Hyrum City

Apr. 1919

13

DIETZGEN

ENGINEER'S

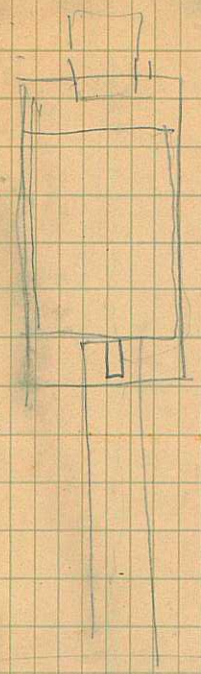
FIELD BOOK

No. 404

#60

HYRUM 09 1919

ALIGNMENT STUDY OF MAIN STREET IN HYRUM



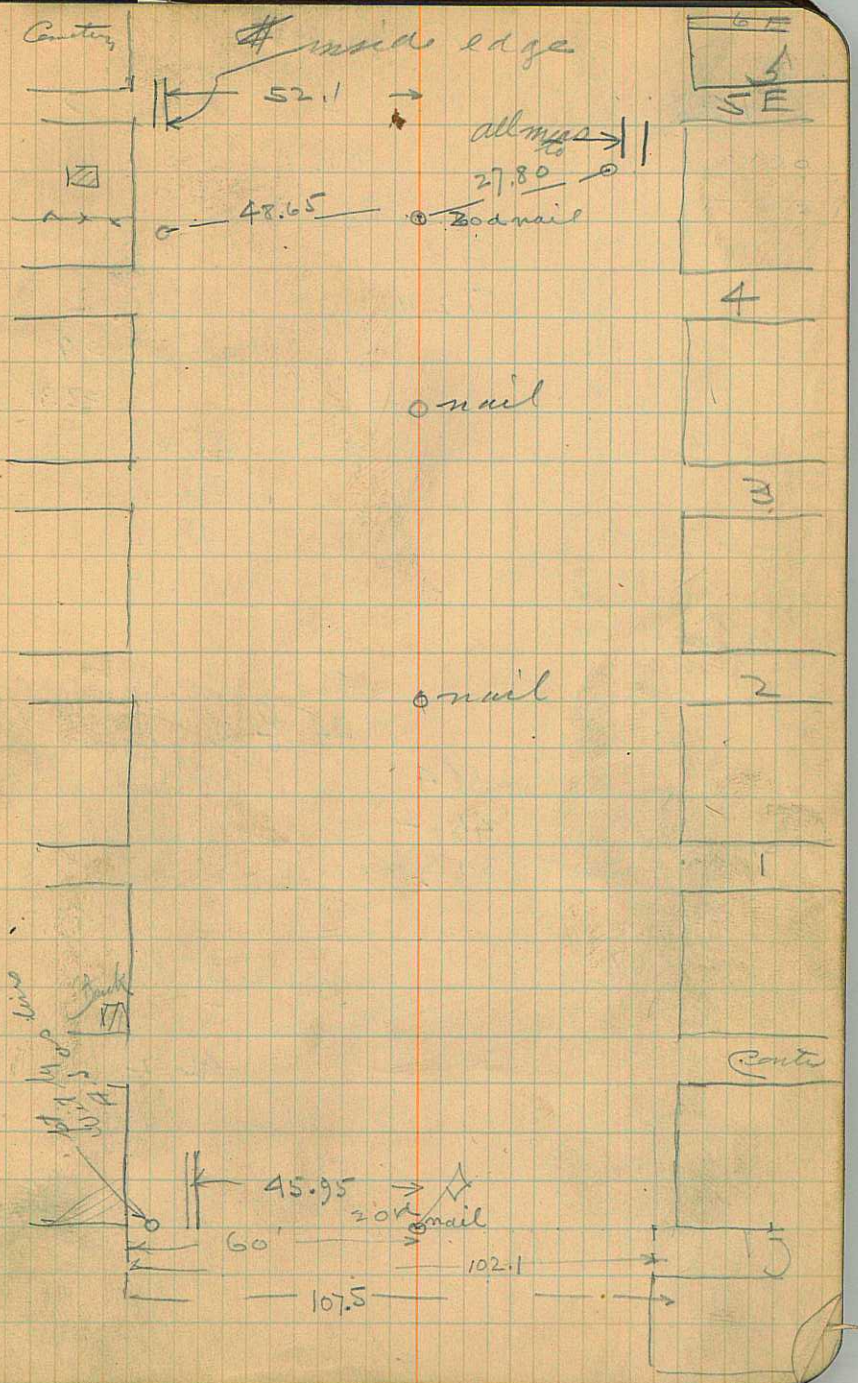
2

3

Align. Study

Main Str. Hyrum Utah

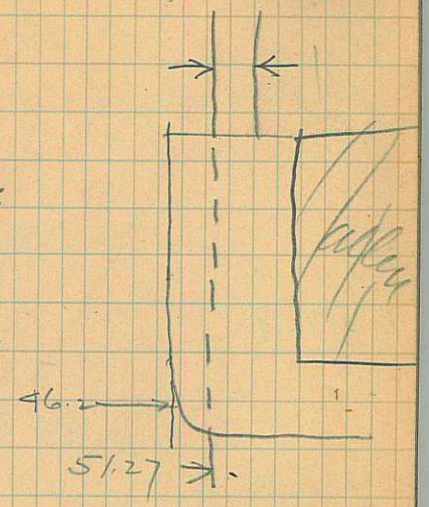
Str.	E side N & S str N	E side N & S str S	W side N & S N	W side N & S S
6E	59.3	37.8	E end Cem 59.5	38.3
5E	59.5	38.8		
S. edge 4' walk	52.1			
			60.00	39.0
N edge 4' walk				31.35
4E	59.1	39		37.8
N edge 4' walk		31.5	fence 59.0	31.50
N " " "				
3E	58.1	38.5		
N edge telephone	37	31.75 pro	fence 57.9	31.9 pro
		16 L poles		
2E	54.6 fence	39.7		
	33.2 Tel	31.9 pro		
		15.5 L lin		
			fence 54.8	38.7
			50.15 P	32.05 P



6

	Enter		Wnd		
1E	N	S	N	S	
		38.3 fence 32.1 P_4			
	56.9 51.2 P_4				fence south edge 4' pav. old post
				39 32.3 P_5	
			35.2 57 46.2 51.27		N edge Telep. poles all store curb line
Center					
		40.8 34 P_5			fence
	58.4 46.05 37.3				Bank Cor. curb cor. inside (N side) ~~Pl~~ pole line
				43.7	
			58.6 51.22 46.2		Cor of Building S. side of walk curb cor.

7



8

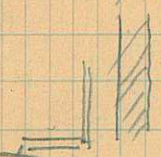
41.5 9

	E. side		W side		
	N	S	N	S	
1W				41.5	to fence No pav. on west pro. line
			58.6		
			51.14 P_5		s. edge
			38.3		n. edge tele pole line
2W		39.48			concrete wall
	58.65				to iron fence
	50.80				to S. edge S walk by Church 39.48
4W			56.8		to S. line Sept School property

Levels on main Str — notes down from

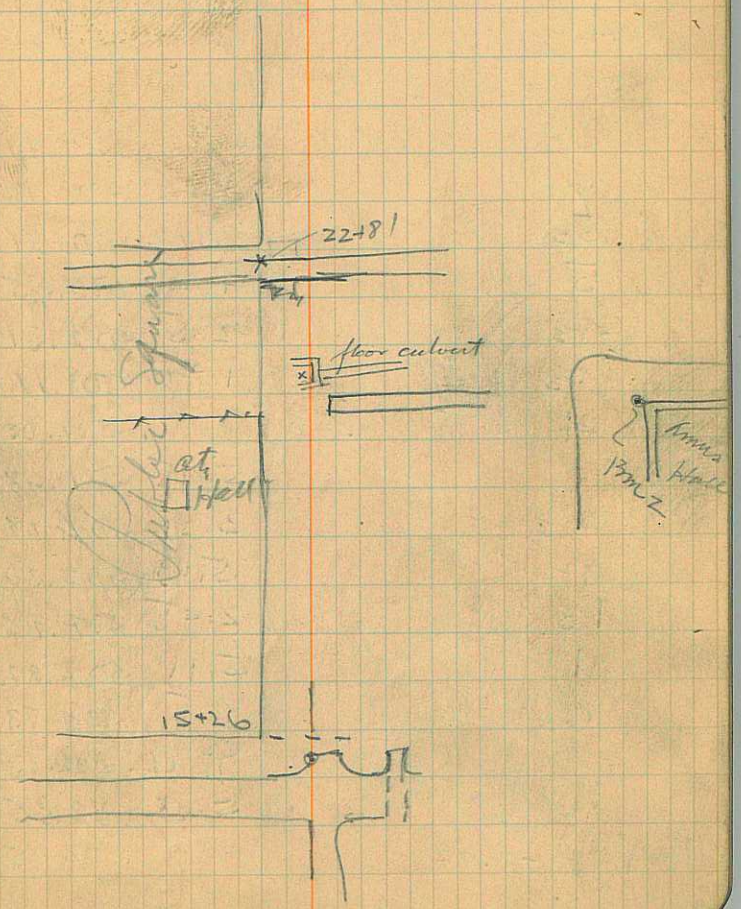
South side

	BS	FS	IM			
2 E						
BM 1	3.600		3	507.45	511.05	
0			4.16	506.89		on Sage 4' walk
0			5.80	505.25		on ditch opposite D
-1			5.12	505.93		
-2			1.45	509.60		
1			4.64	506.41		
1+64			7.30	503.75		bottom culvert
2			5.22	505.83		
3			6.56	504.49		
4			7.86	503.19		
5			8.50	502.55		
6	3.24	9.12		501.93	505.17	
6+63			3.66	501.51		E side first E
7			3.75	501.42		
7+63			3.82	501.35		
8			3.85	501.32		
9			3.72	501.45		
10			3.76	501.41		
11			3.82	501.35		
12			4.02	501.15		
13			4.15	501.02		
14			4.62	500.55		
14+26			4.75	500.42		
15			4.95	500.22		



12 Notes up

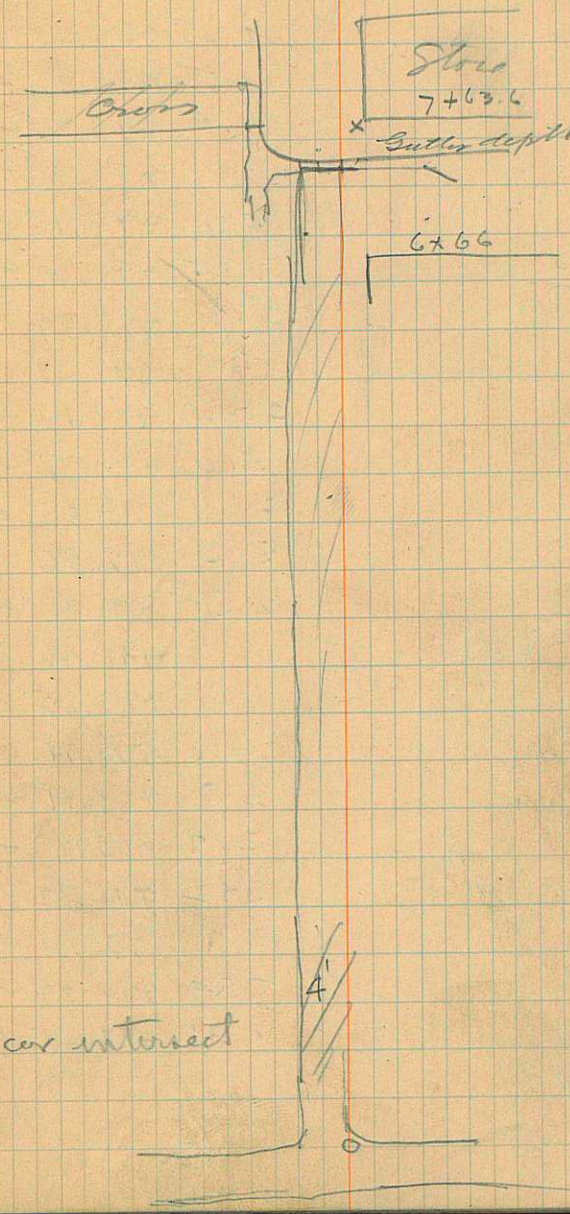
Sta	BS	FS		
				500.00
Bm 2			3.15	499.99
22+81			2.57	500.57
21+89	crossing		3.00	500.14
22			2.80	500.34
21+98	culvert		3.85	499.29
21+84 pv			3.46	499.68
21			4.00	499.14
20			4.82	498.32
19			5.00	498.14
18			4.9	498.24
17			3.35	499.79
16			3.60	499.54
15+23	3.12	5.15		500.02 503.14
15			4.95	500.22
				505.17



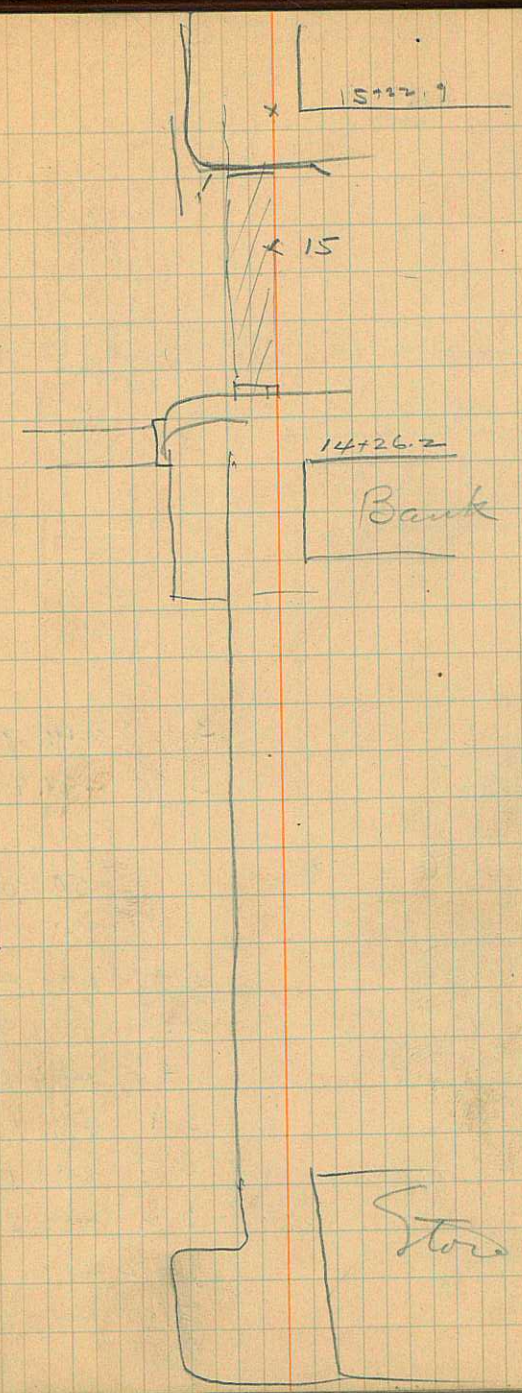
14 9s			4.00	500.81	
9			5.35	499.46	
D 8+40			6.00	498.81	
8s			4.0	500.81	
8			5.03	499.78	
7+63.6			5.00	499.81	
7+63.6 5			3.7	501.11	
7			4.76	500.05	
6+66 pr			4.92	499.89	
6+66 s			3.5	501.31	
~~6~~					
6s			3.4	501.41	
6			4.65	500.16	
5s			3.00	501.81	
5			4.26	500.55	
4s			2.5	502.31	
3s			1.70	503.11	
4	3.78	6.40		501.03	504.81
3			5.75	501.68	
2s			3.25	504.18	
2			5.13	502.30	
1s			2.45	504.98	
1			5.11	502.32	
0s			2.5	504.93	
			7.4	500.03	
0			5.08	502.35	
BM 1	-0.02			507.45	507.43

