64.5 ✓
3' E. - - - - - - - - -	5.0	64.8 ✓
33' S. of SE. cor. of - - - So. of Black. shop	6.1	63.7 ✓
33' N. - - - 5' N. - - - closed shed So. of Black. shop	6.7	63.1 ✓
81' N. of NE. cor. Barn	6.9	62.9 ✓
- - - - - - - - - - - + N. side of Shed N. of House	5.3	(63.5)
T.P. 487	67.79 ✓	6.90 62.22 ✓
5' E. cor. of closed shed so. of Black. shop	3.7	64.1 ✓
5' N. - - - - - - - - -	4.6	63.2 ✓
21' N. of SE. cor. of - - - - -	4.9	62.9 ✓
NE. cor. of - - - - -	3.6	64.2 ✓
Floor - - - - -	3.3	64.5 ✓
N.W. cor. - - - - -	4.2	63.6 ✓
21' N. of N.W. cor. of - - - - -	4.5	63.3 ✓

N.W. cor. closed shed SE. side of Black. shop	2.7	65.1 ✓
Floor Blacksmith Shop	2.6	65.2 ✓
5' N. cor. - - - - -	3.6	64.2 ✓
Scales	3.4	64.4 ✓
Bottom of PIT of Scales	7.0	60.8 ✓
Crack N. side of Barn dirt floor	4.0	63.8 ✓
5' N. of Cr. of N. side of Barn	5.2	62.6 ✓
5' - - - - - - - - -	5.8	62.0 ✓
100' - - - - - - - - -	5.5	62.3 ✓
130' - - - - - - - - -	5.0	62.8 ✓
5' E. cor. of open shed N. of Blacksmith shop	5.5	62.3 ✓
NE. - - - closed shed so. of above on floor	5.6 6.0	62.2 ✓ 61.8 ✓
NE. - - - open - N. of Blacksmith shop	4.8	63.0 ✓
N.W. - - - - - - - - -	5.7	62.1 ✓
T.P. 377	66.69 ✓	4.87 62.92 ✓
N.W. cor. barn on floor	3.40	63.3 ✓
5' N. of above	4.9	61.8 ✓
20' - - - N.W. cor. of Barn	5.7	61.0 ✓
10' S. - - - - - - - - - on floor	3.1	63.3 ✓
5' N. of above	4.1	62.3 ✓
15' - - - - - - - - -	5.6	61.1 ✓
NE. of outbuild N. of barn	4.2	62.5 ✓
N.W. cor. - - - - -	4.7	62.0 ✓
5' N. - concrete wash rack	4.8	61.9 ✓
6' E. - - - - - - - - -	4.8	61.9 ✓

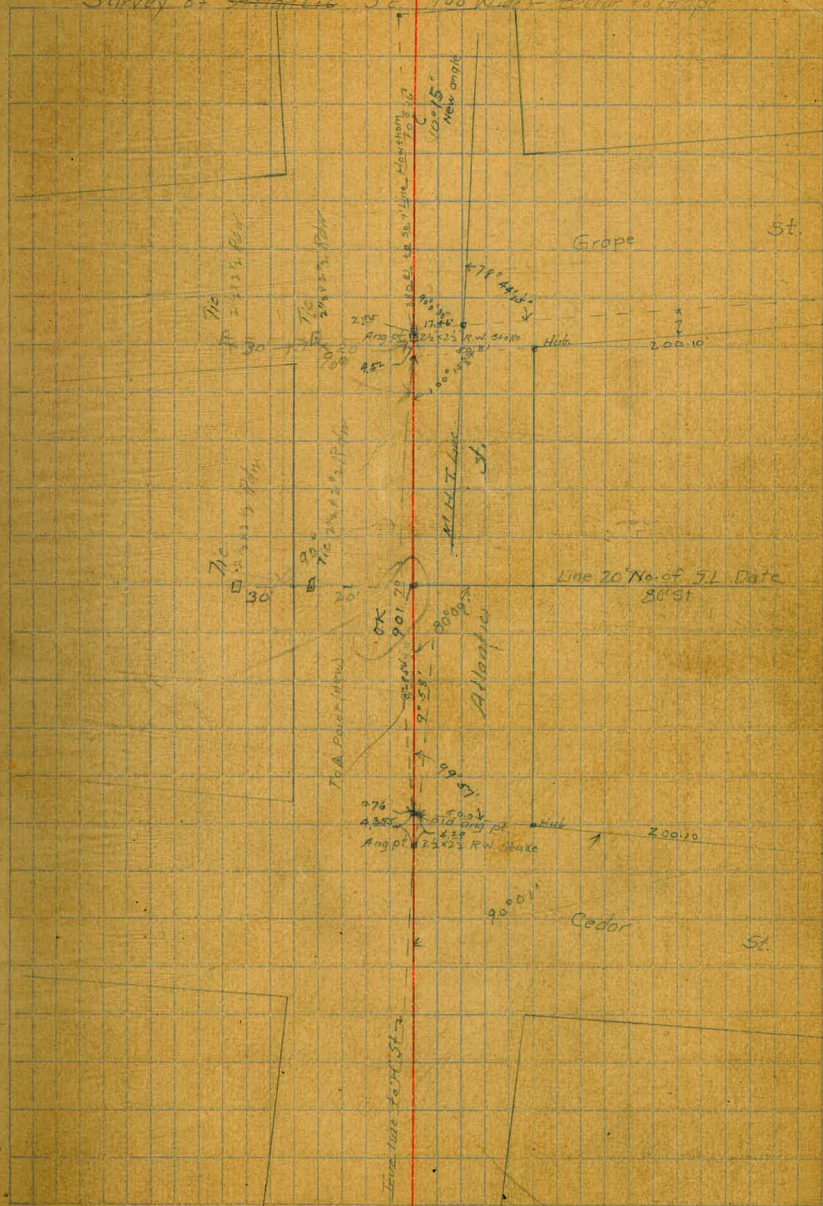
N.E. cor wash rack	4.8	61.9 ^v
Bottom drain SE cor of closed shed No. of Wash rack	6.0	60.7 ^v
NW cor wash rack	4.8	61.9 ^v
Bottom sump in wash rack	7.0	59.7 ^v
31' No. of Wash rack E side of closed shed	5.0	61.7 ^v
Bottom drain pipe 16 1/2' S. of Open shed west of Blksmith shop E side closed shed	5.8	60.9 ^v
T.P.	7.43	70.35 ^v
	3.77	62.92 ^v
18 1/2' S. of NW cor Blks shop + 32' N.	7.3	63.0 ^v
Floor of Outbuild of Blks shop	7.0	63.3 ^v
NW cor - NW - - - -	7.4	62.9 ^v
NE - - - - -	7.1	63.2 ^v
SE - - - - -	6.7	63.6 ^v
SW - - NE - - - -	5.6	64.7 ^v
NW - - - - -	5.9	64.4 ^v
NE - - - - -	5.7	64.6 ^v
3' West of foundation of Paint shop	5.6	64.7 ^v
NW - - - - -	5.6	64.7 ^v
NE - - - - -	5.6	64.7 ^v
SE - - - - -	5.6	64.7 ^v
East end of Water trough No. of Blks. shop.	6.8	63.5 ^v
15' No. of NW cor of Blks shop.	6.7	66.6
ctd. trough NW of - - -	5.2	65.1
SW cor of open shed No. of Blks. shop	4.6	65.7
NW - - - - -	4.0	66.3
NE - - - - -	3.7	66.6
SE - - - - -	4.2	66.1

T.P.	7.84	77.13 ^v	1.06	69.29 -
Bottom of Inlet of Conduit.			16.98	60.15
T.P.	5.61	72.73 -	10.01	67.12 -
T.P.			1.08	71.65 = off on page 15
	2.33	69.46 ^v		67.13 on T.P.
Elv off bottom of Conduit where it crosses N.L. of B St.			16.28	53.18 ^v

PAC NW

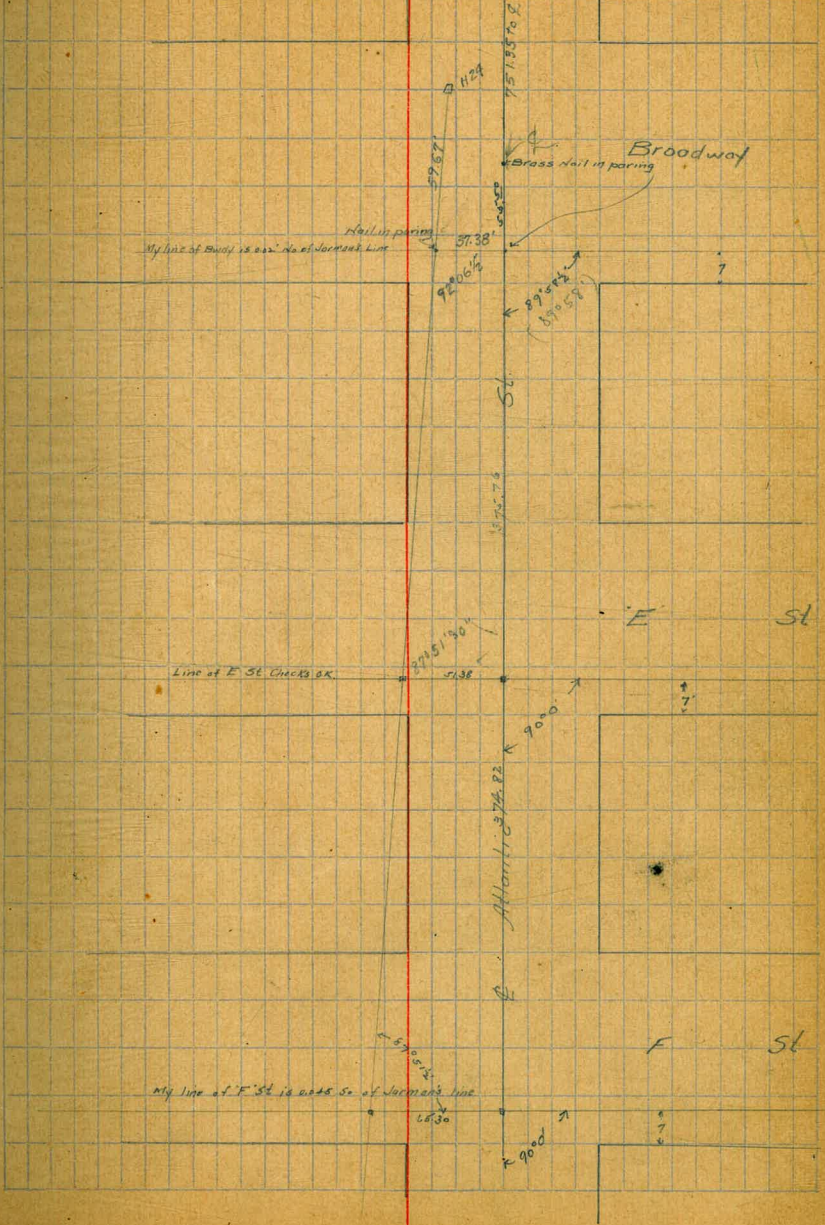
18

Survey of Atlantic St. 100 ft wide - factor to map



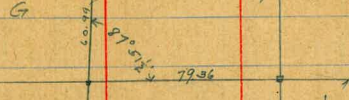
Tie Points on Atlantic St. & Ties to Tide Line

to Davis
Hansen
Herrick



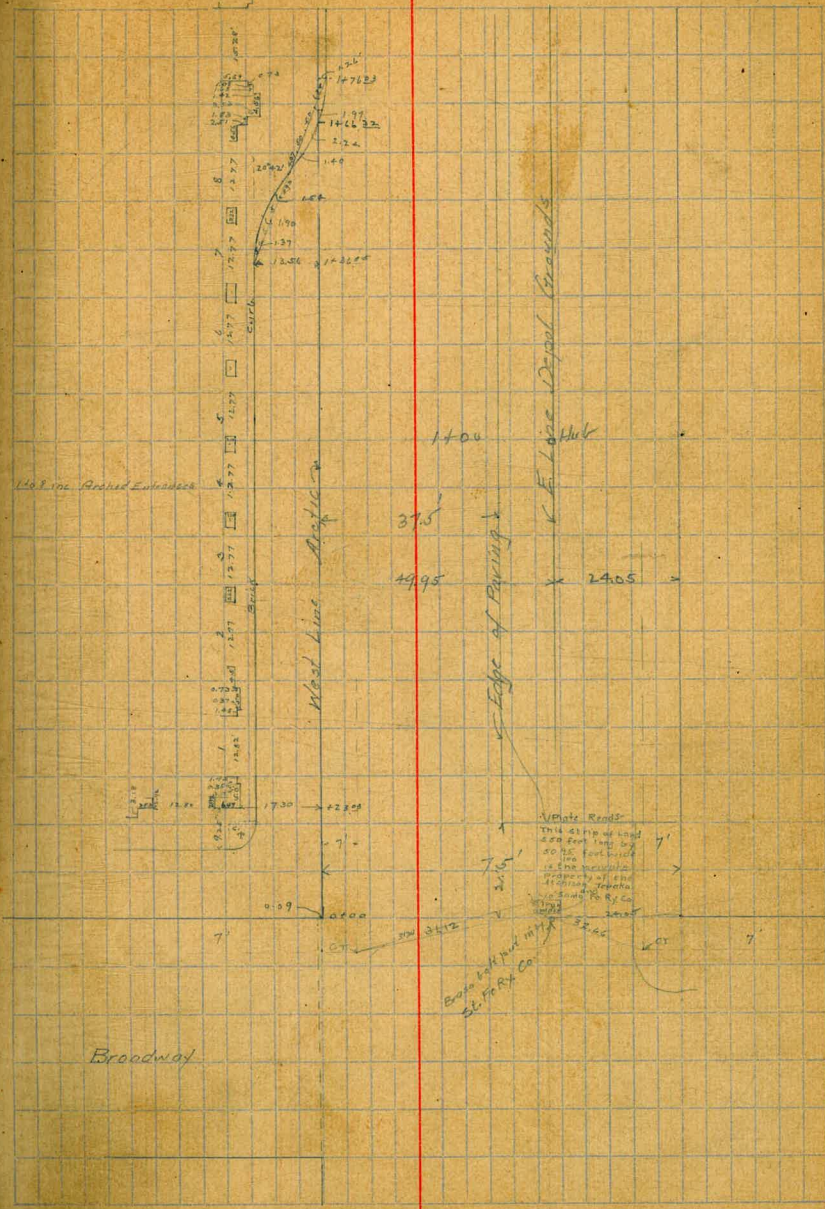
to 27 line
37502.5'

