FIELD BOOK

S 1135

PLEASE RETURN TO
GEAUGA COUNTY ENGINEER
COURT HOUSE
CHARDON, O.
PHONE 250-X

Book 149

HASKINS ROAD IN BAINBRIDGE TP.

No. 191 - Sec. A.B.C.D.E. Pg 1

Profile Pg 38 -
CULVERTS Back Pages

levels for relocation of bridge
sta 42+85 Pg 27

Levels for dr. problem sta 39+83 Rt. - 30

Haskins Rd. ('73) & Dr. Profiles 35

SHAW'S
PIONEERS
SINCE 1831

Field Book
No. S 1135

MADE IN 88 LEAVES

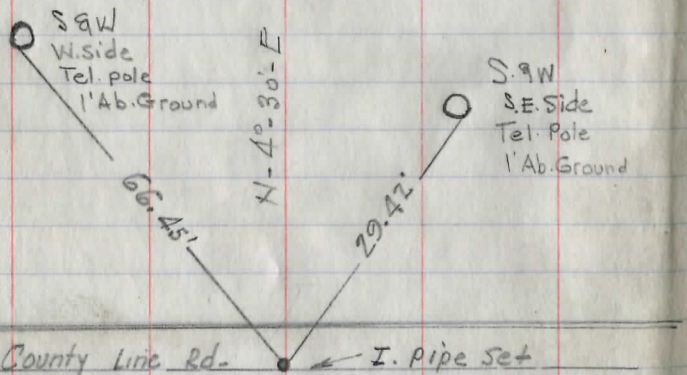
A Product of Wilson-Jones Co.
Made in U. S. A.

Ditch Levels Ranch Drive at House #8818 ('73) Pg 36
" " " S. Side Rd. Pg 75

PAPER AND LITHOGRAPHING
GUARANTEED WATERPROOF

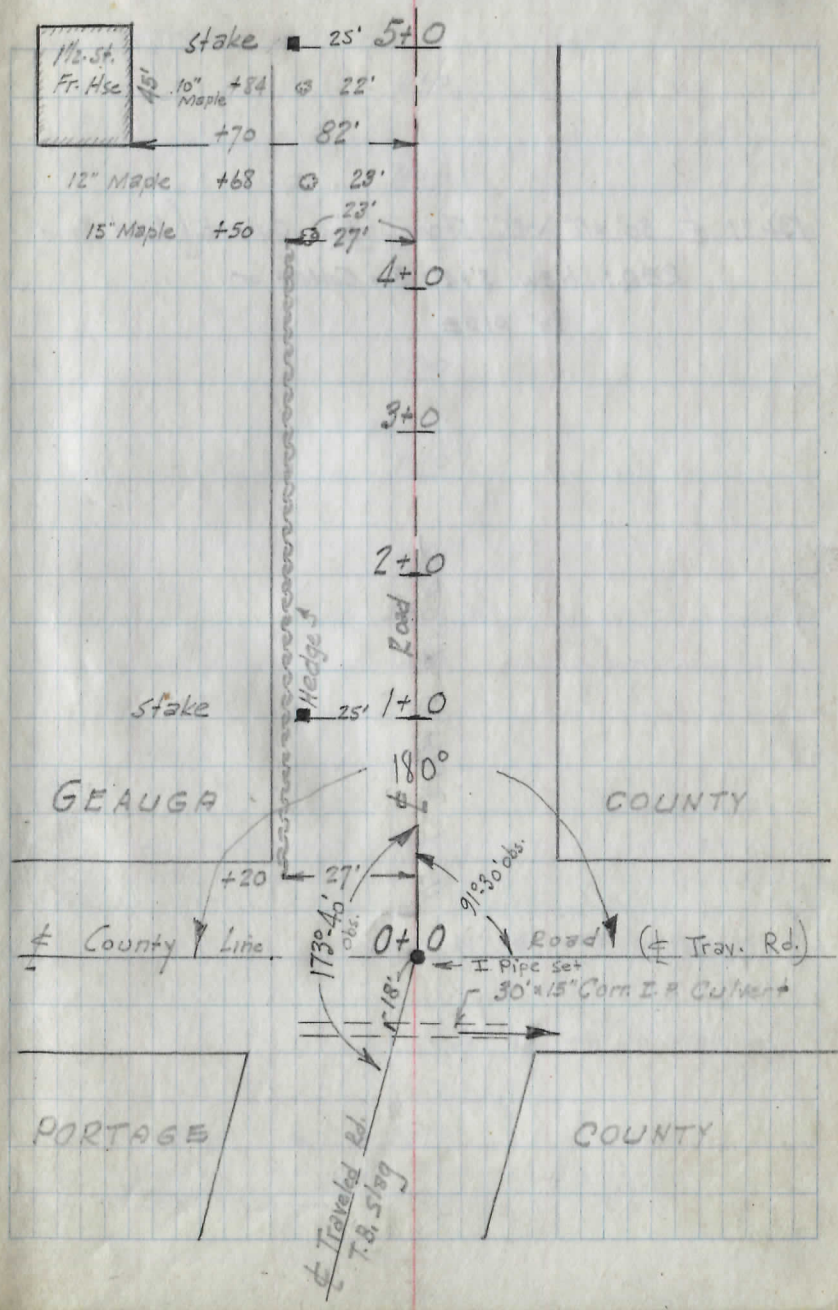
T.H.#191 Haskins Rd- 1-13-35 S. Gould Jr. G. Dietz

NOTE: SIDE STAKES SET EVERY 100' ON RIGHT SIDE OF RD. (EAST) 25-FT. FROM ℄, UNLESS OTHERWISE INDICATED IN THE NOTES.



0+0 County Line Rd. ← I. pipe set
T#. 269

0.18 ℄ 15"x30' Corr I.P. Side Road Culvert (New Pipe)

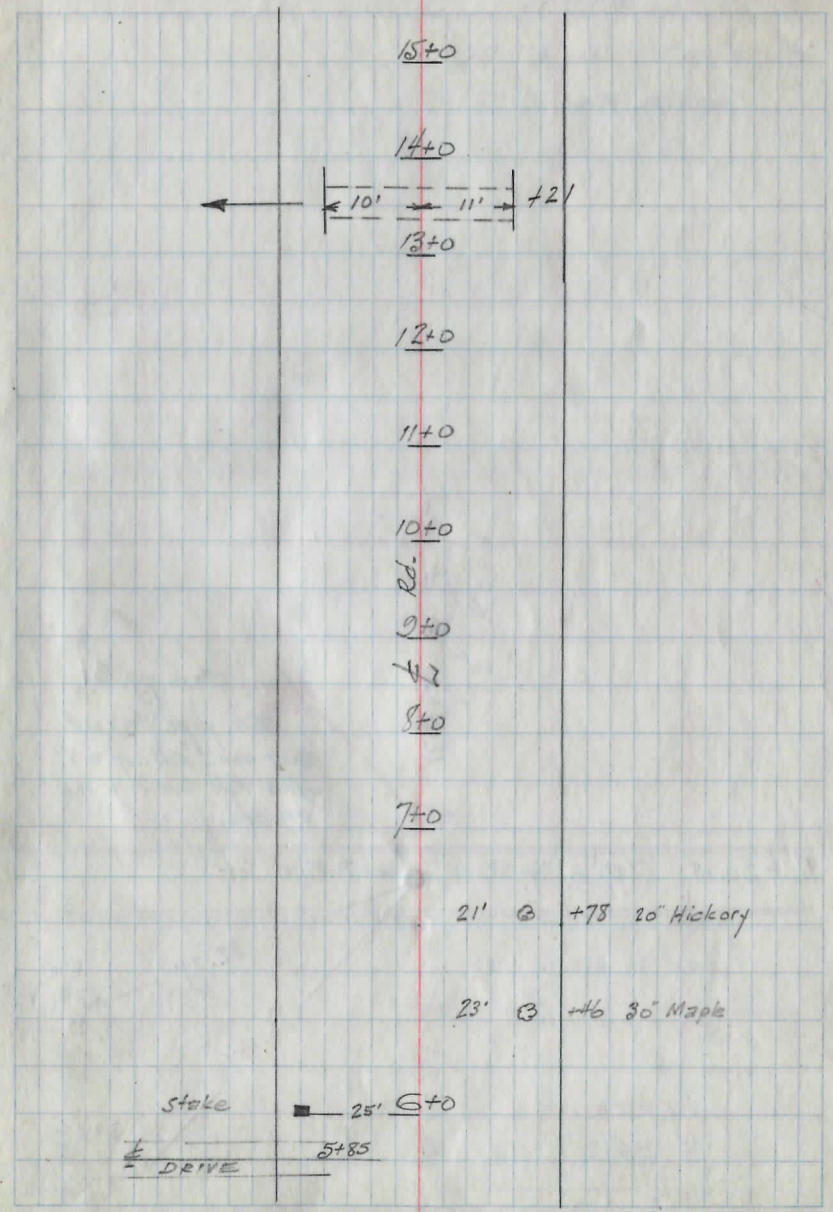


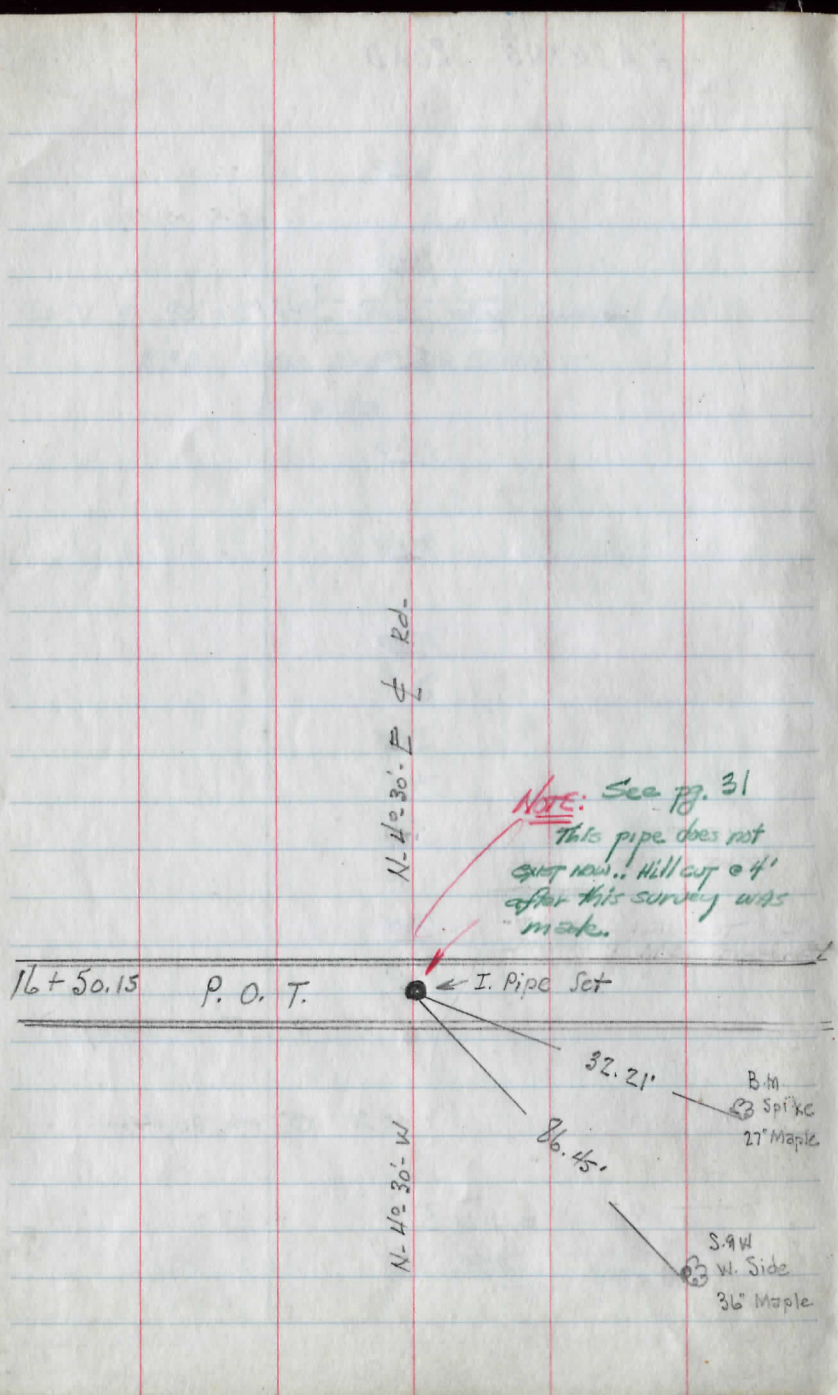
13+21 ℄ 30" x 18" x 21' Stone Box Culvert (Bad Cond.)

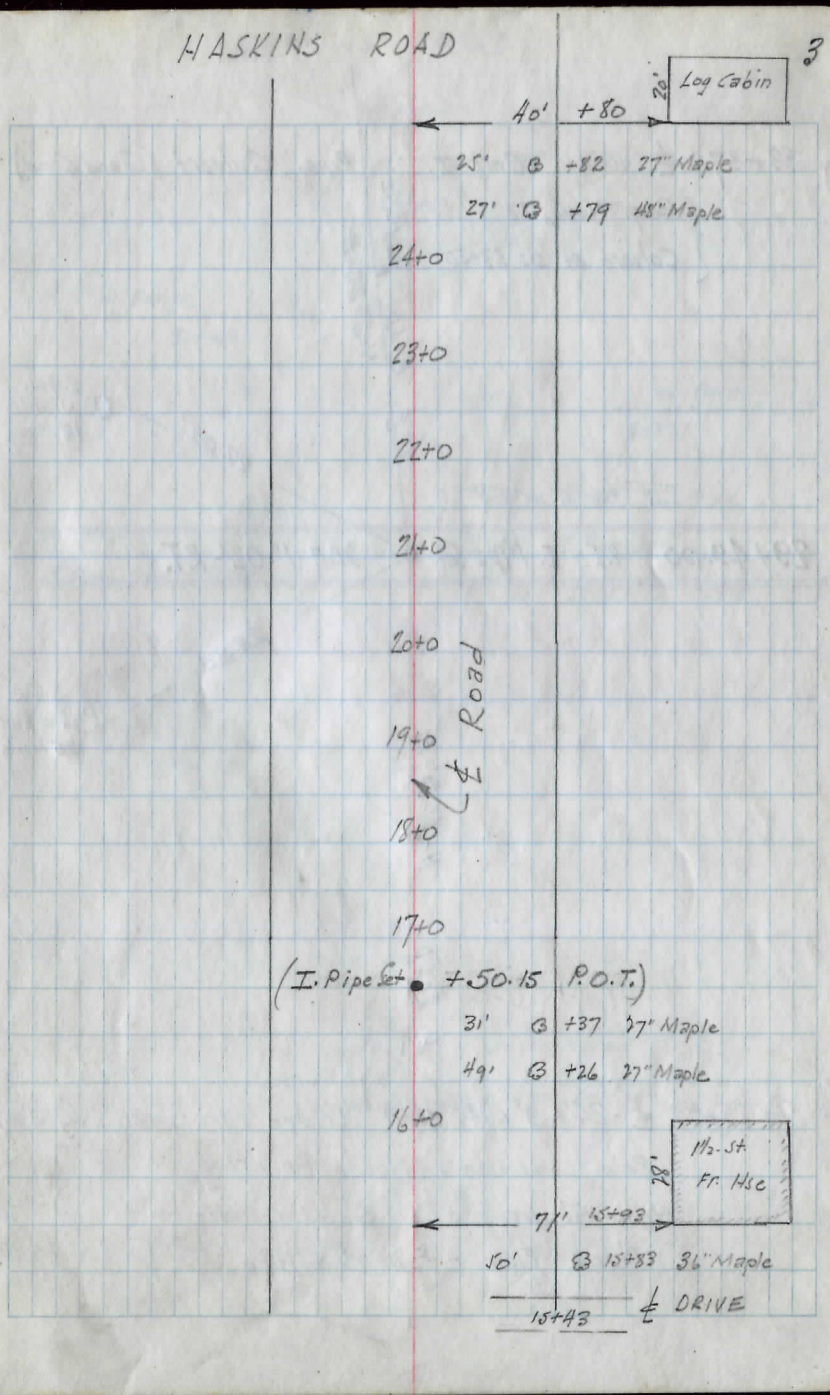
REQ.: NEW 3' x 2' Box Culvert or
30" PIPE

℄ Rd. 1

N. 40-30'-E




N. 40° 30' E ℄ Rd.
Note: See pg. 31
This pipe does not exist now. Will cut @ 4' after this survey was made.
16+50.15 P. O. T.
I. Pipe Set
32.21'
B.M.
Spike
27" Maple
86.45'
N. 40° 30' W
S.9W
W. Side
36" Maple


HASKINS ROAD
3
Log Cabin
28'
40'
+80
25' ℄ +82 27" Maple
27' ℄ +79 48" Maple
24+0
23+0
22+0
21+0
20+0
19+0
℄ Road
18+0
17+0
(I. Pipe Set +50.15 P.O.T.)
31' ℄ +37 37" Maple
49' ℄ +26 27" Maple
16+0
1½ St Fr. Hse
28'
71'
15+93
50' ℄ 15+83 36" Maple
℄ DRIVE
15+43

33+37 ℄ 16'x10" Corr. I. Pipe Culvert (Good Cond)

{ Req. New 12"
Culvert at Sta 33+50

℄ ROAD N-5°-32'-E

1°-02'

S.&W. N. Side 18 Maple

27.00

I.P. fd Nov. 57

29+49.00 P.I. I. Pipe Set DEF. 1°-02'-RT.