Levels on Minnie Mae between 2E & 1 west

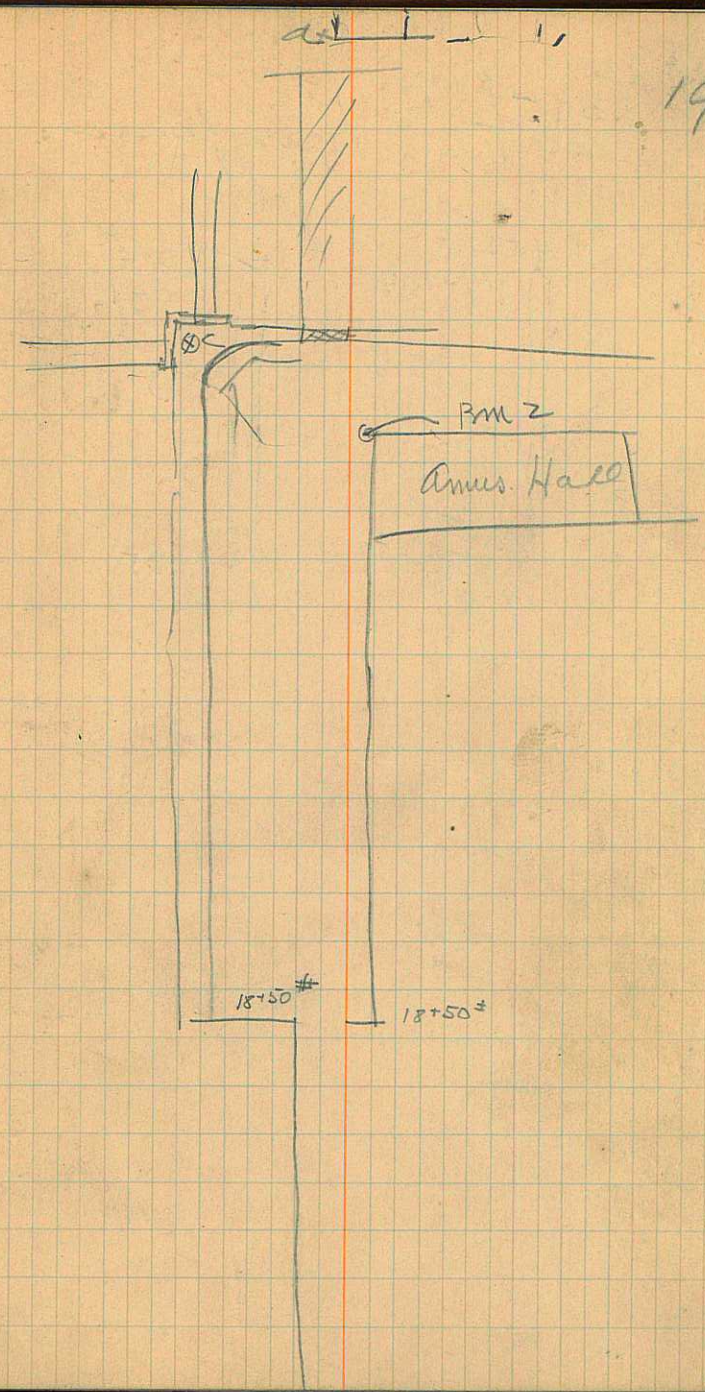
15



Sta	BS	FS	am		
18			4.20	498.66	
18s			4.25	498.61	
17			4.5	498.36	
17s			3.9	498.96	
16s			3.8	499.06	
16			4.76	498.10	
15+22.9s			3.25	499.61	
15+22.9 pr			5.12	497.74	
15			5.18	497.68	
14+26.2			4.72	498.14	
14s #			3.0	499.86	
14			4.6	498.26	
D 13+35			5.3	497.56	
13s			2.5	500.36	
13	4.40	6.35		498.46	502.86
12			6.16	498.65	
12s			4.1	500.71	
D 11+39			6.7	498.11	
11s			3.9	500.91	
11			5.82	499.99	
10s			3.9	500.91	
10			5.54	499.27	
D 9+32			6.20	498.61	504.81



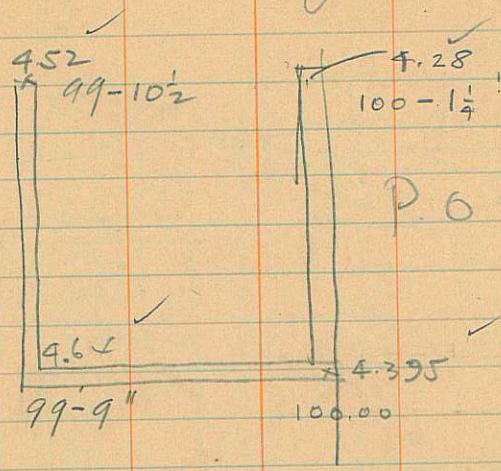
Sta	BS	FS	IM		
a			3.1	499.70	
c			3.9	498.90	
BM 2	2.80	2.86		500.00	502.85
cross			2.4	500.46	
21+84			2.9	499.96	
21 s			3.4	499.46	
21			3.1	499.76	
20			3.7	499.16	
20 s			3.6	499.26	
19			3.82	499.04	
19 s			4.1	498.76	



20

464
4.395
245

Henry Jansen



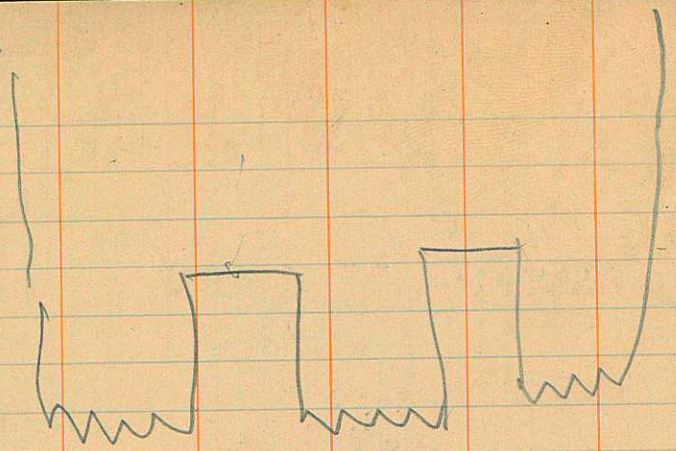
104.395
428
115

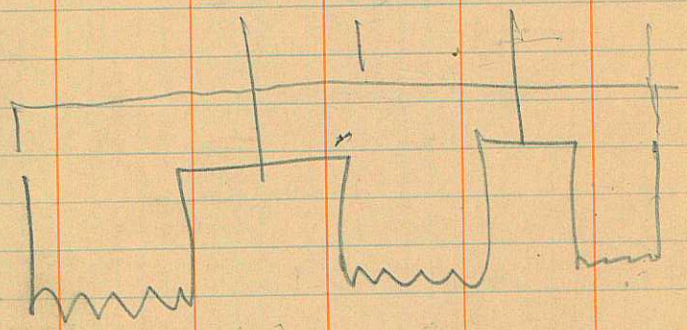
104.395
452
99875

104.395
464
99.755

21

22





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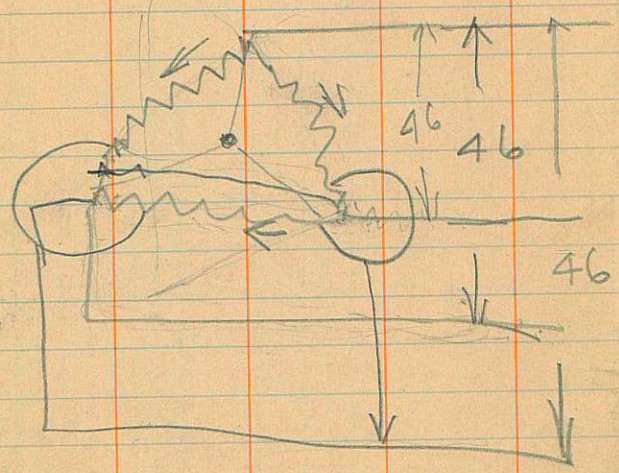

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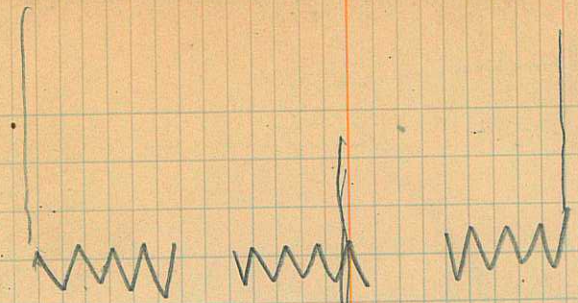
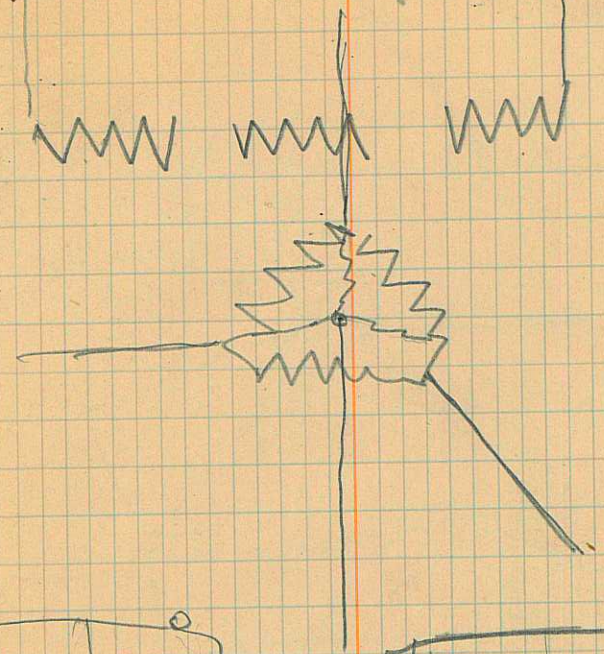
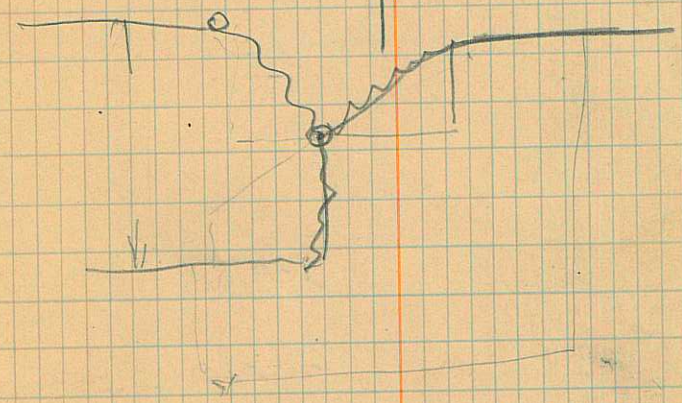
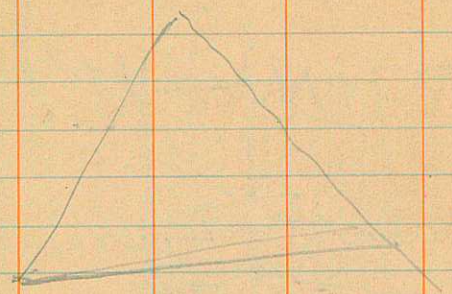
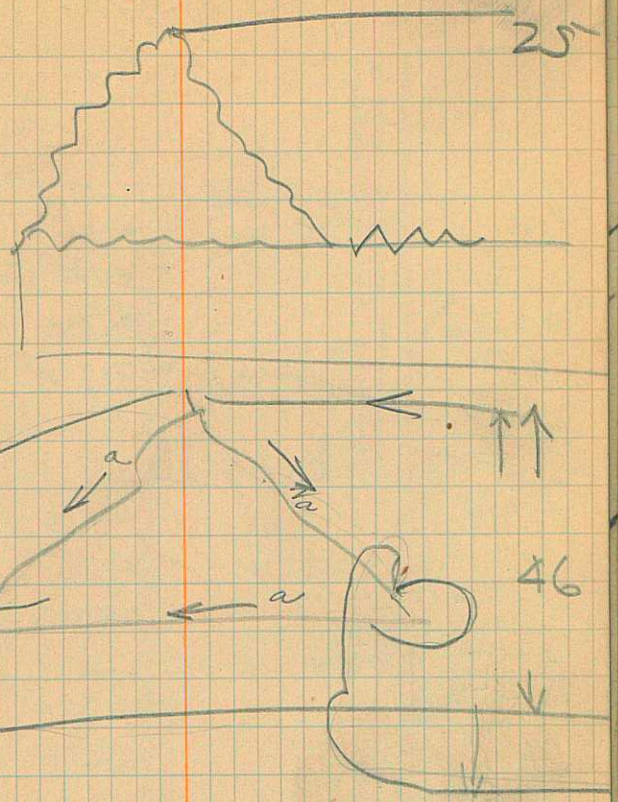









a
a
a
46

99
495
18
31.5
35.0

60
8.25
51.75
49.50
2.25

46
8.25
37.75
1.2

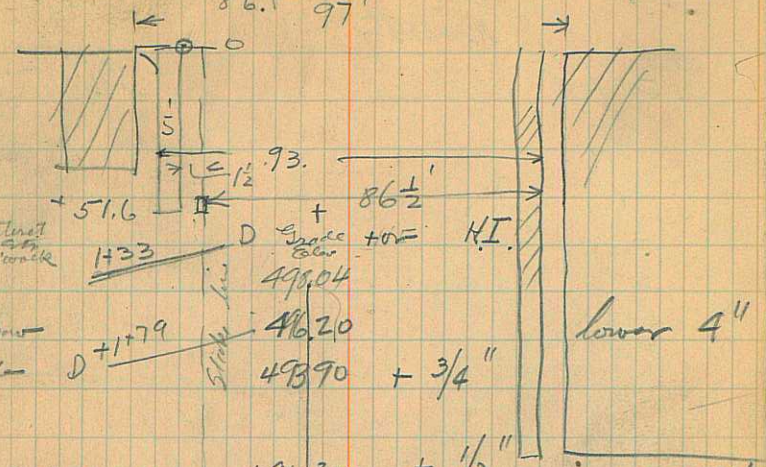
49.5
1.2

Sta	BS	FS	HI		
	0.75			500.42	501.17
0+50			3.18	498.04	
+51.6			4.60	496.57	
1.00			7.32	493.85	
D 1+33			9.20	491.97	
1+50	1.27 1.260	9.91 9.92		491.26	492.53
D 1+79					
2			3.3	489.23	
			4.75	487.78	
2+50			8.94	483.59	
3+00	0.02 0.01	10.88 10.89		481.65	481.67
3+50			2.84	478.83	
4			6.56	475.11	
4+50			10.00	471.67	
5	0.92 0.91	12.84 12.85		468.83	469.75
5+50			2.50	467.25	
6			3.89	465.86	
6+26 pav			3.34	466.41	
6+71			4.84	464.91	
6+81			8.40	461.35	
BM 3			4.10	465.65	
7			5.00	464.75	
7+18			4.63	465.12	

93.0
6.5
86.5

93

97'