Should be 6.204 My line of 'B' St is 0.00' So of Jackson's line



Assuming 1891 Atlantic St

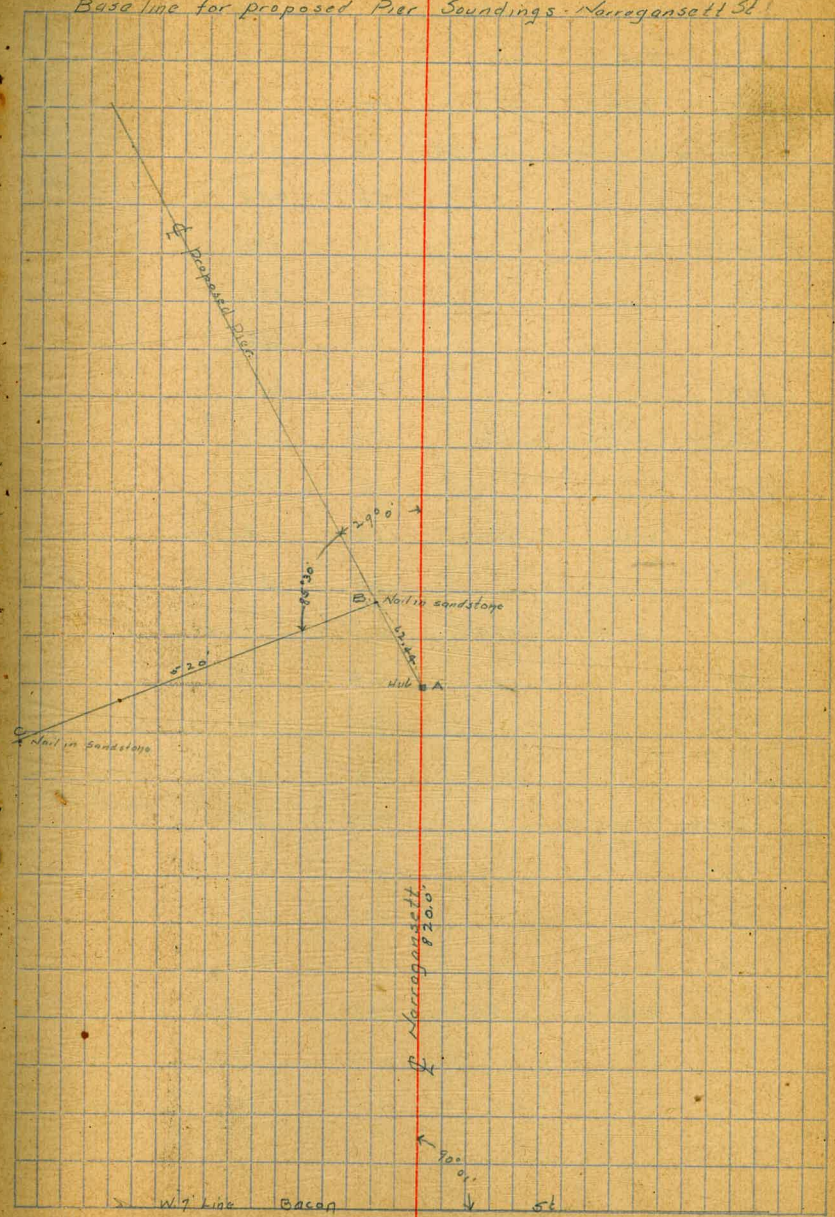
Location of Santa Fe Depot 23
and Baggage Room



Soundings for Proposed Pier off Narragansett St. ^{Dr. Davis}
^{6 Hancock}
^{15 Herrick}

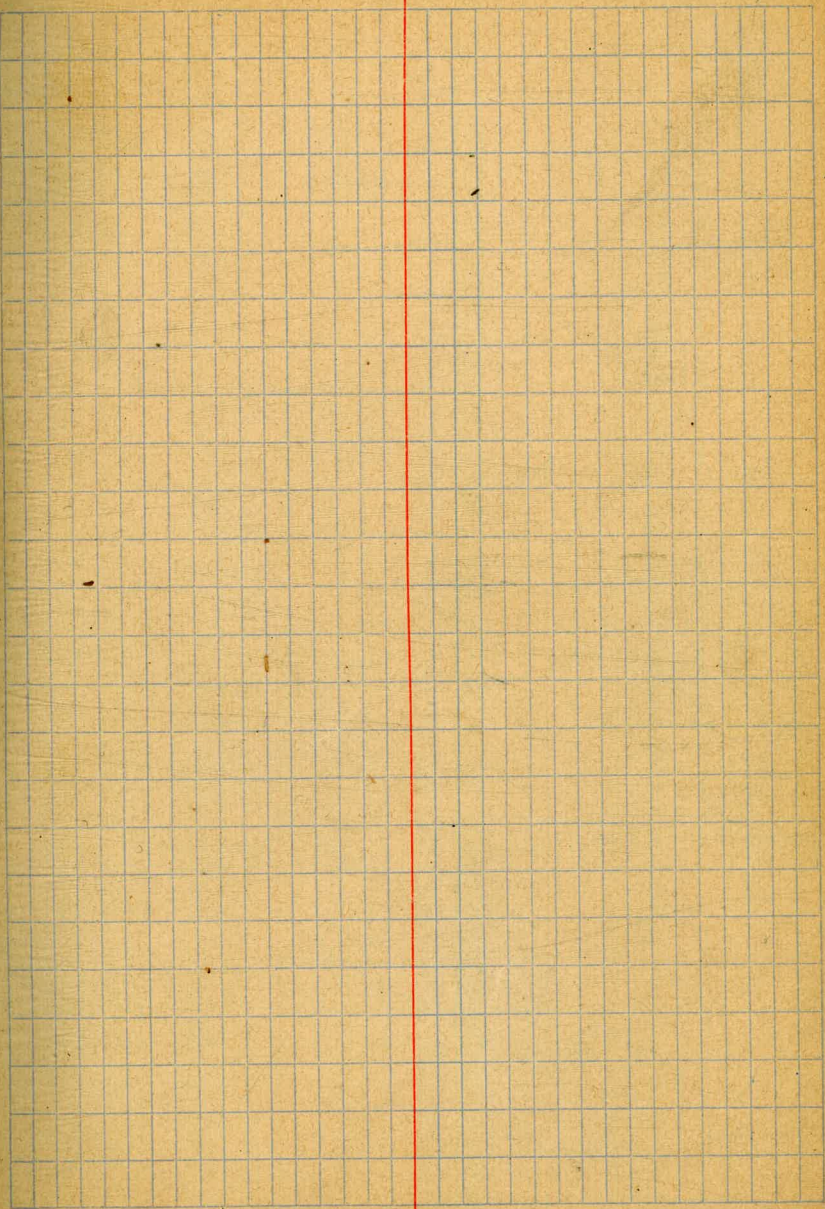
HT	Ang	Vert Ang	Elm.
10.13	L 6° 36'	+0° 00'	
	L 14° 50'	+0° 19'	
	L 15° 09'	-0° 14'	
	L 19° 52'	-0° 10'	
	L 25° 20'	-0° 30'	
	L 27° 25'	-0° 20'	

Base line for proposed Pier Soundings - Narragansett St



Triangles over $\frac{1}{2}$ Narragansett & Portion of $\frac{1}{2}$ of Proposed Pier.

Sta	+	HI	-	Elev
	9.65	28.73		19.08 NW Basin & Narisquet Pt in Ck
T.P	9.49	27.90	0.32	28.41
+00			5.2	32.7
+50			2.3	38.6
7			0.6	37.3
+50			0.5	37.4
8			2.1	35.8
+13			2.8	35.1
+20 - A=20+00 @ Proposed Pier.			2.2	35.7
+08			1.9	36.1
T.P.+12	0.26	25.26	12.90	25.00
+23			10.0	25.3
T.P	0.13	12.51	12.88	12.38
+34			4.7	7.8
+35			7.6	4.9
+46			9.0	3.5
B +62.44			9.58	2.93
+80			12.4	0.1
+81			15.1	-2.6
+15			15.8	-3.3
T.P	5.69	8.62	9.58	2.93
C			3.82	4.80



U.S.A.

271925

57702

1850

607

3770

467

01452

1100

1047

Jarros

Wparf

Angl 22°55'

Azimut horizontal el. 27°44'

Azimut toward star el. el. el. 31°40'

Distancia in circles of longitude 35°25'

5 37°08'20"

6 42°55'

7 46'38"

8 50°23'

9 54°09'

10 57°55'

R = 378.474

97.17

72.27

410.31

488

486.33

488

488

488

488

488

488

488

488

488

488

488

488

488

488

488

488

10°45'

Atlantic

11776.27
 9106.00
 11776.27
 15500 11776.27
 50 km

⊕ Broadway 657.27 to ⊕ Atlantic

1060.0000

1258.9206

10.84058

S.D. Elad

7885.00

742.704

102.700

375.00

845.00

area

10000

10000

10000

10000

10000

10000

10000

31742 James Wharf

Bliss
Isbell
Pearson
3/11/08

Survey to establish location of city property
in Pueblo 1196 South of Balboa Park

90-20-00

30

Note started
at NW corner
of Pueblo 1196

26 08 53

Found
5" x 5" concrete
Monument
NW corner
Pueblo 1196

4758 64
Found Monument on
the N line of east S line of Balboa Park



A ST

10719
Found Stone Monument
on the W line of 10th St

12198
507242
Redwood

93764

Found 5" Dia
Concrete Mon

Fence to extreme edge of fence posts
0.75 E of city line
NE cor. Pueblo 1196
4758 64 NE of city Prop
4758 64 NE of city Prop
4758 64 NE of city Prop

3764 1.0 W of base Sand shop
3764 1.0 W of base Sand shop
2795 Sand Blacksmith shop 0.10 E of city line

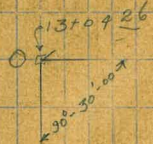
2701 Bldg on line

1706 Sand shop 0.5 W of city line
1703 Bldg 2.7 W of city line
1703 W of 11 0.35 W
2751 W and Bldg 2.70 W of city line
4717 Sand Bldg 2.70 W of city line
4714 0.19 2.55 W of city line