28.56

S.&W. S.W. Root 20" Maple

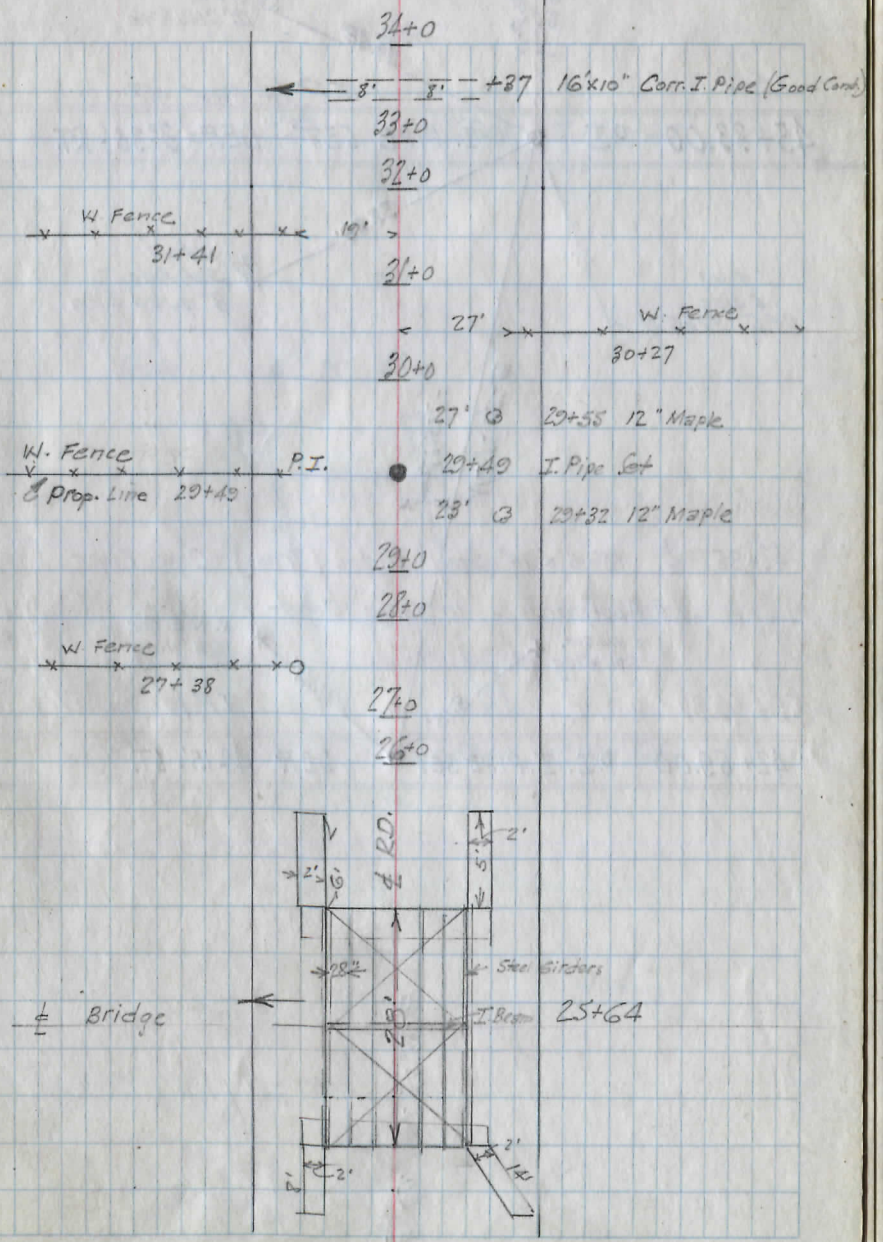
℄ ROAD N-4°-30'-E

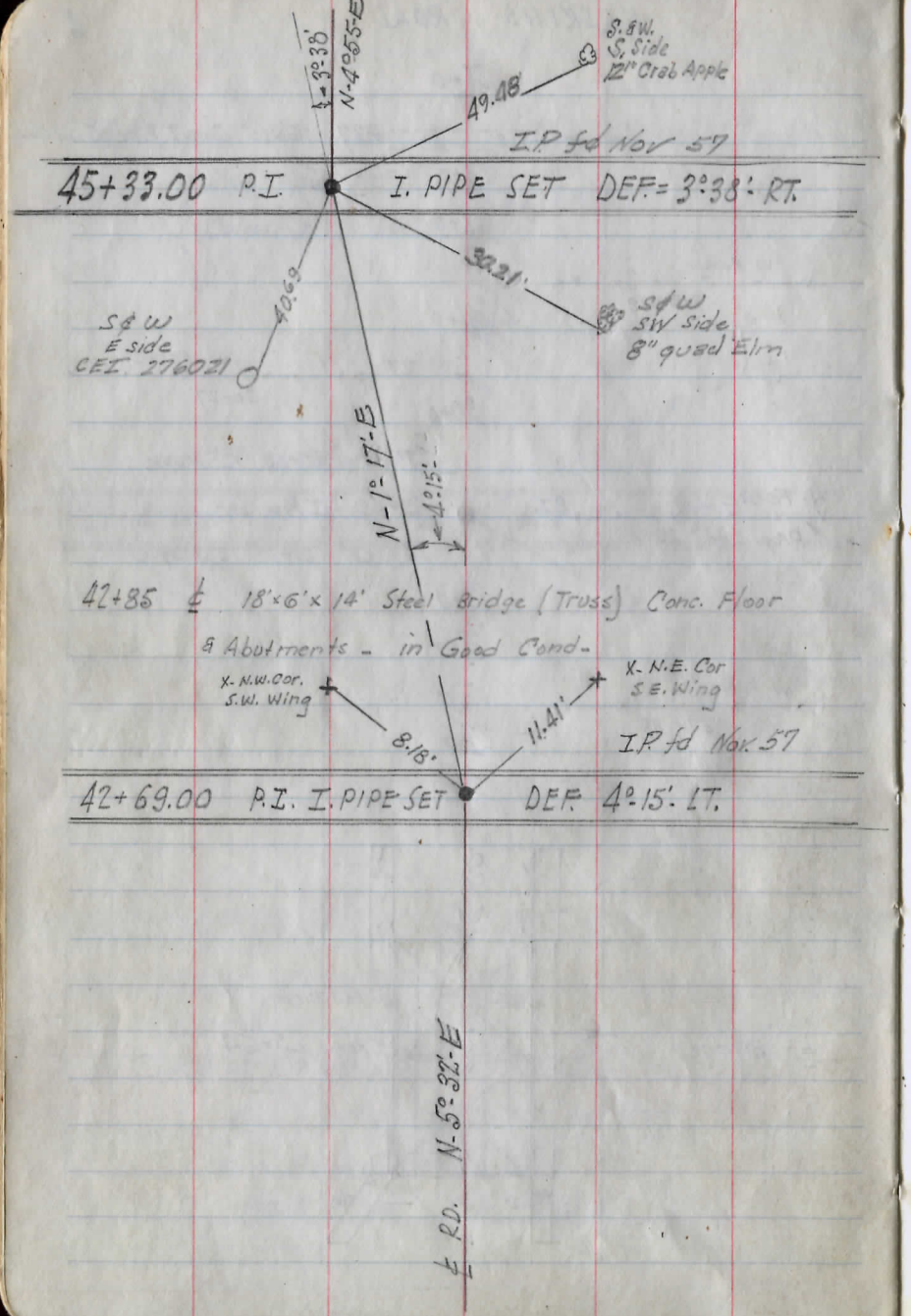
Sta 25+64 ℄ 24'x9'x14 Steel Bridge (Truss 28' Long 8' High)

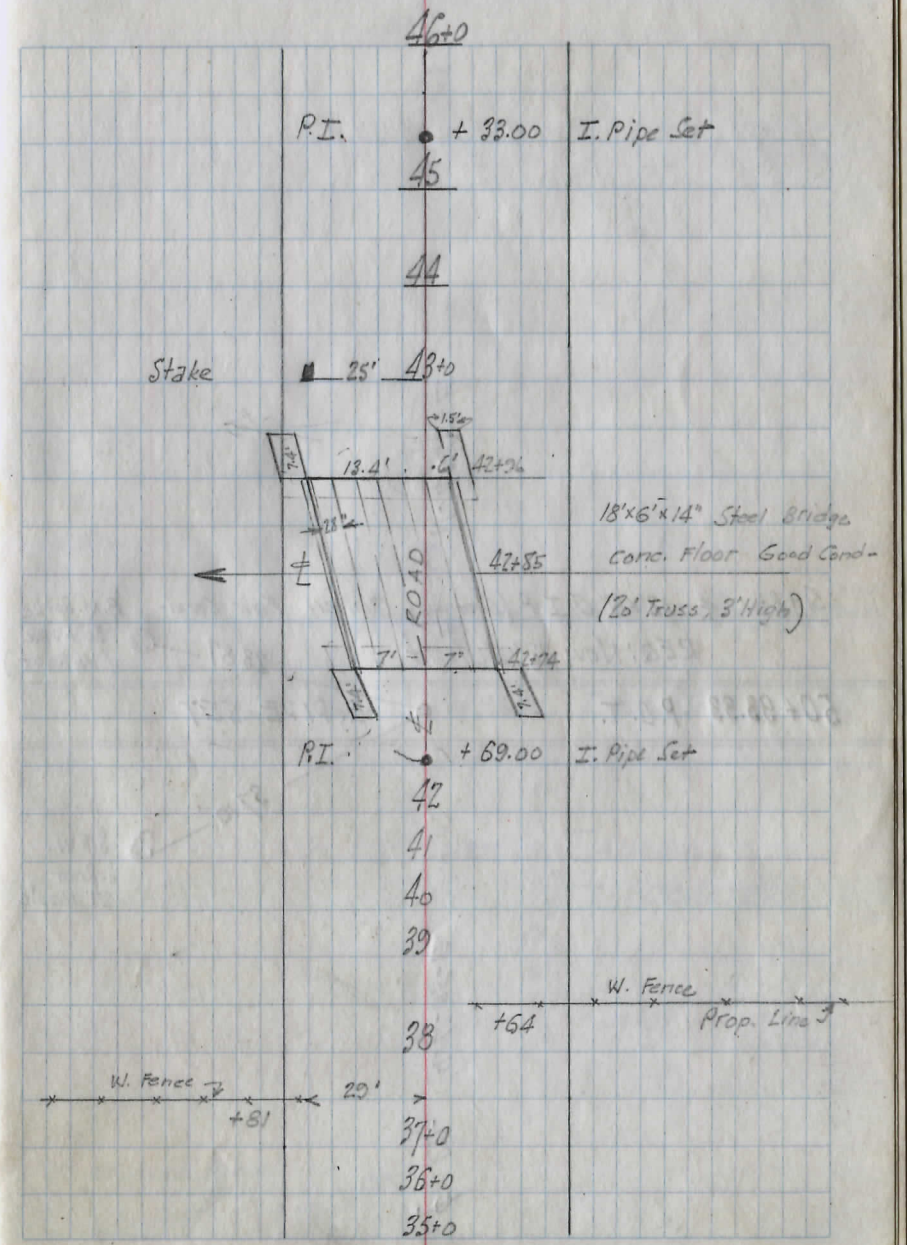
Fair Condition - Needs Painting

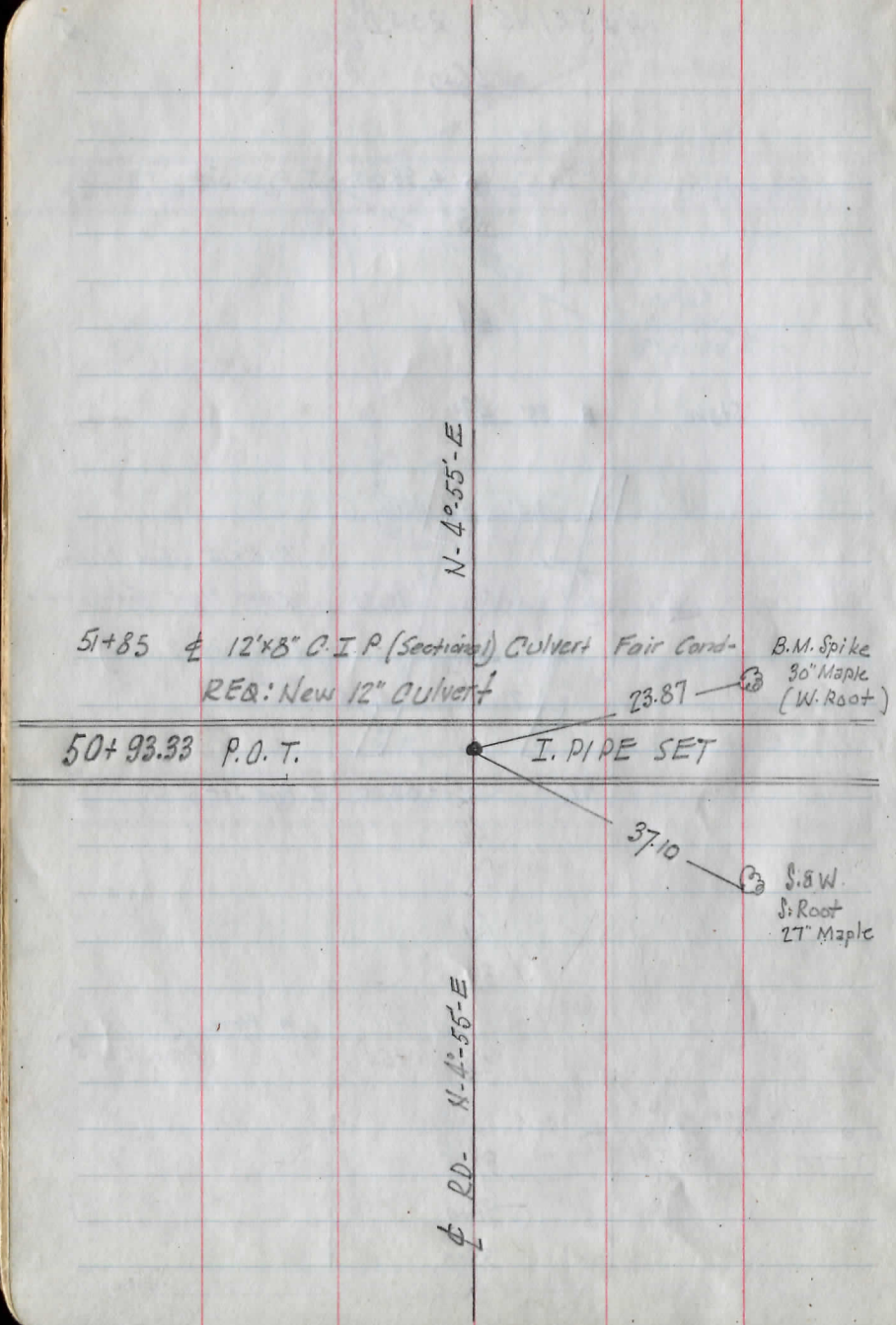
Stone Abutments in Good Condition

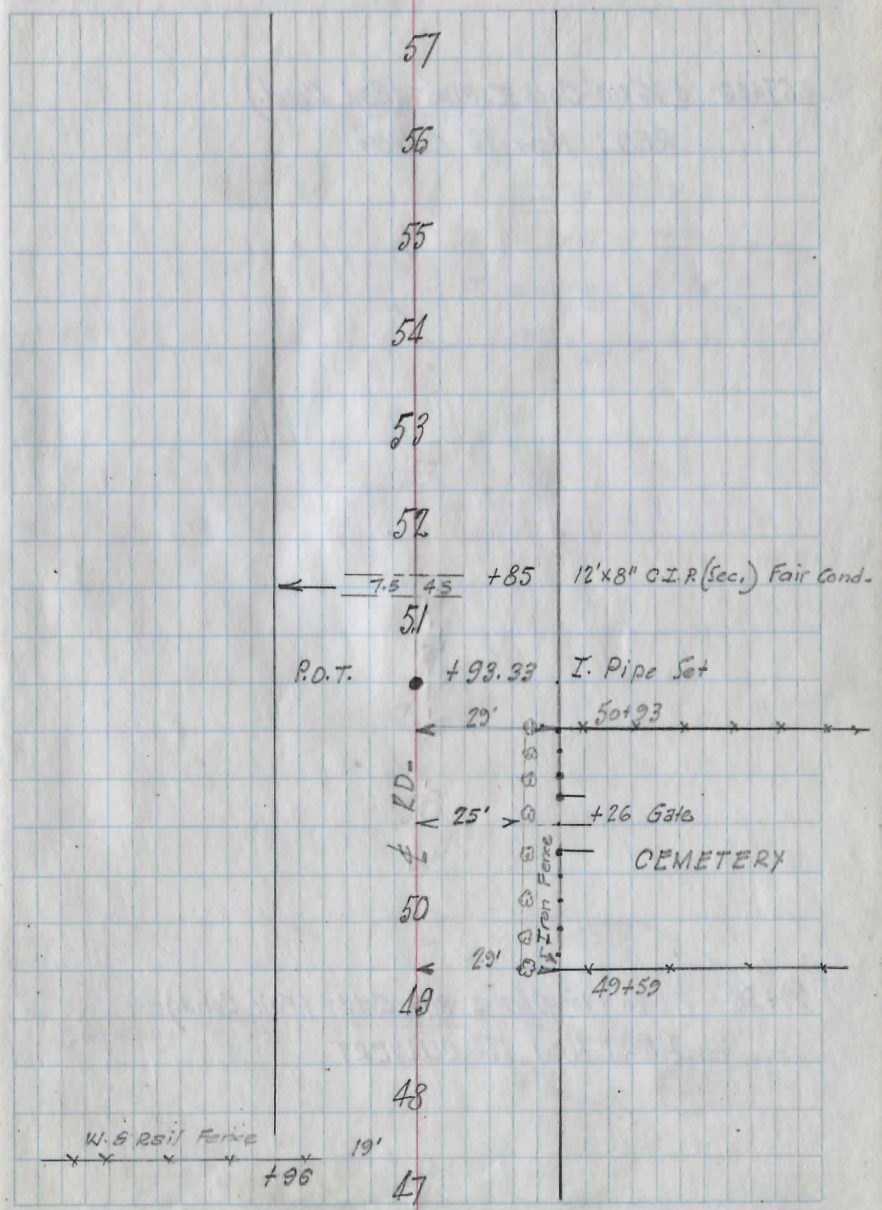
Plank Floor - Fair Condition




Δ = 3°38'
N-40°55-E
49.48
S. & W.
S. Side
12" Crab Apple
I.P. fd Nov 57
45+33.00 P.I. I. PIPE SET DEF.= 3°38' RT.
40.69
S & W
E side
CEI. 276021
30.21'
S & W
SW side
8" quad Elm
N-1°17'-E
42.15'
42+85 ℄ 18'x6'x14' Steel Bridge (Truss) Conc. Floor
& Abutments - in Good Cond.
X. N.W. Cor.
S.W. Wing
8.18'
X. N.E. Cor
S.E. Wing
11.41'
I.P. fd Nov. 57
42+69.00 P.I. I. PIPE SET DEF. 4°-15'. LT.
℄ R.D. N. 5°-32'-E


46+0
P.I. + 33.00 I. Pipe Set
45
44
Stake 25' 43+0
1.5%
13.4'
.6'
42+26
18'x6'x14° Steel Bridge
Conc. Floor Good Cond-
(18' Truss, 3' High)
℄
42+85
ROAD
7'
7'
42+74
P.I. + 69.00 I. Pipe Set
42
41
40
39
W. Fence
Prop. Line
+64
38
W. Fence
29'
+81
37+0
36+0
35+0

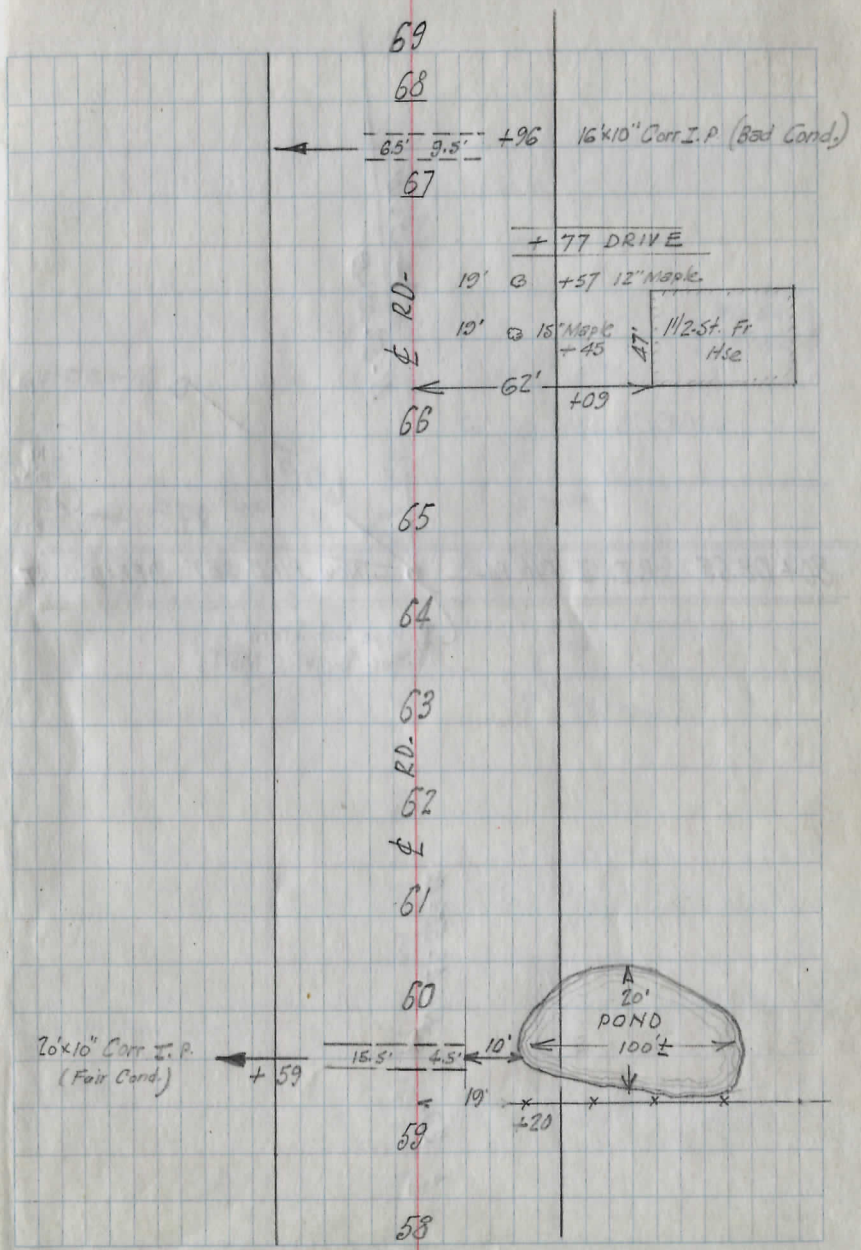

N-4°55'-E
51+85 ℄ 12"x8" C.I.P (Sectional) Culvert Fair Cond.
REQ: New 12" Culvert
B.M. Spike
30" Maple
(W. Root)
23.87
50+93.33 P.O.T.
I. PIPE SET
37.10
S.&W.
S. Root
27" Maple
℄ RD- N-4°-56'-E


57
56
55
54
53
52
51
50
49
48
47
7.5
4.5
+85 12"x8" C.I.P (Sec.) Fair Cond.
P.O.T. +93.33 I. Pipe Set
25'
50+93
℄ RD-
25'
+26 Gate
CEMETERY
Iron Fence
29'
49+59
W.S. Rail Fence
19'
+96