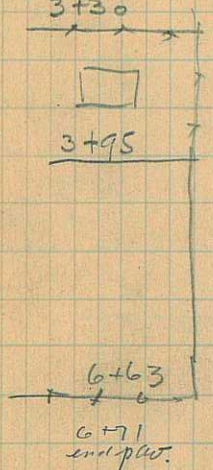


SE cor inlet center 4th scup & walk

Grade Elev +0=

498	04	
496	20	
493	90	+ 3/4"
491	30	+ 1/2"
488	4	~~+2½~~ + 7¼"
485	3	+ 1'- 8½"
482	2	+ 6 5/8"
479	10	+ 3¼"
476		+ 10 3/4"
472	90	+ 1'- 2 3/4
470	10	+ 1'- 3 3/8"
468	30	+ 1'- 1/2"
466	90	+ 1'- 1/2"
465	50	+ 7 1/2"

on end pav on bank



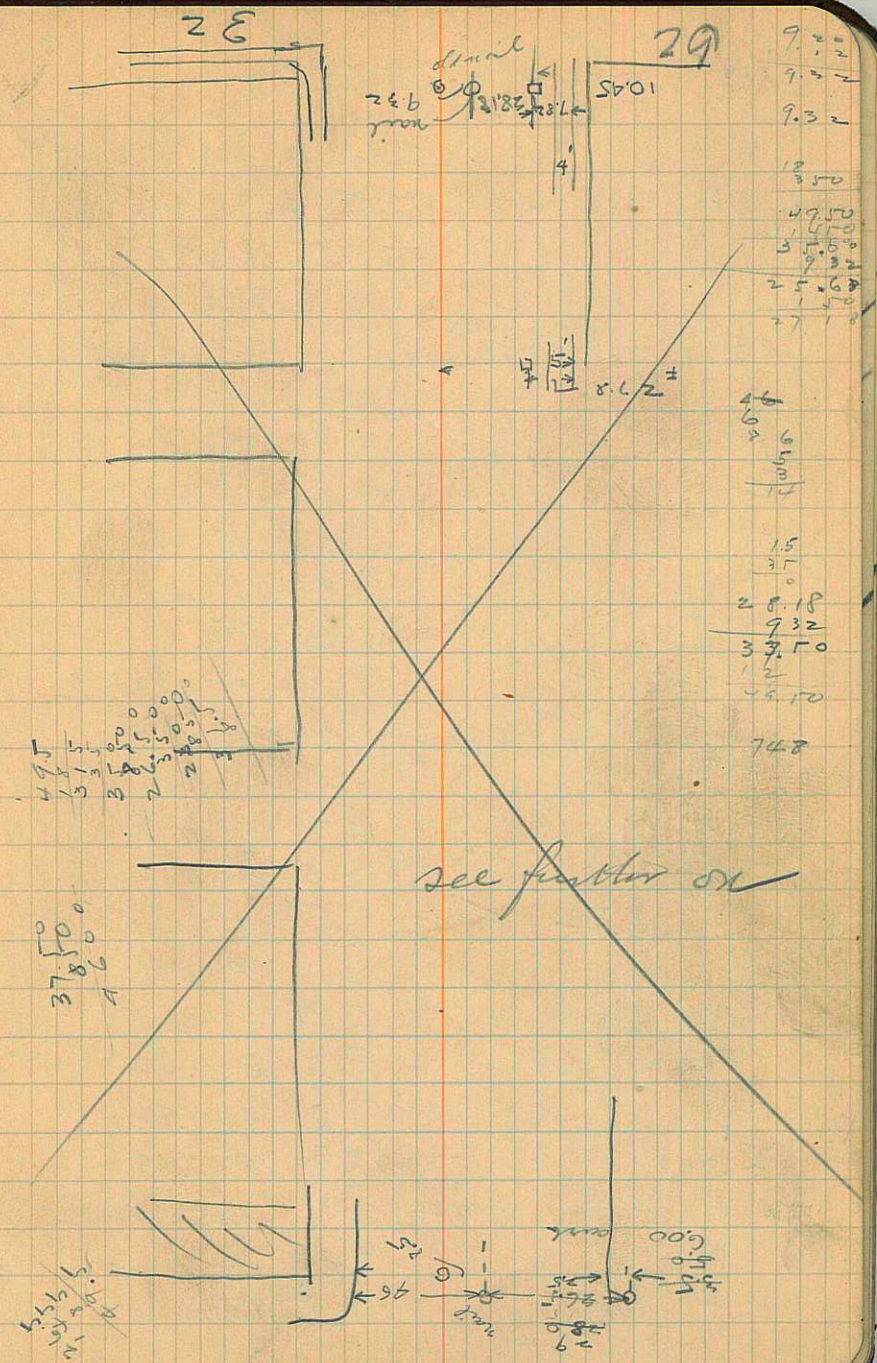
bot. Canal E & W
on nail guy pole Sta 6+90
on traveled road E & W
to O.L.I rail Sta to ℄

28

3
5.5

300.55
275.55
25.00
9.12

287
5.8
93.5



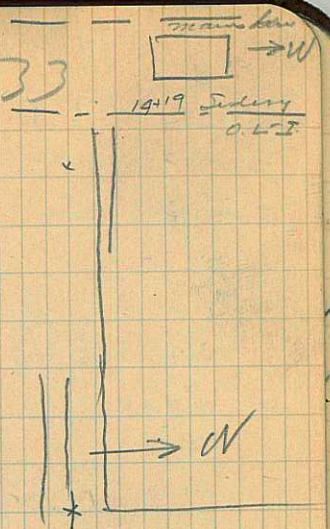
9.32
9.32
9.32
18.50
49.50
35.68
25.68
27.1
46
6
53
1.5
35
28.18
9.32
37.50
46.50
748

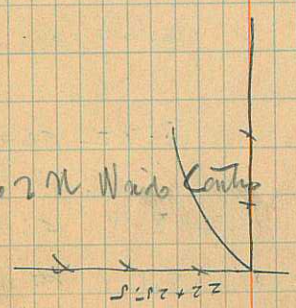
Levels down

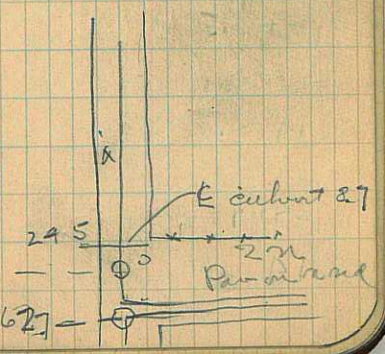
	BS	FS				
8			6.70	463.05	469.75	
8+03.7			5.94	463.81	✓	1 R Rose topsail. Sto to Existing
9			10.80	458.95	✓	
10			12.90	456.85		
10	~~0.05~~ .06	~~12.50~~ 12.49		457.26	457.32	top pin
11			2.40	454.92	✓	
11+08			2.80	454.52	✓	on Detch
12			4.20	453.12	✓	
12+47			5.60	451.72	✓	Detch
13			6.90	450.42	✓	
13+72			8.45	448.87	✓	pro to
14			9.50	447.82	✓	
14+21			10.0	447.32	✓	S side 2nd N
14+92			12.3	445.02	✓	
15			11.80	445.52	✓	
15+14.5			12.2	445.12	✓	N side 2nd N
	~~0.52~~ .53	~~13.07~~ 13.06		444.26	444.79	
16			2.1	442.69		
17			3.9	440.87		
18			5.7	439.09	✓	
19			7.8	436.99	✓	
20			9.5	435.29	✓	
	~~3.67~~ 3.68	~~9.02~~ 9.01		435.78	439.46	
21			5.9	433.56	✓	
22			9.3	430.16		
22+25.5			10.4	429.06		Detch + S side N 2
22+53			9.6	429.86		E Rose E+W

Levels up

	BS	+ S	HI		
14	1.92	0.27	9.25	462.32	
13	~~11.91~~	0.28		459.65	471.57
12 s			1.8	458.12	
12			2.82	457.10	
11			4.75	455.17	
10 s			5.80	454.12	
10			6.80	453.12	
9			8.68	451.24	
8+01	10.65	0.34		449.27	459.92
8+01 s	~~10.64~~	~~0.35~~	0.0	459.61	
7+51			1.2	448.41	
7+046			3.1	446.51	
7					
6 s			5.80	443.81	
6			5.64	443.97	
5			8.1	441.51	
4 s			9.2	440.41	
4			10.12	439.49	
TP	11.09	0.96		438.52	449.61
	~~11.08~~	~~0.95~~			
3			2.17	437.29	
2 s			3.5	435.96	
2			4.30	435.16	
1+00			6.32	433.14	
24.5			7.95	431.51	
0			8.28	431.18	
- 62.7			9.65	429.81	439.46



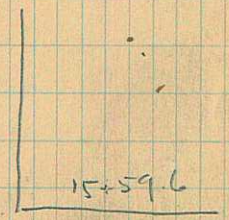




34	BS	FS	HI		
22+23.4			3.30	497.77 ✓	
+51.6			4.50	496.57	
22 s			3.5	497.57	
22			3.68	497.39	
21	8.24 / 8.23	1.58 / 1.590		492.83	500.07
20 s			8	486.41	
20			7.61	486.80	
19	13.40 / 13.39	0.09 / 0.10		480.01	494.41
18 s			6.7	474.40	
18			6.9	474.20	
	9.71 / 9.70	0.18 / 0.19		471.39	480.10
17			2.60	468.97	
16			4.84	466.73	
16 s			4.8	466.77	
PM 3			5.94	465.63	
15+59.6 s			5.3	466.27	
15+59.6			5.91	465.66	
15			6.88	464.69	
15+6.5			6.60	464.97	
14+67.5			7.72	463.85	
14+19			8.9	462.67	
14 s			8.1	463.47	471.57

498.04
497.77
0.37 35

#11 sire man old stake
on Ernie Cutter and old pan

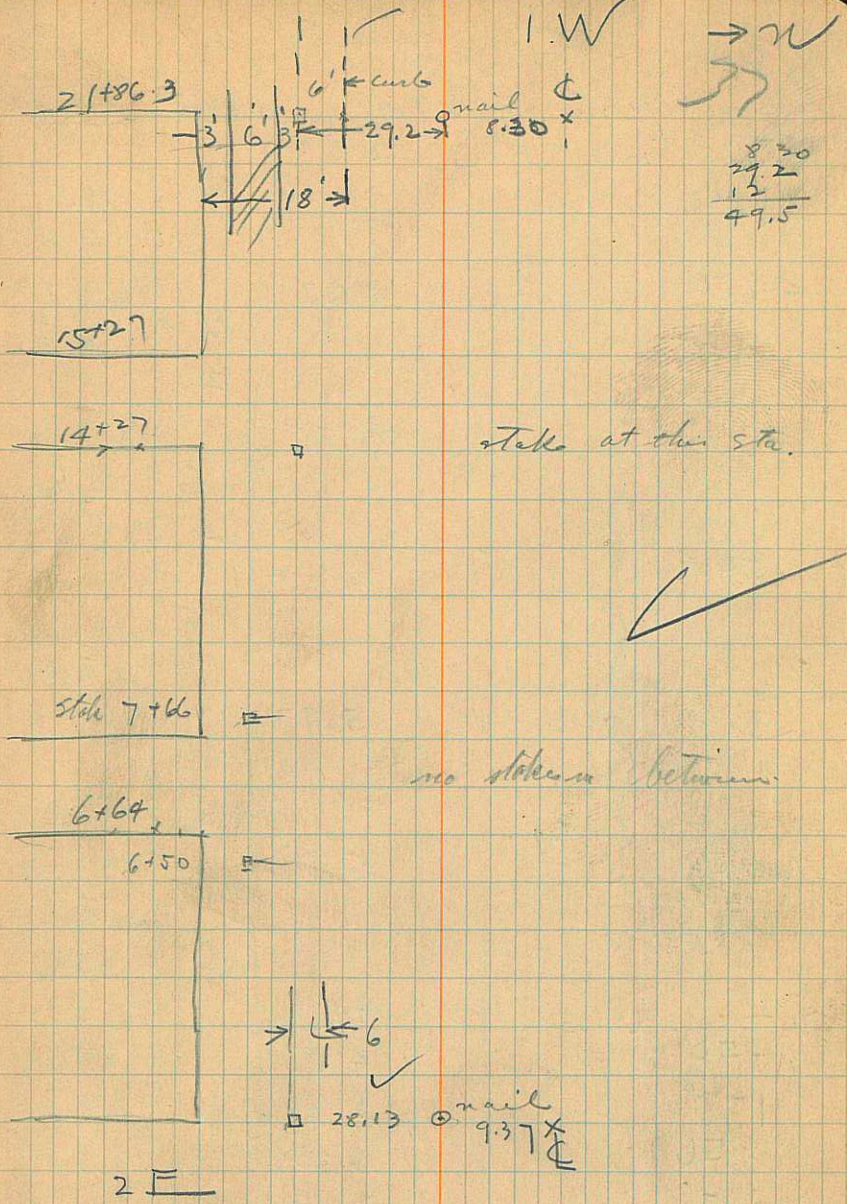


truck

14+67.5 Problem

— - — — screening

36 note


1 W
→ N
37
6' ← curb
21+86.3
3' 6' 3'
29.2 → nail 8.30 ℄
18' →
8.30
29.2
3
49.5
15+27
14+27
stake at this sta.
Stake 7+66
no stakes in between
6+64
6+50
6
28.13 nail 9.37 ℄
2

38 Levels up on Curb stake 9/23/19

Russel L. Crockston
Hyrum Utah

Beg. north Sta 0 on 2 E

Stn	BS	FS	on hub	out	R Rout	Ele	Grade E	+ or −	HI 59
				8	8.5				
				3	8.2				
4+50			7.67		~~8.2~~	502.29			
				4.0	7.9				
				2	7.8				
4			7.55			502.41			
				6	7.6	502.56			
				3	7.6	502.56			
3+50			6.62			503.34			
				9	7.0	502.96			
				6	7.0	502.96			
3			5.97			503.99			
				9	6.5				
				6	6.4				
2+50			5.38			504.58			
				9	5.7	504.26			
				6	5.8	504.16			
2			4.61			505.35			
1+50			4.15			505.81			
1+00			3.93			506.03			
0+50			3.57			506.39	505.363		
0+1.5			3.19			506.77	505.7 00 p37		
BM in pole	2.57 ~~2.50~~					507.45		−1'*1"	509.96

Sta	BS	FS	HI	R Rod out ~~out~~	out ~~RR~~	Ele	Grade Ele	+ or −	HI
				5.1	9	500.1			
				5.1	6	500.1			
9			4.61			501.18	500.375	−9 5/8"	✓
				5.4	9	500.4			
				5.5	6	500.3			
8+50			4.76			501.06	500.496	−6 3/4"	✓
				5.5	7	500.3			
				5.5	✓	500.3			
8			4.75			501.07	500.617	−5 3/8	✓
				5.0	9	500.8			
				5.0	6	500.8			
7+66			4.86			500.96	500.699	−3 1/8"	✓
~~7+66~~				5.6	6				
				5.5	4				
6+50			4.56			501.26	501.19	−1"	✓
6				5.4	6	500.42			
6				5.3	4	501.82			
6	4.22 4.21	8.36 8.37				501.60	501.537	−3/4"	505.82
				9.35	6				
				9.3	3				
5+50			8.32			501.64			
				9	6.02	501.00			
5			8.20			501.76			

See page page 100

Sta	BS	FS	Int	RR out	out	Ele	Grade Ele		
				5.5	6	500.3			
				5.6	3	500.2			
13			5.06			500.76	499.407 (121)	-1'-4¼"	
				5.5	9	500.3			
				5.6	6	500.2			
12+50			5.40			500.42	499.528 (121)	-10¾"	
				5.6	5	500.2			
				5.8	2	500.0			
12			5.05			500.77	499.649 (121)	-1'-1⅜"	
				5.7	5	500.1			
				5.8	3	500.			
11+50			4.95			500.87	499.770 (121)	-1'-1¼"	
				5.6	8	500.2			
				5.7	5	500.1			
11			4.66			501.16	499.891 (121)	-1'-3¼	
				5.5	9	500.3			
				5.5		500.3			
10+50			4.84			500.98	500.012 (121)	-11⅝	
				5.6	8	500.2			
				5.6	5	500.2			
10			4.83			500.99	500.133 (121)	-10⅜"	
				5.4	8	500.5			
				5.4	5	500.5			
9+50			4.67			501.15	500.254 (121)	-10¾"	
							500.375		

Sta	BS	FS	HI	RRod	out	Ele	Grade E	+ or	HI
				5.2	6.	497.8			
				5.4	3	497.6			
17			4.82			498.20	499.126 (121)	+11"	
				4.7	9	498.3			
				4.6	6	498.4			
16+50			4.51			498.51	499.005 (121)	+6"	
				4.4	9	498.6			
				4.5	6	498.5			
16			4.45			498.57	98.884 (121)	+3¾	
15+50			4.06			498.96	98.763	−2½"	
~~15+30~~							.050		
15+30	3.29 3.28	6.09 6.10				499.73	98.713	−1'-¼"	503.02
				6	9	499.8			
				6.1	5	499.7			
14+27			5.80			500.02	499.100 .065	−11"	
				6.6	5	499.2	165		
				6.7	2	499.1			
14			5.97			499.85	499.165 (121)	−8¼"	
				6.1	7	499.7			
				6.3	4	499.5			
13+50			5.75			500.07	499.286 (121)	−9½"	
									505.82
							499.407		

Sta	BS	FS	HI	Rod	Int	Ele.	Grade Elevation	+ or −
				4.5	9	498.5		
				4.5	6	498.5		
21			4.80			498.22	500.094	+1'-10½"
				5	8			
				5.5	3			
20+50			5.36			497.66	499.973	+2'-3⅝"
				5.6	9	497.4		
20			5.87			497.15	499.852	+2'-8½"
				5.9	9			
				6.0	6			
19+50			5.7			497.32	499.731	+2'-4⅞
				5.8	8	497.2		
				6.2	3	496.8		
19 00			5.99			497.03	499.610	+2'-7"
				5.6	8			
				6.25	1			
18+50			5.98			497.04	499.489	+2'-5⅜
				5.7	9	497.3		
				5.8	6	497.2		
18 00			6.07			496.95	499.368	+2'-5"
				5.4	9			
				5.4	6			
17+50			5.32			497.70	499.247	+1'-6⅝"
							499.126	
17								