N line of 8th St 2.6 W of line
Monument 0.5 Down

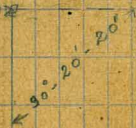
S line of Park

Midway



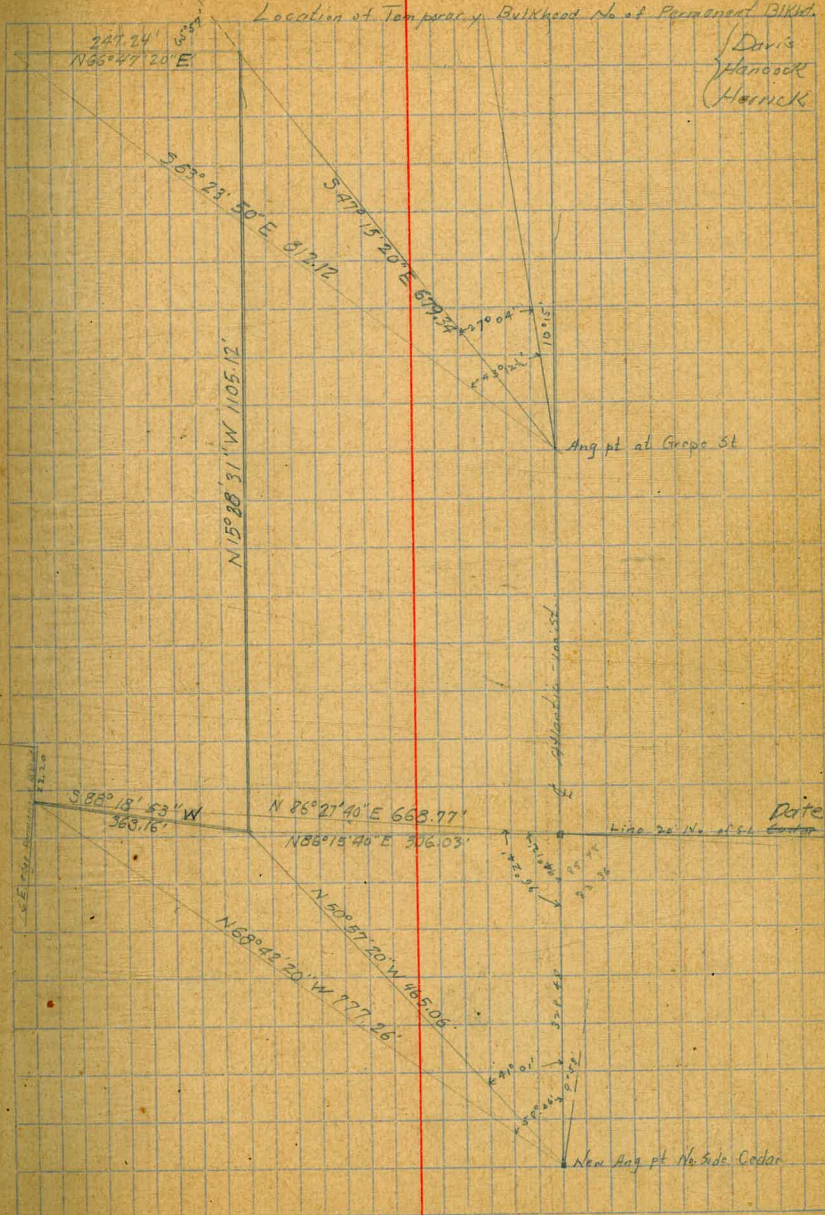
208 E of the
W line of 10th St
368

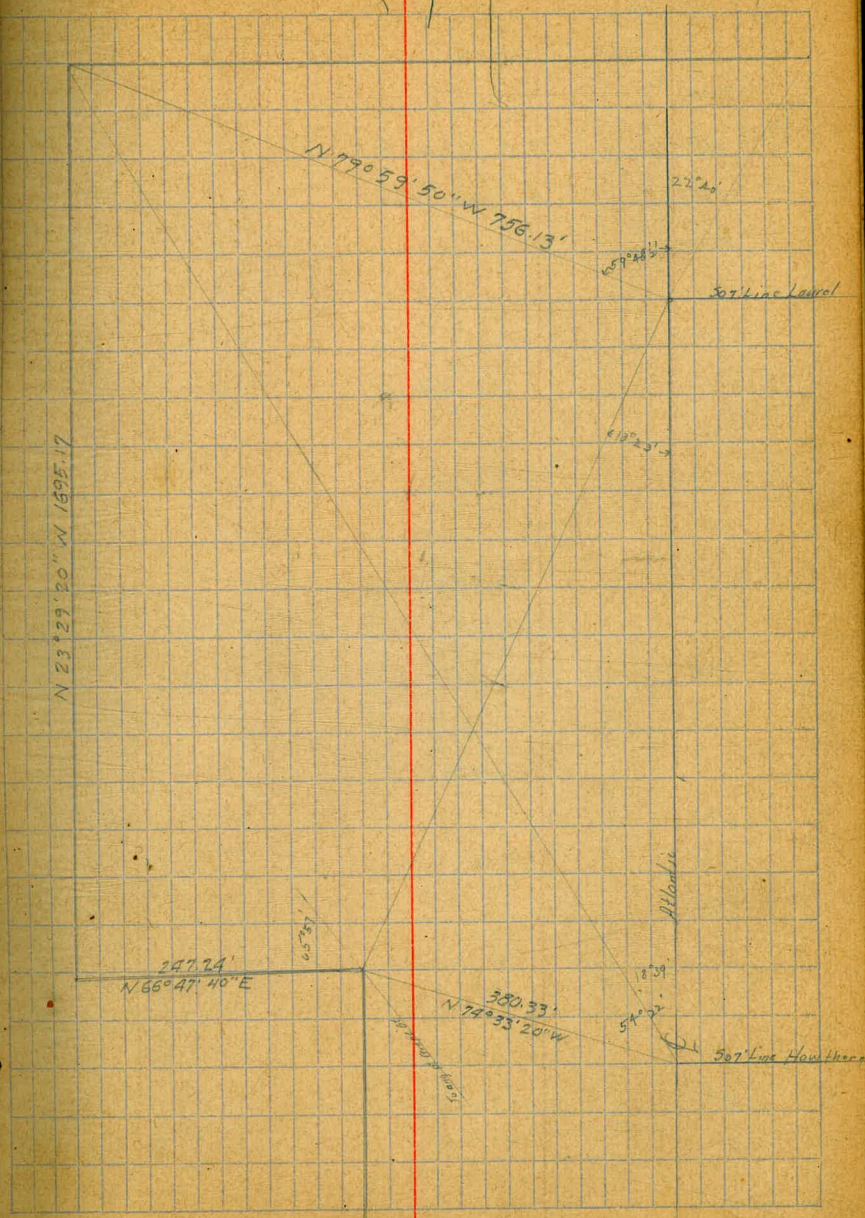
12" Redwood
NE cor. city Prop
and S line of Park



Monument
NE cor. 13 and 5 E cor
N line city Prop

Location of Temporary Bulkhead N. of Permanent Bulkhead.

Davis
Hancock
Hornick



Levels over Ctr & Property Lines of Atlantic St. B. of Laurel St. ^{to 10' from}

Sta	t	HI	-	Floor
	1.10	20.09		15.99 (physical) Ind. 8.8
T.P	0.62	11.11	9.60	10.49
BM Top Hydt	S. E. Atlantic St		5.03	6.08
	50 line "B"			
E			6.6	4.5
C			6.1	5.0
W			6.5	4.6
	17 No			
Ch			8.4	4.7
	28 No			
Ch			4.2	6.9
	140 - Ctr B			
W			7.0	4.1
Ch			4.6	6.5
E			5.9	5.2
	14 N. Ch			
Ch			5.1	6.0
	19 N. Ch			
Ch			6.6	4.5
	25 No Ch			
W			7.6	3.5
	30 N. Ch			
W			6.5	4.6

1111
No line B

W	6.0	5.1
Ch	6.8	4.3
E	6.6	4.5
	50 No	
E	5.9	5.2
C	6.9	4.2
W	6.1	5.0
	100 No	
W	6.6	4.5
C	7.0	4.1
E	5.8	5.3
	150 No	
E	6.2	4.9
C	7.2	3.9
W	6.9	4.2
	200 No	
W	6.7	4.4
C	7.0	4.1
E	7.4	3.7
	250 N.	
E	7.1	4.0
C	7.0	4.1
W	6.7	4.4

ATLANTIC ST.

Sta	+	-	Elev
	14 11.11		
	300 No. B - S Line A		
W		65	4.6'
C		70	4.1'
E		65	4.6'
	140 - Ct Line A		
E		59	5.2'
C		69	4.2'
W		67	4.4'
	No Line A		
W		64	4.7'
C		67	4.4'
E		75	3.6'
	50 No. A		
E		76	3.5'
Ct		66	4.5'
W		64	4.7'
	100 No. A		
W		62	4.9'
C		64	4.7'
E		71	4.0'
	150 No. A		
E		80	3.1'
C		64	4.7'
W		61	5.0'

11.11.58

54

200 No. A			
W		60	5.1'
Ct		63	4.8'
E		73	3.8'
	250 No. A		
E		62	4.9'
C		63	4.8'
W		61	5.0'
	300 No. S Line Ash		
W		62	4.9'
C		65	4.6'
E		80	3.1'
T.P.	528	9.67'	672 4.39'
	71 No. S Line		
E		70	2.7'
	19 No. S Line		
E		51	4.6'
	410 - Ct Ash		
E		51	4.6'
C		52	4.5'
W		48	4.9'
	No. 1100 Ash		
W		49	4.8'
C		51	4.6'
E		57	4.0'

ATLANTIC ST.

9.67

141

Elev

Sta

50 No Ash

F	5.6	4.1
C	5.2	4.5
W	4.9	4.8

100 No Ash

W	4.9	4.8
C	5.2	4.4
F	5.7	4.0

150 No Ash

F	5.7	4.0
C	5.2	4.5
W	4.8	4.9

200 No Ash

W	4.8	4.9
C	5.1	4.6
F	5.5	4.2

250 No Ash

F	5.8	3.9
C	5.3	4.4
W	4.8	4.9

300 No. 3 Line Beach

W	4.9	4.8
C	5.2	4.5
F	5.6	4.1

9.67 No

35

+ 40 = Ctr Beach

F	5.4	4.3
C	5.1	4.6
W	3.6	4.1

40 No Line Beach

W	4.6	5.1
C	5.4	4.3
F	4.8	4.9

50 No Beach

F	4.5	5.2
C	5.2	4.6
W	4.1	5.6

100 No Beach

W	4.6	5.1
C	5.4	4.3
F	3.9	5.8

150 No Beach

F	3.6	6.1
C	5.6	4.1
W	4.7	5.0

180 No Beach

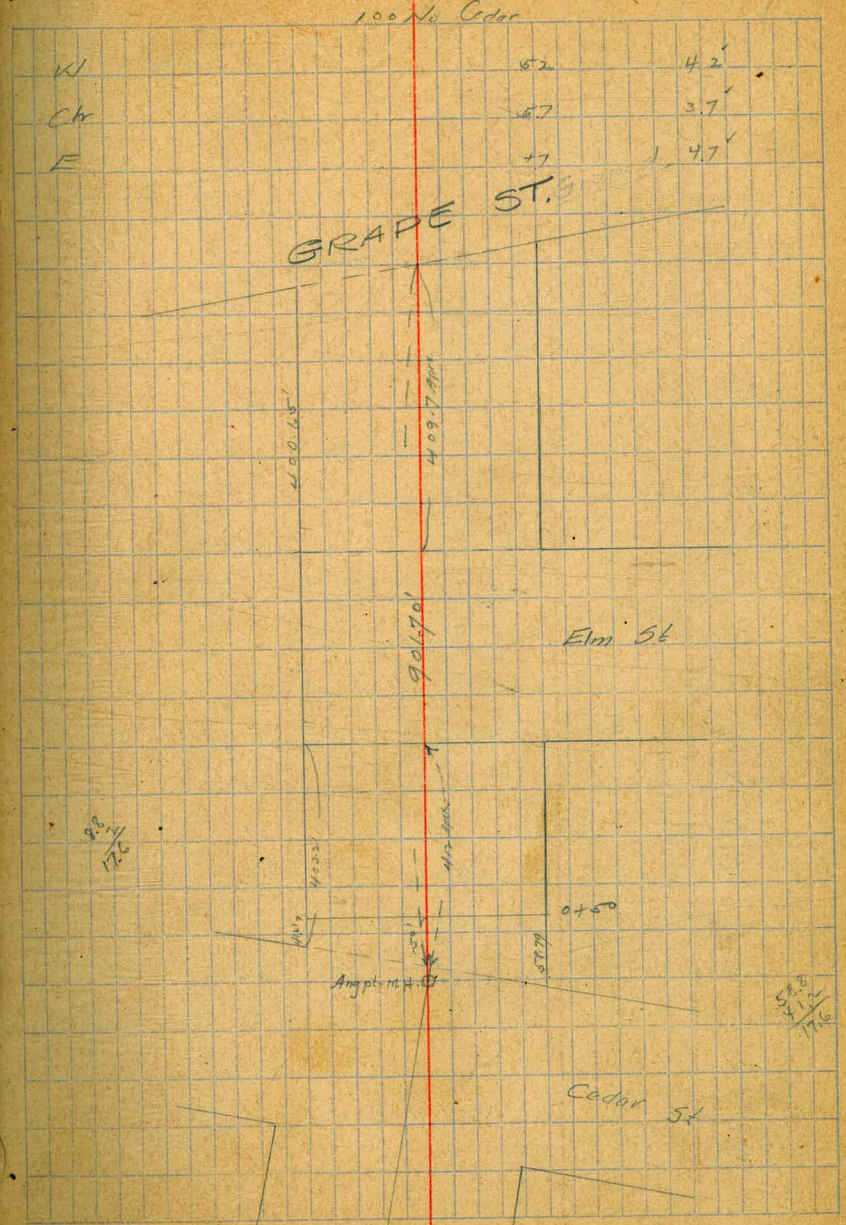
E. Doorway of Warehouse	2.5	7.2
-------------------------	-----	-----

200 No Beach

W	4.9	4.8
C	5.7	4.6
F	3.7	6.0

ATLANTIC ST.

Sta				Elev
		9.67		
	250 N. Beach			
F			36	6.1'
C			58	3.9'
W			50	4.7'
	300 N. Stine Cedar			
W			51	4.6'
C			55	4.2'
E			46	5.1'
T.P	521	9.43	52.5	4.22
	140. Ctr line Cedar			
E			49	4.5'
C			56	3.8'
W			49	4.5'
	Ang. Pt. on Ck. line			
Top Man hole			22	7.0'
	No line Cedar			
W			51	4.3'
C			55	3.9'
E			50	4.6'
	50 N. Cedar			
E			42	5.2'
C			54	4.0'
W			51	4.3'



ATLANTIC ST.

Sta	+	933 HT 100 No Elm	-	ELV
E			5.3	4.0 ^v
C			5.1	4.2 ^v
W			5.2	4.1 ^v
150 No				
W			4.9	4.4 ^v
O			5.0	4.3 ^v
E			5.3	4.0 ^v
200 No				
E			5.5	3.8 ^v
C			4.7	4.6 ^v
W			5.2	4.1 ^v
250 No				
W			4.6	4.7 ^v
C			4.6	4.7 ^v
E			5.3	4.0 ^v 3.0
287 No				
E	Doorway Langell's boat Shop		4.16	5.17 ^v
300 No				
E			5.1	4.2 ^v
C			5.4	3.9 ^v
W			4.6	4.7 ^v
T.P	6.05	910	5.28	4.05 ^v
350 No				
W			5.1	4.0 ^v
C			5.4	3.7 ^v
E			5.3	3.8 ^v

38

910 50 line Groups

E	4.4	4.7 ^v
C	4.7	4.4 ^v
Top M.H.	5.5	3.6 ^v
W	4.8	4.3 ^v
40- Ck Groups		
W	4.3	4.8 ^v
C	4.7	4.4 ^v
E	4.6	4.5 ^v
N Line Groups		
E	5.1	4.0 ^v
C	4.8	4.3 ^v
W	3.8	5.3 ^v
50 No Groups		
W	4.0	5.1 ^v
C	5.2	3.9 ^v
E	5.0	4.1 ^v
100 No		
E	6.1	3.0 ^v
C	4.8	4.3 ^v
W	4.6	4.5 ^v
150 No		
W	4.2	4.9 ^v
C	4.2	4.9 ^v
E	5.1	4.0 ^v
175 No		
C	4.5	4.6 ^v

ATLANTIC ST.