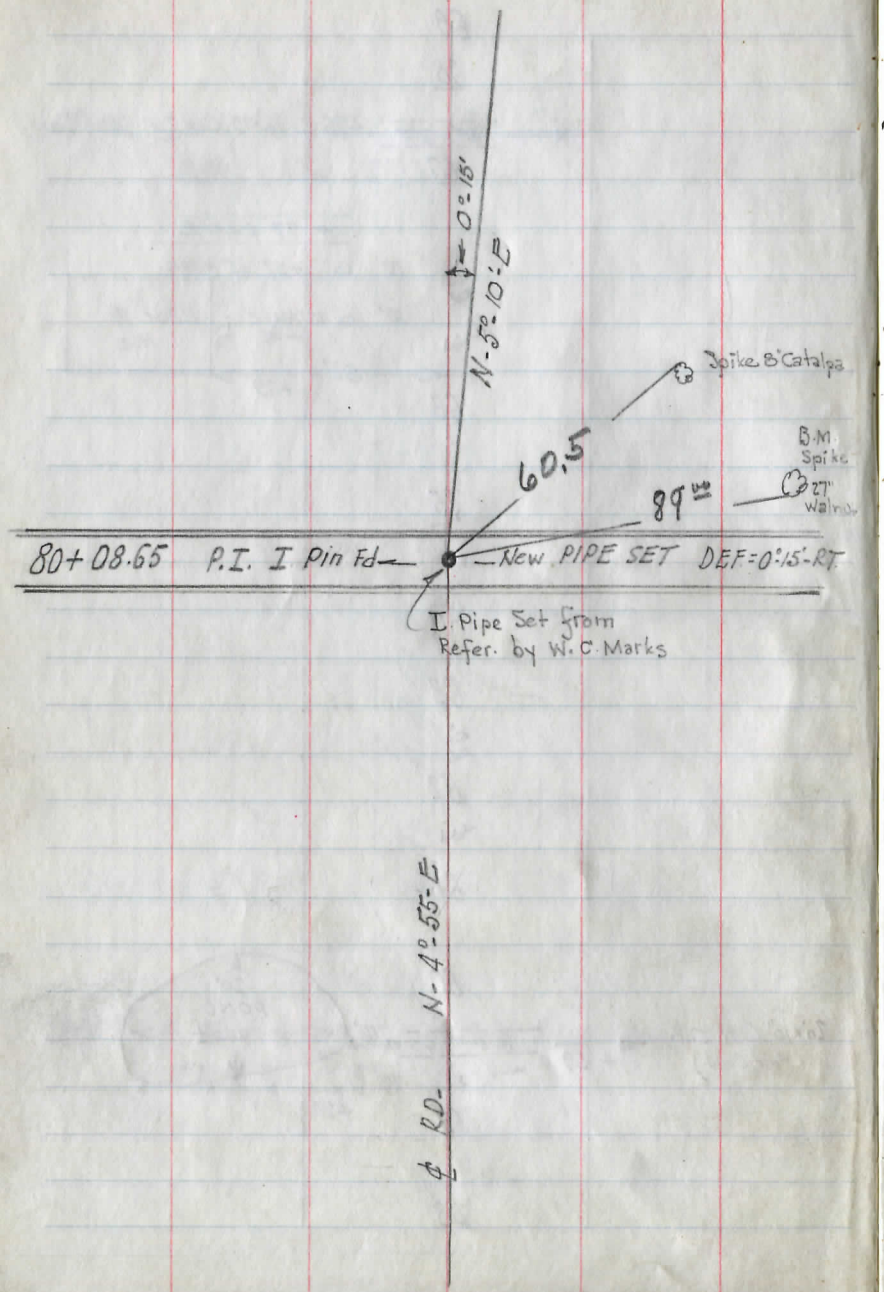
67+96 ℄ 16'x10" Corr. I. Pipe (Bad Cond.)
REQ.: New 12" Culvert

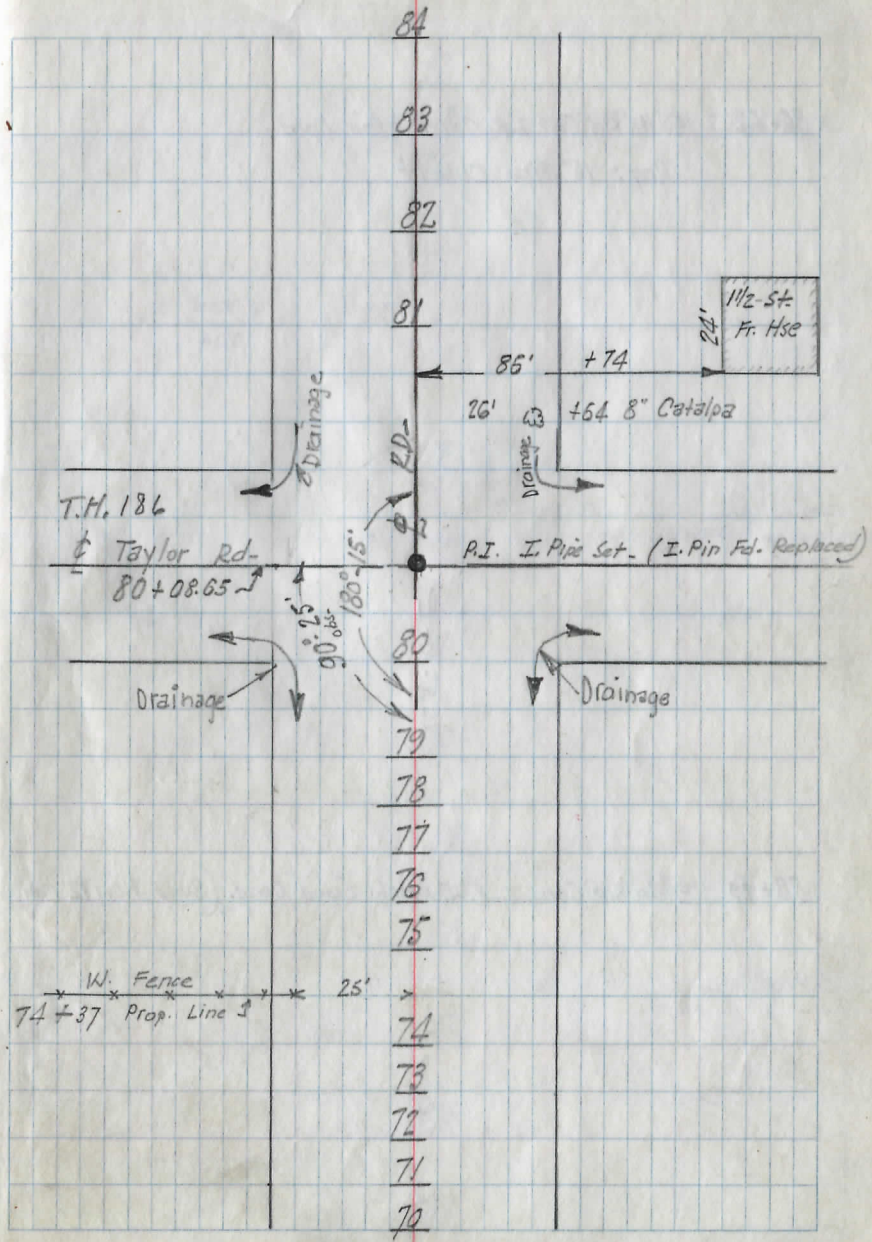
℄ RD. N-4°-55'-E

59+59 ℄ 20'x10" Corr I Pipe Culv. (Fair Cond.)
REQ.: New 15" CULVERT



HASKINS ROAD





HASKINS RD-

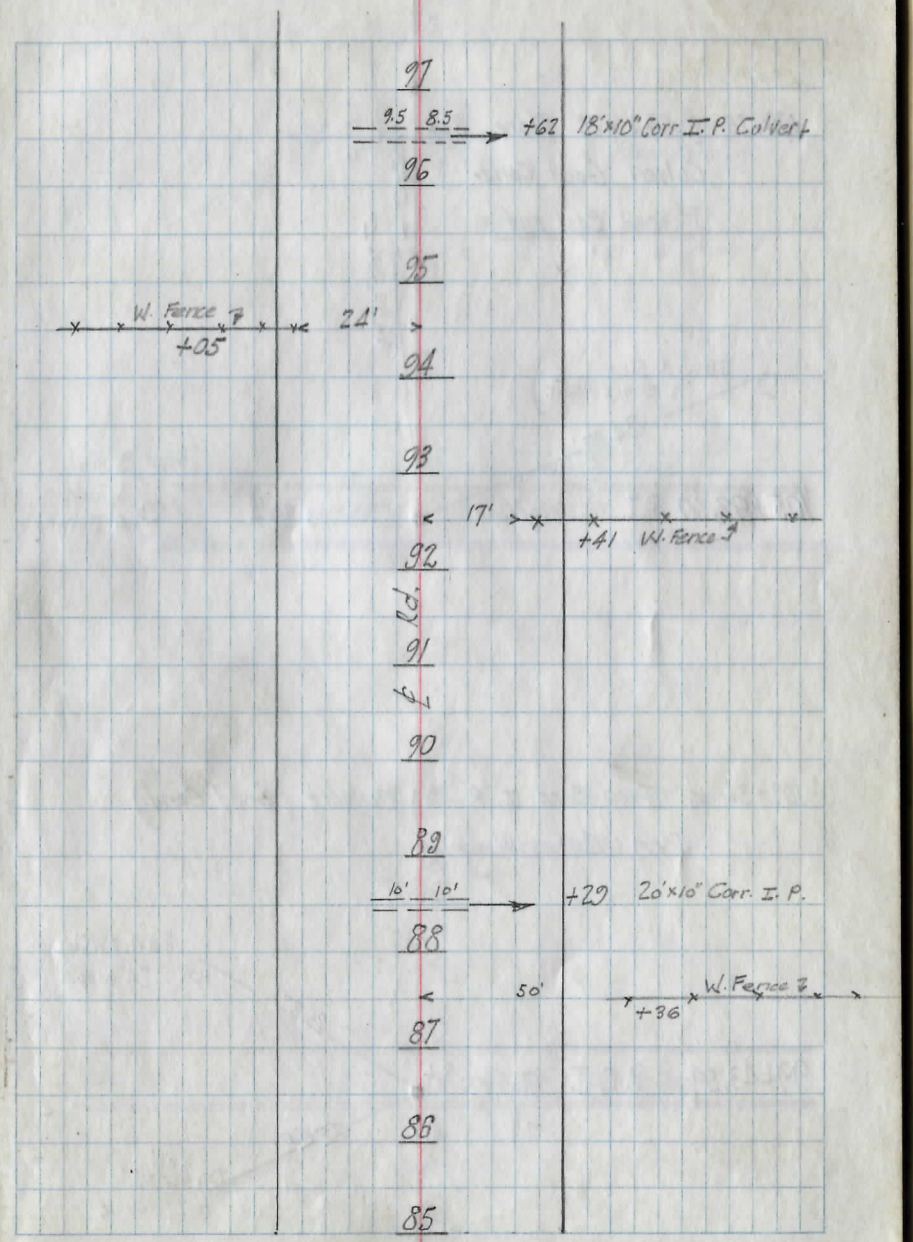
96+62 ℄ 18'x10" Corr. I.P. Culvert Fair Cond-
Req.: 15" Pipe Culvert

N 5° 10' E

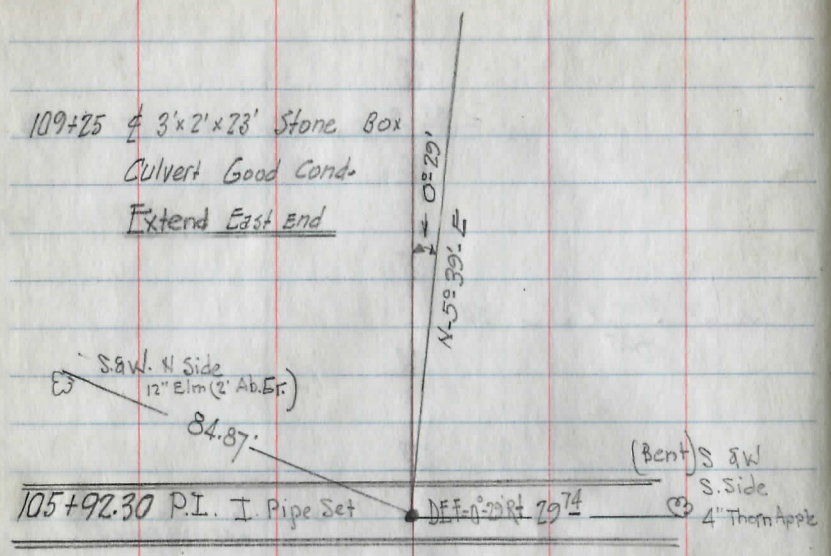
88+29 ℄ 20'x10' Corr I. P. Culvert Good Cond. (Build New 12" Culv)

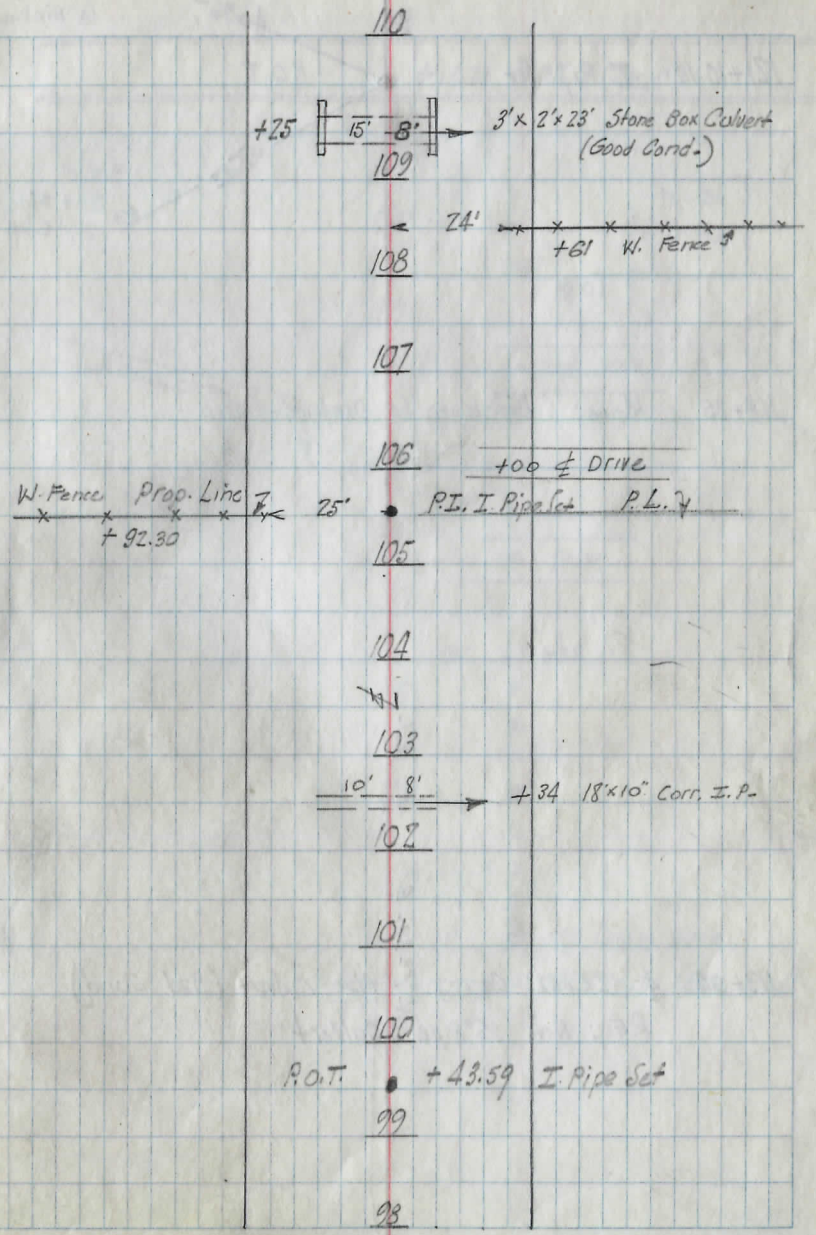
Road

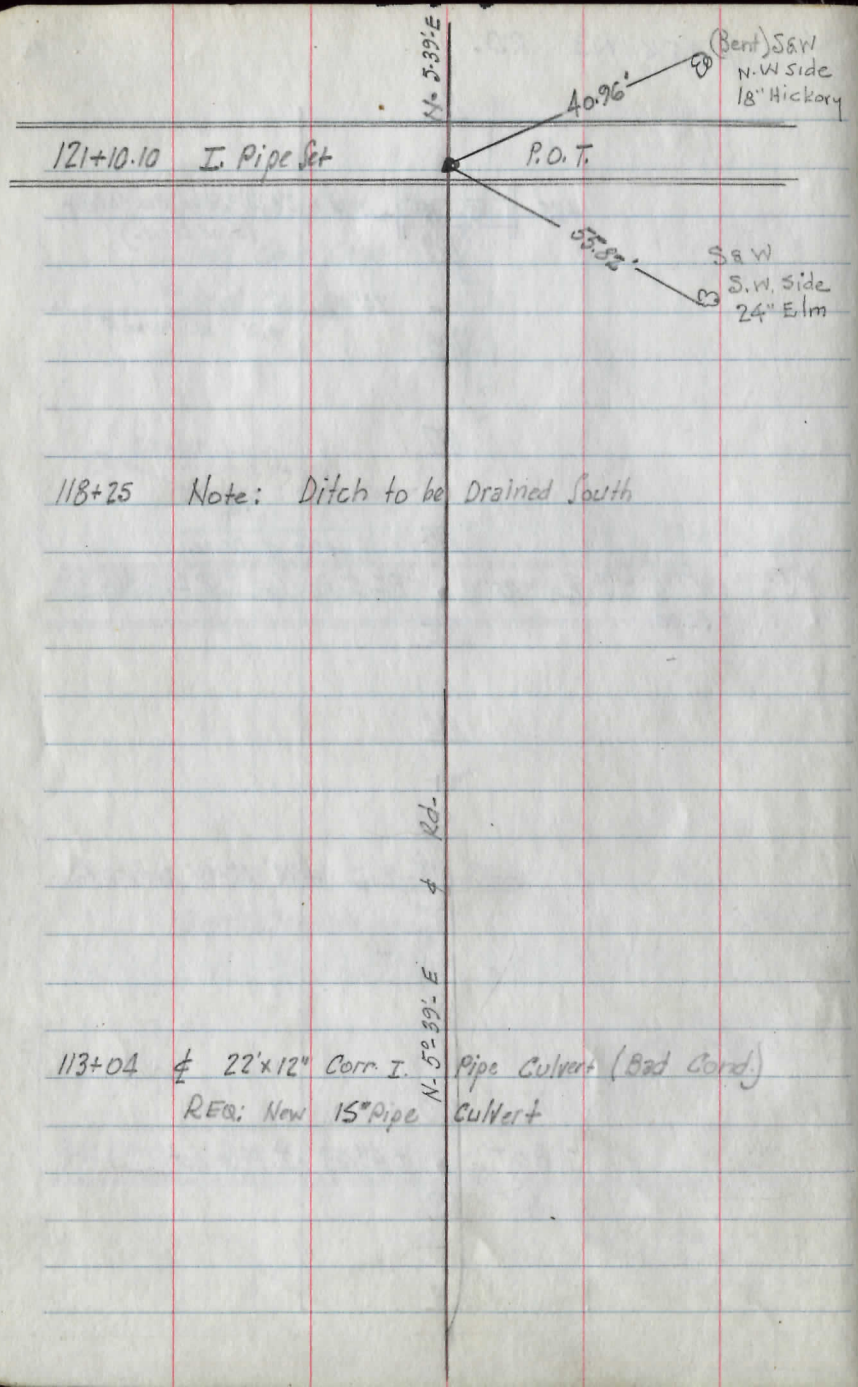
℄

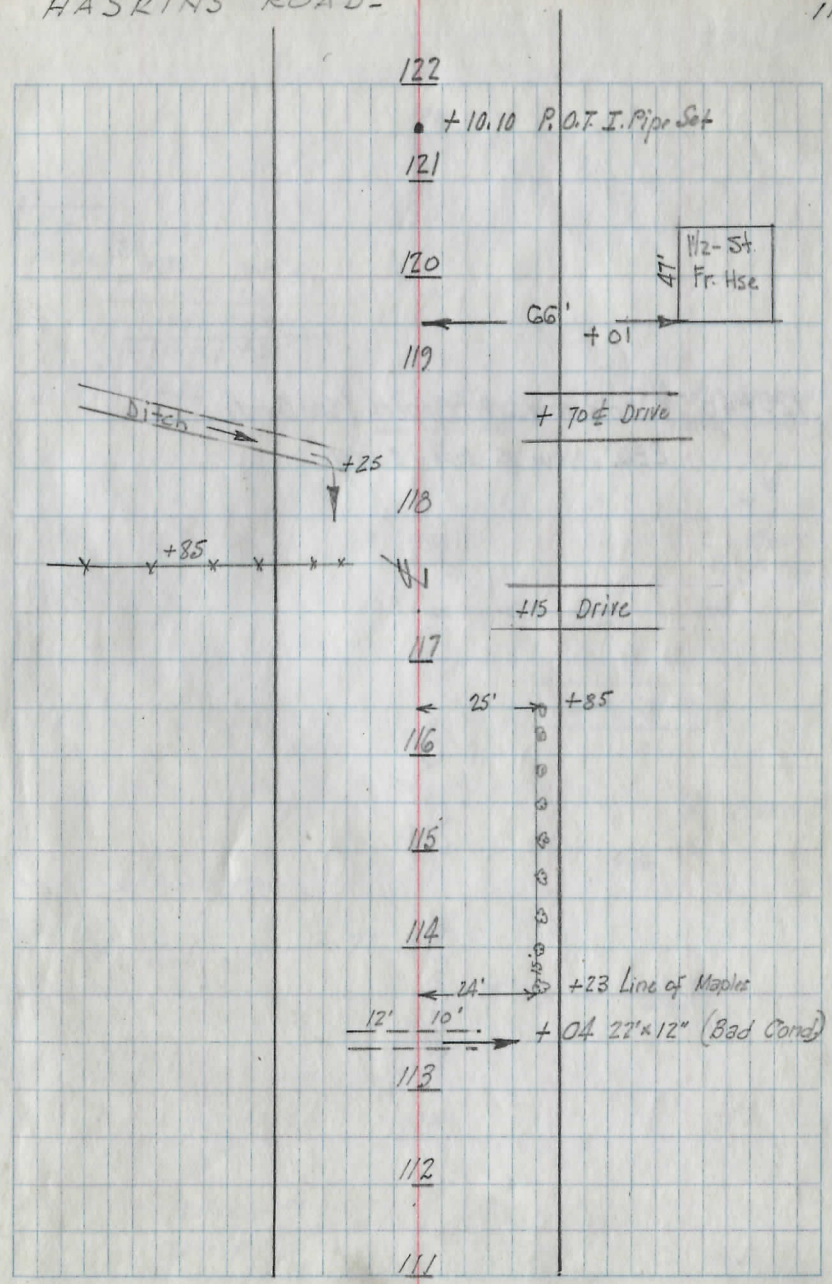


HASKINS RD.