503.02

48

Sta	BS	FS	HI	Elev	Elev
BM 2		3.02 3.03		500.00	
			3.05 9	500.00	
			3.15 6	+99.9	
21+86.3			3.19.	499.83	500.30 0.87 +5 3/4"
			4.2 9		
			4.3 6		
21+50			4.51	498.51	500.213 +1'-8½"

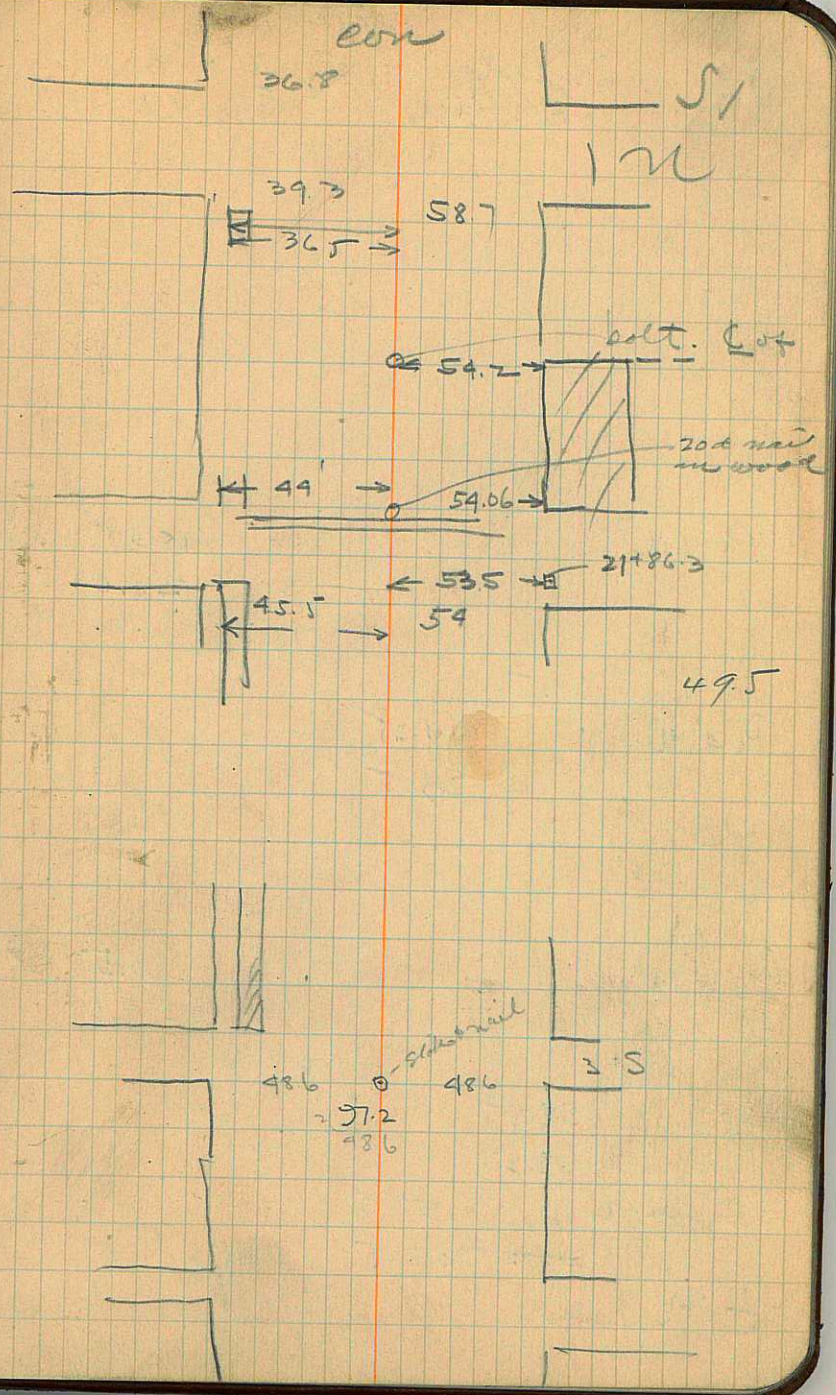
BS	FS
250	49
421	837
328	610
999	303
	17.50
	999
	7.51
7.45 6	
	1797
	1002
	7.5
251	836
422	609
329	302
1002	1747
	1002

500.09
121
215

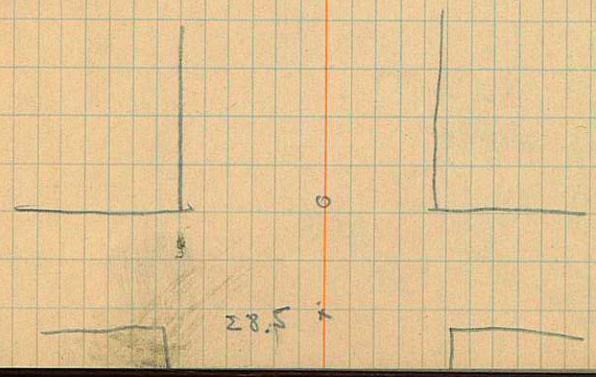
Center grade

50 Align Survey of 1 N

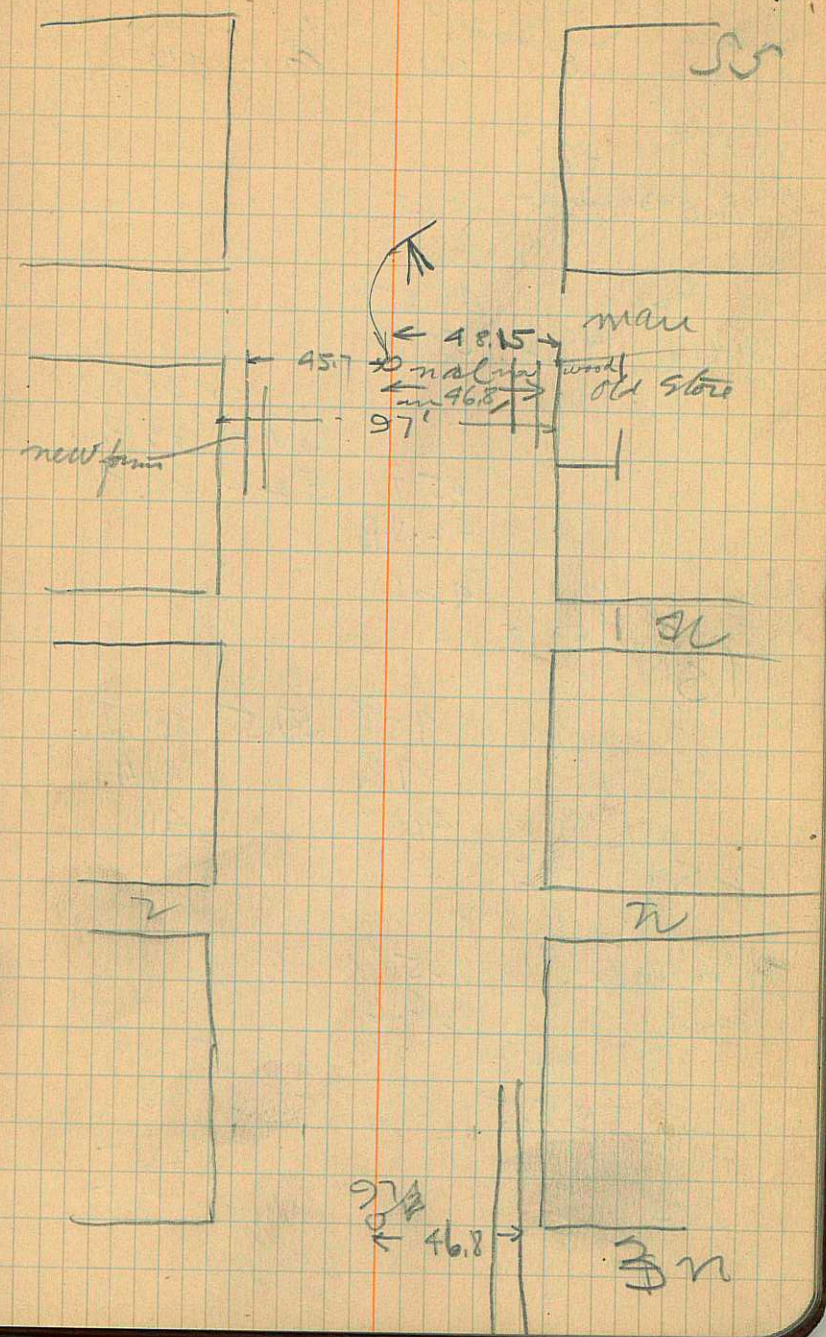
	Spine E	Spine W	Inside E	Inside W
			49 T	27.8 T
			58.5	35.4 pa 4'
1st N				
			41.02 curb	37.3 T
	39' T	43.8 pa 4' in		44 Pa 4' w
main	54	45.5	54.06	46.1
		39 T		37.2 T
nail Side	40.5 T	44.9 P4	42.7 T	44.85 Pa 4' Wed
15	52.2	48.0	52.35	47.75
				38.4 T
			37.2 T	46.06 pa 4 Wedg
			49.7	48.4
		46.08 P4 wedge		
2	49.75	48.1		
			41.5 T	47.4 par 4' Wedge
3			49	48.7
	37 T		37.5 T	
	46.7	47.7	46.5	47.8
45				



	S side E	S side W	N side E	N side W	
S2					
Pa ↓ W				18.3	and pao
			70.7	20.0	
	69.5				
Pa ↑ W		19.25			
		23.5			
3S					
Pi ↓ W				26.5	
				27.6	
			68.6		
	58.7T				
	68.2				
pa ↑ W		27.7			
	~~28.5~~	28.5			
2N					

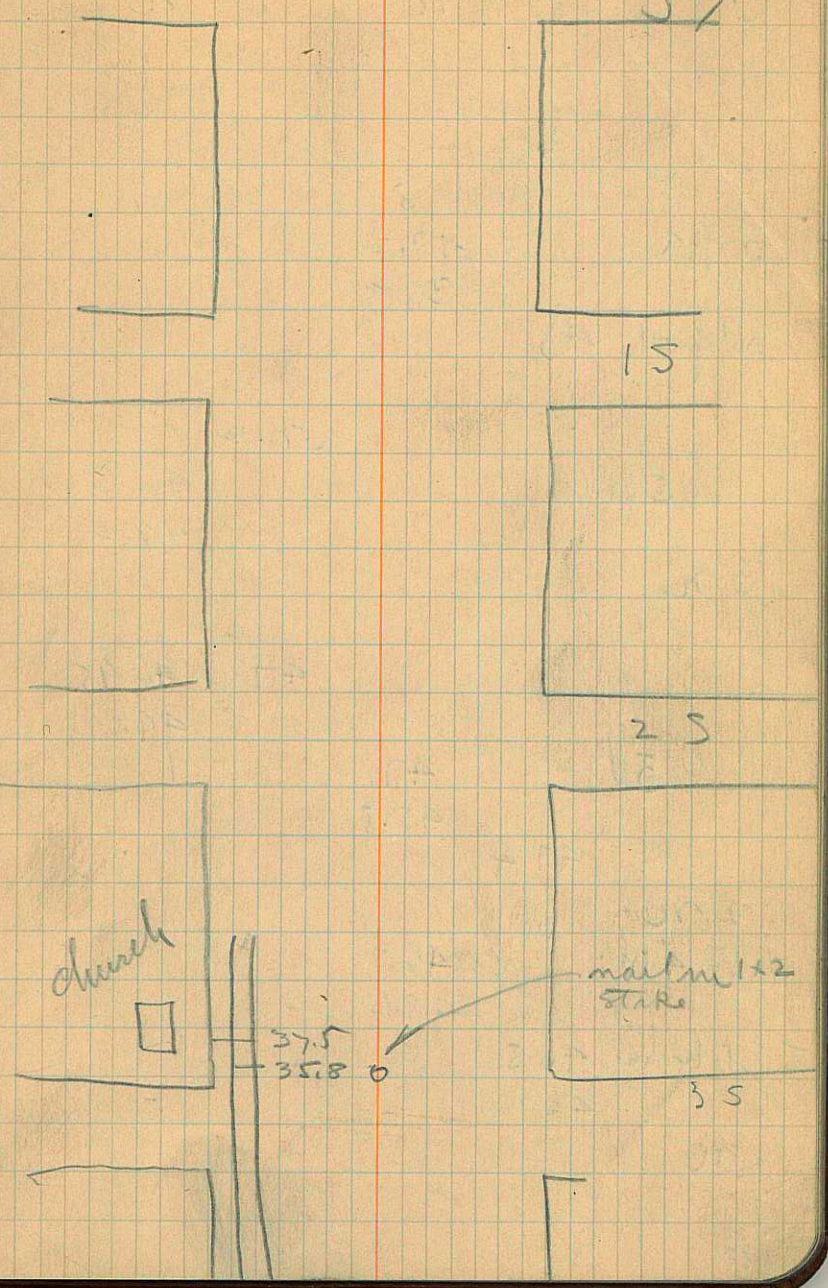


54 Survey of Center St. N+S



56

	Align S Side E	Align S Side W	C str. n Side E	C str. n Side W
curb 14+25	49.7			
Sta 15+30 curb		53.5		
		38.5T		
Pa 4		46.25		
Main	49.2	50.2		
				35.5T
			44.5T	43 Pa 4
		35T	52	46.5
		42.5 Pa		
		43.6		
	52.8			
1S				
		29.5T	51.5	30.2T
		39 Pa		39.45 Pa
		40		41
2S	52			
Pa 4 Wk		35		
		36.6		
	44T		43.5T	
	55.5		54.2	
				26T
3S				37.5



58	S Side E	S Side W	N Side E	N Side W
5 pa		47.2 50.4		
Hepot	43.			
			50.2	
Pa 5 wide				46.6 49.2
3 n				
			47	46.95 49.0
Pa 5' W		47. 48.8		
	47.4			
2 n				
Pa 4' W		46.7 48.6		
to Stake line	40.5 46.7			
1 n				

46.7

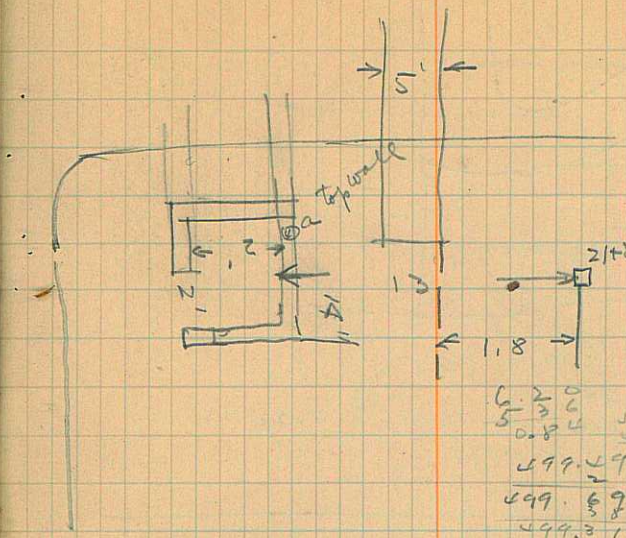
54

Note Return building forms so west of pavo wire lee 1½ ft. E of stake line

60 Levels at
W. side Public Sq.

18+50		7.60		
19+50		7.30	497.32	
⊕ a		4.20	500.47	
		2.1	502.57	
		4.41	500.26	
		4.80	499.87	
		4.53	500.14	
Book 2	467		500	504.67