9.10

181' No. Craps

C 28 6.3'

200 No.

W 3.2 5.9'

C 3.7 5.4'

E 5.7 3.4'

206' No.

C 5.0 4.1'

250 No.

E 4.8 4.3'

C 4.7 4.2'

W 4.9 4.2'

272' No.

C 4.5 4.6'

300' N. S. Line Hawthorn

E 4.6 4.5'

C 3.6 5.5'

W 3.8 5.3'

T.P. 4.7 10.15' 3.82 5.28'

4th Cr. Hawthorn

W 4.6 5.6'

C 3.8 6.4'

E 6.1 4.1'

20' No. Cr.

E 5.4 4.8'

30' No. Cr.

E 4.1 6.1'

102' H.I.

39

10.15 No. Line Hawthorn

E 4.4 5.8'

C 4.4 5.8'

W 4.1 6.1'

50' No.

W 5.3 4.9'

C 4.9 5.3'

E 5.0 5.2'

100' No.

E 4.8 5.4'

C 4.4 5.8'

W 5.2 5.0'

150' No.

W 4.9 5.3'

C 4.9 5.3'

E 4.9 5.3'

200' No.

E 4.7 5.5'

C 4.6 5.6'

W 5.1 5.1'

250' No.

W 5.0 5.2'

C 4.6 5.6'

E 5.0 5.2'

ATLANTIC ST.

10.15

Sta		HT	Elev
300 No. Saline 1vy			
E		47	5.5'
C		52	5.0'
W		5.0	5.2'
+40- Ctr 1vy			
W		49	5.3'
C		59	4.3'
E		56	4.6'
1 1/2 line 1vy			
E		62	4.0'
C		58	4.4'
W		5.2	5.0'
50 No 1vy			
W		59	4.3'
C		6.0	4.2'
E		6.2	4.0'
100 No. 1vy			
E		58	4.4'
C		49	5.3'
W		4.4	5.8'
T.P.	5.07	9.33	5.89 4.26'
120 No 1vy			
C		53	4.0'
E		29	2.4'

40

9.33

150 No 1vy			
E		56	2.7'
C		47	4.6'
W		45	4.8'
166 No 1vy			
C		39	5.4'
186 No 1vy			
C		50	4.3'
200 No 1vy			
E		50	4.3'
C		50	4.3'
W		41	5.2'
225 No 1vy			
W		50	4.3'
C		38	5.5'
E		54	3.9'
250 No 1vy			
E		48	4.5'
C		51	4.2'
W		49	4.4'
300 No. 5. Line 1vy			
W		46	4.7'
C		49	4.4'
E		55	3.8'

ATLANTIC ST.

9.33

M1

Elev

Sta

140 - Ctr Juniper

E

5.7

3.6'

C

4.0

5.3'

W

3.5

5.8'

No line Juniper

W

4.8

4.5'

C

5.1

4.2'

E

5.5

3.8'

50 No Juniper

E

7.0

2.3'

C

4.8

4.5'

W

4.3

5.0'

100 No.

W

4.3

5.0'

C

5.0

4.3'

E

5.9

3.4'

137 No.

C

5.1

4.2'

142 No.

C

6.6

0.7'

150 No.

E

5.5

3.8'

C

7.8

1.5'

W

4.4

4.9'

41

9.33

200 ft Juniper

W

4.5

4.8'

C

8.5

0.8'

E

4.7

4.6'

250 No.

E

3.7

5.6'

C

8.5

0.8'

W

5.4

3.9'

300 No.

W

6.1

3.2'

C

8.7

0.6'

E

1.9

7.4'

350 No.

E

1.1

8.2'

C

8.9

0.4'

W

6.3

3.0'

400

W

6.6

2.7'

C

9.2

0.1'

E

1.5

7.8'

430 No.

E

1.2

8.1'

T.P.

3.50

5.50

7.33

2.00'

443 No.

E

3.6

1.9'

ATLANTIC ST.

Sta	H1	Elev
5.0°		
450 N. Juniper		
E	3.5	2.0 ✓
C	5.5	0.0 ✓
W	3.2	2.3 ✓
500 N.		
W	3.7	1.8 ✓
C	5.8	-0.3 ✓
E	4.2	1.3 ✓
501 N.		
E	5.5	0.0 ✓
550 N.		
E	5.8	-0.3 ✓
C	5.5	0.0 ✓
W	4.0	1.5 ✓
570 N.		
W	4.1	1.4 ✓
	4.8	0.7 ✓
600 N.		
W	5.5	0.0 ✓
C	5.1	-0.3 ✓
E	6.1	-0.6 ✓
650 N.		
E	6.1	-0.6 ✓
C	6.4	-0.9 ✓
W	6.3	-0.8 ✓

55 H.I.

42

680 N. - 5 Line Laurel			
W		6.4	-0.9 ✓
C		6.3	-0.8 ✓
E		6.5	-1.0 ✓
+40: Ch Laurel			
E		6.6	-1.1 ✓
C		6.6	-1.1 ✓
W		6.6	-1.1 ✓
No line Laurel			
W		6.8	-1.3 ✓
C		6.8	-1.3 ✓
E		6.8	-1.3 ✓
T.P	7.33	9.33	3.50 2.00
T.P	12.97	22.08	0.27 9.06
T.P	13.01	34.72	0.32 21.71
T.P	12.99	47.60	0.11 34.61
BIM SW. Loda x Juniper Ridge			
		6.80	46.80 41.87

Cross Section of Terry Road (New Line) from Sta 78+43.52

Sta + HI - Elev.

Note Cross Sections taken for 18' Roadway

$\frac{9}{6}$ Davis
 $\frac{16}{16}$ Hancock
Harris

56.37

78+43.52 PC

L	10.5	45.9
C	10.3	46.1
R	10.5	45.9

+7.5

R	10.1	46.3
C	9.5	46.9
L	9.6	46.8

79+100

L	9.1	47.3
C	9.1	47.3
R	9.5	46.9

+2.5

R	9.0	47.4
C	8.5	47.9
L	8.6	47.8

+5.0

L	8.1	48.3
C	8.0	48.4
R	8.3	48.1

56.37

43

+7.5

R	7.7	48.7
C	7.3	49.1
L	7.6	48.8

80+00

L	7.1	49.3
C	6.7	49.7
R	7.1	49.3

+13.25 EC

R	6.8	49.6
C	6.4	50.0
L	6.9	49.5

+5.0

L	5.8	50.6
C	5.4	51.0
R	5.8	50.6

81+00

R	3.9	52.5
C	3.7	52.7
L	4.2	52.2

+5.0

L	1.8	54.6
C	1.5	54.9
R	1.6	54.8

T.P 12.00 67.87 0.50 55.87

67.87

82+00

R	1.01	57.9
C	1.02	57.7
L	1.07	57.2

821218 PC

L	9.3	58.6
C	8.9	59.0
R	8.8	59.1

+50

R	6.8	61.1
C	6.8	61.1
L	7.6	60.5

+75

L	5.6	62.3
C	5.1	62.8
R	5.2	62.7

83+00

R	3.7	64.2
C	3.7	64.2
L	3.9	64.0
	1.38	66.44 13M Hyd. Post. 83.5

+25

L	2.4	65.5
C	2.0	65.9
R	2.0	65.9

+50

R	9.6	67.3
C	9.6	67.3
L	9.9	67.0
T.P. 12x23	79.61	67.38

+75

L	11.2	68.4
C	10.7	68.7
R	10.8	68.8

84+00

R	9.6	70.0
C	9.6	70.0
L	10.1	69.5

+0872 EC

L	9.7	69.9
C	9.3	70.3
R	9.2	70.4

+50

R	8.1	71.5
C	7.8	71.8
L	8.2	71.4

+78 93 PC

L	7.6	72.0
C	7.4	72.2
R	7.5	72.1

7961

85+00

R	6.8	72.8
C	6.7	72.9
L	7.1	72.5

+25

L	6.5	73.1
C	6.1	73.5
R	5.9	73.7

+50

R	5.2	74.4
C	5.1	74.5
L	5.2	74.0

+75

L	4.4	75.2
C	4.1	75.5
R	4.3	75.3

+6+00

R	3.5	76.1
C	3.6	76.0
L	4.0	75.6

+25

L	2.8	76.8
C	2.5	77.1
R	2.7	76.9

JUN

+4485 EC

R	1.9	77.7
C	1.7	77.9
L	2.0	77.6

+50

L	1.8	77.8
C	1.5	78.1
R	1.5	78.1

T.P. 1194	91.30	0.19	79.42
-----------	-------	------	-------

87+00

R	11.3	80.1
C	11.1	80.3
L	11.2	80.2

+50

L	9.9	81.5
C	9.8	81.6
R	9.9	81.5

88+00

R	7.8	83.6
C	7.6	83.8
L	7.9	83.5

+50

L	5.9	85.5
C	5.7	85.7
R	5.9	85.5
R	5.1	86.3

91.36
88+13.92 PC

R		50	86.4
C		45	86.9
L		45	86.9
89+00			
L		36	87.8
C		35	87.9
R		38	87.6
+25			
R		18	89.6
C		18	89.6
L		16	89.8
T.P	1280	103.94	0.22 91.14
+50			
L		12.2	91.7
C		12.1	91.8
R		12.1	91.8
+75			
R		10.3	93.6
C		10.2	93.7
L		10.1	93.8
90+00			
L		86	95.3
C		84	95.5
R		83	95.6

103.94

46

90+03 23 EC

R		81	95.8
C		82	95.7
L		84	95.5
+50			
L		49	99.0
C		47	99.2
R		49	99.0
91+00			
R		16	102.3
C		1.3	102.6
L		11	102.8
T.P	1280	116.79	0.13 103.81
+50			
L		11.0	105.8
C		11.1	105.7
R		11.7	105.1
92+00			
R		7.8	109.0
C		7.5	109.3
L		7.4	109.4
+1862 P.C			
L		60	110.8
C		61	110.7
R		66	110.2

116.79

92+50

R	4.3	112.5
C	3.9	112.9
L	3.2	113.6

+7.5

L	1.6	115.2
C	2.2	114.6
R	2.5	114.3

93+00

R	0.8	116.0
C	0.2	116.4
L	0.0	116.8
T.P	12.86	128.71
	0.94	115.85

+7.5

L	10.4	118.3
C	10.7	118.0
R	11.1	117.6

119.58 Ec

R	9.6	119.1
C	9.0	119.7
L	9.0	119.7

94+00

L	5.1	123.6
C	5.2	123.5
R	5.5	123.2

92+44 E

128.71

47

94+2262 PC

R	3.5	125.2
C	3.1	125.6
L	3.0	125.7

+5.0

L	0.9	127.8
C	1.4	127.3
R	1.8	126.9
T.P	0.24	128.47

953214

Cross Section Biological Grade - for 16' Roadway

Sta	+	5770	←	Elev
		79+43.59		PC
10 R			121	456
P "			117	460
C			116	461
P L			117	460
11 "			118	459
		+75		
11 L			110	467
P "			109	468
C			108	469
P R			113	464
13 "			116	461
		79+00		
13 R			109	468
P "			107	470
C			104	473
P L			104	473
13 "			106	471
		+25		
14 L			102	475
P "			100	477
C			98	479
P R			102	475
12 "			105	472

9' Davis
12' Hamock
11' Hamock

57.7°

18

		+50		
12 R			96	481
P "			96	481
C			93	484
P L			93	484
15 L			98	479
		+75		
16 L			94	483
P "			89	482
C			86	491
P R			90	487
12 "			89	488
		+20+00		
12 R			87	490
P "			83	494
C			80	497
P L			84	493
14 L			84	489
		+13+50 EC		
14 L			84	493
P "			81	496
C			77	500
P R			81	496
13 "			84	493