109+25 ℄ 3'x2'x28' Stone Box
Culvert Good Cond.
Extend East End
N-0°29' E
N-5°39' E
S&W. N Side
12" Elm (2' Ab. Gr.)
84.87'
(Bent) S&W
S. Side
4" Thorn Apple
105+92.30 P.I. I. Pipe Set
DEFL 0°29' Rt 29 74
102+34 ℄ 18'x10" Corr. I. P. Culvert (Good Cond)
Req: Extending
N-5°10' E
S&W N.W Side
24" Maple
25.32'
99+43.59 P.O.T. I. Pipe Set
42.68'
N-5°10' E
S&W
SW Side
27" Maple


110
+25
15'
8'
3'x2'x23' Stone Box Culvert
(Good Cond.)
109
24'
+61 W. Fence
108
107
106
+00 ℄ Drive
W. Fence
Prop. Line
25'
P.I. I. Pipe Set P.L. 7
+92.30
105
104
103
10'
8'
+34 18'x10" Corr. I.P.
102
101
100
P.O.T.
+43.59 I. Pipe Set
99
98


N. 5°39' E.
(Bent) S&W
N.W Side
18" Hickory
40.96'
121+10.10 I. Pipe Set
P.O.T.
55.82'
S & W
S.W. Side
24" Elm
118+25 Note: Ditch to be Drained South
Rd.
N. 5°39' E.
113+04 ℄ 22'×12" Corr. I. Pipe Culvert (Bad Cond.)
REQ: New 15" Pipe Culvert

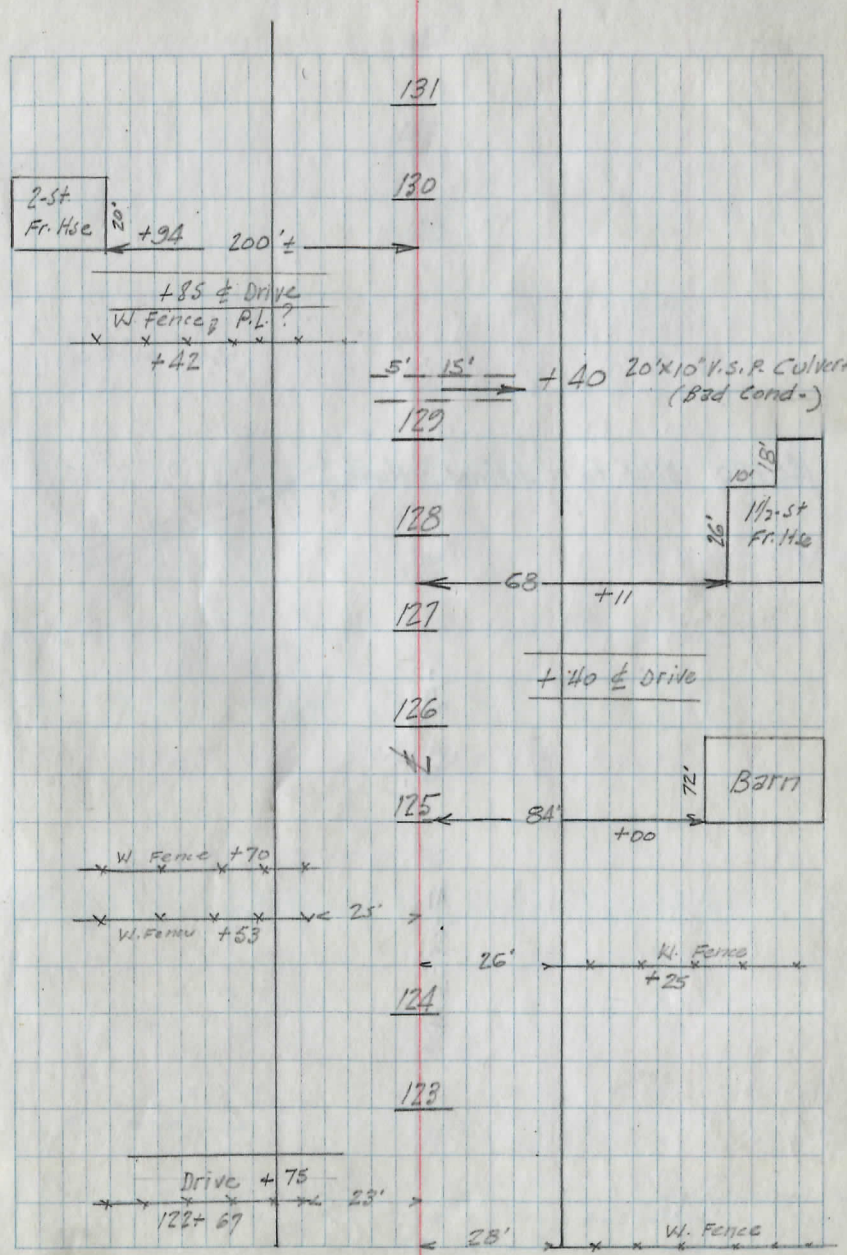

HASKINS ROAD-
122
+10.10 P.O.T. I. Pipe Set
121
120
1½-St. Fr. Hse.
47'
66'
+01
119
+70 ℄ Drive
Ditch
+25
118
+85
+15 Drive
117
25'
+85
116
115
114
24'
+23 Line of Maples
12'
10'
+04 22'×12" (Bad Cond.)
113
112
111