61



4.80
0.37
0.43

504.67
500.30
4.37

6.20
5.36
0.84

504.67
499.31
5.36

499.49
2
499.69
38
499.31

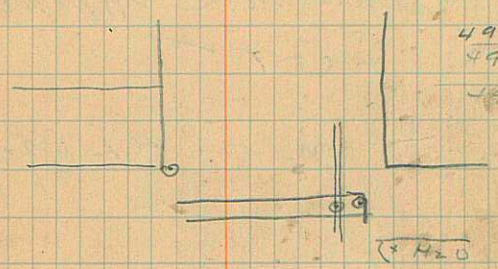
6.50
5.12
1.38

499.69

20
499.73
499.93
38
499.55

504.67
499.55
5.12

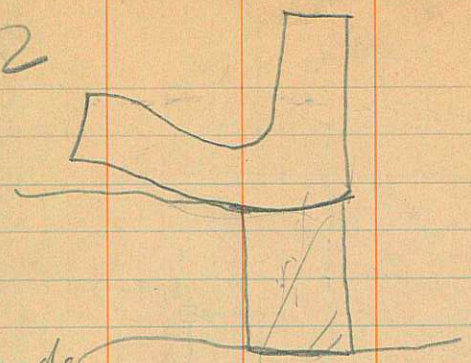
499.73 curb



SW cor Public Sq.

on cross in line with curb
on H2O
on end cross

62



made
Oct 1st 1919
Edwin J. Peterson

Parkinson notation
or Cor

+ n ne de fai

63

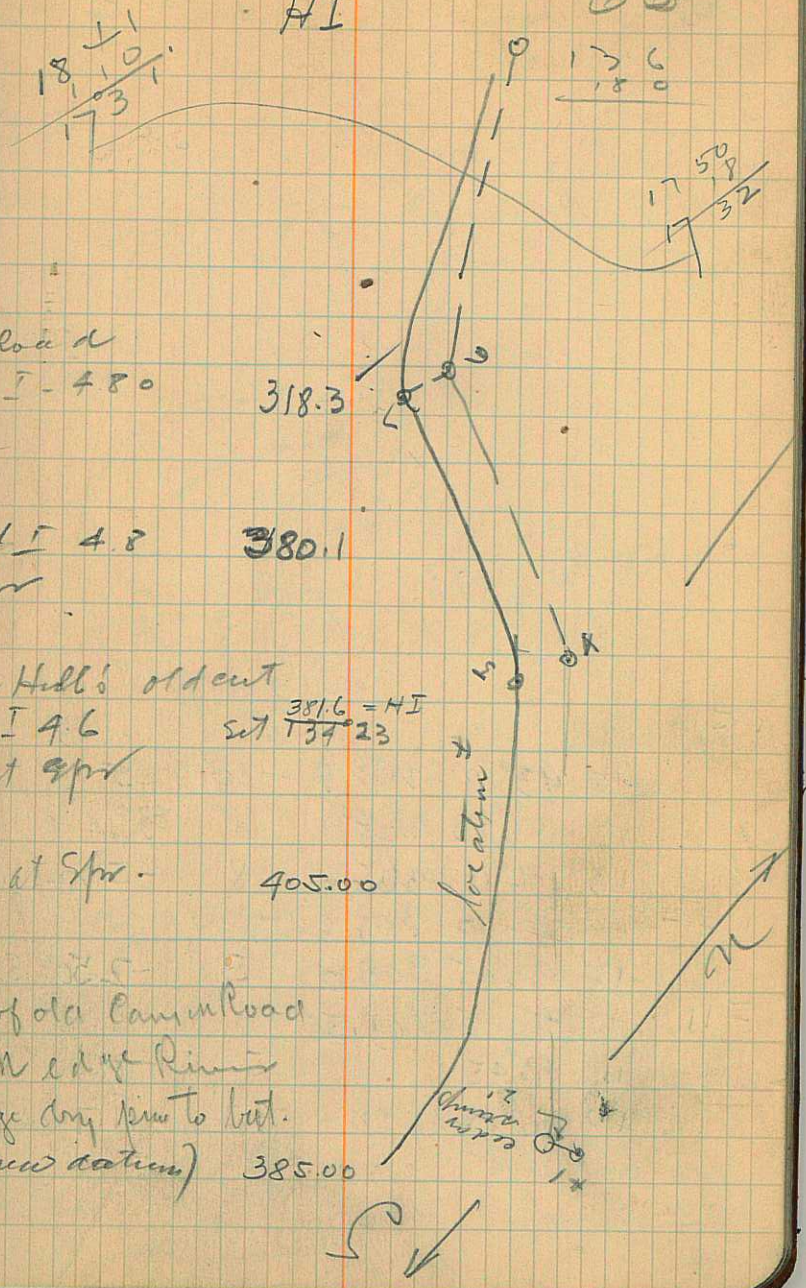
5.
5.58
6
16.58

18
16.58
1.52

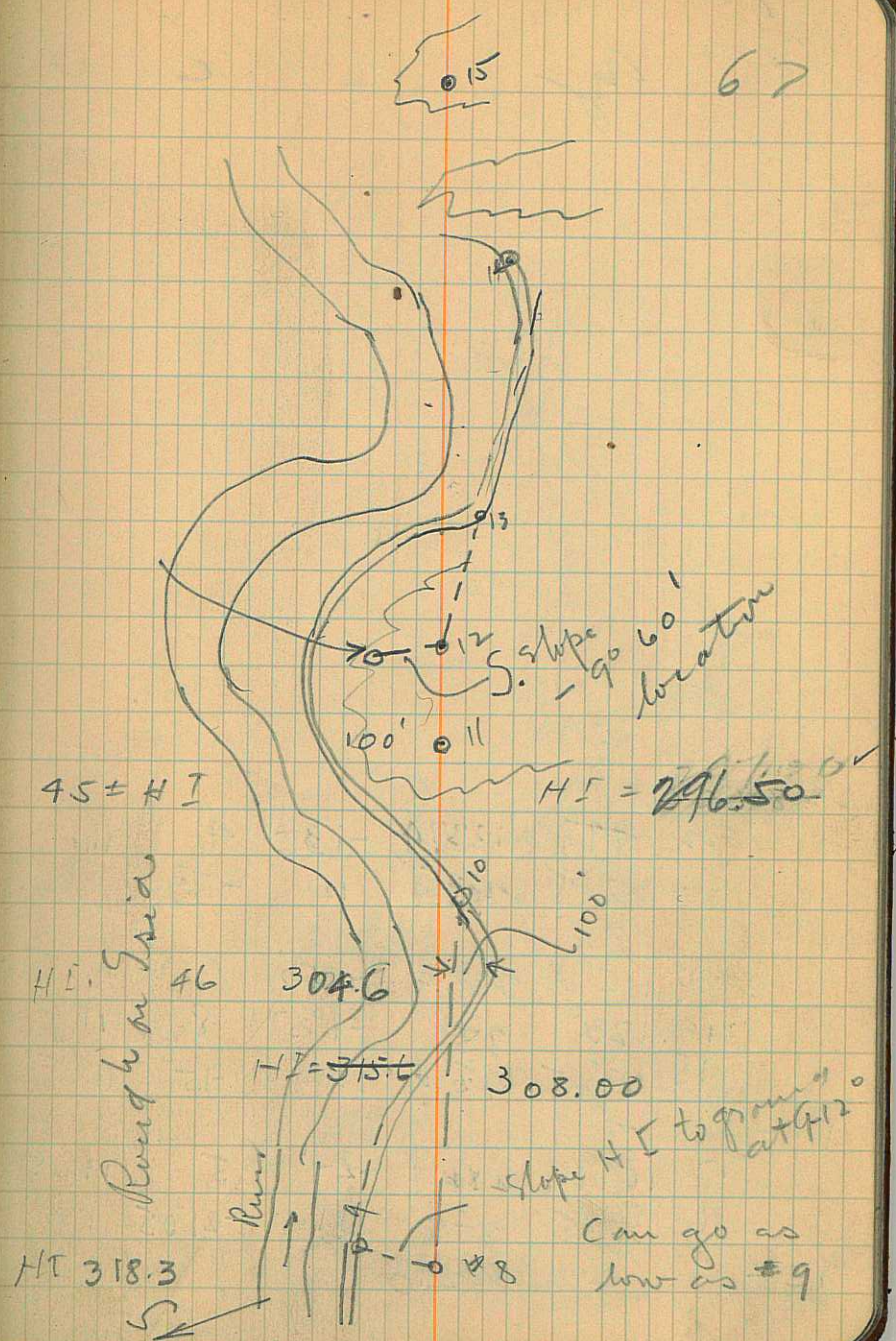
Pre-Survey 11/13/19
Estimate to Meadow Spr

Pt.	Az	Ele	L	Stad. C	J	
-9	14°53	296.5	11	-6°30'	11.93	on Road
8-						
-8	95°35	313.5	-2°58	4	10.03	HI - 4.8 318.3
7	15°23	367	11	-23'	11.35	
6-						
A	346°32'					HI 4.8 380.1 Spr
-6	86°08'	375.3	5	+10'	11.7	
5	22°08	360	11	-7°	11.8	on Hill's old cut
-4		377.00				HI 4.6 Set 381.6 = HI 134°23
A	15°32			+2°04		at Spr
aA						
A	45°52	400.00		+2°12'		at Spr. 405.00
-4	134°23	377.00	4	0°	11.86	
aA	136°02'		3	-20'	5.86	
3	105°	373.0	4	-3°20'	5.37	℄ of old Camp Road
2	72°05	358	9	-4°20'	11.35	on edge Rimrock
1	18°41		+24°19			Large dry pine to left.
1-		380.00				(new datum) 385.00

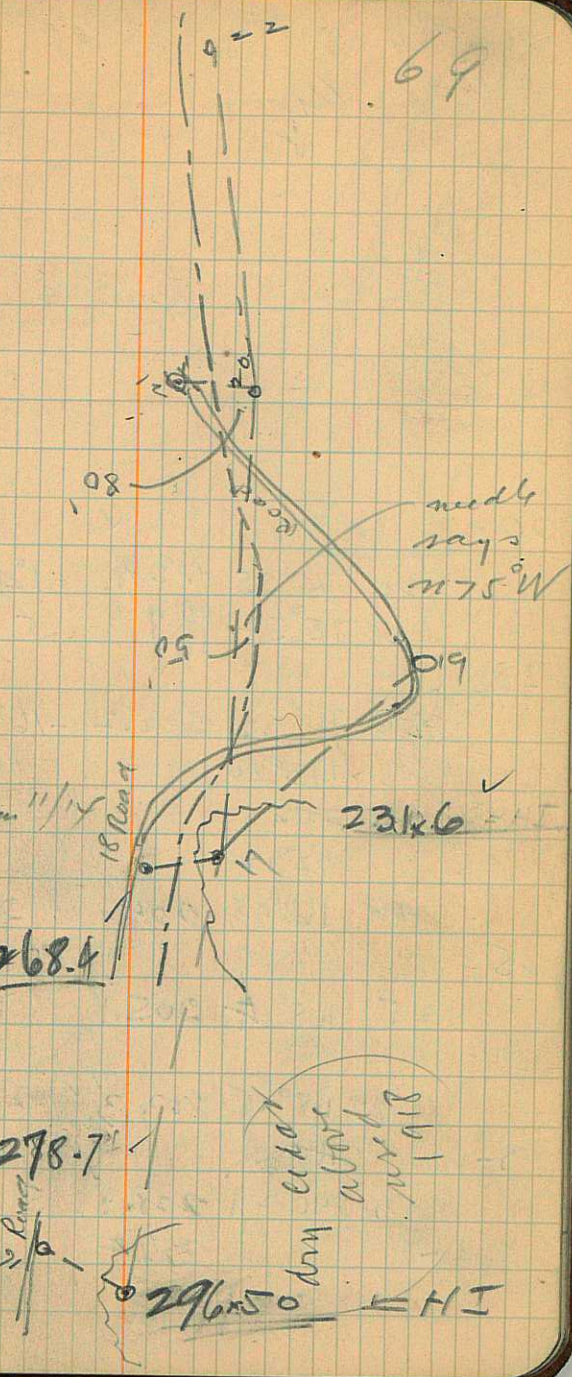
Level
HI



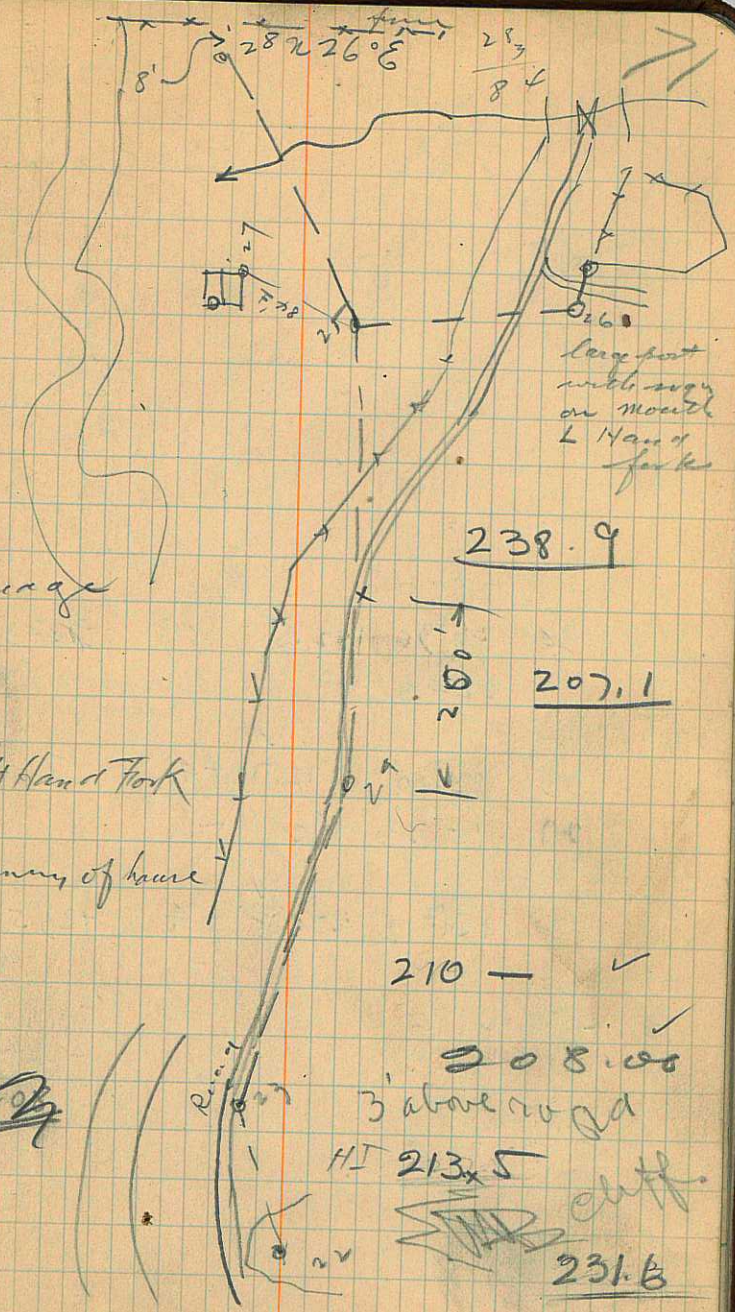
			Stadia		
H	ay		L	C	D
15 -					
15	93°10'	292.0	-20'	5	11.6
14	102°43	265	6	-3°14'	11.7
13	106°10'	265.6	8	-5°32	11.13
12 -					
12	93°45	300.0	5	-2°50'	5.69
11	4	303.5			
11	93°45'		5	-36'	11.94
10	102°02	281	9	11.7	-2°42'
8 -					