57.70

80+50

10'R	73	506
P"	71	506
C	67	510
PL	70	507
14"	75	502

81+00

13'L	57	520
P"	54	523
C	50	527
P'R	52	525
12"	56	521

+ 50

11'R	31	546
P"	29	548
C	28	549
PL	31	546
13"	35	542

82+00

11'L	07	570		
P.	04	573		
C	00	577		
P'R	00	577		
13"	00	577		
T.P	1284	70.25	0.29	57.41

70.25

82+216+PC

49

14'R	112	591
P"	111	592
C	113	590
PL	117	586
14"	120	583

+ 50

11'L	100	603
P"	97	606
C	92	611
P'R	91	611
13"	96	607

+ 75

10'R	77	626
P	75	628
C	75	628
PL	79	624
14"	82	624

83+00

14'L	64	639
P.	63	640
C	61	642
P'R	61	642
13"	61	642

376

Ch. 49 BM Hyde Post 82+05

20.25

P 3+20

13'R	4.3	66.0
8"	4.4	65.9
C	4.3	66.0
8'L	4.7	65.6
12"	4.8	65.5

+50

12'L	3.3	67.0
8"	3.3	67.0
C	3.0	67.3
8'R	3.0	67.3
14"	3.8	67.5

+75

14'R	1.4	68.9
8"	1.5	68.8
C	1.6	68.7
8'L	1.8	68.5
12"	1.8	68.5

P 4+00

12'L	0.7	69.6
8"	0.7	69.6
C	0.3	70.0
8'R	0.2	70.1
15"	+0.2	70.5
T.P	1/08	81.06
	0.27	69.98

81.06

P 4+08.72 EC

50

14'R	10.5	70.6
8"	10.7	70.4
C	10.8	70.3
8'L	11.1	70.0
13"	11.2	69.9

+50

10'L	9.8	71.3
8"	9.6	71.5
C	9.2	71.9
8'R	9.5	71.6
11"	9.2	71.9

P 4+70.93 PC

11'R	8.7	72.4
8"	9.0	72.1
C	8.8	72.3
8'L	9.0	72.1
11'L	9.2	71.9

85+00

11'L	8.5	72.6
8"	8.5	72.6
C	8.2	72.9
8'R	8.2	72.9
11"	8.2	72.9

81.06

F5+25

11'R	7.3	73.8
P	7.3	73.8
C	7.6	73.5
8L	7.9	73.2
10"	8.0	73.1

+50

10L	7.0	74.1
P	7.0	74.1
C	6.5	74.6
PR	6.7	74.4
10"	6.6	74.5

+75

12R	5.9	79.2
P	5.7	75.4
C	5.2	75.5
8L	5.9	75.2
11"	5.8	75.3

86 to 0

11L	5.4	75.7
P	5.4	75.7
C	5.0	76.1
8R	5.1	76.0
9"	4.6	76.5
12"	1.2	79.9

81.06

+25

13R	1.1	80.0
9"	4.2	76.9
P	4.5	76.8
C	4.0	77.1
8L	4.2	76.9
11"	4.2	76.9

+ 44.85 EC

10L	3.3	77.8
P	3.4	77.7
C	3.1	78.0
PR	3.2	77.9
9"	3.3	77.8

+50

10'R	2.9	78.2
P	2.9	78.2
C	2.9	78.2
8L	3.2	77.9
10"	3.2	77.9

87 to 0

9'L	0.6	80.5	
P	0.8	80.3	
C	0.5	80.3	
8'R	0.9	80.2	
11"	0.7	80.4	
TIP 12.28	93.04	0.30	80.76

9304

87+50

12'R	11.5	81.5
8	11.5	81.5
C	11.5	81.5
8L	11.5	81.5
10"	11.1	81.9

88+00

11L	9.6	83.4
8	9.5	83.5
C	9.3	83.7
8R	9.5	83.5
12'	9.2	83.8

+850

10R	6.3	86.7
P	7.0	86.0
7	7.7	85.3
C	7.4	85.6
8L	7.5	85.5
10"	7.8	85.2

+830 PC

12L	6.2	86.8
8	6.3	86.7
C	6.2	86.8
8R	6.6	86.4
12'	3.6	89.4

9304

89+00

12'R	42	88.8
8	55	87.5
C	52	87.8
8L	52	87.8
12"	51	87.9

+225

12'L	32	89.8
P	33	89.7
C	34	89.6
8R	34	89.6
10"	33	89.7

+50

10'R	15	91.5
P	12	91.8
C	12	91.8
8L	12	91.8
11"	11	91.9
T.P	14.83	105.79
	0.08	92.96

+75

10'R	121	93.7
P	121	93.7
C	120	93.8
8L	120	93.8
10	119	93.9

52

52

105.79
90 + 0.323 EC.

10L	102	956
P	103	955
C	100.	958
P.R	100	958
10.	97	961

+50

10R	65	993
P	68	990
C	66	992
P.L	68	990
10.	67	991

9/100

11L	28	1030
P	30	1028
C	32	1026
P	34	1024
10R	29	1029

+50

11R	00	1052
P	06	1052
C	00	1058
P.L	00	1058
9.	101	1059
T.P.	12.63	118.39
	0.03	105.76

53

118.39 92/100

11L	90	109.4
P	91	109.3
C	91	109.3
P.R	94	109.0
9.	94	109.0

+18.68 PC

10R	80	110.4
P	81	110.3
C	77	110.7
P.L	76	110.8
11L	75	110.9

+50

14L	47	113.7
P	50	113.4
C	56	112.9
P.R	58	112.6
14	61	112.3

+75

14R	40	114.0
P	40	114.4
C	38	114.6
P.L	33	115.1
14	27	115.7

Chk. B.M. on PT (Hatch's)

2.53

115.826 115.8512M

118.39

93+00

14 L	1.5	116.9
P	1.7	116.7
C	2.0	116.4
8 R	2.3	116.1
12	2.6	115.8

1.25

11 R	1.0	117.4
P	0.7	117.7
C	0.4	118.0
8 L	0.0	118.4
T.P	1299	131.22
		0.16
		118.23

93+49.5⁵ EC

9 L	11.4	119.8
P	11.5	119.7
C	11.6	119.6
8 R	12.0	119.2
11	12.2	119.0

94+00

10 R	7.2	123.4
P	8.0	123.2
C	7.7	123.5
8 L	7.6	123.6
10	7.5	123.7

131.22

94+22.67 PC

54

9 L	5.6	125.6
P	5.6	125.6
C	5.7	125.5
8 R	6.1	125.1
9	6.0	125.2

+00

10 R	4.2	127.0
P	4.3	126.9
C	3.9	127.3
8 L	0.5	127.7
10	3.2	128.0

1.75

10 L	1.9	129.3
8	2.0	129.2
C	2.2	129.0
8 R	2.5	128.7
10	2.6	128.8

95+00

11 R	0.8	130.4
P	1.0	130.2
C	0.7	130.5
8 L	0.6	130.6
10	0.4	130.8
T.P	1143	142.57
		0.08
		131.14

142.57

95+32.24/50

12L	10.3	132.3
P	10.4	132.2
✓	10.3	132.3
PR	10.5	132.1
11	10.4	132.2

+50

10'R	9.7	132.9
P	9.8	132.8
C	9.6	133.0
PL	9.6	133.0
13'	9.5	133.1

95+76.12

15L	8.2	134.3
P	8.4	134.2
C	8.4	134.2
PR	8.4	134.2
11	8.2	134.4

96+00

16'R	7.3	135.3
P	7.3	135.3
C	7.4	135.2
PL	7.7	134.9
16'	7.7	134.9

142.57

+25

14L	7.7	134.9
P	7.4	135.2
C	6.9	135.7
PR	6.6	136.0
27'	5.6	137.0

+50

22R	5.6	137.0
P	6.2	136.4
C	6.7	135.9
PL	7.2	135.4
14L	7.6	135.0

+75

15L	7.4	135.2
P	7.1	135.5
C	6.4	136.2
PR	6.0	136.6
19'	6.7	136.4

97+00

17'R	6.2	136.4
P	6.3	136.3
C	6.4	136.2
PL	7.1	135.5
11	7.2	135.4

142.57

97+25

10 L	6.9	135.7
P	7.0	135.6
C	6.6	136.0
P R	6.3	136.3
17	6.3	136.3
B.M. MacNeil cook in No. End Culvert (Glar 97114)	6.84	135.73

97+49.57 EC

16 R	6.2	136.4
8	5.9	136.7
C	6.1	136.5
P L	6.3	136.3
10	6.3	136.6

+75

10 L	5.0	137.6
P	5.1	137.5
C	5.2	137.4
P R	5.4	137.2
11	5.1	137.5

98+06.50 PC

9 R	4.1	138.5
P	4.2	138.4
C	3.8	138.8
P L	3.7	138.9
10	3.6	139.0

142.57

+25

10 L	2.7	139.9
P	2.9	139.7
C	3.0	139.6
P R	3.5	139.1
10	3.4	139.2

+50

9 R	2.0	140.6
P	2.1	140.5
C	1.5	141.1
P L	1.1	141.5
11	0.9	141.7
TIP 11.82	154.36	142.54

+75

13 L	10.5	143.9
8	11.0	143.4
C	11.4	143.0
8 R	12.0	142.4
12	6.8	147.6

99+0.0

12 R	6.3	148.1
8	10.6	143.8
C	10.0	144.4
8 L	9.5	144.9
14	9.3	145.1

56

154.36

99 + 25

15'L	8.5	145.9
P	8.7	145.7
C	9.1	145.3
PR	9.6	144.8
11	5.7	148.7
+50		
10'R	4.9	149.5
7'	8.6	145.8
C	8.3	146.1
P'L	7.7	146.7
14	7.3	147.1
+75		
12'L	6.2	148.2
8	6.2	148.2
C	6.6	147.8
PR	6.7	147.7
13'	3.6	150.8
100 + 06 72 = EC		
11R	4.7	149.7
P.	4.6	149.8
C	4.3	150.1
PL	4.6	149.8
12	4.8	149.6

57

+50

10'L	2.3	152.1
P	2.3	152.1
C	2.0	152.4
PR	2.2	152.2
12	2.3	152.1
T-P 12.59	166.65	0.30
101 + 00		
12'R	11.5	155.2
P	11.0	155.7
C	10.9	155.8
PL	11.2	155.5
10	11.2	155.5
+50		
9'L	8.3	158.4
8	8.2	158.5
C	7.9	158.8
PR	8.2	158.5
11	8.3	158.4
102 + 00		
12'R	5.3	161.4
8	5.0	161.7
C	4.9	161.8
PL	5.0	161.7
9	5.0	161.7

166.65

102+00

9L		20	164.7
P		20	164.7
C		19	164.8
PR		22	164.5
12		25	164.2
T.P	1295	179.54	006
		166.59	

103+00

11R		12.3	167.2
8		12.1	167.4
C		11.7	167.8
PL		11.7	167.8
12		11.7	167.8

103+49.95 RC

13L		80	171.5
P		81	171.4
C		83	171.2
PR		87	170.8
		86	170.9

+75

9R		78	171.7
P		78	171.7
C		69	172.6
8L		67	172.8
13		65	173.2

179.54

104+00

13L		48	174.7
P		5.1	174.4
C		5.4	174.1
PR		6.1	173.4
9		6.1	173.4
		+25	
9R		4.4	175.5
P		4.3	175.2
C		3.6	175.9
PL		2.1	176.4
12		2.8	176.7
BM. 1-Sub PI of Curve		5.9	174.05

+50

11L		13	178.2
P		14	178.1
C		16	177.9
PR		24	177.1
10		25	177.0
TP	1304	192.22	036
		179.18	

+75

11R		132	179.0
8		130	179.2
C		123	179.9
PL		124	179.8
10		125	179.7

192.92

105 + 0.41 FC

10L		104	181.8
P		10.2	182.0
C		10.0	182.2
PR		10.5	181.7
11		10.4	181.8

+50

10'R		7.0	185.2
P		7.0	185.2
C		6.8	185.4
PL		7.1	185.1
11		7.1	185.1

106 + 0.0

10'L		3.8	188.4
P		3.8	188.4
C		3.3	188.9
PR		3.5	188.7
11		3.7	188.5

+50

10 R		0.9	191.3	
P		1.0	191.2	
C		0.8	191.4	
PL		1.0	191.2	
9		1.0	191.2	
T.P	10.92	202.96	0.18	192.04

202.96

59

106 + 0.25 PC

12'L		10.9	192.1
P		10.8	192.2
C		10.4	192.6
PR		10.5	192.5
9		10.4	192.6

107 + 0.0

10'R		9.7	193.3
P		9.7	193.3
C		9.8	193.2
PL		10.1	192.9
11'		10.1	192.9

+25

13L		9.1	193.9
P		9.1	193.9
C		8.7	194.3
PR		8.3	194.7
14'		7.9	195.1

+50

14'R		7.5	195.5	
P		7.7	195.3	
C		7.9	195.1	
PL		8.2	194.8	
10L		8.4	194.6	
T.P	5.29	207.32	0.93	202.03

Hubon PJ

207.32

107+73² EC

13'L	122	195.0
P	121	95.2
C	117	95.6
P'R	118	95.5
11'	122	95.1

108+00

11'R	115	95.8
8	113	96.0
C	109	96.4
8'L	111	96.2
12	113	96.0

+27² PC

13'L	97	97.6
P	96	97.7
C	96	97.7
8'R	102	97.1
10	100	97.3

+00

9'R	88	98.5
P	88	98.5
C	83	99.0
8'L	80	99.3
13'	78	99.5

207.3

60

+75

13'L	60	201.3
P	63	201.0
C	67	200.6
P'R	73	200.0
9''	73	200.0

109+00

95'R	58	201.5
P	57	201.6
C	51	202.2
8'L	49	202.4
12''	48	202.5

+25

11'L	33	204.0
P	33	204.0
C	34	203.9
8'R	39	203.9
11'R	39	203.9

+50

11'R	21	204.9
P	21	204.9
C	16	205.5
8'L	19	205.4
11'	18	205.5

207.32

109+6262 FC

11'L		0.9	206.4
P		0.9	206.4
C		1.0	206.3
8'R		1.4	205.9
11"		1.6	205.7

T.P.	12.68	219.97	0.03	207.29
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110+00

10'R		220.0	1.17	208.3
P			1.17	208.3
C			1.13	208.7
PL			1.15	208.5
11			1.17	208.3

+50

11'L		8.5	211.5
P		8.5	211.5
C		8.2	211.8
8'R		8.4	211.6
11		8.2	211.8

111+00

11'R		60	215.0	
P.		19	215.1	
C		48	215.2	
PL		48	215.2	
10.		48	215.2	
T.P.	12.80	232.73	0.04	219.93

232.73 H₂O

61

+1.50

11'L		12.7	220.0
P		12.8	219.9
C		13.2	219.5
8'R		13.6	219.1
13		14.1	218.6

+55.32 PC

13'R		13.8	218.9
P		13.5	219.2
C		12.9	219.8
PL		12.4	220.3
12'		12.2	220.5

+7.5

12'L		10.9	221.8
P		11.0	221.7
C		11.3	221.4
8'R		11.6	221.1
13.		11.9	220.8

112.05

10.5'R		10.3	222.4
P		10.3	222.4
C		9.9	222.8
8'L		9.5	223.2
12.		9.4	223.3

232.73

112 + 25

13L	8.2	224.5
8	8.1	224.6
C	8.3	224.4
8R	9.0	223.7
9	9.0	223.7

+50

10R	7.8	224.9
8	7.7	225.0
C	7.1	225.6
PL	7.0	225.7
14L	7.1	225.6

+75

14L	5.7	227.0
8	5.6	227.1
C	5.5	227.2
8R	6.2	226.5
10.5	6.0	226.3

113 + 00

10R	4.2	228.3
8	4.2	228.3
C	3.8	228.9
8L	3.7	228.8
13	4.1	228.6

232.73

+117 EC.