HASKINS ROAD-

129+40 ℄ 20'x 10" V.S.P. Culvert (Bad Cond)
REQ: New 15" Pipe Culvert

℄ Road

N. 5° 39' E

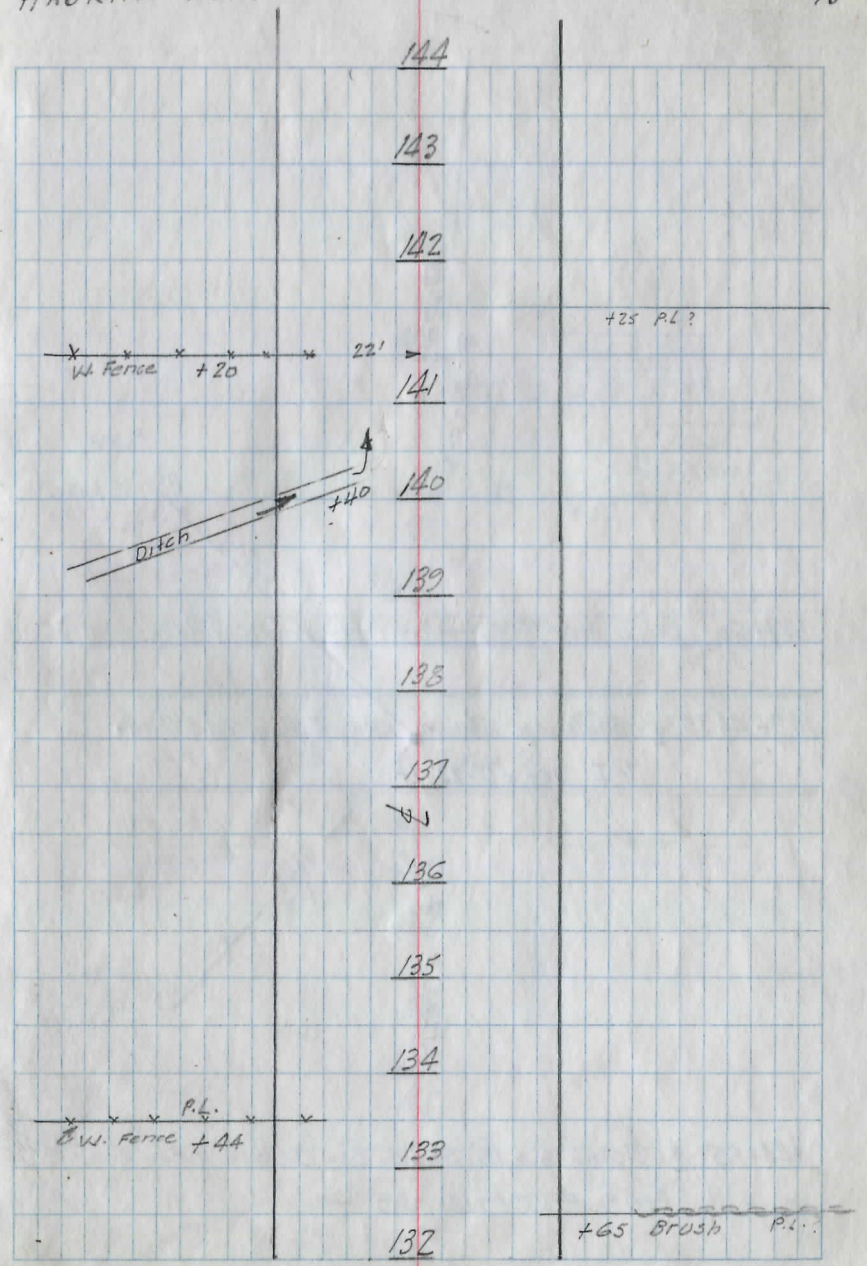


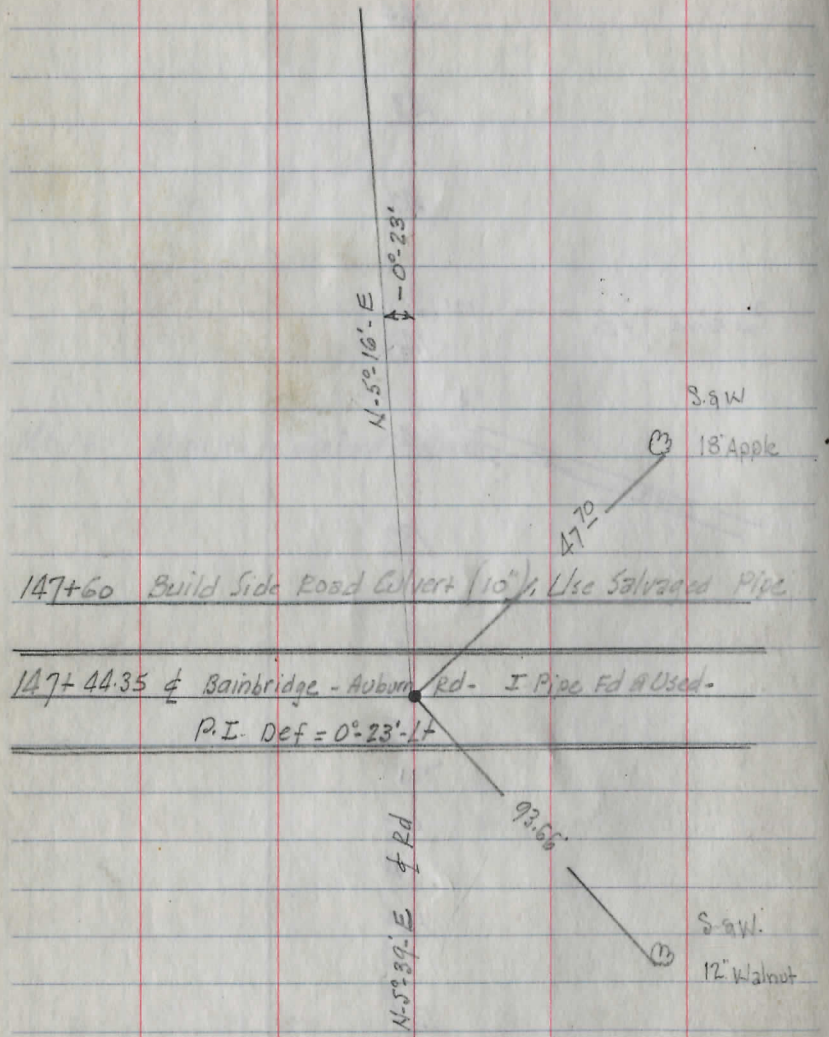
HASKINS ROAD-

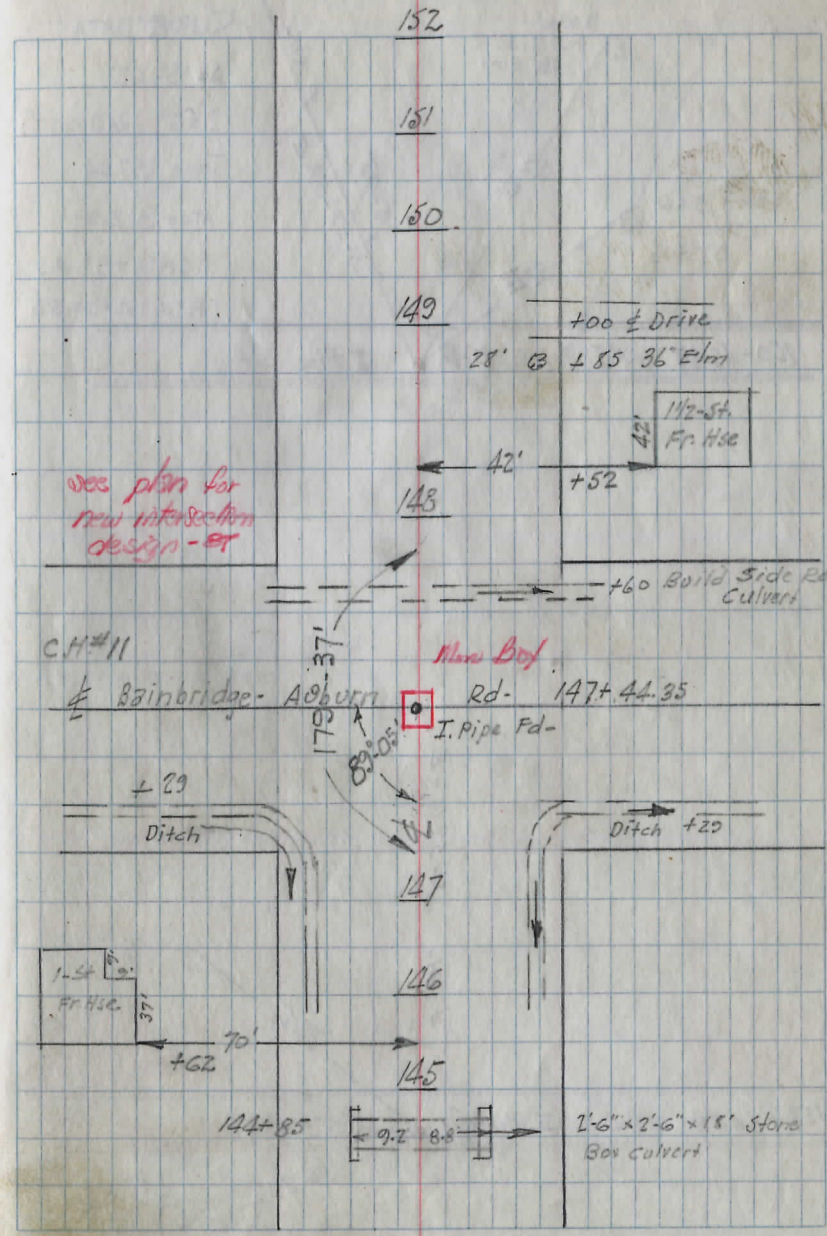
140+40 Ditch to be drained North

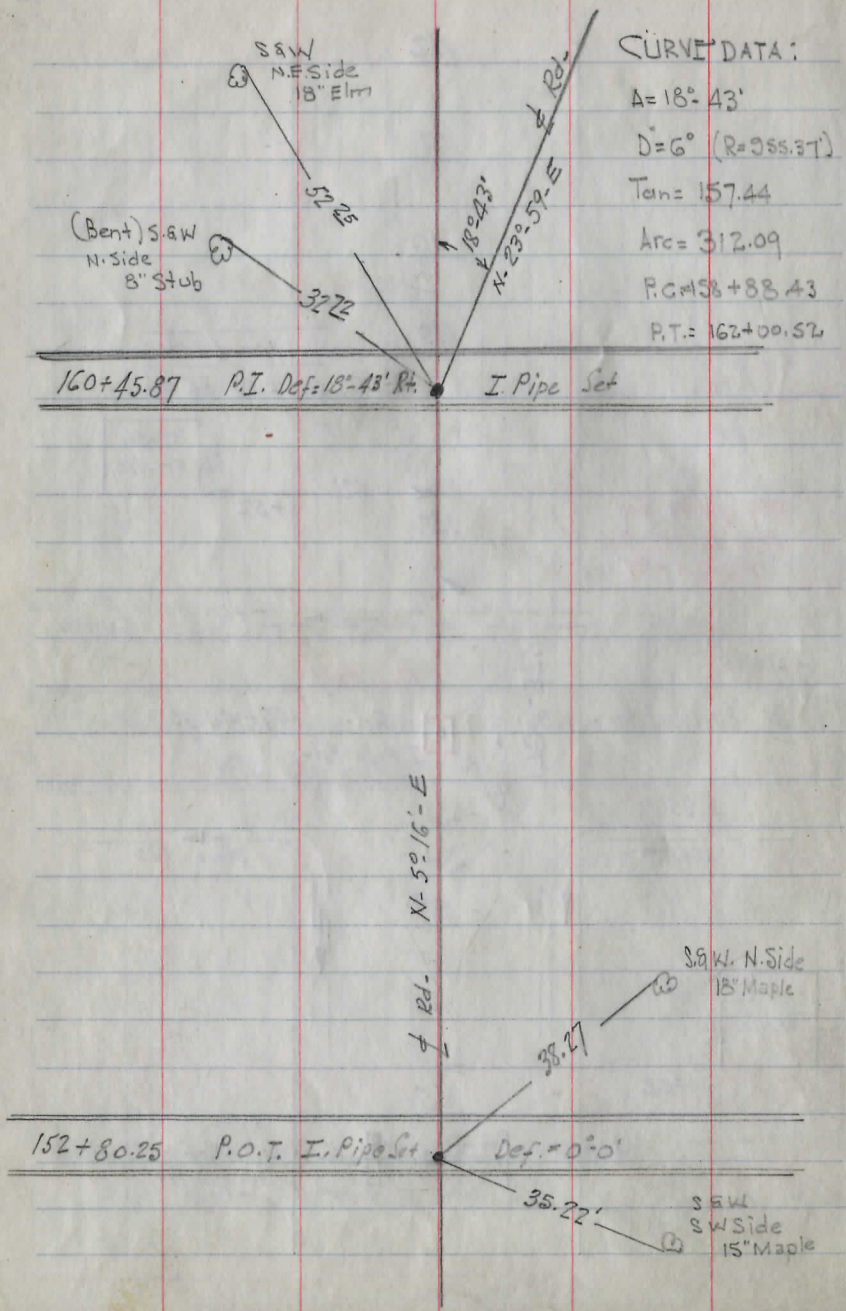
N 5°-39'-E

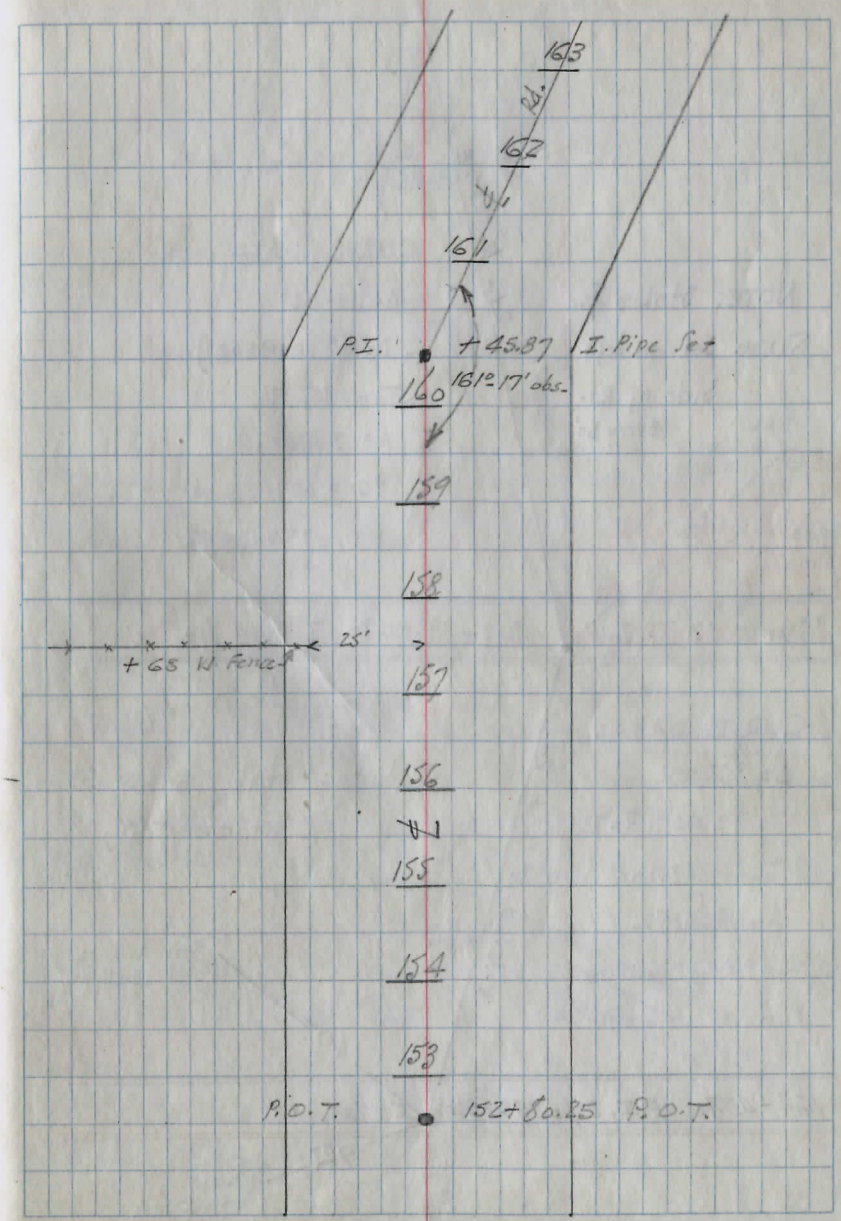
4 Rd-

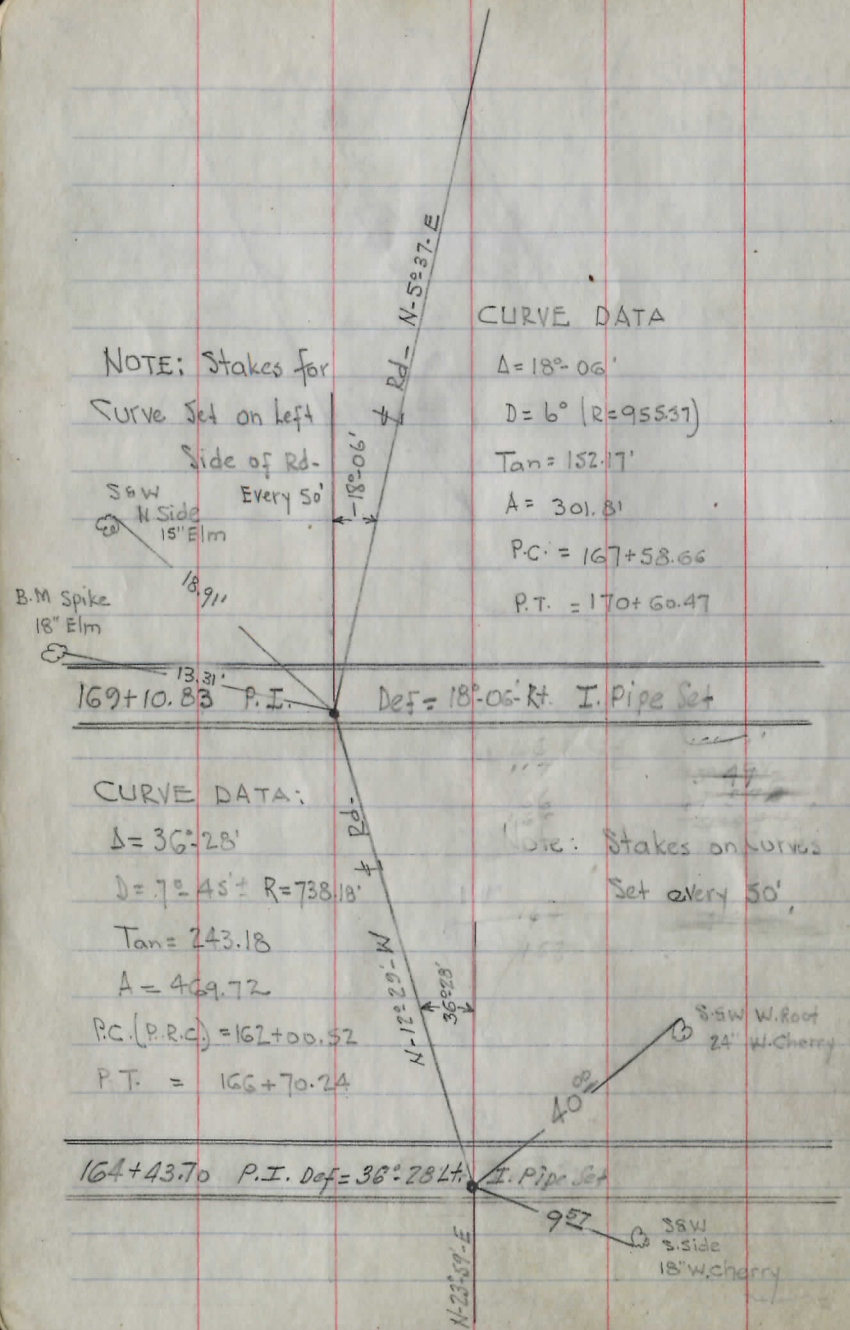


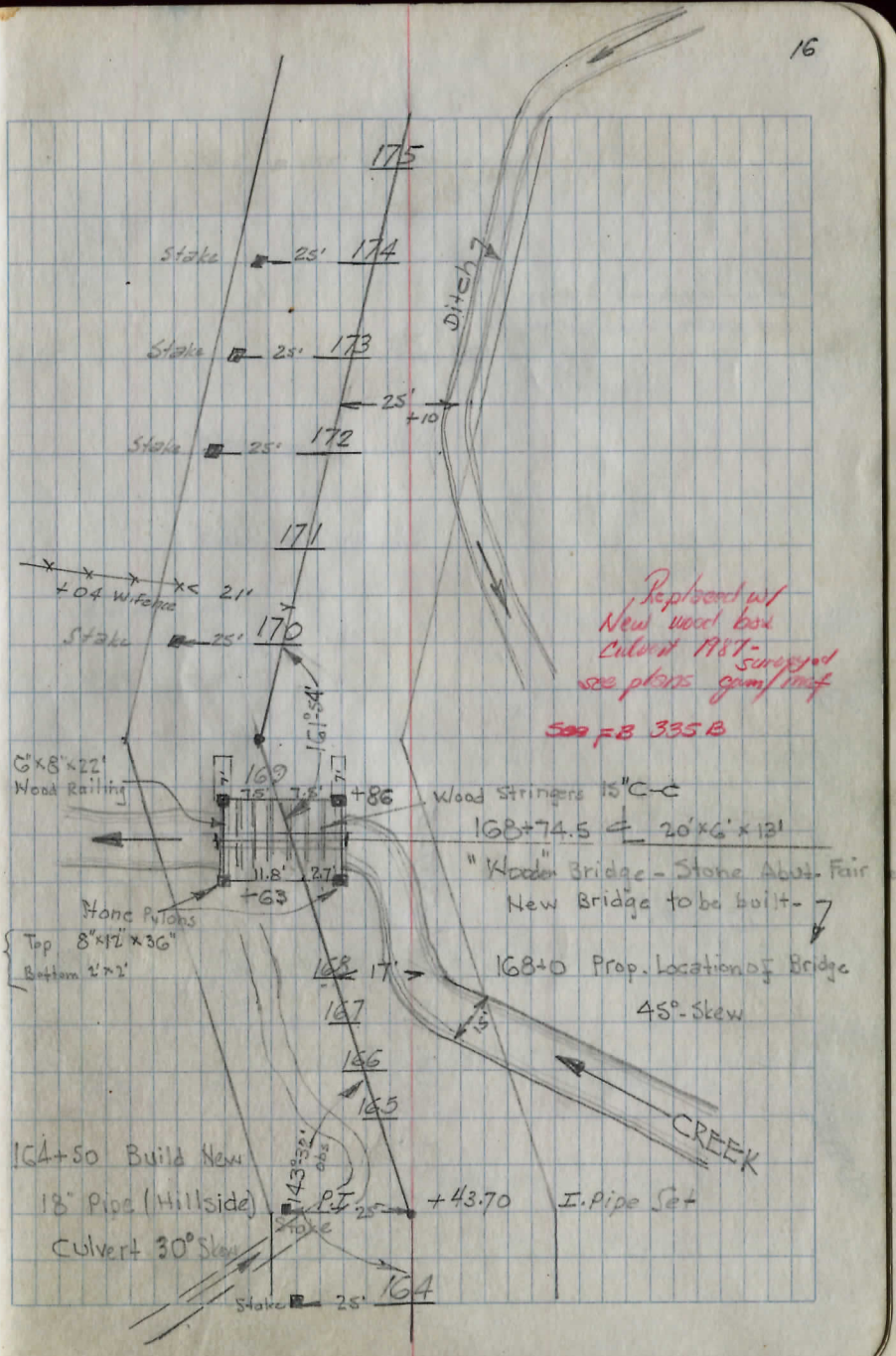

N-5°-16'-E
-0°-23'
S.&W.
18" Apple
47.70
147+60 Build Side Road Culvert (10") Use Salvaged Pipe
147+44.35 ℄ Bainbridge - Auburn Rd - I Pipe Fd & Used -
P.I. Def = 0°-23'-1+
93.66
℄ Fd
N-5°-39'-E
S.&W.
12" Walnut
144+85 ℄ 2'-6" x 2'-6" x 18' Stone Box Culvert (Fair Cond.)
Req: EXTENDING

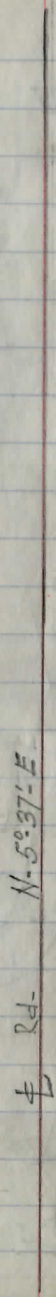

152
151
150
149
+00 ℄ Drive
28' CB ⊥ 85 36" Elm
1½-St. Fr. Hse
42'
42'
+52
Des plan for new intersection design - ef
148
+60 Build Side Rd Culvert
CH #11
New Bdy
℄ Bainbridge - Auburn Rd - 147+44.35
I. Pipe Fd -
179.37'
89°-05'
⊥ 29
Ditch
Ditch ⊥29
147
146
1-St Fr Hse
37'
+62
70'
145
144+85
9.7
8.8
2'-6" x 2'-6" x 18' Stone Box Culvert

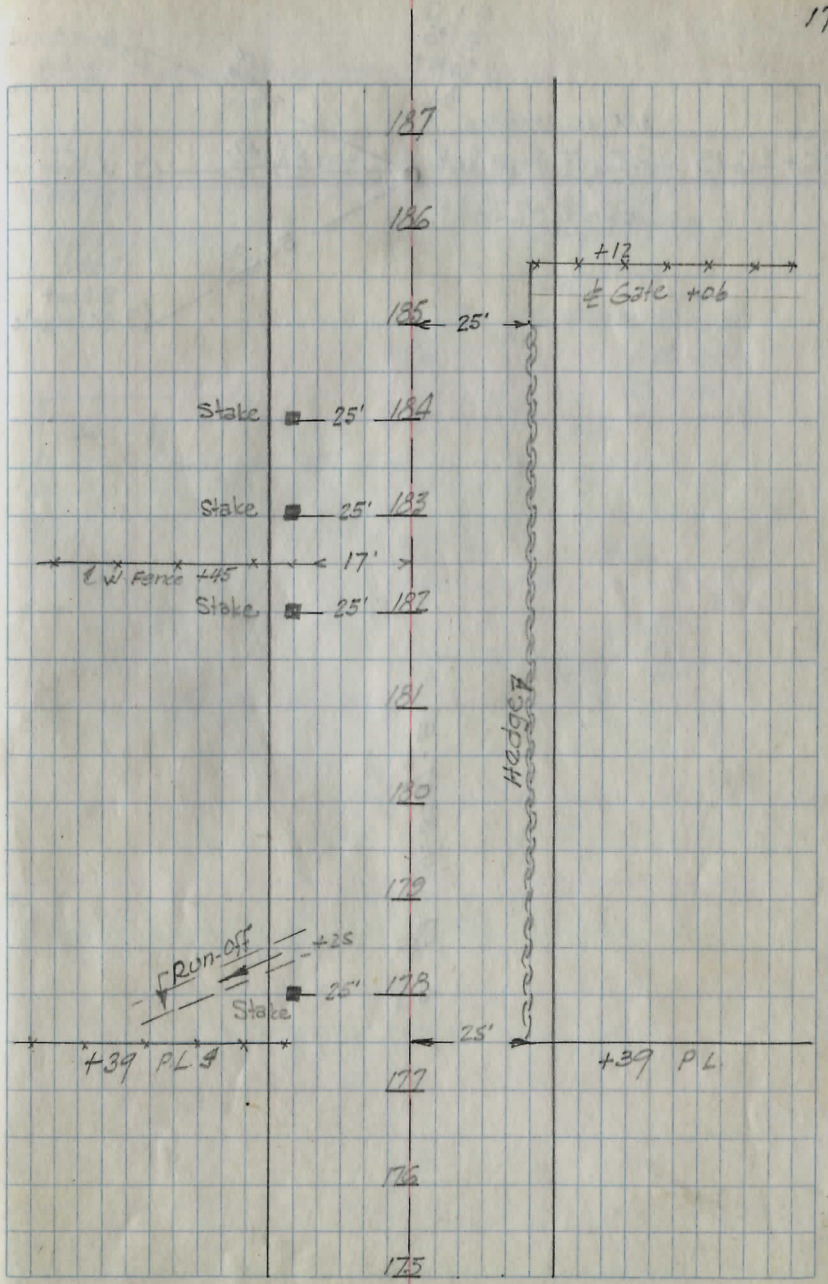

S&W
N.E. Side
18" Elm
52.25
(Bent) S.&W
N. Side
8" Stub
32.72
18°-43'
N-23°-59-E
Rd.
CURVE DATA:
Δ = 18°-43'
D = 6° (R = 955.37')
Tan = 157.44
Arc = 312.09
P.C. = 158+88.43
P.T. = 162+00.52
160+45.87 P.I. Def = 18°-43' Rt. I. Pipe Set
N-5°-16'-E
Rd.
S.&W. N. Side
18" Maple
38.27
152+80.25 P.O.T. I. Pipe Set Def. = 0°-0'
35.22'
S.&W.
S.W. Side
15" Maple

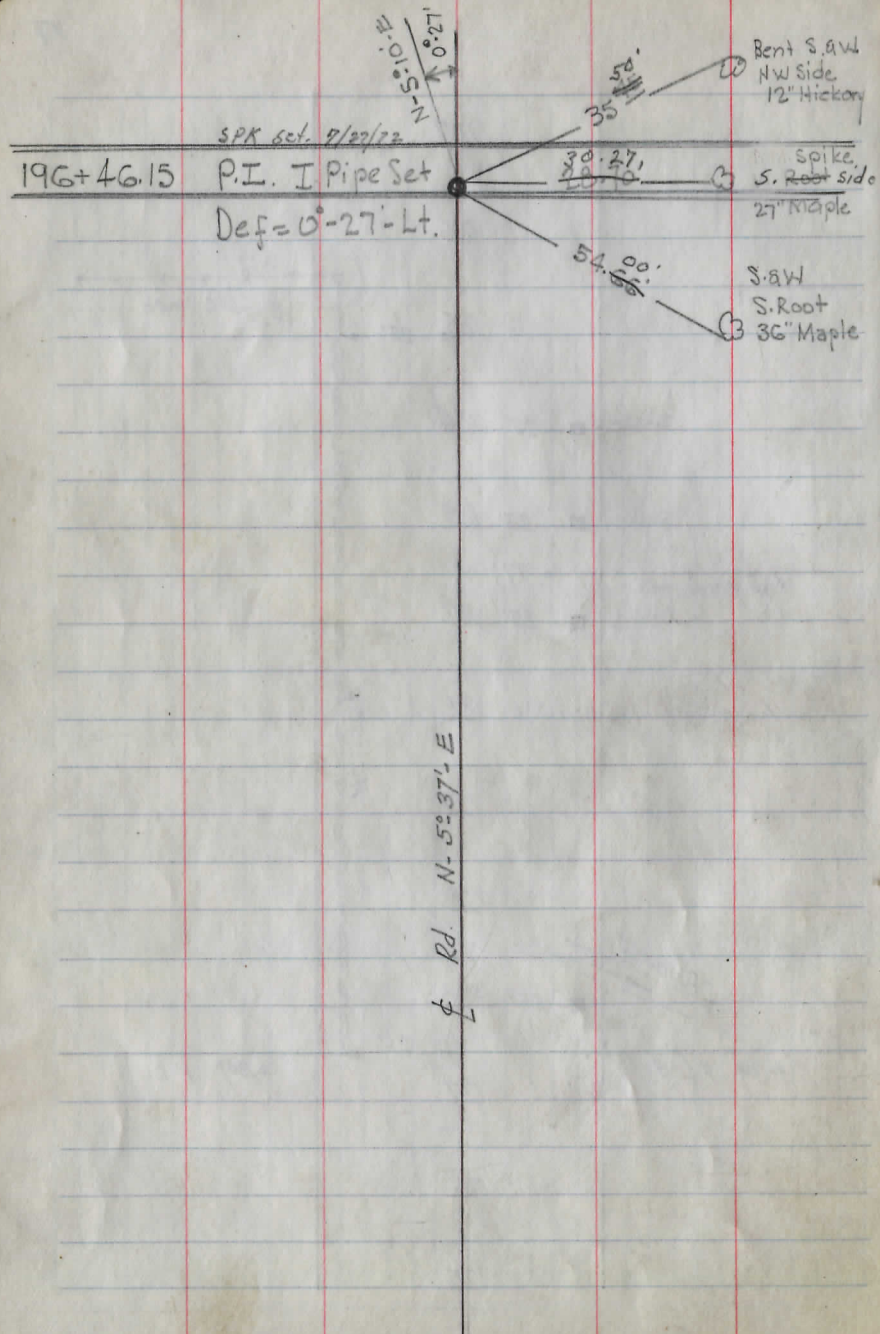

163
Rd.
162
161
P.I. +45.87 I. Pipe Set
160 161°-17' obs.
159
158
25'
+65 W. Fence
157
156
155
154
153
P.O.T.
152+80.25 P.O.T.