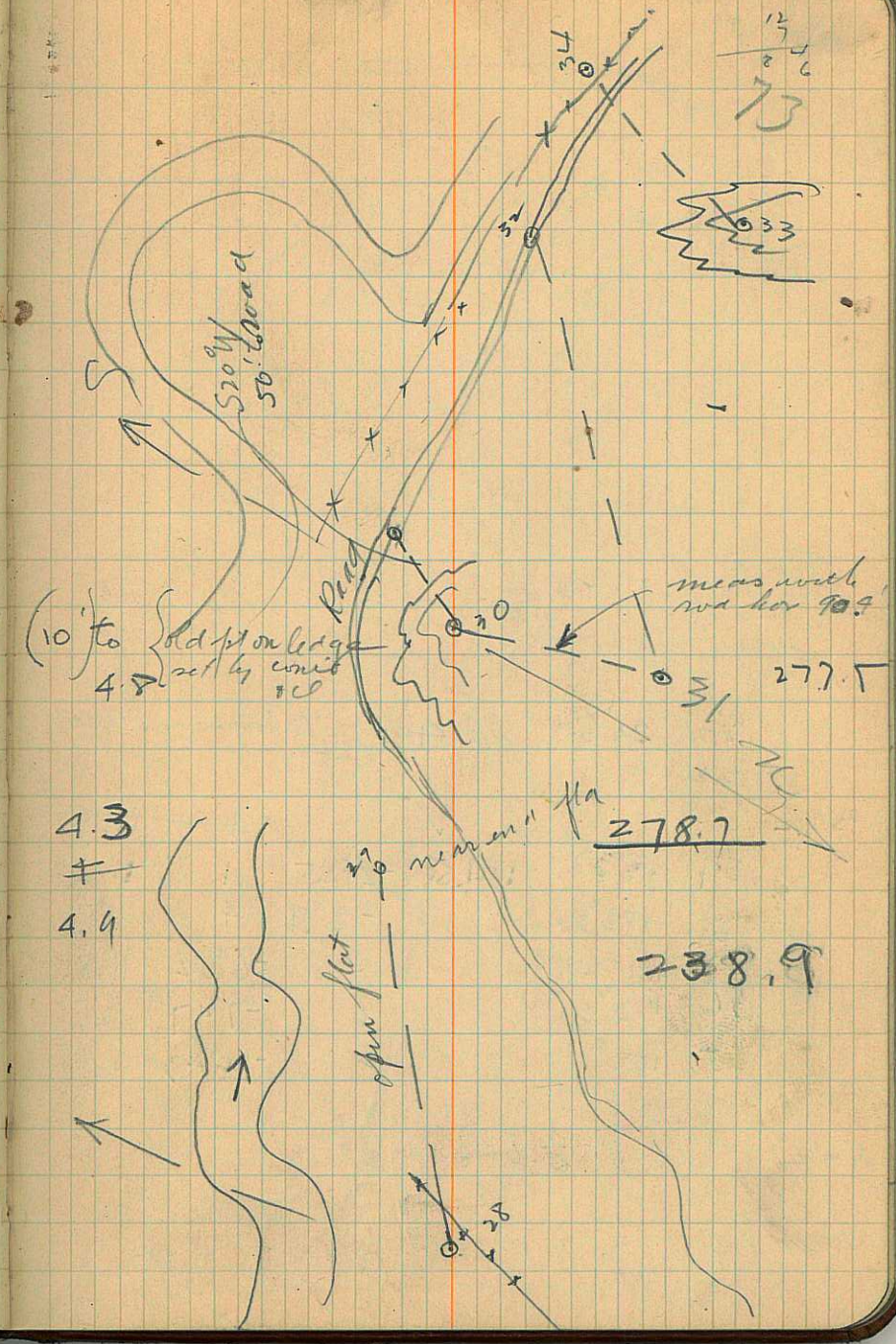
Pt	Ay		L	C	U
22	~~99°~~ 98°44	227.4	-1°30'	4	11.1
21	36°45	233.4	10	-7°30'	11.86
20	105°24	263.7	-33'	6	11.25
19	123°	251	-1°37	8	11.4
18	38°45	251.4	11	-15°	11.65
17	109°09'	274.7	-47'	5	11.25
16	36°45	258	11	-21°05	11.8
15		292.0			



Pt	Az		Stadia L	C	U
30 –					
30	74°55	234.	+1°47	6	11.3
29	75°52	191	5	-11'	11.5
28					
28	76°32	202.2	-16'	5.13	8.00
	173°20				
27	43°47				
	32°12				
26	161°48	204	3	+33	5.18
25 –					
25	108°14	205.1	1	+3'	5.62
24					
24	118°15	203.3	2	-1°8'	5.35
23 –	118°				
23	90°29'	208.8	5	-11°31'	5.89
22 –		227.4			



	34	26°30	182.5	9	-30°43'	10.95
		324				
33						
	33	83°00'	272.7	+4'	7	11.1
	32	75°33	192	-6°	8	11.7
31—						
	31	156°12'	274.4	4	+23°58'	5.07
30—						

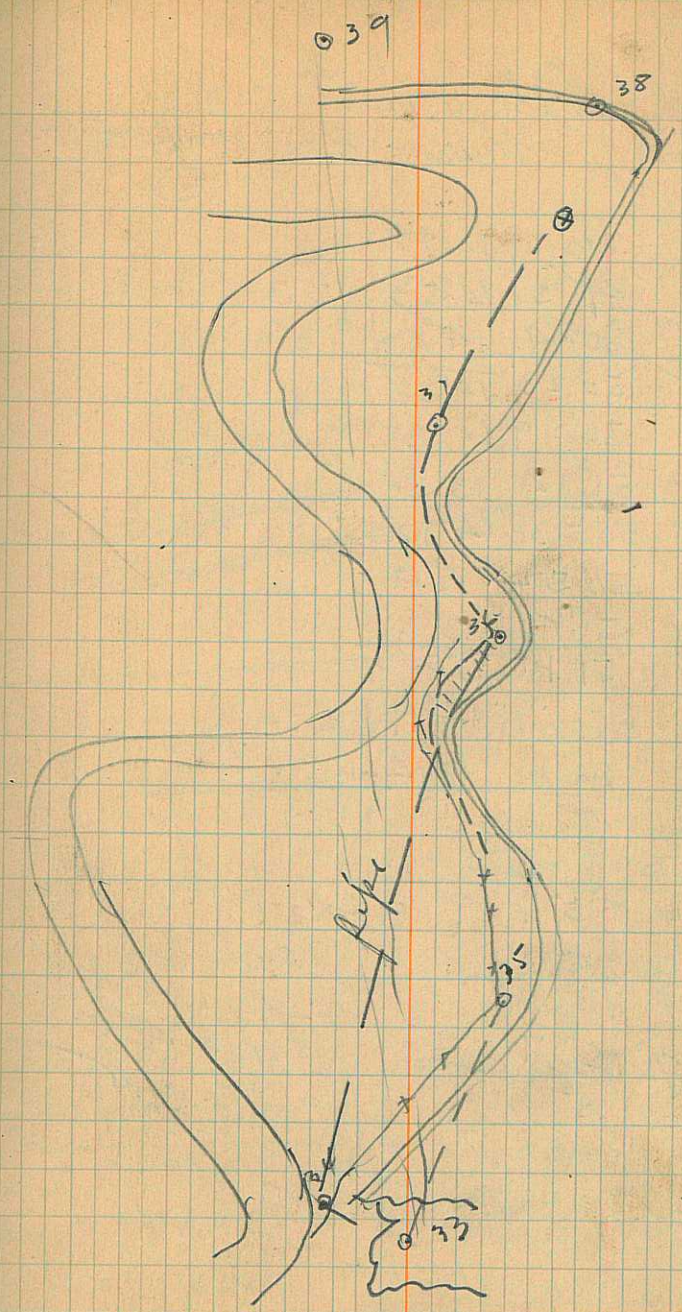


42 266 (400' Left to turn on road)

39-

		✓			~~11.3~~
39	83°37'	189.5	-2°25'	1	11.3
38	103°36'		-3°31	4	11.8
37	100°27'		3	-6°02'	11.8
36	103°30'		6	-7°47	12.1
35	108°		2	-14°43	5.87

33—



Ob on # 39
Wur. Nov ~~15 or 16~~ 13

	Az	Vert	
☾	49°57'	14°53'	3:30 true time
☉	50°49'	14°07'	
	50°23'	14°30'	
☾	50°29	14°31	
☉	51°14	13°50'	
	50°51'30"	14°10'30"	
☾	50°52	14°14	
☉	51°40'	13°31'	
	51°16'	13°52'30"	
Σ ☾	50°50'10"	14°11	

179 59 60
65 9 50
1 1 4 5 0 1 0
2
2 2 9 4 0 2 0

49° 40' 20" true Az

Set 83°37 B ☉ to # 33

Sub ~~Add~~ 1°10'

φ = 41°38'
δ = −17°52'40"
Z = 75°52'40"

75 52 40
41 38
117 30 40 =
116 90 40
17 52 40
2 | 99 38 00
log 4949 00 = T. 8097182
sin 6741 40 = T. 9662229
T. 7759411
T 986.6721
T 7892690
T. 8735549
T. 9157091

117°30'40"
17 52 40
2 | 135 23 20
6741 40

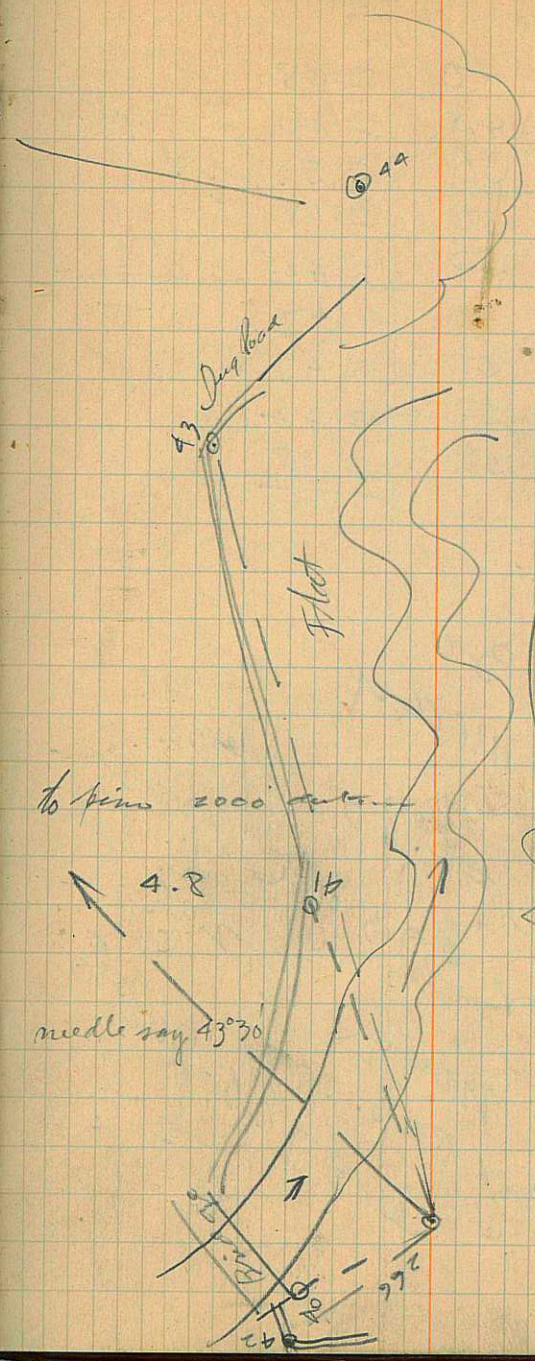
T. 9157091
T. 9578545

~~6~~ in 75°52'40"
lat 41°38

Sub 1°0'

1/4 acy/prec9	161°56'		3.	+2°42	5.33
	243°43				
45 –					
45	70°55	166.	6.0	-1°35'	11.1
44 –					
44	43°48	183.50	-17'	5	11.3
43	34°03'		2.	-37	11.7
41	31°07		6	-3°37'	9.2
40	285°12	-8°	11		12.
39 –					

48°36



Plantice Stone
Log lath
lath 8" below
℄ of Stone

to pine 2000 [illegible]

this pt. near
4 a?

80

	42	40	2.08
	37	40	2.20
	43	50	2.53
	50	50	2.18
	45	50	2.42
Electrical	44	50	2.47
	44	50	2.47
	49	50	2.22
	50	50	2.18

2.30 ma

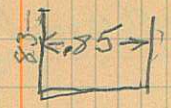
2.30
mean

Q = 0.83 cfs
or 373 ga per
min @ 200 gal
per cap.
= 2700 people

Mean Depth 4 3/4 in.

81

83



$9\frac{3}{4}$
$4\frac{3}{4}$
5 in

nail on water surface
1' above Lance
lower flume –

Gris flat
@ 45

Survey from Wly Hollow

~~Back Stadia~~

Pt	L	C	U	L	C	U
		Back Stadia			Fore Stadia	
13	~~4~~	~~+13°54~~	~~5.80~~			
14						
13				1	-12°57	11.4
12				-5°16	9	11.6 —
11	-1°37	8	11.1 —			
9	3	+38'	11.1			
10 —						
9				3	-10°43	5.33
7	3	+12°12'	5.92			
8 —						
7				8	-9°43'	11.65
5	4.	+11°18'	5.54			
6						
5	4			4	-11°10'	5.29
3	4	+10°24	5.33			
4 —	~~4~~	~~+10°24~~	~~5.33~~			
3				9	-12°01'	11.75
2	4	+13°54	5.80			
1 —						

Bear

N 78°10' E

— = Intermediate

on scale

H I 5. opp. Garrison Hollow

on 5" M. S. where same intersects Survey line from Gr. Pt.

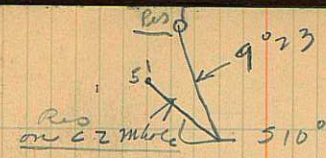
Note { RR on 9 = 4.4 } BM 145.89
" on BM = 6.4 }
"

on a flat on rock about 50' from

on Chitaks Bar in Wly hollow

Pt	Back L	Back C	Back U	Fore L	Fore C	Fore U	Bear	
32				8	+52'	11.7	N72°W	
31	10	+1°56	11.9				S54°E	
29	4	+2°55'	11.9				S87°50'E	
30								⊼ on trench
29				4	+9'	11.4	S86°W	
28				1	-3°93	5.50	S80°30'W	
27				9	-13'	11.1	S62°30'W	
26	10	-3°06'	11.17				S3°50'E	
24	6	-30'	11.1				S72°30'E	
25								⊼ on N side R
24				5	-1°15	11.25	S87°20'W	
23				9	-30'	11.6	S50°W	
22				4	+19'	6.07	S33°10'W	
21	9	+30'	11.2				S57°45'E	S side R
20	5	+1°24	11.1				S88°20'E	
21								⊼ not on pipe; on N side R
20				9	-2°47'	11.3	N84°50'W	
19				4	-4°44	5.91	N82°30'W	
17	10	+9°42	12.05				S58°E	
18								⊼ on trench
17				7	+4°07'	11.5	N81°15'W	
16				8	+1°51'	11.22	S87°W	
15				3	-31	5.25	S79°W	
14								(14 on trench)

Pt.	Back L	Back C	Back U	Fore L	Fore C	Fore U	Bear	
52 51	1.0	+8°08'	11.25	+7°05	5	11.2	S18°30'W	
51				+5°33'	3	11.25	S10°W	
50				-1°33	6	11.25	N75°15'W	Top bank
49				-1°39	9	12.2	N75°15'W	bottom of step incline
48				3	-1°05	5.90	N75°15'W	on River bottom
47	11	-13°20'	11.6				N75°W	bank of bank on trench
46	3	-4°	5.9				S78°30'E	℄ river
45	+50'	7	11.5				S77°30'E	on turn
44							N89°E	
43				5	-1°11'	11.70	N81°W	
42				6	-1°10'	11.25	N78°45'W	
41				9	-1°31'	11.13	N89°45'W	
40	5	-15°33'	5.90				S40°W	℄ River on trench
39	5	+3°37	11.3				S81°10'E	
39				5	-2°27	11.3	N69°W	
38				-4°14	9	11.32	N68°W	
37	9	-5°28	11.3				S51°50'E	PC
36	2	-5°44'	5.7				S42°E	leave R bank
35	7	-6°38	11.6				S36°10'E	℄ River
34	6	-4°16	11.3				S34°45'E	Enters L bank River
33	-2°51	8	11.7				S30°10'E	
33				4	-1°28	11.3	N50°N	



200 ft
.2
40.0
9000

7

Top bank ⊼ #52 in river canyon

bottom of step incline

on River bottom

bank of bank on trench

pop goes down River right

℄ river

on turn

⊼ on trench & R bank River

347 0'
338
9 23

℄ River on trench

⊼ not on trench

PC

leave R bank

℄ River

Enters L bank River

⊼ on trench

88

290 | 39
243 | 7.4
178
156

Costs –

31000 ft pipe @ 85¢	$26,350
6000 yds excav. @ 150	9000
Taking out 5" mains	500
	36850
plus 10 o/o	3685
	$40535
Less sale of 13000 5" ms	5000
	$35,535

18000 ft @ 85¢	$15300
Ex Hoosays	6000
	21300
plus 10 o	2130
	23430

At at Meeting
Dec 1st. 1919

1.