13L	3.3	229.4
8	3.0	229.7
C	3.0	229.7
8R	3.5	229.2
10	3.4	229.3

+50

10R	0.7	232.0
8	0.7	232.0
C	0.3	232.4
4L	0.5	232.2
12	0.2	231.9

T.P. 13.04 245.46 0.31 202.42

+88 EC.

11L	11.3	234.2
8	11.2	234.3
C	10.7	234.8
8R	10.7	234.8
12	10.6	234.9

114 + 00

12R	9.7	235.8
8	9.7	235.8
C	9.9	235.6
8L	10.5	235.0
12	10.8	234.7

245.46

114+25

12L	9.3	236.2
J	8.9	236.6
C	8.1	237.4
PR	7.8	237.7
15 "	7.7	237.8
Emp. Cross on E end Cul Sta 114130	7.13	238.33

+50

12R	6.4	239.1
P	6.4	239.1
C	6.4	239.1
PL	7.0	238.5
12	7.4	238.1

+67⁴⁰FC

13L	5.4	240.1
P	5.2	240.3
C	4.9	240.6
PR	4.9	240.6
11 "	4.9	240.6

115+00

10R	2.9	242.6
P	2.7	242.8
C	2.2	243.3
8L	2.1	243.1
14	2.6	242.9

245.5

63

115 21 PC

15L	1.6	243.9
P	1.0	244.5
C	0.9	244.6
P	1.7	243.8
10	1.8	243.7

+75

10R	1.0	244.5	
P	1.0	244.5	
C	0.2	245.3	
8L	0.2	245.3	
16L	0.9	244.6	
TP 1272	258.13	0.05	245.41

+50

15L	11.3	246.8
P	10.7	247.4
C	10.7	247.4
PR	11.3	246.8
95	11.4	246.7

+75

10R	9.1	249.0
P	9.1	249.0
C	1.6	249.5
8L	0.6	249.5
16	9.3	248.8

258.13

116+00

15'L	7.2	250.9
P	6.9	251.2
C	6.8	251.3
PR	7.4	250.7
10.5	7.5	250.6

+25

13 R	6.1	252.0
P	5.8	252.3
C	5.2	252.9
PL	5.4	252.7
13	5.5	252.6

140.2 PCC

12'L	4.4	253.7
P	4.3	253.8
C	4.2	253.9
PR	4.4	253.7
14R	4.9	253.2

+50

15R	4.2	253.9
P	3.8	254.3
C	3.6	254.5
PL	3.6	254.5
12	3.7	254.4

258.1

+75

10'L	2.0	256.1
P	2.0	256.1
C	1.8	256.3
PR	1.8	256.3
19	2.1	255.7

117+00

12'R	1.2	256.9
P	0.4	257.7
C	0.4	257.7
PL	0.5	257.6
10	0.4	257.7

T.P. 12.64 270.70 0.07 258.06

+25

9'L	11.4	259.3
P	11.5	259.2
C	11.7	259.0
PR	11.8	258.9
13	12.4	258.3

150.66 PCC

25'R	10.9	259.8
P	10.7	260.0
C	10.5	260.2
PL	9.8	260.9
10	9.6	261.1

27070

117+75

108	8.5	262.2
P	8.8	261.9
C	9.5	261.2
PR	9.6	261.1
30	9.1	261.3

+92.55 RCL

30 R	8.7	262.0
P	9.0	261.7
C	8.7	262.0
PL	7.9	262.8
10	7.7	263.0

118+00

13 L	7.1	263.6
P	7.5	263.2
C	8.3	262.4
PR	8.6	262.1
30	8.3	262.4

+25

30 R	8.3	262.4
P	7.7	263.0
C	7.3	263.4
PL	6.9	263.8
22	6.5	264.2

270.7 H9

+50

13 L	6.0	264.7
P	6.2	264.5
C	6.5	264.2
PR	7.0	263.7
30	8.3	262.4

+70 92.000

30 R	8.3	262.4
P	6.5	264.2
C	6.3	264.4
4 L	5.8	264.9
6	4.1	266.6
8	5.3	265.4
10	6.4	264.3
13	6.3	264.4

119+00

13 L	4.0	266.7
10	6.0	264.7
P	5.4	265.3
G	4.7	266.0
C	5.7	264.8
PR	6.3	264.4
23	7.6	263.1

270.70

119+12 DEC

2'R		77	263.0	
P		60	264.7	
C		58	264.9	
4'L		50	265.7	
8		6.0	264.7	
13		42	266.3	
TIP	12.25	277.60	5.35	265.35

+31.92 DEC

20'L		31	274.5
15"		41	273.5
11		9P	267.8
8		112	266.3
7		124	265.2
3		11.3	266.3
C		121	265.5
PR		123	265.3
30		13.3	264.3

+50

30'R		154	265.2
P		117	265.9
C		11.5	266.1
11L		10.2	267.4
3		11.8	265.8
6		116	266.0
13		33	274.3
20		16	276.0

277.6

+75

20'L		0.0	277.6	
8		25	275.1	
5		30	274.6	
C		104	267.2	
2'R		110	266.6	
8'		10.7	266.9	
20		110	266.6	
T.P	1276	285.50	480	272.80

120+00

20L		7.2	278.4
8'		9.6	276.0
2.		106	275.0
1		125	273.1
C		128	272.8
4'R.		16.3	269.3
P		178	267.8
30		177	267.9

+25

30'R		154	270.2
15		165	269.1
8		124	273.2
7		108	274.8
C		95	276.1
5'L		80	277.6
20		58	279.8

285.56

120+50

20 L	47	280.9
P	69	278.7
C	84	277.2
8R	98	275.8
10	103	275.3
11	119	273.7
16	147	270.9
20	140	271.6

+75

30 R	120	273.6
12	125	273.1
8	84	277.2
C	70	278.6
P L	55	280.1
20	34	282.2

121+00

20 L	12	284.2
P	36	282.0
C	56	280.0
4 R	13	279.3
P	11.5	275.1
30	10.1	275.5

+25

25 R	86	277.0
P	86	277.0
3	87	276.9
C	51	280.5
8 L	31	282.5

20 L	07	284.9
------	----	-------

20 L	+5569 PR +0.3	285.9
------	------------------	-------

8 "	1.9	283.7
4 "	2.7	282.9
C	6.6	279.0

8 R	60	279.6
20	60	279.6

+75

17 R	45	281.1
P	43	281.3
C	50	280.6
2 L	49	280.7
TIP	13.06 294.57 ✓	281.81 ✓
P L	99	285.0
20	72	287.7

122+00

20 L	63	288.6
12	82	286.6
8	124	282.5
C	122	282.7
8 R	123	282.6
14	125	282.4

+25

10 R	114	283.5
P	113	283.6
C	108	284.1
P L	109	284.0
13	109	284.0

+50

13 L	107	284.2
11	96	285.2
8	96	285.3
C	95	285.4
P	101	284.8
95	102	284.6
13m. N and collar on Culvert x cut	990	284.97

14 + 140 = Culvert

294.87

12275

10R	86	286.3
P	86	286.3
C	81	286.8
PL	84	286.5
10	90	285.9

+865 EC

10L	81	286.8
P	80	286.9
C	74	287.5
PR	74	287.5
11	75	287.4

123400

12R	64	288.5
8R	63	288.6
C	66	288.3
PL	70	287.9
10	71	287.8

+274 PC

12L	58	289.1
PR	56	289.3
C	49	290.0
P	48	290.1
12	50	289.9

294.9

68

+50

11R	45	290.7
P	39	291.0
C	37	291.2
PL	42	290.7
10	46	290.3

+75

11L	29	292.0
P	26	292.3
C	21	292.8
PR	23	292.6
10	23	292.6

124100

10R	05	294.4
P	05	294.4
C	04	294.5
PL	10	293.9
13	13	293.6

TP 1303 307.24 006 294.81

+25

12L	126	295.2
8	125	295.3
C	119	295.9
PR	118	296.0
10	118	296.0

307.84

124+50

10R	108	297.0
8	108	297.0
C	108	297.0
PL	113	296.5
13	116	296.2

+75

13L	10.6	297.2
8	99	297.9
C	95	298.3
PR	96	298.2
11	96	298.2

+87.5 EC

12R	87	299.1
8	88	299.0
C	85	299.0
PL	90	298.8
12	95	298.3

125+00

11.5L	84	299.4
8	83	299.5
C	78	300.0
8R	78	300.0
13	78	300.0

307.84

+50

12R	39	303.9
8	39	303.9
C	27	304.1
PL	43	303.5
12	45	303.3

125+77.95

13L	27	305.1
8	22	305.6
C	19	305.9
PR	23	305.5
11	24	305.4

T.P. 12.33 319.63 0.54 307.30

126+00

10R	129	306.7
8	128	306.8
C	122	307.4
PL	124	307.2
14	125	306.8

+25

15L	111	308.5
8	103	309.3
C	103	309.3
8R	110	308.6
10	109	308.7

319.63

126 + 50

8R	94	310.7
C	88	310.8
8L	88	310.8
12	87	310.9

+ 75

13L	80	311.6
P	74	312.2
C	75	312.1
PR	81	311.5

127 + 100

10R	66	313.0
P	64	313.2
C	59	313.7
8L	59	313.7
13	65	313.1

+ 24 12 EC

13L	49	314.7
P	45	315.1
C	43	315.3
8R	47	314.9
10	47	314.9
10R	29	316.7
P	28	316.8
C	28	316.8
8L	30	316.6
12	30	316.6

+ 51 100 29

319.63

+ 75

70

13L	19	317.7
P	19	317.7
C	16	318.0
PR	16	318.0
10	16	318.0

128 + 100

11R	06	319.0	
P	05	319.1	
C	03	319.3	
8L	06	319.0	
14	10	318.6	
T.P. 1266	331.99	030	319.33

+ 25

15L	120	320.0
P	112	320.6
C	113	320.7
PR	117	320.3
11	117	320.3

+ 50

10R	106	321.4
P	105	321.5
C	101	321.9
8L	100	322.0
10	106	321.4

331.99
 (3320)
 129+75

16L	9.2	322.7
P	8.8	323.2
C	9.0	323.0
PR	9.2	322.7
10	9.1	322.9

129+100

10R	7.5	324.5
P	7.4	324.6
C	7.2	324.8
8L	7.3	324.7
16	7.9	324.1

+20³⁴ EC

12L	6.7	325.3
P	5.6	326.4
C	5.3	326.7
PR	5.7	326.3
10	5.7	326.3

+53² PC

10R	2.4	329.6
P	2.4	329.6
C	2.2	329.8
8L	2.6	329.4
10	2.5	329.5

71

+75

10L	1.4	330.6
P	1.3	330.7
C	0.9	331.1
PR	1.1	330.9
10	1.0	331.0
T.P	10.55	342.51
		0.03
		331.96

130+00

13R	10.0	332.5
P	10.0	332.5
C	10.0	332.5
8L	10.8	331.7
9	10.8	331.7

+25

12L	7.8	334.7
P	9.7	332.8
C	9.6	332.9
PR	9.5	333.0
14	9.5	333.0

+50

14R	9.0	333.5
P	8.9	333.6
C	9.0	333.5
8L	9.5	333.0
12	9.5	333.0

342.51

130+75

13'L	71	335.4
P	89	333.6
C	85	334.0
PR	82	334.3
14	82	334.3

131+00

12'R	79	334.6
P	80	334.5
C	81	334.6
PL	83	334.2
10	82	334.3

+25

11'L	74	335.1
P	75	335.0
C	74	335.1
PR	73	335.2
12	72	335.3

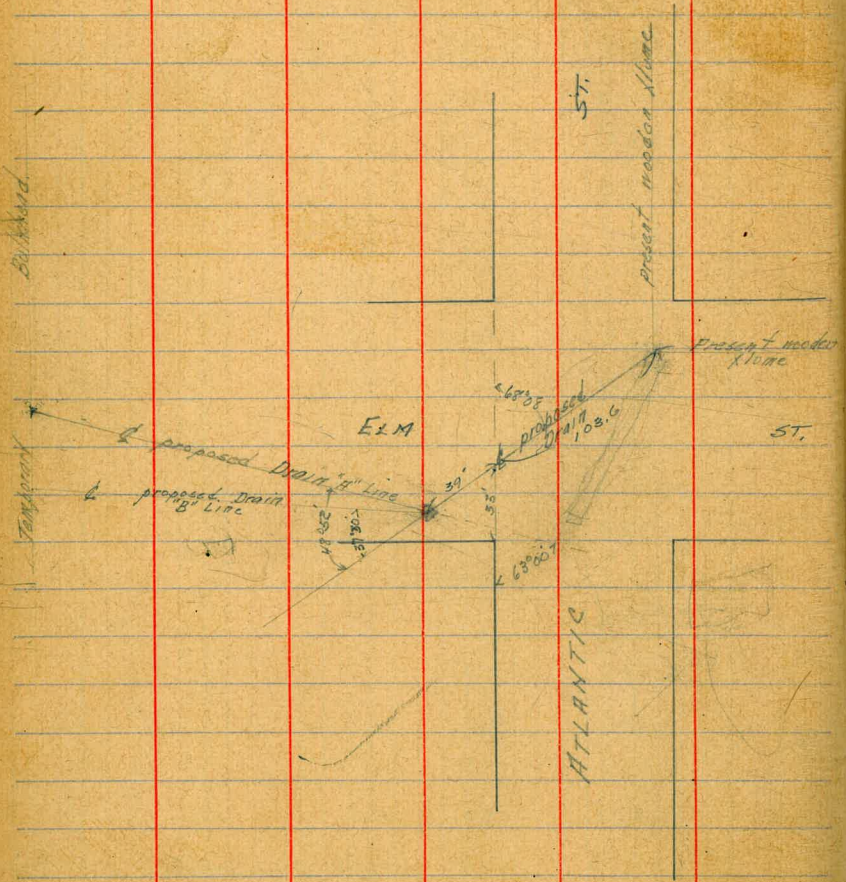
+47.03 = FCC

12'R	6.5	336.0
P	6.7	335.8
C	6.7	335.8
PL	6.7	335.8
	7.5	335.0

B.M. Nail in S. end Culvert Center Sta 120+45 6.92 335.59

9/23/6
 Invert
 Manhole
 37

Location + Levels
 Drain from Elm + Atlantic
 To Bulkhead



Levels on L.