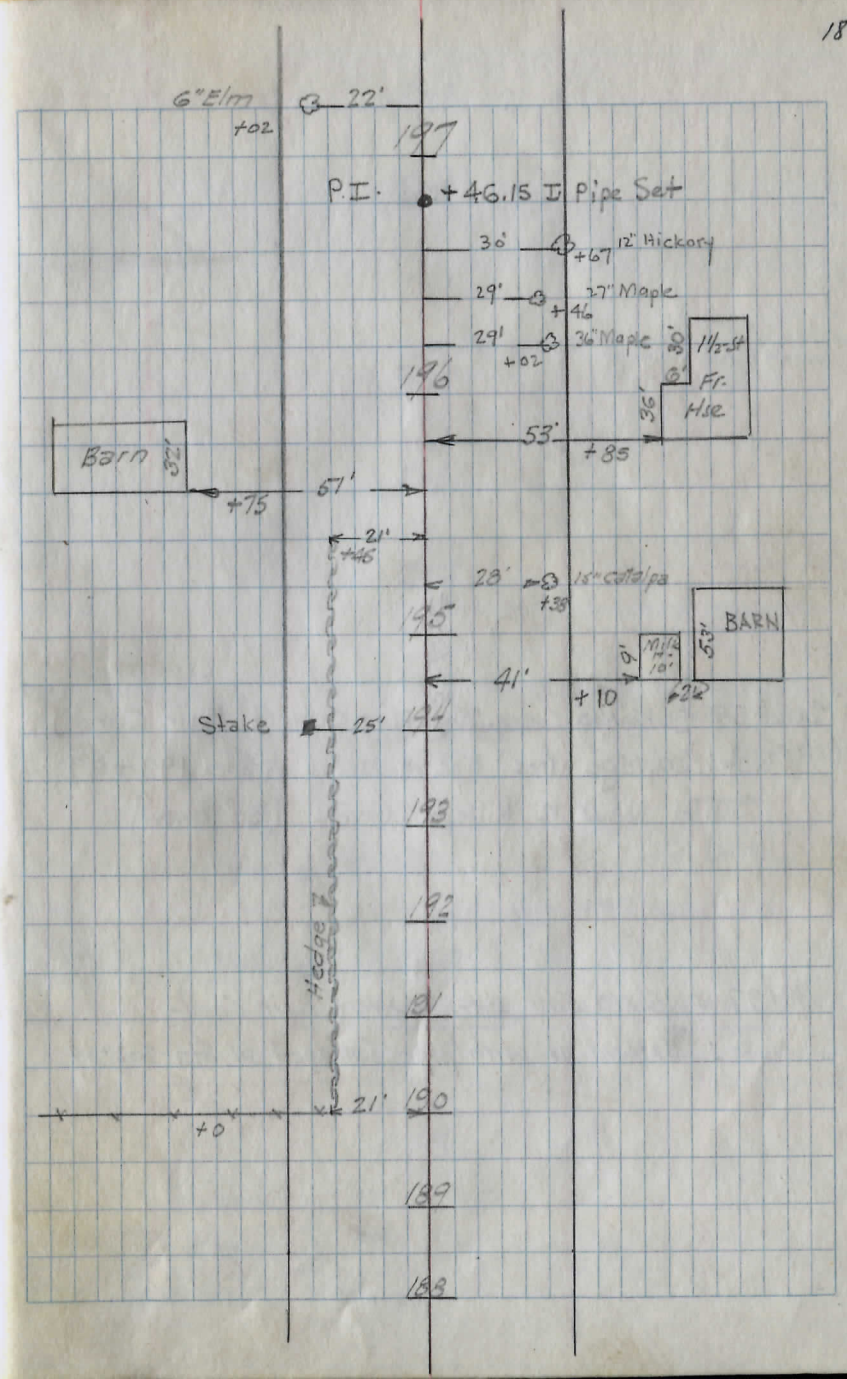

NOTE: Stakes for Curve Set on left Side of Rd- Every 50'
CURVE DATA
Δ = 18°-06'
D = 6° (R = 955.37)
Tan = 152.17'
A = 301.81'
P.C. = 167+58.66
P.T. = 170+60.47
N-5°-37-E Rd
18°-06'
S&W N.Side 15" Elm
18.91'
B.M Spike 18" Elm
13.31'
169+10.83 P.I. Def = 18°-06'-Rt. I. Pipe Set
CURVE DATA:
Δ = 36°-28'
D = 7°-45' R = 738.18'
Tan = 243.18
A = 469.72
P.C. (P.R.C.) = 162+00.52
P.T. = 166+70.24
N-12°-29'-W Rd
36°28'
Die: Stakes on Curves Set every 50'
S-SW W.Root 24" W.Cherry
40.68'
164+43.70 P.I. Def = 36°-28'-Lt. I. Pipe Set
95.7'
S&W S.Side 18" W.cherry
N-23°-59'-E


175
Stake 25' 174
Stake 25' 173
25' +10
Stake 25' 172
171
+04 W.Fence
21'
Stake 25' 170
Ditch
Replaced w/ New wood box Culvert 1987- Surveyed see plans gpm/mcf
599 F B 335 B
6"x8"x22' Wood Railing
169
7.6' 7.8'
+86
Wood Stringers 15" C-C
168+74.5 ℄ 20'x6'x13'
"Wooden Bridge - Stone Abut. Fair
New Bridge to be built-
11.8' 27'
+63
Stone Pytons
Top 8"x12"x36"
Bottom 2'x2'
168 17'
168+0 Prop. Location of ℄ Bridge
45°-Skew
167
166
165
CREEK
164+50 Build New 18" Pipe (Hillside) Culvert 30° Skew
143.35' obs
P.I. 25'
+43.70 I. Pipe Set
Stake
Stake 25' 164


℄ Rd.
N-5°37'-E


187
186
185
184
183
182
181
180
179
178
177
176
175
+17
℄ Gate +06
25'
Stake
25'
Stake
25'
17'
℄ W. Fence +45
Stake
25'
Hedge
Run-off
+25
25'
Stake
25'
+39 PL
+39 PL

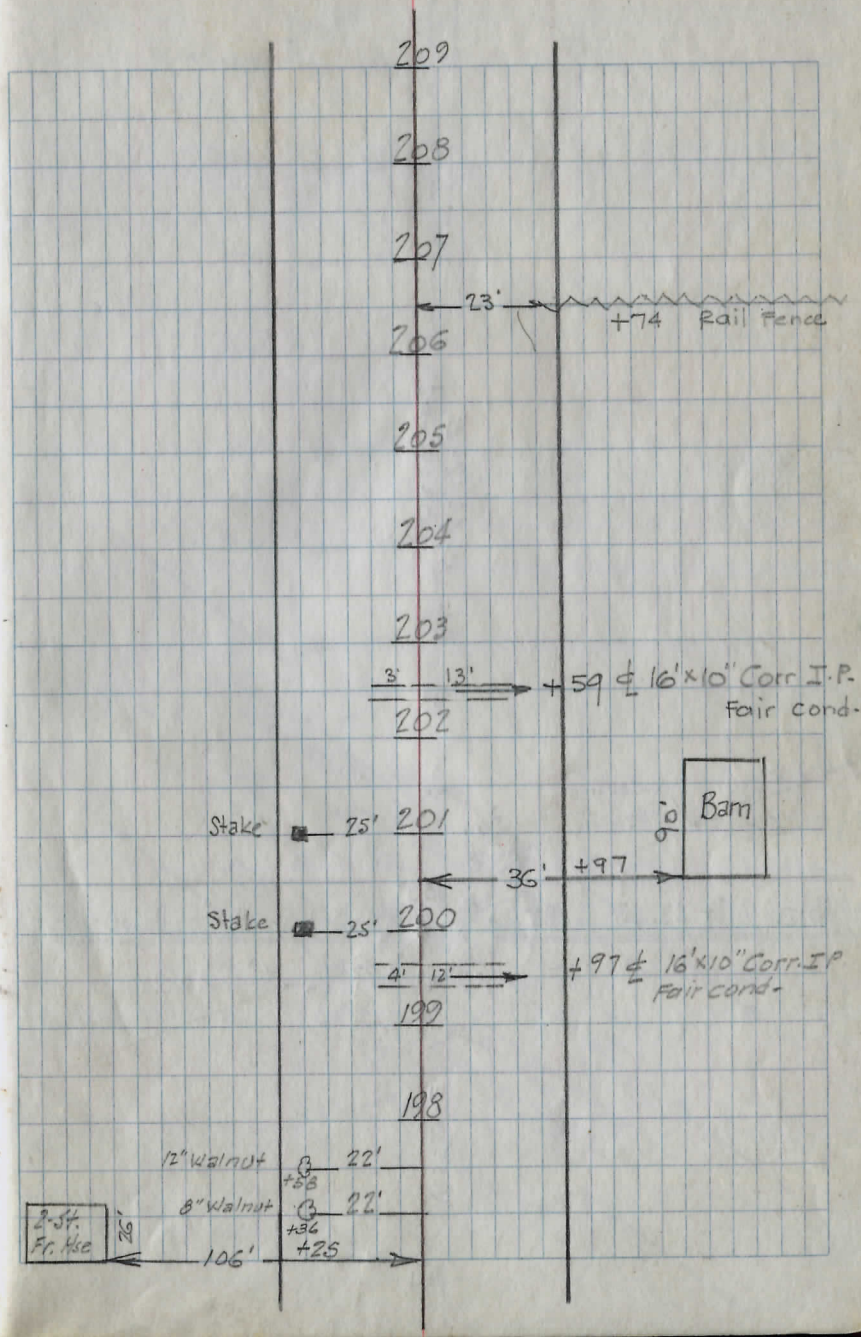

N-5°-10'-E
0.27'
SPK Set 7/27/22
196+46.15 P.I. I Pipe Set
Def=0°-27'-Lt.
50'
35
30.27'
54.00'
Bent S.&W.
NW Side
12" Hickory
Spike
S. Root side
27" Maple
S.&W.
S. Root
36" Maple
℄ Rd. N-5°-37'-E

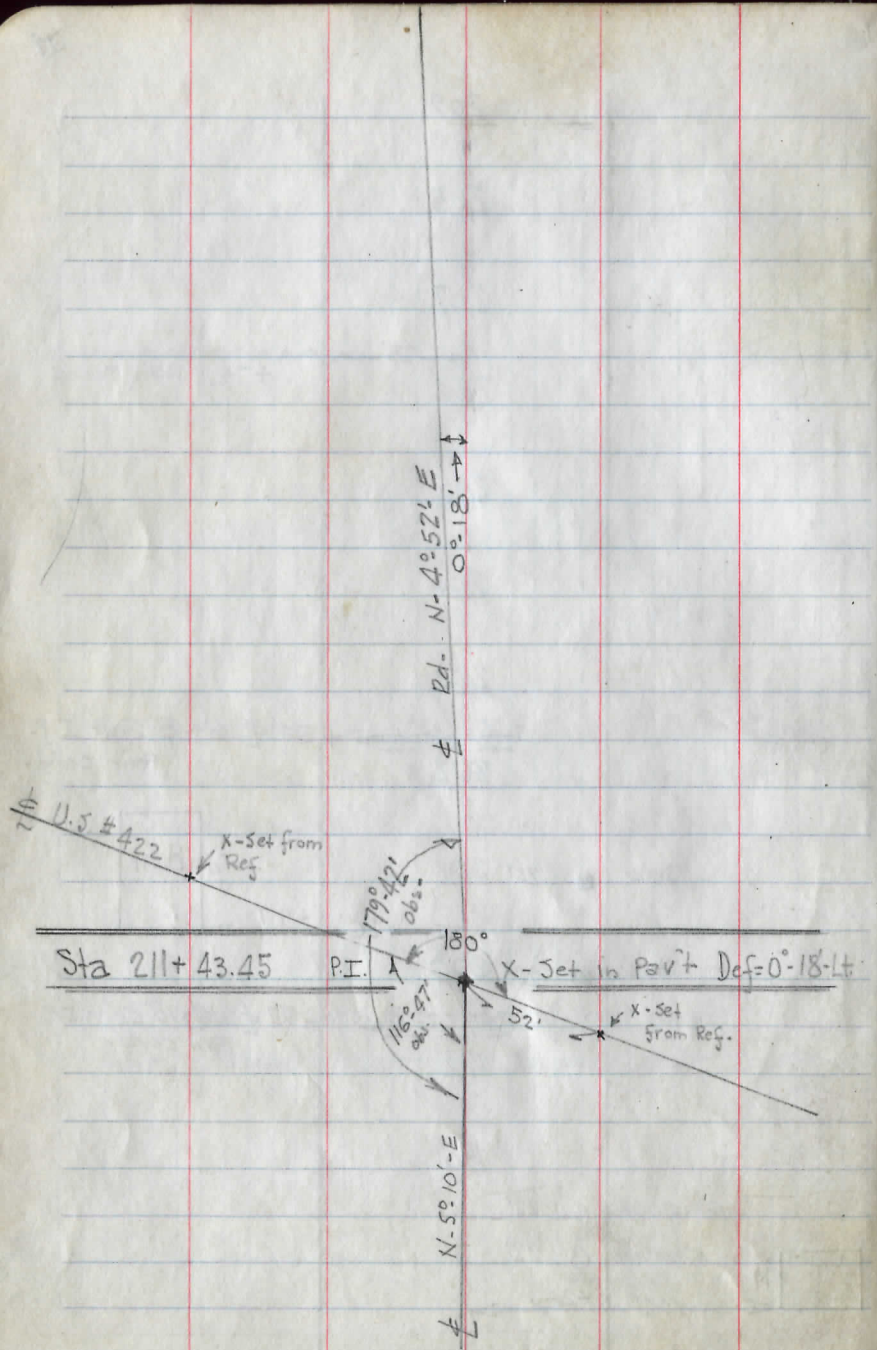

6" Elm
+02
22'
197
P.I. +46.15 I Pipe Set
30'
+67
12" Hickory
29'
+46
27" Maple
29'
+02
36" Maple
30'
1½-St
Fr.
Hse.
36'
196
53'
+85
Barn
32'
+75
57'
21'
+46
28'
+38
15" catalpa
195
BARN
53'
9'
Mfg
10'
41'
+10
+24
Stake
25'
194
193
192
Hedge
191
21'
190
+0
189
188

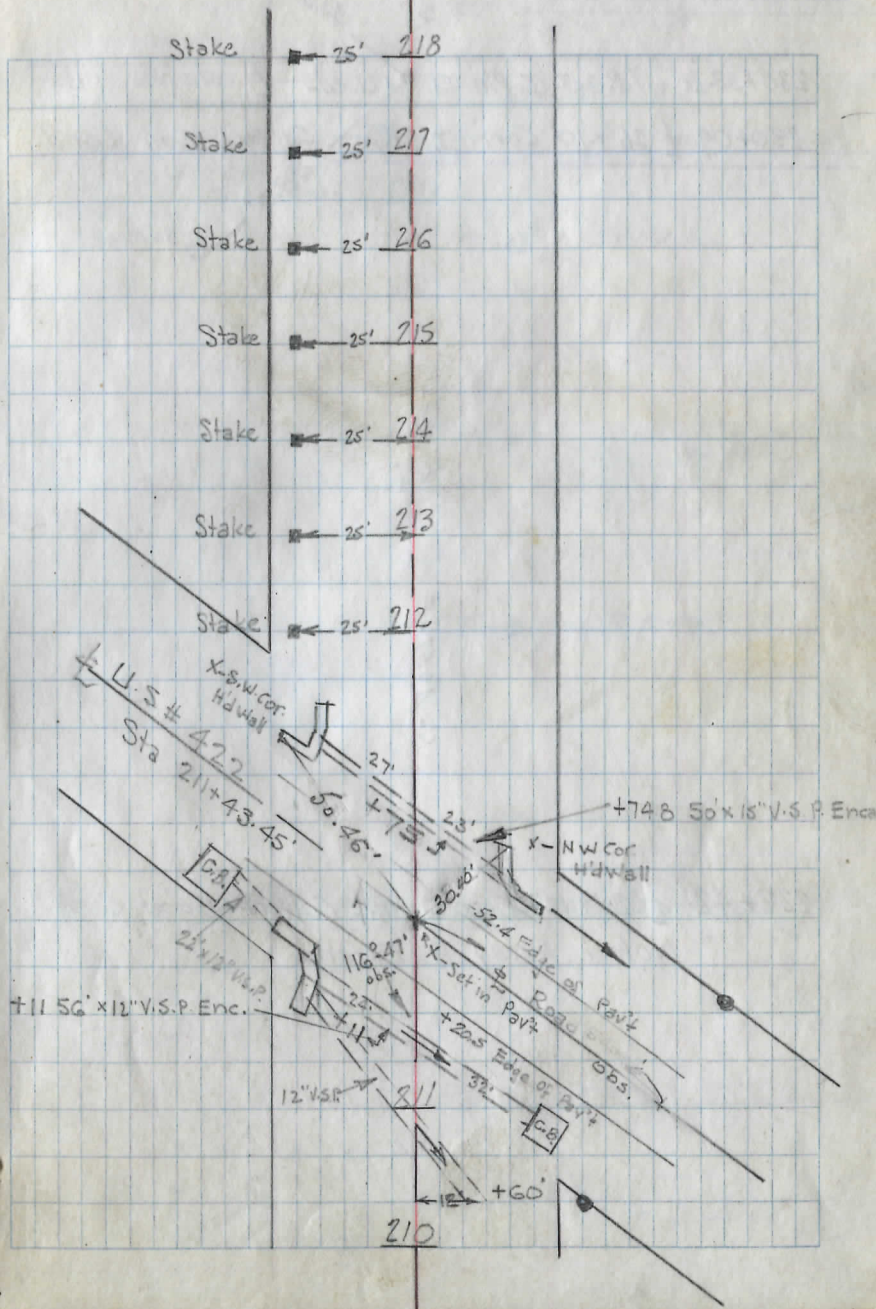
N-5°-10'-E

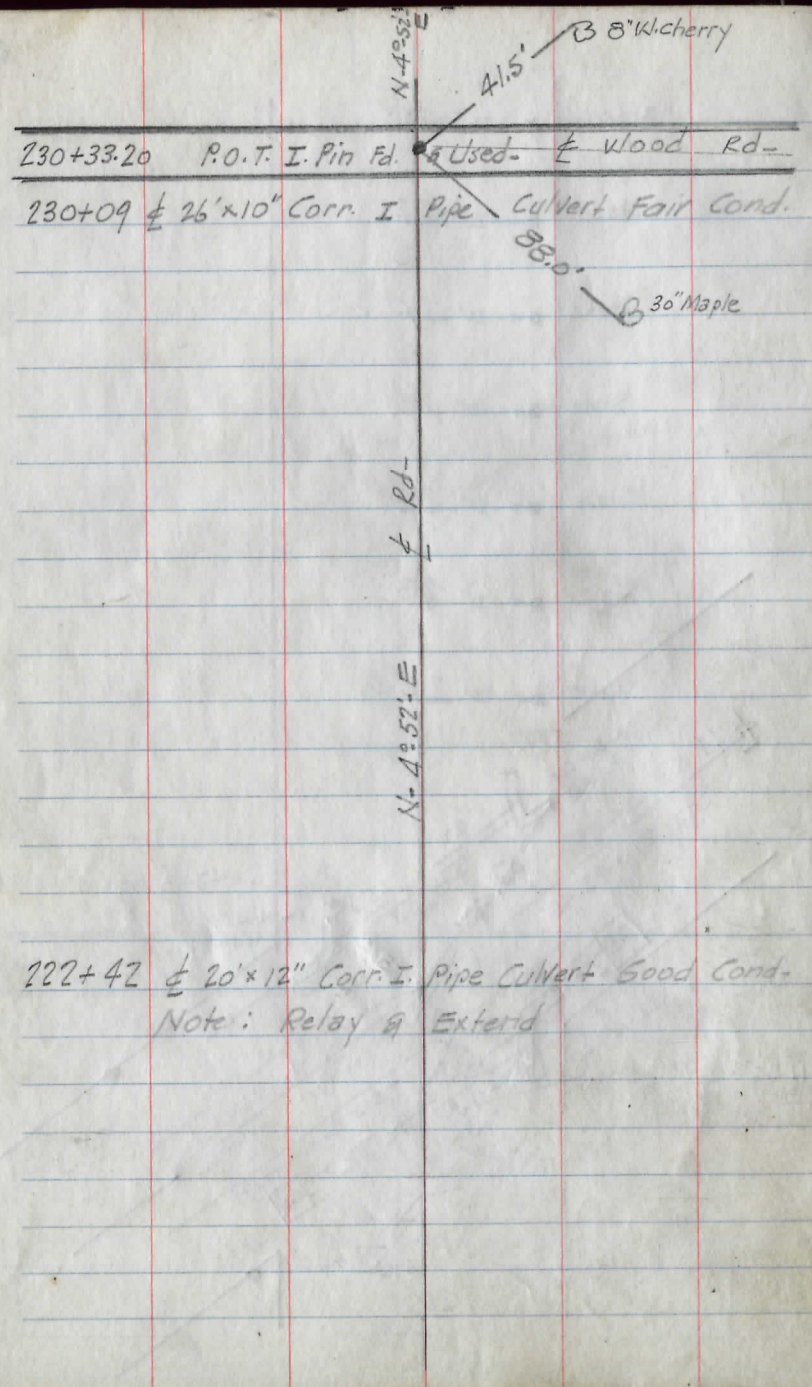
202+59 ℄ 16'x10' Corr. I. Pipe Culvert (Fair Cond.)
Note: Salvage Pres Pipe & use it at Sta 199+97
Build New 12" Hillside Culvert (30° Skew)