85
31000
85000
255
26350000

13000
18
31

150
3
31

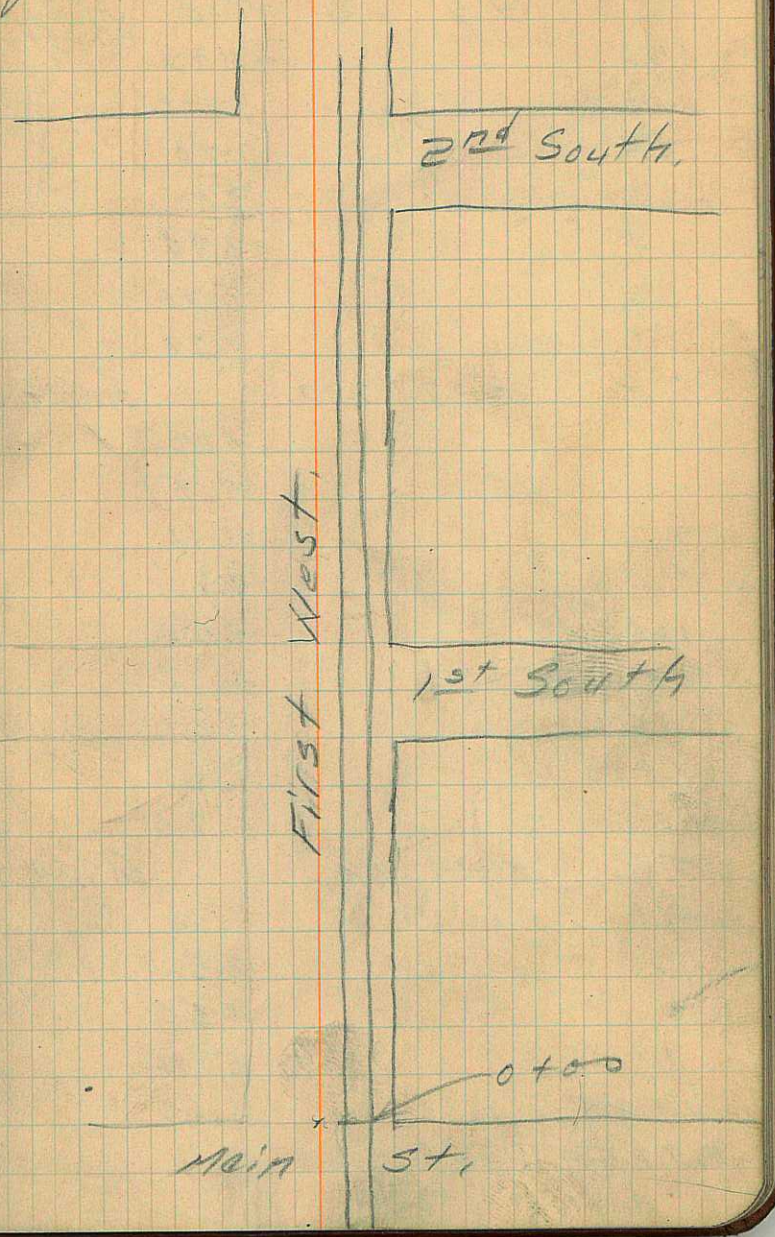
18000

89

90

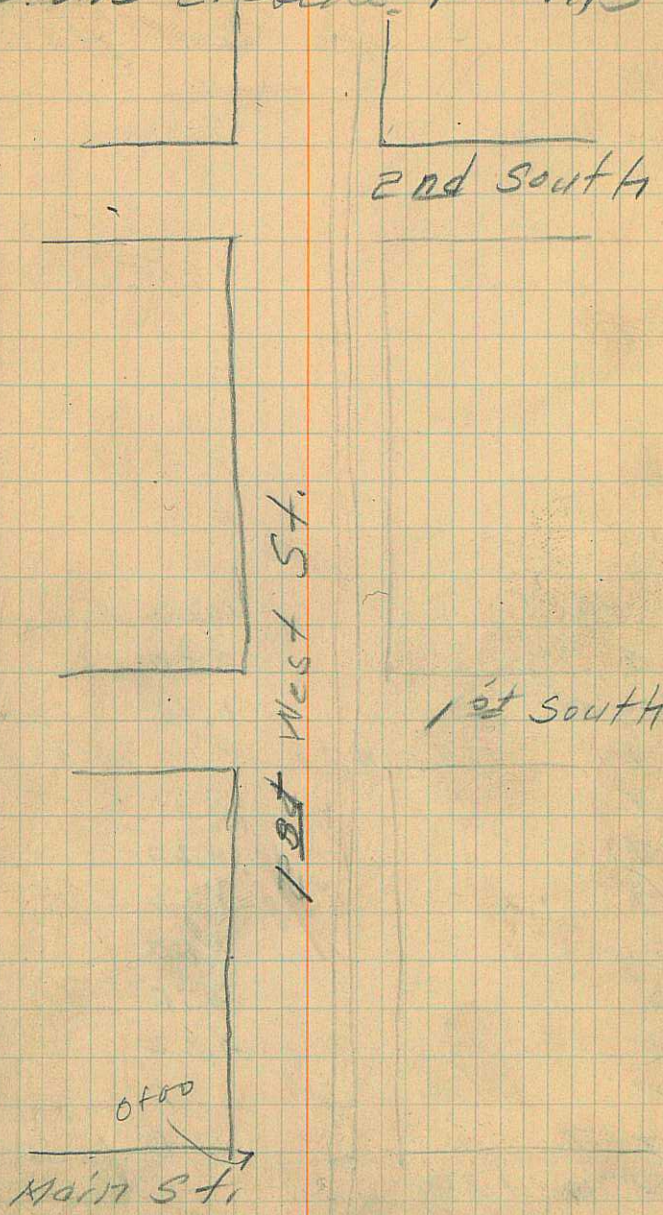
Begin at Main St. S. side 1 Running S on W. side 1st W.

	+S	-S	Rod	H.I.	Elev
16			0.46		11.46
+27			2.88		09.04
15			3.30		08.62
+25.5			4.45		07.47
14			4.73		07.19
13			5.30		06.62
12			5.95		05.97
T.P.	6.30	2.32		511.92	505.62
11			2.31		05.63
10			2.70		05.24
9+00			3.05		04.89
8+00			3.49		04.45
+60.5			3.52		04.42
7+00			4.25		03.69
+62			4.75		03.19
6+00			5.13		02.81
5+00			5.84		02.10
T.P.	6.56	3.45		507.94	501.38
4+00			3.47		01.36
3+00			3.65		01.18
2+00			3.79		01.04
1+00			3.96		00.87
0+00			4.24		500.59
B.M #2	4.83			504.83	500



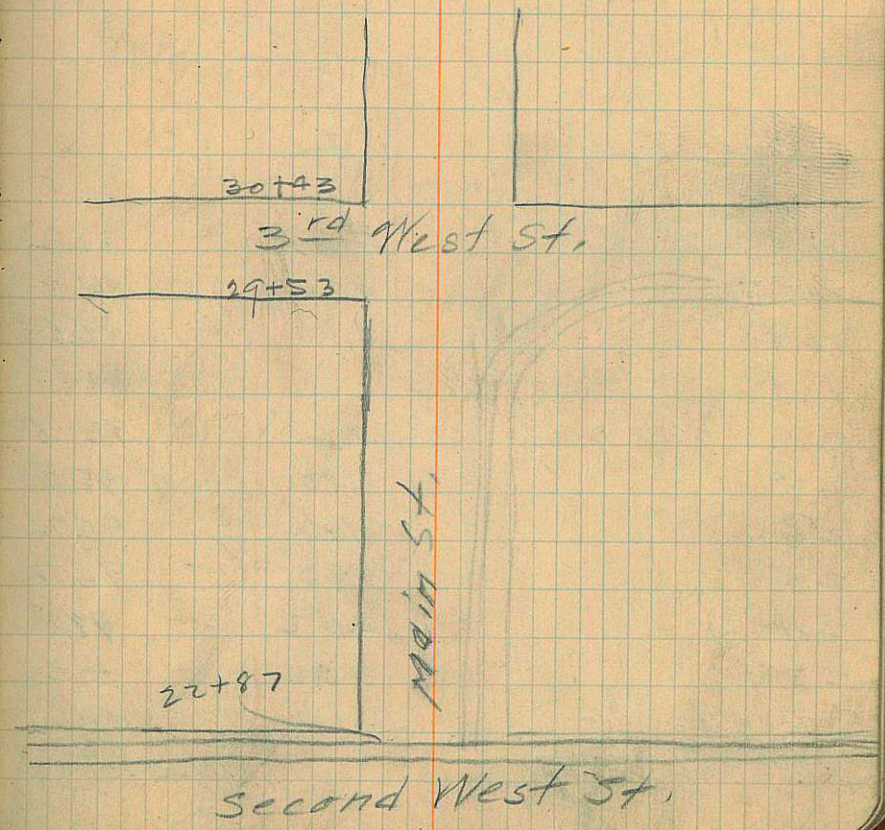
92 Begin Sta. 16+00 Running N. on E. side 1st St.

	+S	-S	Rod	H.I.	Elev.
				511.92	
16			+1.00		510.9
+27			1.00		10.9
15			1.70		10.2
+25.5			3.00		08.9
14			2.90		09.0
13			5.70		06.2
12			7.20		04.7
T.P.	3.47	7.05		508.34	104.87
11			4.00		04.34
10			4.05		04.29
9			4.40		03.94
8			4.30		04.04
+60.5			4.50		03.84
7+00			5.10		03.24
+62			5.60		02.74
6+00			5.60		02.74
5			6.20		02.14
T.P.	3.44	6.40		505.38	101.94
4			4.35		01.03
3			4.50		00.90
2			4.50		00.90
1			5.10		00.30
0+00			5.60		99.80
B.M. #2		5.30			500.08



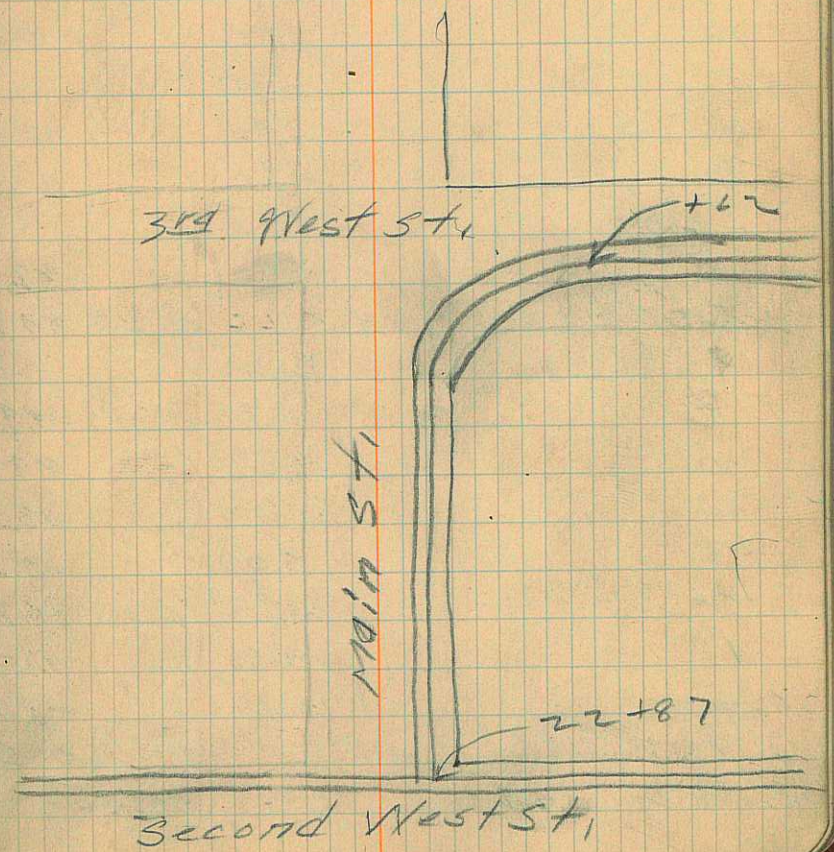
94 Begin 1st W. W. Side Running W on Main St. S. Side

	45	-5	Rod.	H.I.	Elev.
					500
+43			16.50		76.8
30			7.10		86.2
+53			2.40		90.9
T.P.	1.18	9.70		493.26	492.08
29			9.50		92.3
28			8.25		93.55
27			6.60		95.2
26			5.60		96.2
25			5.10		96.7
24			4.30		97.5
23			1.20		00.6
22+87			1.20		00.6
B.M.2	1.78			501.78	500



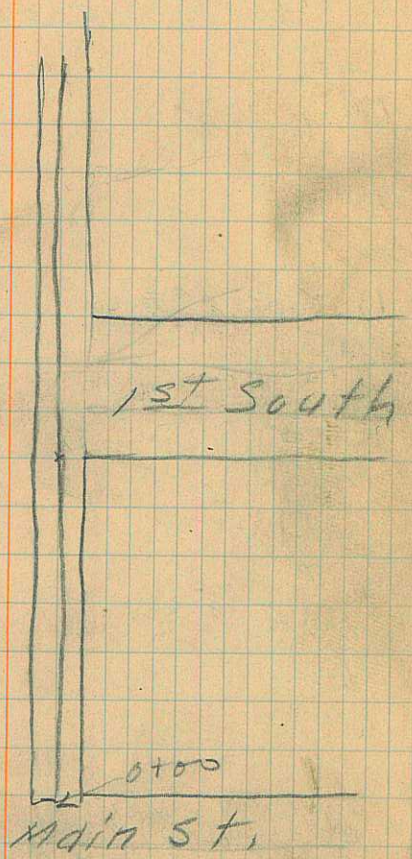
96 Begin 1st W. W. Side Running W. on Main St. N. Side

	+S	-S	Rod	H.I.	Elev.
+62			11.11		82.33
+25			9.26		84.18
29			8.00		85.44
T.P.	3.66	12.76		493.44	489.78
28			12.65		89.89
27			9.00		93.54
26			7.25		95.29
25			5.80		96.74
24			4.52		98.02
23			3.00		99.54
22+87			2.85		99.69
B.M.2	2.54			502.54	500

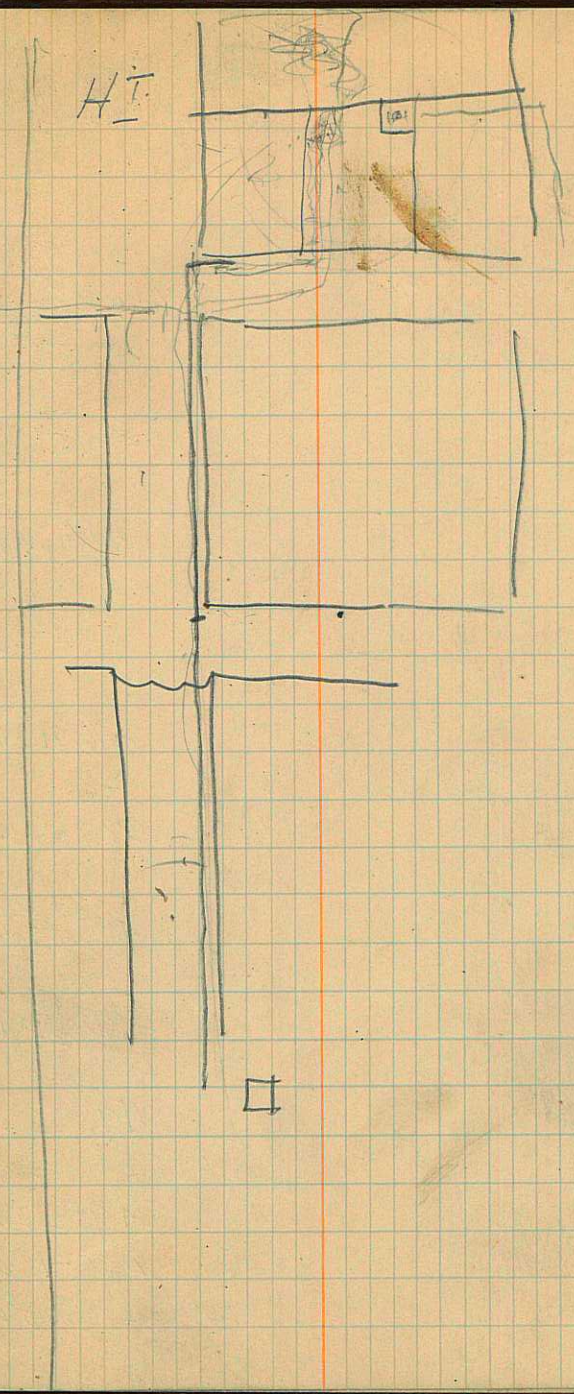


98 Begin on Main St, Running S. on Center W. Side, 99

	+S	-S	Rod	H.I.	Elev.
11			0.74		09.40
10			3.30		06.84
9			4.45		05.69
8			4.85		05.29
+55.5			4.95		05.19
7			4.90		05.24
T.P.	5.42	2.04		510.14	504.72
+54			2.06		04.70
6			2.79		03.97
5			3.50		03.26
4			4.00		02.76
3			4.50		02.26
2			4.92		501.84
1			5.60		501.16
0+00			6.75		500.01
T.P.	6.78	3.44		506.76	499.98
B.M 2	3.42			503.42	500