73

in Manhole see page 37	1.38	6.89	5.51
00		3.7	3.2 = wooden flume
+6		2.7	4.2
+25		3.5	4.4
+50		2.7	4.2
sewer here about		5.7	1.2
+75		2.4	4.5
+95		2.4	4.5
+112		5.2	1.7
+135		4.7	2.2
+42.6' Δ 48°52' R		5.2	1.7 = lowest point
+60		5.3	1.6
+75		3.8	3.1
+90		1.8	5.1
2700		1.8	5.1
+25		1.8	5.1
+50		2.2	4.7
+75		2.3	4.6
3		1.9	5.0
+25		1.9	5.0
+50		2.4	4.5
+75		2.4	4.5
4		2.3	4.6
+11		2.0	4.9 = bulkhead
		12.7	- 5.8 = ground out 31 39 bulkhead

6.89
"B" Line

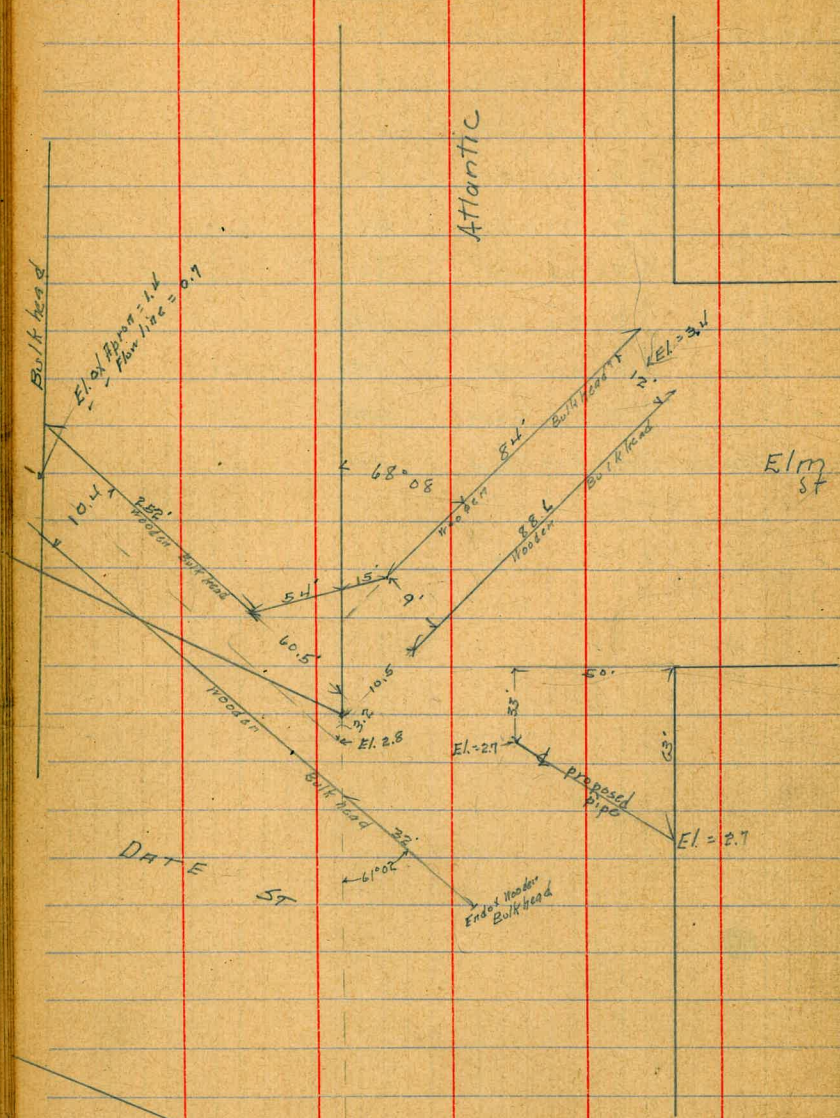
14426 Δ 37°30 R	5.2	1.7	
1+75	5.2	1.7	
2	3.0	3.9	
+25	2.2	4.7	
+50	2.4	4.5	
+75	2.2	4.7	
3	2.1	4.8	
+25	2.2	4.7	
+50	2.0	4.9	
+75	2.9	4.0	
+86	3.0	3.9	= bulk head
+86	11.8	- 4.9	= ground outside bulkhead
	9.7	- 2.8	= high water mark

74

H.I. = 10.0 - tentative

bottom	distance	day	grade	
	1.51	5.49	5.49	0.0
1+50	2.20	7.80	5.35	2.45
1+60	2.67	7.33	5.21	2.11
1+50	2.00	8.00	5.08	2.92
2+00	1.71	8.29	4.94	3.35
2+50	2.19	7.81	4.80	3.01
3+00	2.15	7.85	4.66	3.19
3+50	2.75	7.24	4.52	2.73
4+00	3.07	6.80	4.38	2.55
4+10 = top whalwhastyle	5.67	4.32	4.32	0.0

7/20/08 G. Wood Location of Drains etc
 Miller Elm + Atlantic
 Moore



Elev. flow line sewer ctr Atlantic + Elm = 0.20
 - Robbins Mch. Co. Shop floor 4.1

	+	H.I.	-	
	0.96	95.80		94.84
T.P.	0.18	83.03	12.95	82.85
T.P.	0.15	70.89	12.29	70.74
1			5.8	65.09
2			6.95	63.74
3			7.3	63.6
4			7.3	63.6
5			7.35	63.5
6			7.3	63.6
7			7.1	63.3
8			6.8	64.1
B.M.	2.58	73.32		70.74
9			8.2	65.1
10			8.6	64.7
11			8.2	65.1
12			8.9	64.4
13			8.3	65.0
14			9.2	64.1
15			8.4	64.7
16			9.4	63.9
17			8.3	65.0
18			9.4	63.9
19			8.3	65.0
20			9.3	64.0
21			8.4	64.9

B.M. S.W. Cor 20th + Broadway

Rock 20' N of Fire Plug

Floor of Blacksmith Shop in doorway

N.W. Cor. Open Shed

18' S of " " "

36' S " " "

54' S " " "

72' S " " "

90' S " " "

108' S " " "

Rock

Ground B.S. Shop NE of NE Cor Open Shed

NE Cor open Shed

Opposite NE Cor East Building

18' S of NE cor

Opposite Above

36' S of NE Cor Open Shed

E opposite above.

54'

54' E

72'

72' E

90'

90' E

73.32

22	9.1	64.2
23	8.3	65.0
24	8.6	64.7
25	8.0	65.3
26	8.2	65.1
27	7.7	65.6
28	7.8	65.5
29	7.4	65.9

77

108

E

126

E

144

E

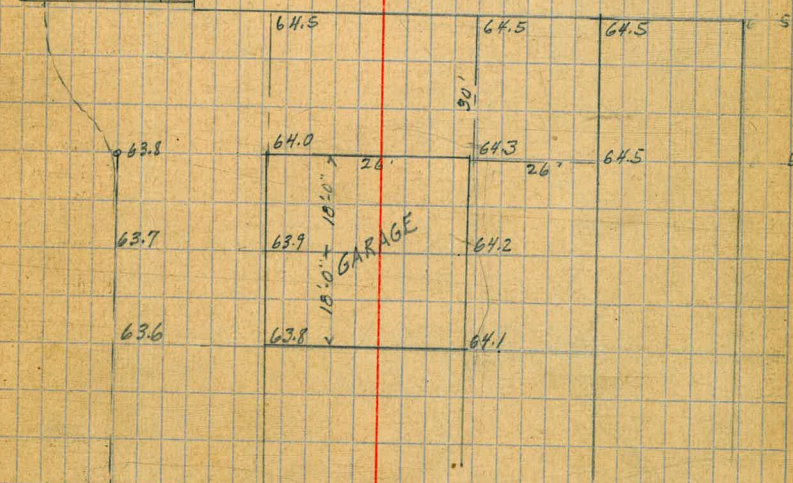
162

N.E. Cor of Bldg. S of open Shed

E

Scales

BLK. SM. SHOP



Sketch of Grades Set.

Barns

8/11/19 Gregory
Matter.
Shaw

Levels etc for Extension
of Garbage Shed
at City Stables

on B.M.	0.82	75.66		94.86	82.5W D=204
T.P.	1.66	84.40	12.92	82.74	
T.P.	2.17	73.53	13.04	71.36	
			7.38	66.65	spk 17 pole NW 204 R
	2.35	66.37	9.51	64.02	
Front edge of concrete No. E. shed on floor.			4.98		on concrete
Back " " " " " " " "			4.95		" "

Levels on E. & W. edges of shed produced north.

0+00 = No. end of shed. E side	5.1	61.3		
0+25 E side		4.6	61.8	
0+50 ✓ ✓		4.0	62.4	
0+75 ✓ -		4.0	62.4	
1+00 ✓ ✓		3.8	62.6	
1+25 ✓ ✓		3.6	62.8	
1+35 ✓ ✓		3.3	63.1	
T.P.	10.84	76.96	0.30	66.07
1+42			10.7	66.3
1+45			8.4	68.6
1+58.75 = No. Line City Prop.		4.0	73.0	

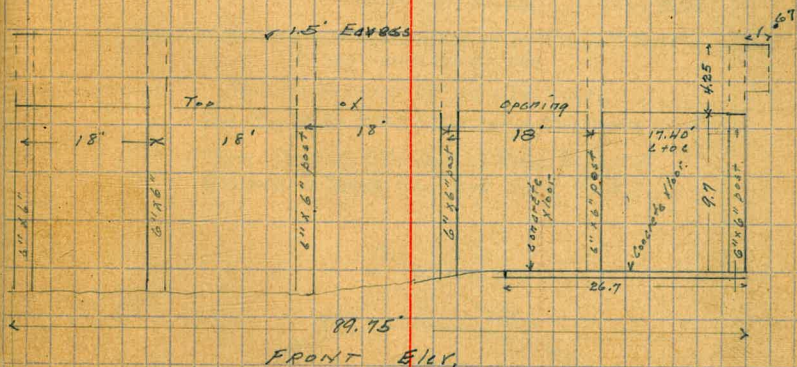
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66.37

Levels on W. edge of shed prod. No

0+00 = No. End shed W. Side		5.1	61.3
0+10 W. side		4.4	62.0
0+25 ✓ -		4.2	62.2
0+50 - -		2.6	63.8
0+75 ✓ -		3.7	62.7
0+92 - -		3.6	62.8
T.P.	10.84	76.96	0.30
0+98		12.7	61.2
1+00		8.0	69.0
1+06		5.2	71.8
1+25		4.3	72.7
1+44		4.0	73.0
1+58.75 = No. Line City Prop.		3.7	73.3
B.M.		3.76	73.20

Now NW
City Prop.



Bldg. is 24' wide, outside to outside
Rafters spaced 2' c to c
2"x4" uprights spaced 6' c to c. on No. end.

34.4	76.8
6.2	40.8
40.8	36

1478 96 To Line 8 90 So. H

KEITH'S RAILROAD CURVE TABLES.

Published by KEUFFEL & ESSER CO., New York.

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HOW TO USE KEITH'S TABLES.

EXAMPLE.

Wanted a Curve with an Ext. of about 12 ft. Angle
of Intersection or I. P.=23° 20' to the R. at Station
542+72.

Ext. in Tab. IV opposite 23° 20'=120.87
120.87+12=132.87. Say a 10° Curve.

Tan. in Tab. IV opp. 23° 20'=1183.1
1183.1+10=1193.1.

Tab. V. correction for A. 23° 20' for a 10° Cur.=0.16
1193.1+0.16=1193.26=corrected Tangent.

(If corrected Ext. is required find in same way)
Ang. 23° 20'=23.33°+10=33.33°=L. C.

2° 19½' = def. for sta.	542	I. P. = sta.	542+72
4° 49½' = " " "	+50	Tan. =	118.47
7° 19½' = " " "	543	B. C. = sta.	541+53.53
9° 49½' = " " "	+50	L. C. =	233.33
11° 40' = " " "	543+	E. C. = sta.	543+86.86
	86.86		

100-53.53=46.47×3'(def. for 1 ft. of 10° Cur.)=139.41'=
2° 19½'' = def. for sta. 542.

Def. for 50 ft.=2° 30' for a 10° Curve.

Def. for 86.86 ft.=1° 50½' for a 10° Curve

(These tables are published in Field Books of
KEUFFEL & ESSER CO., New York, N. Y.)

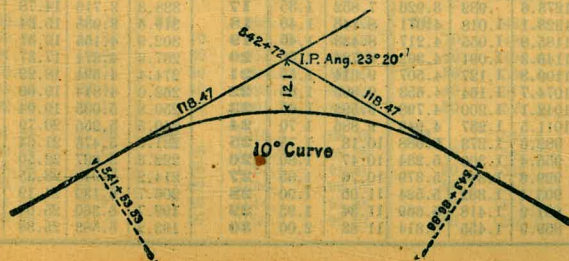


Table VI. Deflections for Sub Chords for Short Radius Curves.