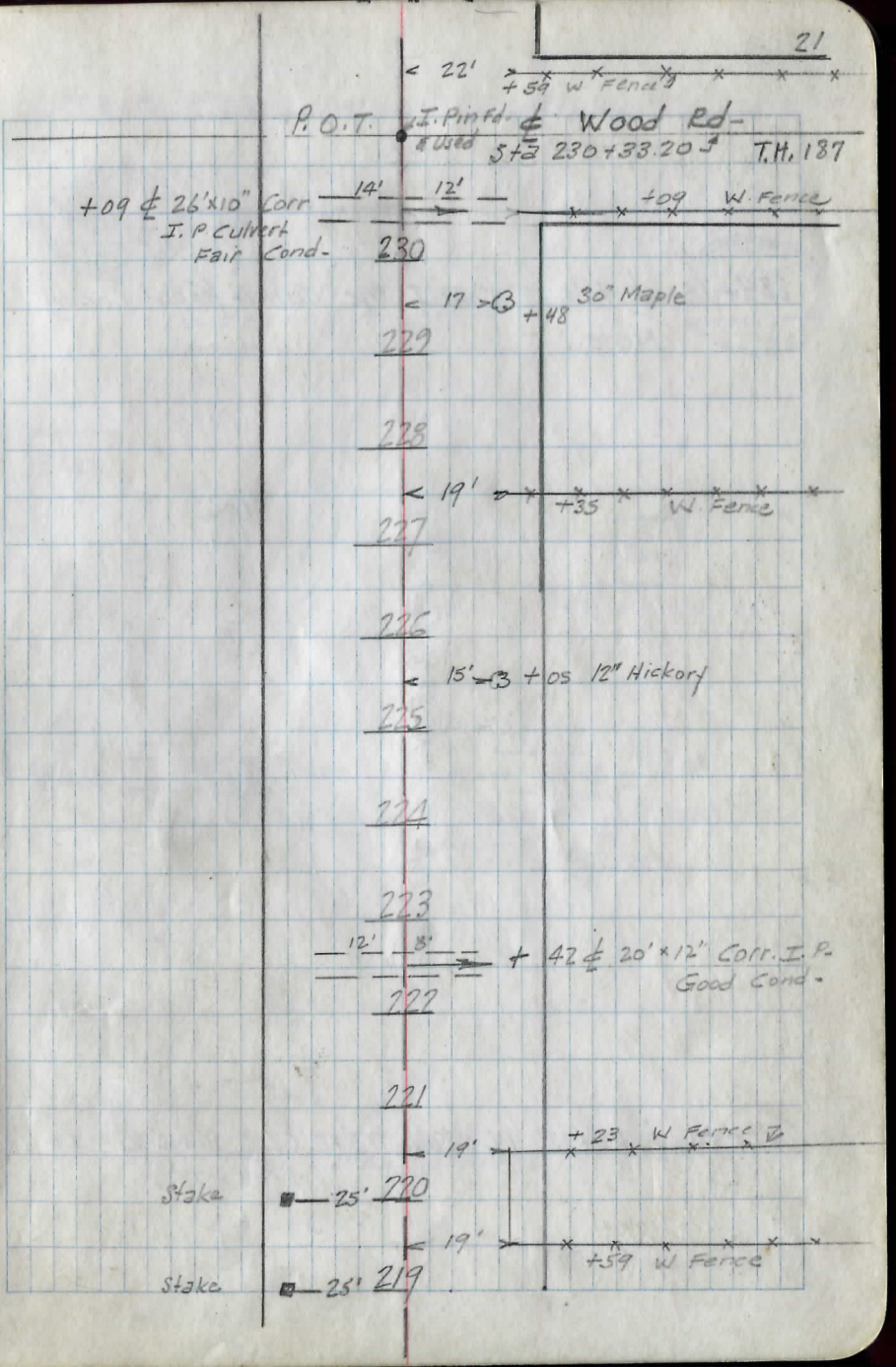
199+97 ℄ 16'x10" Corr I.P. Culvert Fair Cond.
Note: Extend it with pipe Salvaged at Sta 202+59




℄ U.S # 422
X-Set from Ref
Sta 211+43.45
P.I.
179°42' obs.
180°
116°47' obs.
52'
X-Set in Pav't
Def=0°-18'-Lt
X-Set from Ref.
℄ Rd. N-4°52'E
0°-18'-Lt
N-5°10'-E
℄


Stake 25' 218
Stake 25' 217
Stake 25' 216
Stake 25' 215
Stake 25' 214
Stake 25' 213
Stake 25' 212
℄ U.S # 422
Sta 211+43.45
X-S.W. Cor. H'dwall
27'
50.46'
23'
+748 50'x15" V.S.P Encased
X-N.W. Cor. H'dwall
30.46'
52.4' Edge of Pav't
116°47' obs.
X-Set in Pav't
+11 56' x 12" V.S.P Enc.
23'
+11
+20.5 Edge of Pav't
12" V.S.P.
211
C.B.
+60'
210


N 4°52' E
41.5'
B 8" W. cherry
230+33.20 P.O.T. I. Pin Fd. & Used - ℄ Wood Rd -
230+09 ℄ 26'x10" Corr. I. Pipe Culvert Fair Cond.
88.0'
B 30" Maple
℄ Rd -
N 4°52' E
222+42 ℄ 20'x12" Corr. I. Pipe Culvert Good Cond.
Note: Relay & Extend.

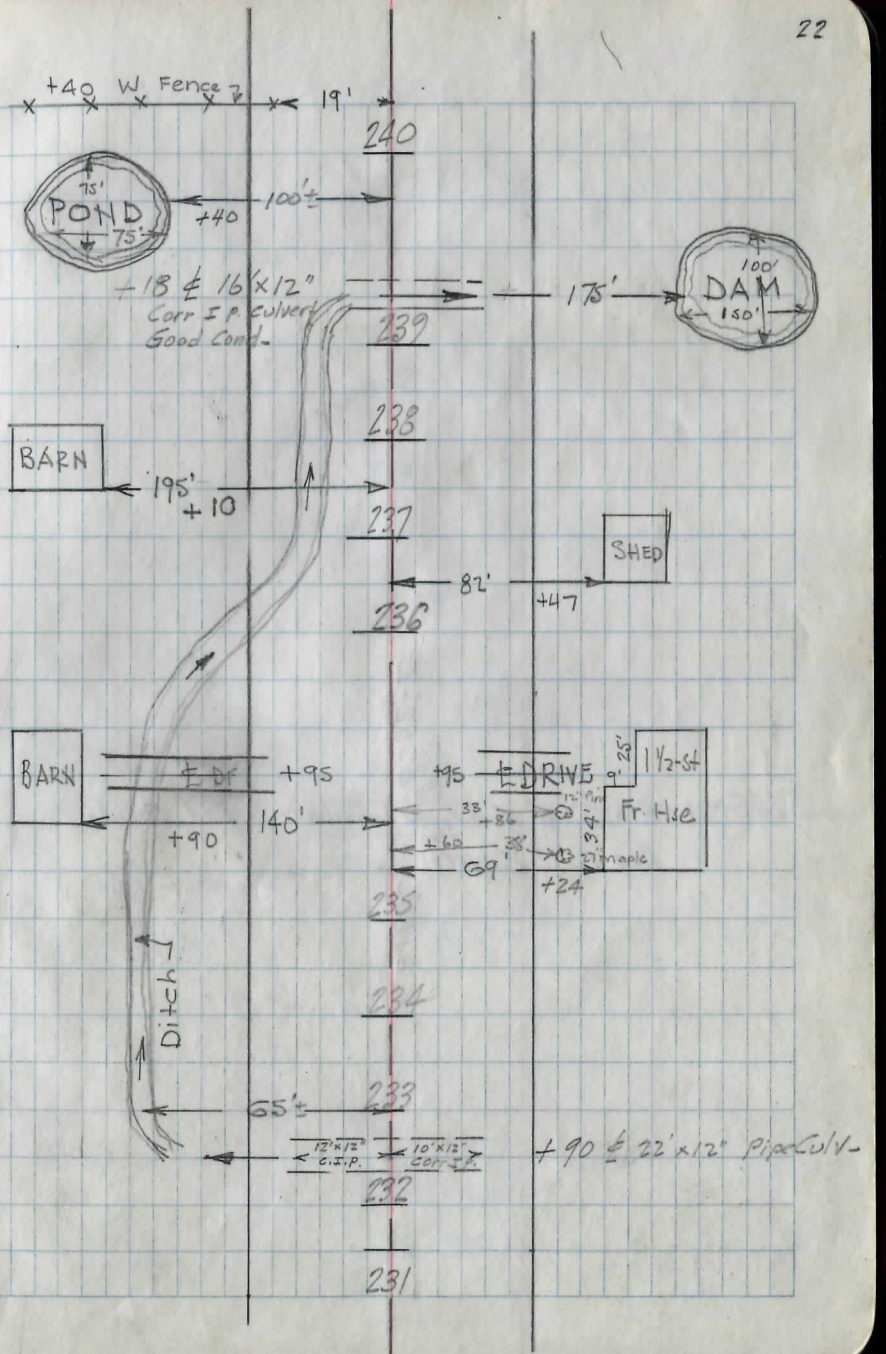

21
22'
+59 W Fence
P.O.T. I. Pin Fd. & Used ℄ Wood Rd -
STA 230+33.20
T.H. 187
+09 ℄ 26'x10" Corr. I.P. Culvert Fair Cond.
14'
12'
+09 W. Fence
230
17'
B +48 30" Maple
229
228
19'
+35 W. Fence
227
226
15'
B +05 12" Hickory
225
224
223
12'
8'
+42 ℄ 20'x12' Corr. I.P. Good Cond.
222
221
19'
+23 W Fence
Stake
25'
220
19'
+59 W Fence
Stake
25'
219

239+18 ℄ 16'x 12" Corr. I. Pipe Culvert (Good Cond.)
Note:

N-42 52'-E

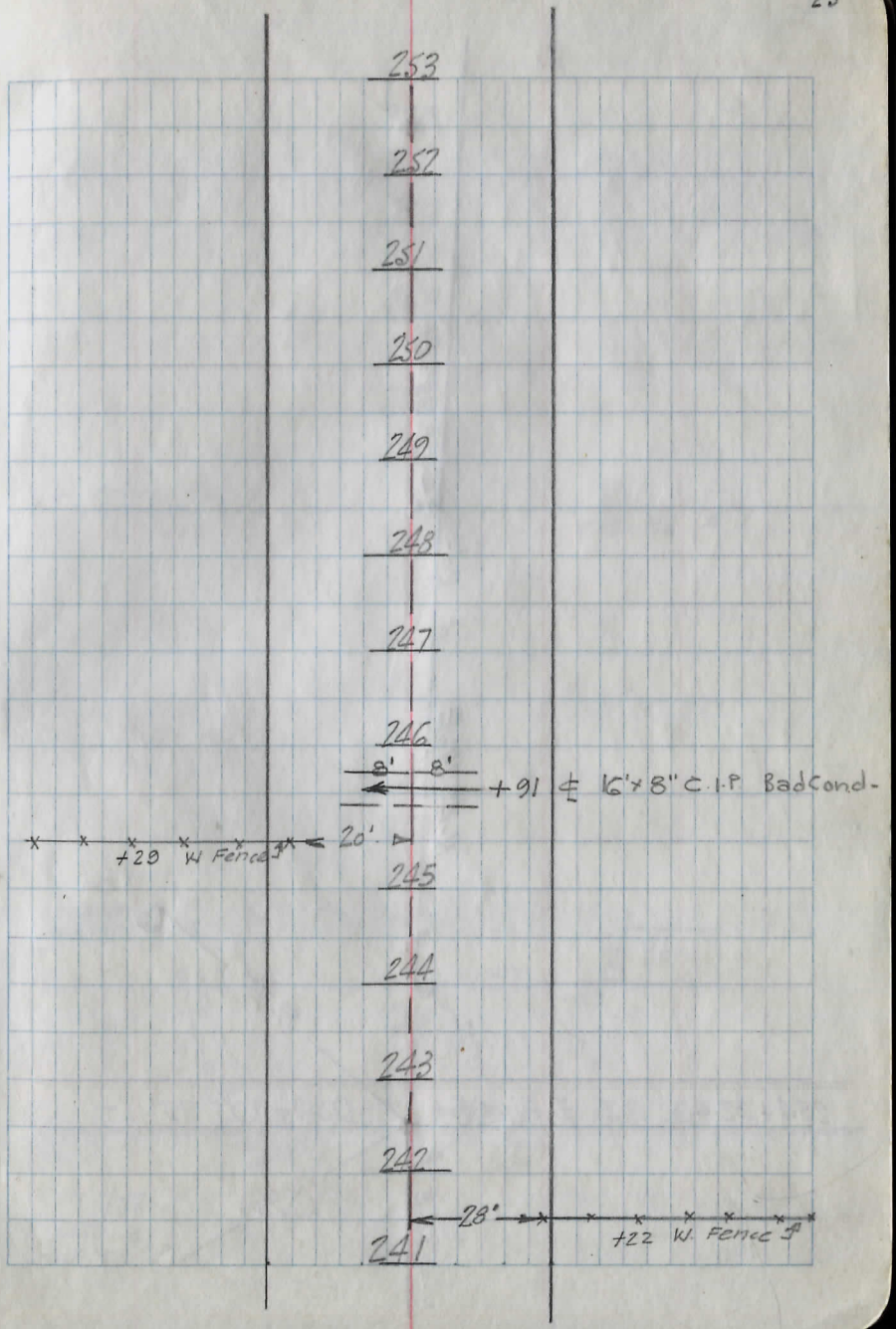
℄ Rd.

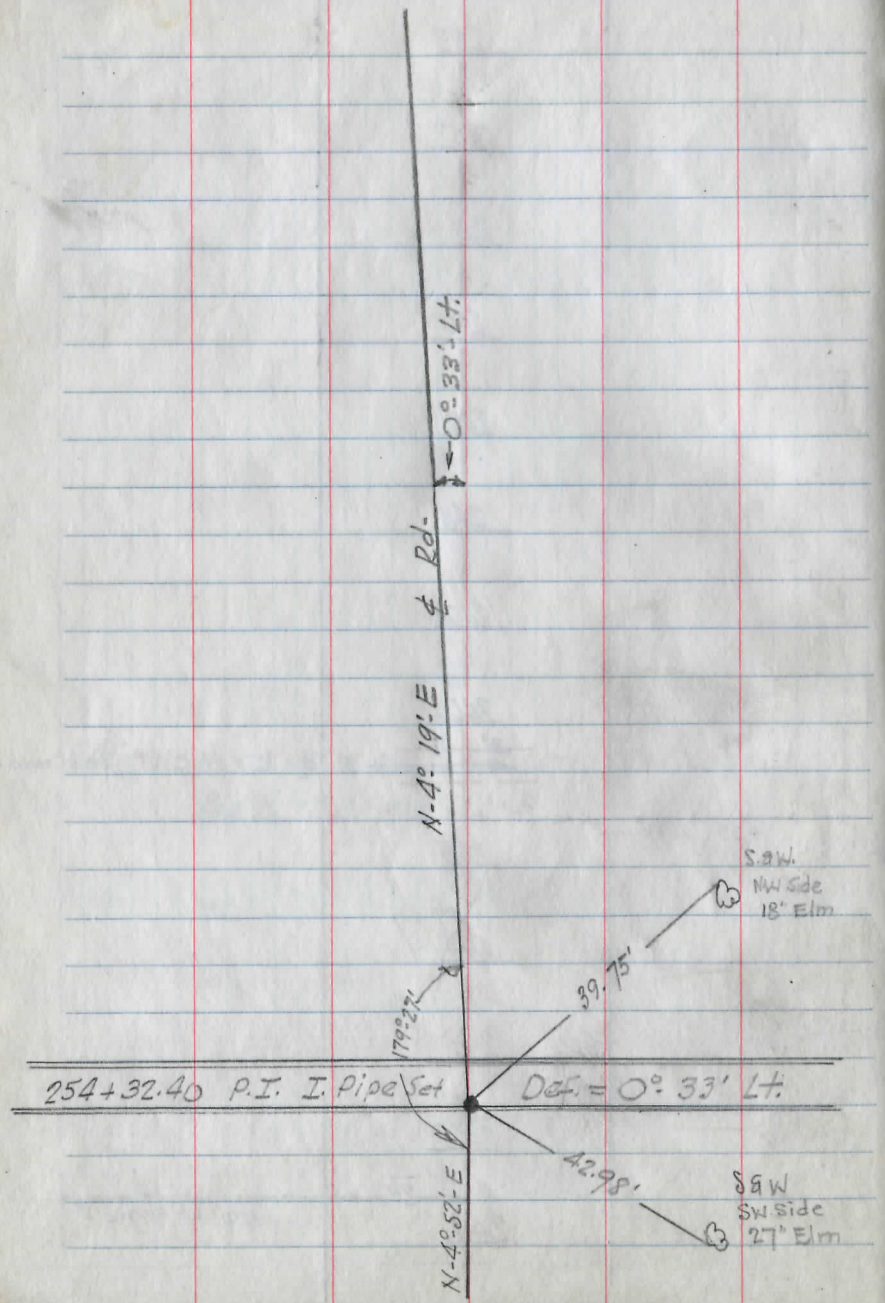
232+90 ℄ 22'x12" Pipe Culv. 12'x12" C.I.P., 10'x12' Corr. I.P.
(Fair Cond.)

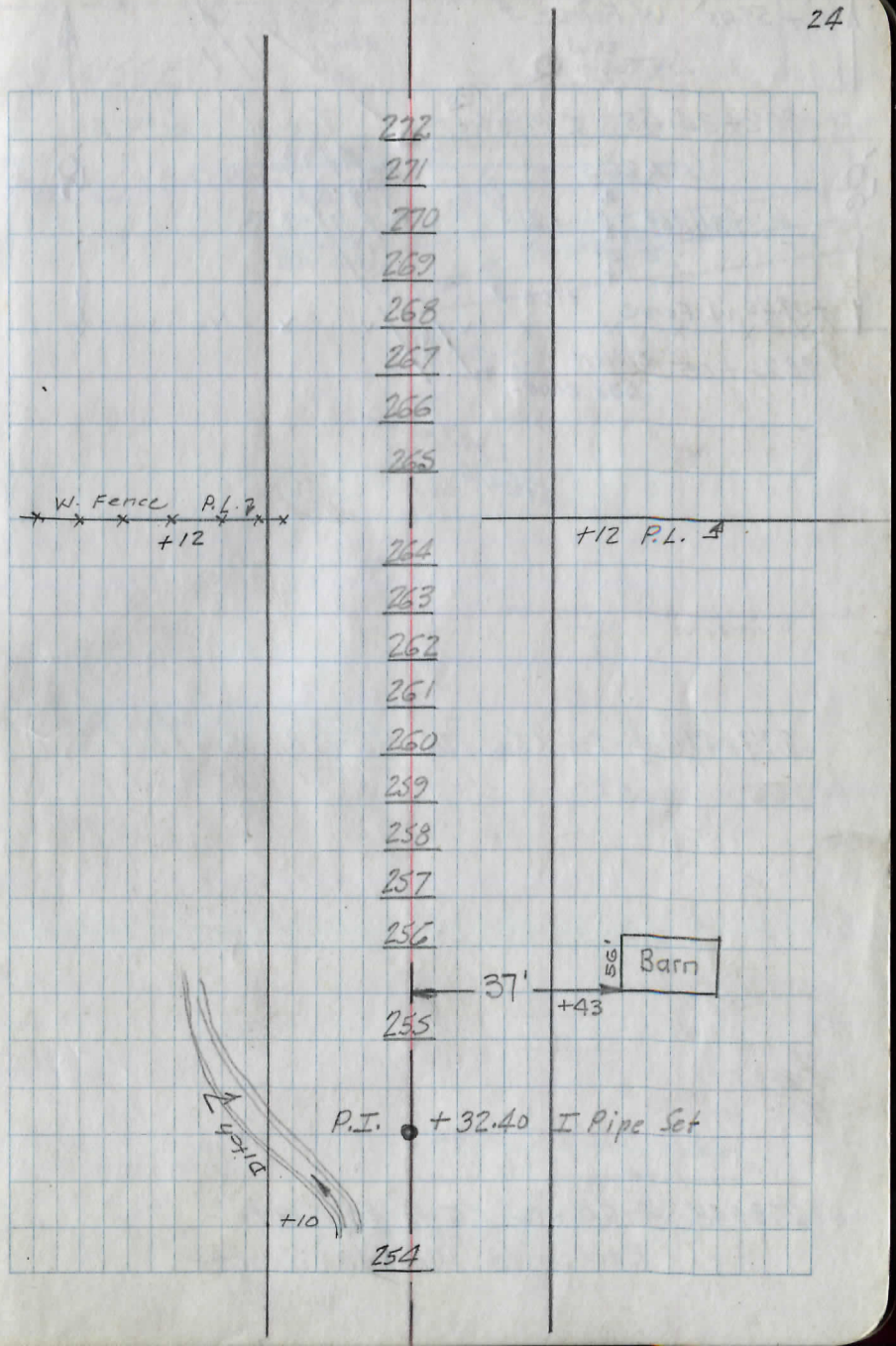


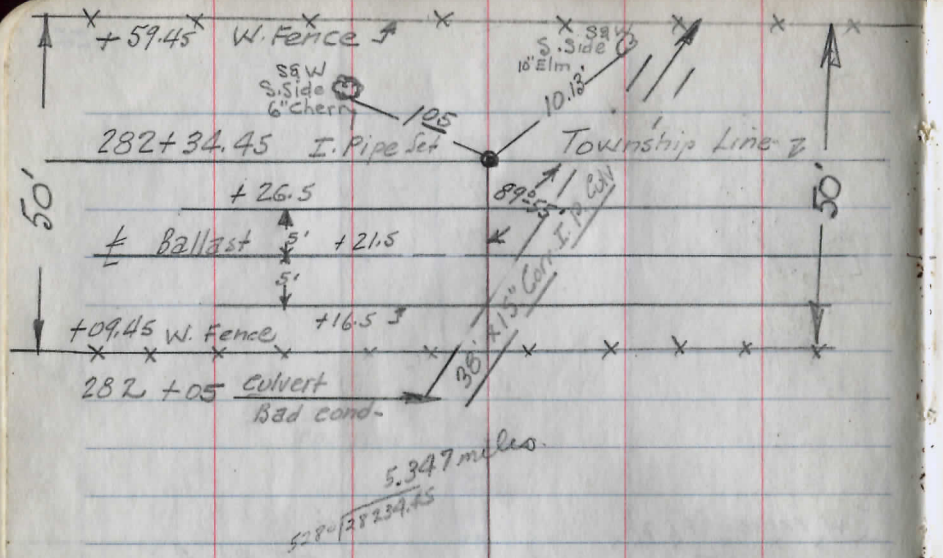
245+91 ℄ 16'x8" C.I.P. Culvert Bad Cond.
Req: 12" Culvert