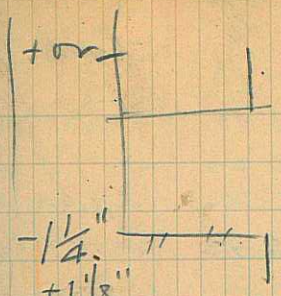
100	BS	FS	HI	Ele	Grade Ele	For
			1.0.2			
	25		11			
	.02					
	.50		1.			
Q = .02						
300		150.00				
3						



	BS	FS	HI	Ele	Grade Elev	Cor − F +	H.T.
15+30				499.73	499.770	+ 1/4"	✓
15+50				498.96	499.935	+ 9 1/4"	✓
16 00				498.57	499.647	+1'-1"	✓
16+50				498.51	499.559	+1'-1/2"	✓
17 00				498.20	499.471	+1'-3 1/4	✓
17+50				497.70	499.383	+1'-8 1/4"	✓
						~~+2'-4"~~	
18 00				496.95	499.295	+2'-4"	✓
18 50				497.04	499.207	+2'-2 1/8"	✓
19				497.03	499.119	2'-1 1/8"	✓
19 50				497.32	499.031	+1'-8 1/2"	✓
20				497.15	498.903	+1'-9 1/2"	✓
20+50				497.66	498.855	+1'-2 3/8"	✓
21				498.22	498.167	+ 6 1/2"	✓
21+50				498.51	498.679	+1"	✓
21+83.6				499.83	498.60	-1'-2 3/4	✓

	BS	FS		Ele	Grade + 6	HI	
104							~~Re~~ Correct 105
7+66			5.30	501.00	501.13		+1'5/8" used 7/14/20
6+64					501.30		Ent. 1st E — — — 501.3 grade
6+50			4.95	501.35	501.38		+3/8"
6+00			4.64	501.66	501.68		+1/4" Curb grade
5+50			4.66	501.64	501.98		+4" loose
5+00	4.50	8.14		501.80	502.286	506.3	+5 3/4"
4+50			7.58	502.36	502.588		+2 3/4" ✓
4+00			7.47	502.47	502.890		+5" ✓
3+50			6.60	503.34	503.192		-2" ✓ loose tighten ✓
3+00			5.97	504.02	503.491		-6 3/8" ✓
2+50			5.74	504.60	503.796		-9 5/8" ✓
2+00			4.57	505.37	504.093		-1' 3 1/4" ✓
1+50			4.14	505.80	504.406		-1' 4 3/4"
1+00			3.90	506.04	504.702		-1'-4 1/8" ✓
+50 ✓			3.54	506.40	505.00		-1'-4 7/8"
0+1.5 ✓			3.15	506.79	505.30		1'-5 7/8" ✓
BM near cv	2.49			507.15	509.44		

	BS	FS	HI	Elev.	Grade Elev.	
14+27			3.72	500.04	499.94	-1 1/4"
14			3.86	499.90	499.99	+1 1/8"
13+50			2.73	501.03	500.07	503.76 -1 1/2" Lightener of on top cap back of 15' W of fountain comes on old pavement
13	2.86	5.40 ~~5.40~~	~~5.40~~	500.90		
12+50			6.00	500.30	500.255	-1 1/2"
12			5.54	500.76	500.344	-5" lightener of cap
11+50			5.38	500.92	500.432	-5 7/8"
11 00			5.11	501.19	500.521	-8"
10+50			5.46	500.84	500.609	-2 3/4"
10+00			5.29	501.01	500.695	-3 5/8"
9+50			5.19	501.11	500.786	-3 7/8"
9 00			5.28	501.02	500.875	-1 7/8" reset.
8+50			5.23	501.07	500.963	-1 1/4"
8 00			5.22	501.08	501.05	-3/8"
7+66			5.30	501.00	501.13	506.30 +5/8" 7+66



13/16
1/2
13/16
1 5/16

501

Bm	3.77		500.00	Grade Est	New	old		
21+86+		3.88	499.88	498.60	-1'-3 3/8	-1'-2 3/4	Peterson more grade	
21+50		5.22	498.54	498.679	+ 1 1/2"	+1"		
21		5.52	498.24	498.767	+ 6 1/2	+6 1/2		
20+50		6.08	497.68	498.855	+1'-2 1/8	+1'-2 3/8		
					+1'-9 1/2			
20		4.53 PG	499.23					
		6.60	497.16	498.943	+1'-9 1/2	+1'-9 1/2"		
		4.46	499.30					
19+50		6.93	497.33	499.031	+1'-8 1/2	+1'-8 1/2	OK	3/8" too low
		4.39 PG	499.37					
19		6.75	497.01	499.14	+2'1 1/4	+2-1 1/8"		3/4" too low
		4.35 PG	499.41					
18+50		6.76	497.00	499.207	+2-2 1/2	+2-2 1/8		1 1/4" too low
		4.26 PG	499.50					
18.00		6.84	496.92	499.295	+2'-4 1/2"	+2'-4"		1" too low
		4.18 PG	499.58					
17+50		6.10	497.66	499.383	+1'-8 5/8	1'-8 1/4		1 1/8" too low
		4.06 PG	499.70					
17		5.58	498.18	499.471	+1'-3 1/2	+1'-3 1/4 Regulator		7/8" too low
		3.98 PG	499.78					
16+50		5.26	498.50	499.559	+1'-3/4	+1'-1/2"		1" to low
		3.89 PG	499.87					
16.00		5.21	498.55	499.647	+1'-1 1/4"	+ — reset		1" too low
		3.91	499.85					
15+50		4.82	498.94	499.735	+9 1/2	+9 1/4		2" too L
		3.85	499.91					
15+70		4.1	499.66	499.7	+1 1/4"	H.I. 503.76		

on Peterson line eg. 3" higher than Curb = PG

M. conc. on old cement

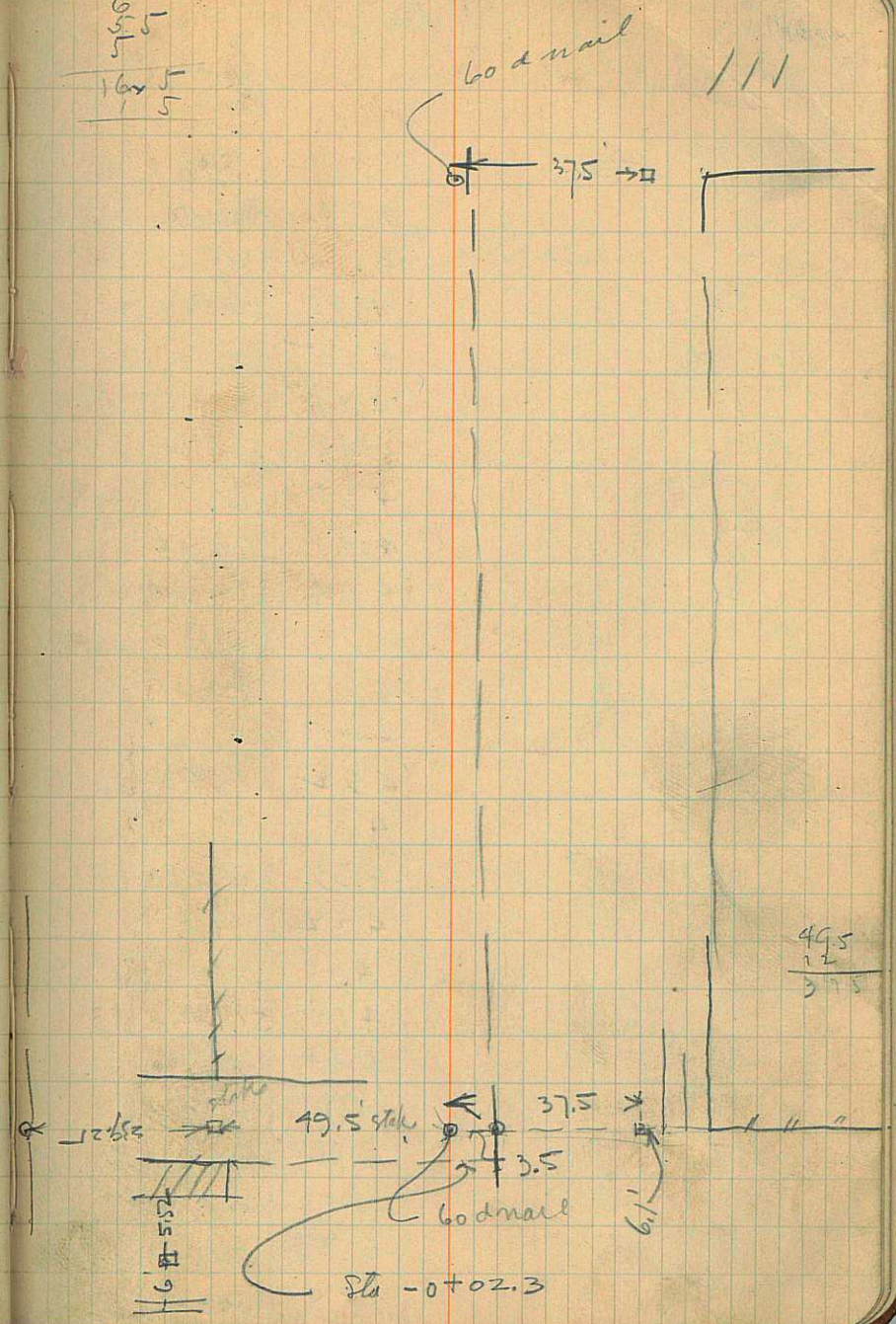
New values June 9-1970 Curb to 1st Wm Wm

110

17.5
16.5
725
870
145
239.25

6
55
55
165
55

111



112

			Hub Ele −	Grade Elevation +
BM at Amuse. Hall	5.300		500.00	5.53
0		4.940	500.36	499.40 .327
pro 0		4.700	500.60	
0+50		4.81	500.49	498.72 .328
pro 50		4.55	500.75	
1+00		4.84	500.46	499.055 .327
pro		4.45	500.85	
1+50		4.94	500.36	499.382 .328
pro		4.44	500.86	
2		4.66	500.64	499.710 .327
P		4.38	500.92	
2+50		4.15	501.15	500.037 .328
P		4.24	501.06	
3		4.32	500.98	500.365 .327
P		4.27	501.03	
3+50		4.53	500.77	500.692 .328
P		4.22	501.08	
H		4.48	500.82	501.020 .327
P		4.08	501.22	
4+50		4.44	500.86	501.347 .328
P		3.86	501.44	
5		3.86	501.44	501.675 .327
P		3.40	501.90	
5+50		2.96	502.34	502.002 .328
P		3.00	502.30	502.330

Levels on Hubs. 37½ W of ℄ on W side of 1W between Mem + 8 1.5 5.113

H	+ or −
5053	−1'−11½"
	−1'−9⅛"
	−1'−4⅞"
	−11¾"
	−11"
	−1'−1⅜"
	−7½"
	−1"
	+2½"
	+5⅞"
	+2¾"
	−4¼"

Edge

65507

0.327
328

501.15
500.04
1 11

37½
12
49½

500.98
500.36
62

501.02
500.82
20

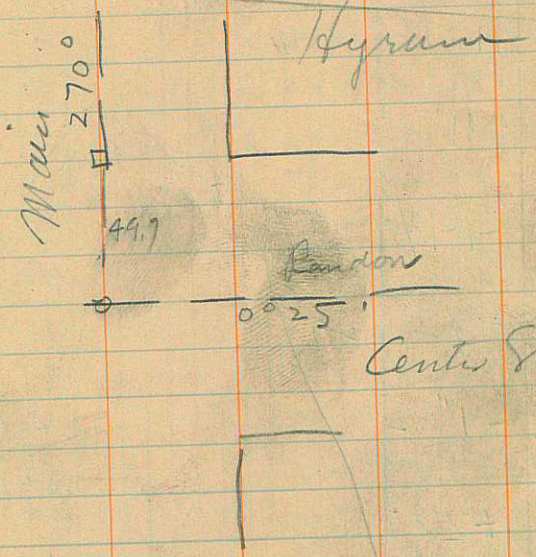
501.35
500.86
49

501.67
501.44
23

114

	Ele	Grade Ele +	for −
6⁰⁰	3.21	502.09	502.33 (327) + 3"
P	2.65	502.65	✓
6+50	2.83	502.47	502.65 (8) + 2¼"
P	2.32	502.98	✓
6+72.6	2.69	502.61	502.73 (60) + 1¼"
Par 6+72.6	2.21	503.09	✓

7/13/20



Roy Hall

115

66
47
19

.65
.13
195
65
.0845

502.74 cor grade of curve

2)92.3
46.1

nt
ence
stance
) the distance from
e curve. Thus $(54.50)^2 \div (2 \times 688.26) = 2.16$ ft.

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

Externals.—May be found in similar manner to tangents. Thus curve above is 115.37 For from Table IV for 1° curve E=960.6 20′=960.6÷8⅓=115.27 and from Table V correction=.10 or 5.37 Or suppose △=32° and E is measured and found to be What is D? From Table IV E=230.9 and ÷42=5.5 or D=

116 490 spill at
Big hollow
~~440~~ spill at Dam
Dam = 340

434 Ele at 247+63

BS	FS	
4.4		434
	3.30	
13.50		
12.10	0.70	
13.00	1.80	
13.00	3.60	
11.00	2.80	
67.00	10.20	
56	11.00	

Placed stake at E 490
spill below 246+79
all. 124 C. xD l + long

DIETZGEN'S RAILROAD CURVE AND REDUCTION TABLES

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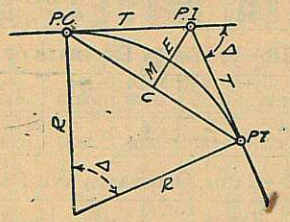

CURVE FORMULAS

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

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

Middle ordinate=$M=R(1-\cos. \frac{\Delta}{2})$ (5) $=R\,\text{vers}\,\frac{\Delta}{2}$ (6)

External=$E=T\tan\frac{\Delta}{4}$ (7) $=R\div\cos\frac{\Delta}{2}-R$ (8)$=R\,\text{exsec}\frac{\Delta}{2}$ (9)

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

EXPLANATION AND USE OF TABLES

Stations.—Given P. I.=Sta. 161+60.35 to find Sta. of P. C. P. T. $\Delta=62°\ 10'$ $D=8°\ 20'$. From Table IV for 1° curve T=1 and ÷8⅓=414.49 ft. From Table V correction=.36 or T=5 ft. P. C.=Sta. P.I.—T=157+45.50. Also from (4) L=0 and P. T.=Sta. P. C.+L=164+91.50.

Offsets.—Tangent offsets vary (approximately) directly with d with square of the distance. Thus tangent offset for Sta. n above curve is 2.16 ft. found as follows. From Table III tangent for 100 ft.=7.27 ft. Distance=158—Sta. P. C.=54.50, hence =7.27 $(54.50\div100)^2$=2.16 ft. Also square of any distance ed by twice the radius equals (approximately) the distance from nt to curve. Thus $(54.50)^2\div(2\times688.26)$=2.16 ft.

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

xternals.—May be found in similar manner to tangents. Thus curve above is 115.37 For from Table IV for 1° curve E=960.6 20′=960.6÷8⅓=115.27 and from Table V correction=.10 or 5.37 Or suppose $\Delta=32°$ and E is measured and found to be What is D? From Table IV E=230.9 and ÷42=5.5 or D=