Degree of Curve	Radius 50 sin. def. ang.	1/2 sub chord R = sin of def. angle				Length of arc for 100 ft.
		12.5 Ft.	15 Ft.	20 Ft.	25 Ft.	
30°	193.18	1° 51'	2° 17'	2° 58'	3° 43'	101.15
32°	181.39	1° 59'	2° 25'	3° 10'	3° 58'	101.33
34°	171.01	2° 06'	2° 33'	3° 21'	4° 12'	101.48
36°	161.80	2° 13'	2° 41'	3° 33'	4° 26'	101.66
38°	153.58	2° 20'	2° 49'	3° 44'	4° 40'	101.85
40°	146.19	2° 27'	2° 57'	3° 55'	4° 54'	102.06
42°	139.52	2° 34'	3° 05'	4° 07'	5° 08'	102.29
44°	133.47	2° 41'	3° 13'	4° 18'	5° 22'	102.53
46°	127.97	2° 48'	3° 21'	4° 29'	5° 36'	102.76
48°	122.92	2° 55'	3° 29'	4° 40'	5° 50'	103.00
50°	118.31	3° 02'	3° 38'	4° 51'	6° 04'	103.24
52°	114.06	3° 09'	3° 46'	5° 02'	6° 17'	103.54
54°	110.11	3° 16'	3° 54'	5° 13'	6° 31'	103.84
56°	106.50	3° 22'	4° 02'	5° 23'	6° 44'	104.14
58°	103.14	3° 29'	4° 10'	5° 34'	6° 57'	104.43
60°	100.00	3° 35'	4° 18'	5° 44'	7° 11'	104.72

CURVE FORMULAS.

$T = R \tan \frac{1}{2} I$	$R = T \cot. \frac{1}{2} I$	Chord def. = $\frac{\text{chord}^2}{R}$
$T = 50 \tan. \frac{1}{2} I$	$R = 50$	
$\text{Sin. D} = \frac{\text{Sin. D}}{\text{Sin. D} = 50}$	$\text{Sin. D} = \frac{\text{Sin. D}}{\text{Sin. D} = 50}$	No. chords = $\frac{1}{2} \frac{I}{D}$
$\text{Sin. D} = \frac{R}{T}$	$\text{Sin. D} = \frac{R}{T}$	
$\text{Sin. D} = \frac{50 \tan. \frac{1}{2} I}{T}$	$E = R \text{ ex. sec. } \frac{1}{2} I$	Tan. def. = $\frac{1}{2} \text{ chord def.}$
	$E = T \tan \frac{1}{2} I$	

The square of any distance, divided by twice the radius, will equal the distance from tangent to curve, very nearly.

Table IV. contains Tangents and External to a 1° curve. Tan. and Ext. to any other radius may be found, nearly enough, by dividing the Tan. or Ext. opposite the given Central Angle by the given degree of curve.

To find Deg. of Curve, having the Central Angle and Tangent: Divide Tan. opposite the given Central Angle by the given Tangent.

To find Deg. of Curve, having the Central Angle and Tangent: Divide Ext. opposite the given Central Angle by the given External.

To find Nat. Tan. and Nat. Ex. Sec. for any angle by Table IV.: Tan. or Ext. of twice the given angle divided by the radius of a 1° curve will be the Nat. Tan. or Nat. Ex. Sec.

To find angle for a given distance and deflection.
Rule 1. Multiply the given distance by .01745 (def. for 1° for 1 ft.), and divide given deflection by the product.

Rule 2. Multiply given deflection by 57.3, and divide the product by the given distance.

To find deflection for a given angle and distance: Multiply the angle by .01745, and the product by the distance.

RIGHT ANGLE TRIANGLES. - Square the altitude, divide by twice the base. Add quotient to base for hypotenuse.

Given Base 100, Alt. 10. $10^2 \div 200 = .5$. $100 + .5 = 100.5$ hyp.

Given Hyp. 100, Alt. 25. $25^2 \div 200 = 3.125$. $100 - 3.125 = 96.875 =$ Base.

Error in first example, .002; in last, .045.
To find Tons of Rail in one mile of track: multiply weight per yard by 11, and divide by 7.

Natural Sines

deg.	0'	10'	20'	30'	40'	50'	log.	deg.	0'	10'	20'	30'	40'	50'	log.
0	0000	0029	0058	0087	0116	0145	89	10	6428	6450	6472	6494	6517	6539	49
1	0175	0204	0233	0262	0291	0320	88	41	6561	6583	6604	6626	6648	6670	48
2	0349	0378	0407	0436	0465	0494	87	42	6691	6713	6734	6756	6777	6799	47
3	0523	0552	0581	0610	0640	0669	86	43	6820	6841	6862	6884	6905	6926	46
4	0698	0727	0756	0785	0814	0843	85	44	6947	6967	6988	7009	7030	7050	45
5	0872	0901	0929	0958	0987	1016	84	45	7071	7092	7112	7133	7153	7173	44
6	1045	1074	1103	1132	1161	1190	83	46	7193	7214	7234	7254	7274	7294	43
7	1219	1248	1279	1305	1334	1363	82	47	7314	7333	7353	7373	7392	7412	42
8	1392	1421	1449	1478	1507	1536	81	48	7431	7451	7470	7490	7509	7528	41
9	1564	1593	1622	1650	1679	1708	80	49	7547	7566	7585	7604	7623	7642	40
10	1736	1765	1794	1822	1851	1880	79	50	7660	7679	7698	7717	7735	7753	39
11	1908	1937	1965	1994	2022	2051	78	51	7771	7790	7808	7826	7844	7862	38
12	2079	2108	2136	2164	2193	2221	77	52	7880	7898	7916	7934	7951	7969	37
13	2250	2278	2306	2334	2363	2391	76	53	7986	8004	8021	8039	8056	8073	36
14	2419	2447	2476	2504	2532	2560	75	54	8090	8107	8124	8141	8158	8175	35
15	2588	2616	2644	2672	2700	2728	74	55	8192	8208	8225	8241	8258	8274	34
16	2756	2784	2812	2840	2868	2896	73	56	8290	8307	8323	8339	8355	8371	33
17	2924	2952	2979	3007	3035	3062	72	57	8387	8403	8418	8434	8450	8465	32
18	3090	3118	3145	3173	3201	3228	71	58	8480	8496	8511	8526	8542	8557	31
19	3256	3283	3311	3338	3365	3393	70	59	8572	8587	8601	8616	8631	8646	30
20	3420	3448	3475	3502	3529	3557	69	60	8660	8675	8689	8704	8718	8732	29
21	3584	3611	3638	3665	3692	3719	68	61	8746	8760	8774	8788	8802	8816	28
22	3746	3773	3800	3827	3854	3881	67	62	8829	8843	8857	8870	8884	8897	27
23	3907	3934	3961	3987	4014	4041	66	63	8910	8923	8936	8949	8962	8975	26
24	4067	4094	4120	4147	4173	4200	65	64	8988	9001	9013	9026	9038	9051	25
25	4226	4253	4279	4305	4331	4358	64	65	9063	9075	9088	9100	9112	9124	24
26	4384	4410	4436	4462	4488	4514	63	66	9135	9147	9159	9171	9182	9194	23
27	4540	4566	4592	4617	4643	4669	62	67	9205	9216	9228	9239	9250	9261	22
28	4695	4720	4746	4772	4797	4823	61	68	9272	9283	9293	9304	9315	9325	21
29	4848	4874	4899	4924	4950	4975	60	69	9336	9346	9356	9367	9377	9387	20
30	5000	5025	5050	5075	5100	5125	59	70	9397	9407	9417	9426	9436	9446	19
31	5150	5175	5200	5225	5250	5275	58	71	9455	9465	9474	9483	9492	9502	18
32	5299	5324	5348	5373	5398	5422	57	72	9511	9520	9528	9537	9546	9555	17
33	5446	5471	5495	5519	5544	5568	56	73	9563	9572	9580	9588	9596	9605	16
34	5592	5616	5640	5664	5688	5712	55	74	9613	9621	9628	9636	9644	9652	15
35	5736	5760	5783	5807	5831	5854	54	75	9659	9667	9674	9681	9689	9696	14
36	5878	5901	5925	5948	5972	5995	53	76	9703	9710	9717	9724	9730	9737	13
37	6018	6041	6065	6088	6111	6134	52	77	9744	9750	9757	9763	9769	9775	12
38	6157	6180	6202	6225	6248	6271	51	78	9781	9787	9793	9799	9805	9811	11
39	6293	6316	6338	6361	6383	6406	50	79	9816	9822	9827	9833	9838	9843	10

deg.	60'	50'	40'	30'	20'	10'	log.	deg.	60'	50'	40'	30'	20'	10'	log.
80	9848	9853	9858	9863	9868	9872	99	80	9868	9872	9876	9880	9884	9888	99
81	9877	9881	9886	9890	9894	9898	98	81	9894	9898	9902	9906	9910	9914	98
82	9903	9907	9911	9914	9918	9922	97	82	9918	9922	9926	9930	9934	9938	97
83	9925	9929	9932	9936	9939	9942	96	83	9939	9942	9946	9949	9953	9956	96
84	9945	9948	9951	9954	9957	9960	95	84	9957	9960	9963	9966	9969	9972	95
85	9962	9964	9967	9969	9971	9974	94	85	9971	9974	9977	9980	9983	9985	94
86	9976	9978	9980	9981	9983	9985	93	86	9983	9985	9987	9989	9991	9992	93
87	9986	9988	9989	9990	9992	9993	92	87	9992	9993	9994	9995	9996	9997	92
88	9994	9995	9996	9997	9997	9998	91	88	9997	9998	9999	1.0000	1.0000	1.0000	91
89	9998	9999	9999	9999	1.0000	1.0000	90	89	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	90

Natural Cosines

26
26
73
9974
80
797920
280.00
279.27
26

Handwritten notes and calculations on the left page of the notebook, including various numbers and diagrams. A circled number '791.24' is visible near the top center.

Handwritten notes and calculations on the top right page of the notebook, including various numbers and diagrams.

DISTANCES FROM CENTER OF ROADWAY FOR CROSS-SECTIONING.

ROADWAY 14 FEET WIDE. SIDE SLOPES 1 1/2 TO 1.

FOR SINGLE TRACK EMBANKMENT.

	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	
0	7.0	7.2	7.3	7.5	7.6	7.8	7.9	8.1	8.2	8.4	0
1	8.5	8.7	8.8	9.0	9.1	9.3	9.4	9.6	9.7	9.9	1
2	10.0	10.2	10.3	10.5	10.6	10.8	10.9	11.1	11.2	11.4	2
3	11.5	11.7	11.8	12.0	12.1	12.3	12.4	12.6	12.7	12.9	3
4	13.0	13.2	13.3	13.5	13.6	13.8	13.9	14.1	14.2	14.4	4
5	14.5	14.7	14.8	15.0	15.1	15.3	15.4	15.6	15.7	15.9	5
6	16.0	16.2	16.3	16.5	16.6	16.8	16.9	17.1	17.2	17.4	6
7	17.5	17.7	17.8	18.0	18.1	18.3	18.4	18.6	18.7	18.9	7
8	19.0	19.2	19.3	19.5	19.6	19.8	19.9	20.1	20.2	20.4	8
9	20.5	20.7	20.8	21.0	21.1	21.3	21.4	21.6	21.7	21.9	9
10	22.0	22.2	22.3	22.5	22.6	22.8	22.9	23.1	23.2	23.4	10
11	23.5	23.7	23.8	24.0	24.1	24.3	24.4	24.6	24.7	24.9	11
12	25.0	25.2	25.3	25.5	25.6	25.8	25.9	26.1	26.2	26.4	12
13	26.5	26.7	26.8	27.0	27.1	27.3	27.4	27.6	27.7	27.9	13
14	28.0	28.2	28.3	28.5	28.6	28.8	28.9	29.1	29.2	29.4	14
15	29.5	29.7	29.8	30.0	30.1	30.3	30.4	30.6	30.7	30.9	15
16	31.0	31.2	31.3	31.5	31.6	31.8	31.9	32.1	32.2	32.4	16
17	32.5	32.7	32.8	33.0	33.1	33.3	33.4	33.6	33.7	33.9	17
18	34.0	34.2	34.3	34.5	34.6	34.8	34.9	35.1	35.2	35.4	18
19	35.5	35.7	35.8	36.0	36.1	36.3	36.4	36.6	36.7	36.9	19
20	37.0	37.2	37.3	37.5	37.6	37.8	37.9	38.1	38.2	38.4	20
21	38.5	38.7	38.8	39.0	39.1	39.3	39.4	39.6	39.7	39.9	21
22	40.0	40.2	40.3	40.5	40.6	40.8	40.9	41.1	41.2	41.4	22
23	41.5	41.7	41.8	42.0	42.1	42.3	42.4	42.6	42.7	42.9	23
24	43.0	43.2	43.3	43.5	43.6	43.8	43.9	44.1	44.2	44.4	24
25	44.5	44.7	44.8	45.0	45.1	45.3	45.4	45.6	45.7	45.9	25
26	46.0	46.2	46.3	46.5	46.6	46.8	46.9	47.1	47.2	47.4	26
27	47.5	47.7	47.8	48.0	48.1	48.3	48.4	48.6	48.7	48.9	27
28	49.0	49.2	49.3	49.5	49.6	49.8	49.9	50.1	50.2	50.4	28
29	50.5	50.7	50.8	51.0	51.1	51.3	51.4	51.6	51.7	51.9	29
30	52.0	52.2	52.3	52.5	52.6	52.8	52.9	53.1	53.2	53.4	30
31	53.5	53.7	53.8	54.0	54.1	54.3	54.4	54.6	54.7	54.9	31
32	55.0	55.2	55.3	55.5	55.6	55.8	55.9	56.1	56.2	56.4	32
33	56.5	56.7	56.8	57.0	57.1	57.3	57.4	57.6	57.7	57.9	33
34	58.0	58.2	58.3	58.5	58.6	58.8	58.9	59.1	59.2	59.4	34
35	59.5	59.7	59.8	60.0	60.1	60.3	60.4	60.6	60.7	60.9	35
36	61.0	61.2	61.3	61.5	61.6	61.8	61.9	62.1	62.2	62.4	36

Calculated by Julien A. Hall, M. Am. Soc. C. E.

MADE IN GERMANY.