℄ Rd. N-4°-52'-E




N-4° 19'-E
℄ Rd.
0° 33' Lt.
S.&W.
NW Side
18" Elm
39.75'
179°27'
254+32.40 P.I. I. Pipe Set
Def. = 0° 33' Lt.
42.98'
N-4° 52'-E
S&W
SW. side
27" Elm

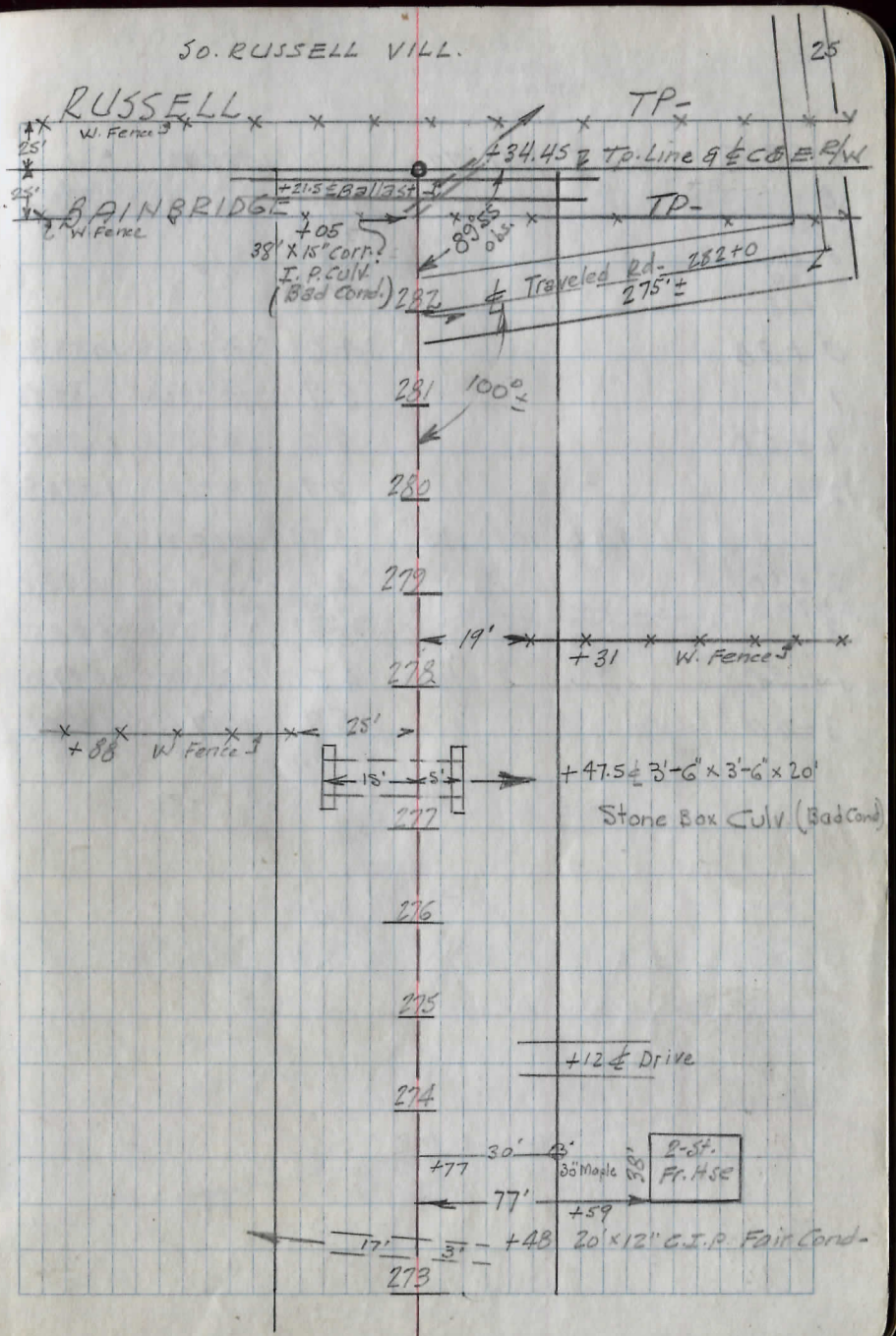

272
271
270
269
268
267
266
265
W. Fence P.L.?
+12
+12 P.L. ?
264
263
262
261
260
259
258
257
256
56'
Barn
37'
+43
255
℄ 49°10
P.I. +32.40 I Pipe Set
+10
254



277+47.5 ℄ 3'-6" x 3'-6" x 20' Stone Box Culv (Bad Cond)

273+48 ℄ 20' x 12" C.I.P. Fair Cond-

Req: 18" Hillside Culvert

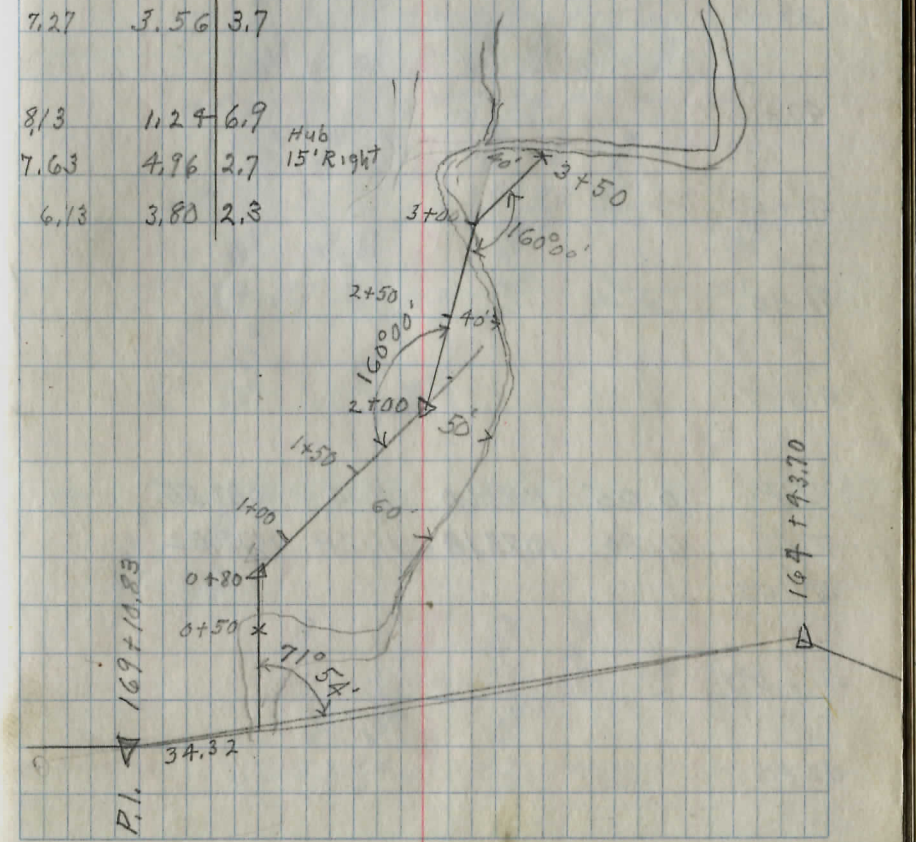


Apr. 21, 1938, Fair, 65° ±
W.C. Marks
E. Richards
H.H. Fowler

B.M. #15	4.55	1091.77		1087.22	
0			9.4	1082.4	Grade 1082.5
0+25			9.4		
0+50			6.8		
0+60			8.2		
0+65			5.2		
0+80			4.6		1083.3
1			3.9		1083.5
1+50			3.6		1084.0
2			3.7		1084.5
	4.92	1093.13	3.56	1088.21	
2+50			4.0		1085.0
2+90			7.3	1085.8	
3			5.8		1085.5
3+50			4.5		1087.0
3+60			5.9	1087.2	~~1087.0~~

Left, 169+08
Gr. Rod, Hub 15' L.
Rod, Cut.

8.47	4.49	4.0
8.27	4.20	4.1
7.77	3.15	4.6
7.27	3.56	3.7
8.13	1.24	6.9
7.63	4.96	2.7
6.13	3.80	2.3

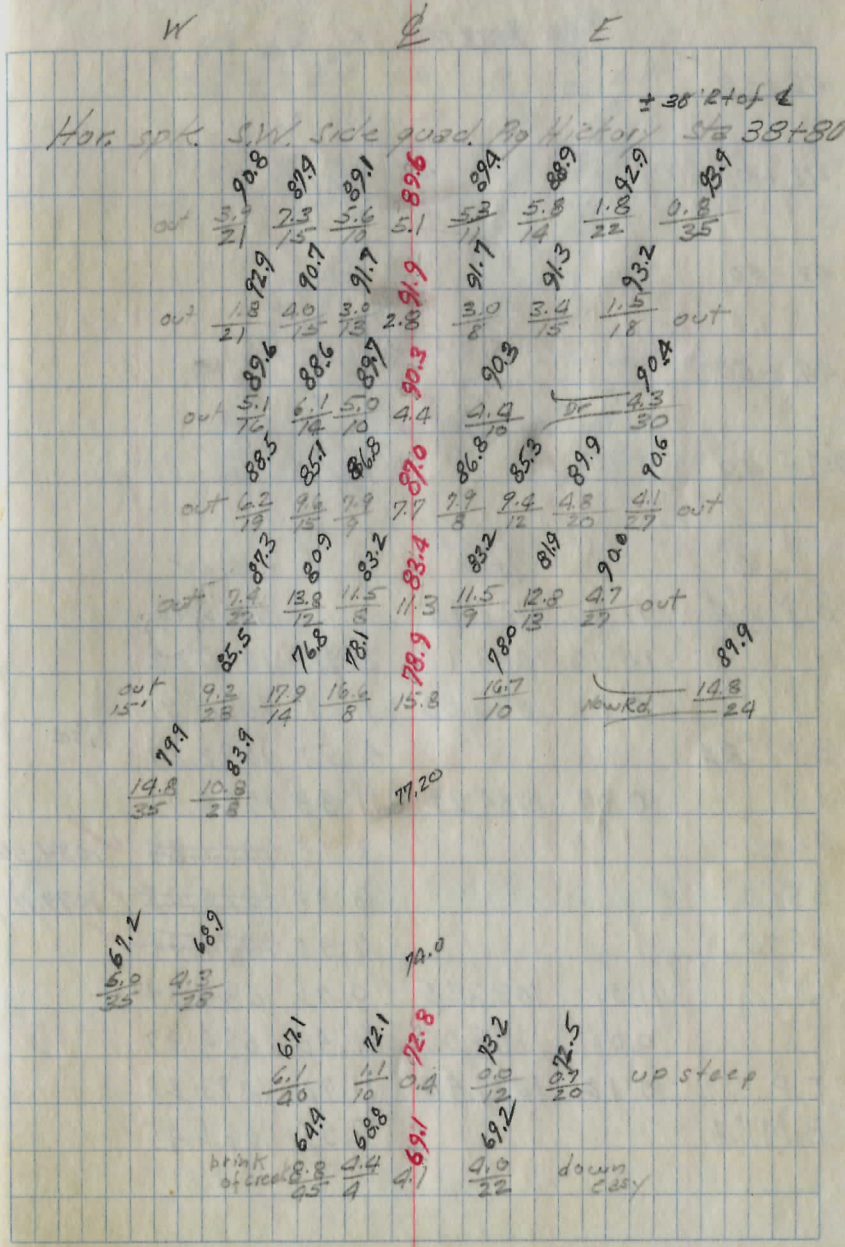


Partly cloudy
cool ± 45°
Patterson Temple

Elev for relocation of
Haskins Rd Bridge Sta 42+85
Nov 57

	+	HI	−	Elev
				1092.29
BM #3A	2.40	1094.69		100.00
37+0				
38+0				
39+0				
40+0				
40+50				
41+0				
41+17				
TP	0.05	1083.60	11.14	1083.55
TP	0.86	1073.18	11.28	1072.32
41+42				
41+50				
42+0				

error in reading
℄ elev should be 1090.90



1073.18

42+50

43+0

43+50

44+50

45+50

	+	HI	−	Elev	
B.M. #4	11.70	1077.15		1065.45	
TP	11.96	1088.18	0.93	1076.22	
TP	9.92	1096.83	1.27	1086.91	
B.M. #3A			4.54	1092.29	Use
TP	0.04	1084.99	11.88	1084.95	
36+0			3.15	~~1081.84~~	✓ 1084.56
35+0			6.94	~~1078.05~~	✓ 1079.11
34+0			7.95	~~1077.04~~	✓
TP	11.51	1096.45	0.05	1084.94	
TP	0.03	1085.00	11.48	1084.97	
T.P.	0.12	1073.40	11.72	1073.28	
B.M. #4			7.95	1065.45	

W. side of brook E.

out 58.4 / 14.3 / 28 — 64.6 / 8.6 / 18 — 66.4 / 6.8 / 2 — 6.6 — 66.8 / 6.4 / 13 — 65.0 / 8.2 / 20 out

out 63.3 / 9.9 / 15 — 65.3 / 7.9 / 12 — 7.6 — 63.6 / 9.6 / 3 — 61.0 / 12.2 / 8 out

out 63.2 / 10.0 / 30 — 64.6 / 8.6 / 22 — 8.4 — 64.4 / 8.8 / 5 — 62.2 / 11.0 / 10 out

out 66.2 / 7.0 / 23 — 66.0 / 7.2 / 20 — 66.5 / 6.7 / 16 — 6.4 — 66.6 / 6.6 / 3 — 65.7 / 7.5 / 12 down east

out 76.9 / 3.7 / 30 — 70.9 / 2.3 / 15 — 72.0 / 1.2 / 10 — 72.3 — 0.9 — 72.1 / 1.1 / 8 — 71.1 / 2.1 / 14 — 73.2 / 0.0 / 17 out

	+	HI	-	Elev
BM #4	10.26	1075.71		1065.45
BM #4A			11.88	1063.83
TP	11.45	1087.04	0.12	1075.59
TP	8.92	1094.01	1.95	1085.09
46+50				
47+50				
TP	8.65	1101.08	1.58	1092.43
48+50			3.00	

Bent Spk N side 10" Walnut Sta 43+0
± 25' Left of New ℄

	92.8	91.3	81.2	82.5	℄ 82.7	82.4	81.5	℄ 82.5	86.9	88.5
	42	27 W	12.5	4.7	11.33	11.6	12.5	11.5	7.6	5.5
out	40	30	15	12		12	15	18	22	30

92.1
1.58

1098.1
3.00

Driveway problem

Levels - Sta 39+83 (Rt.)

B.M.	1.01	93.30		1092.29
T.P.	8.17	1089.40	12.07	81.23
0+0				
+18 top berm	-30's.		8	
+20		(12" Conc. culv.)		
+35				
T.P.	8.16	1097.07	0.49	1088.91
+50				
1+0				
+65	top of grade	(in Area of hse & dr S.)		
2+15				
+65				
	4.59	1094.45	7.21	1089.86
B.M.			2.16	1092.27

Davidson
Patterson
R Diedrich T

10/25/05

30

Spk S.W. side gard. pig hickory (36+80)? 0+0 = Spk & cap ⊥ℓ

ℓ Haskins @ Sta 39+83
dr. sta & ℓ dr. from Haskin

(79.05)
(79.30)
(81.00)
(83.3)
(89.19)
(93.81)
(92.63)
(90.92)

HASKINS Rd

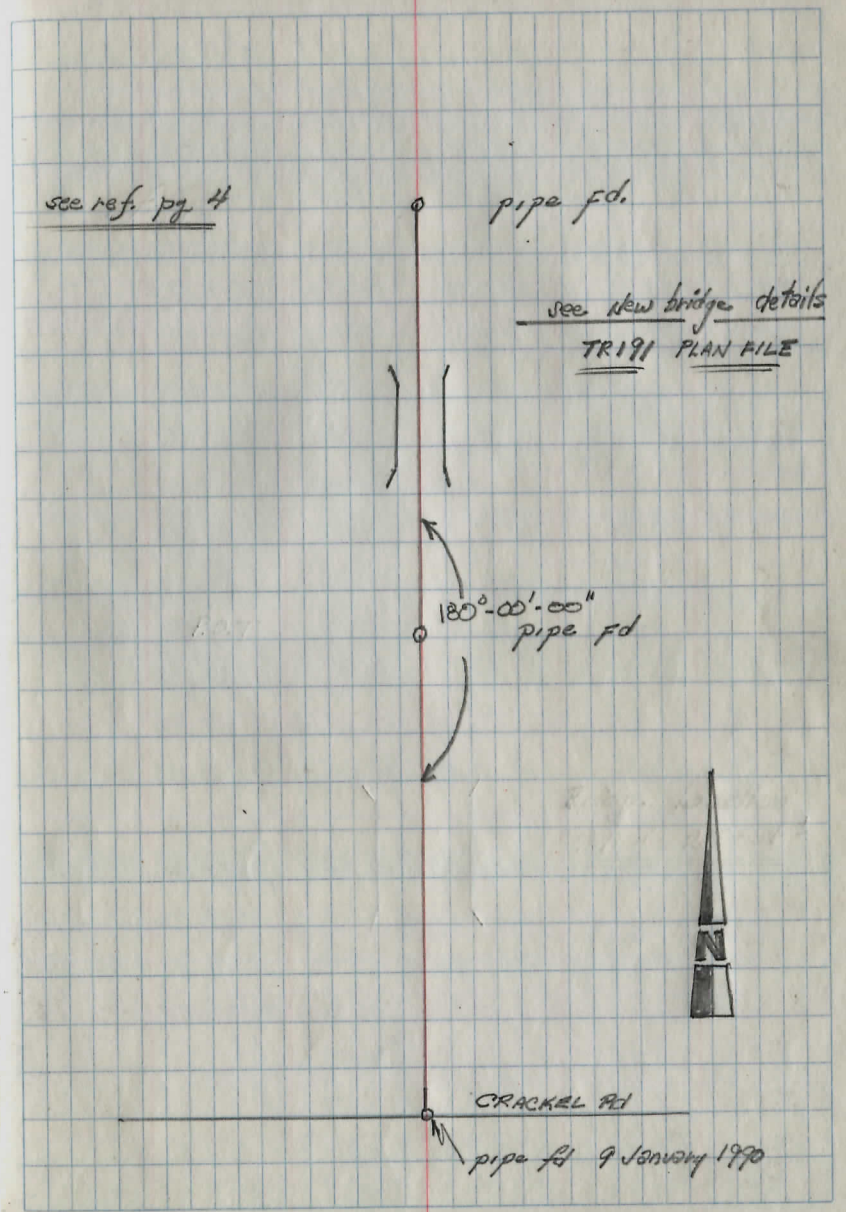
29+47 18

16+68 68

0+00

B. Lotts
M. Ferguson

January 1990 31



"BENCH MARKS" (From Taylor Rd. South) Jan 21, 1935 (Cold & Windy 10° Above) S. Gould Jr. G. Dietz — 33

Sta	+	H. I.	-	Elev.	R E MARKS
B.M.#7	1.09	1170.73		1169.64	
T.P.	1.08	1163.25	8.53	1162.20	
T.P.	0.17	1152.21	11.21	1152.04	
T.P.	1.75	1143.38	10.58	1141.63	
T.P.	8.52	1147.36	4.54	1138.84	
B.M.#6			3.92	1143.44	Spike in S.W. Root 24" Pine 42' Rt. Sta 66+08
T.P.	0.50	1136.26	11.60	1135.76	
T.P.	0.25	1124.06	12.45	1123.81	
T.P.	0.45	1111.78	12.73	1111.33	
T.P.	7.45	1115.02	4.24	1107.54	
T.P.	7.97	1122.77	0.22	1114.80	
T.P.	2.71	1115.51	9.97	1112.80	
B.M.#5			3.27	1112.24	Spike in West Root 30" Maple 25' Rt. Sta 51+0
T.P.	0.02	1107.28	7.25	1107.26	
T.P.	1.08	1097.40	10.96	1096.32	
T.P.	0.46	1086.32	11.54	1085.86	
T.P.	0.27	1076.17	10.42	1075.90	
T.P.	3.02	1069.33	9.86	1066.31	
B.M.#4			3.88	1065.45	X. N.E. Corner S.E. Wing (S. Abutment) Sta 42+75
T.P.	8.89		3.69		
T.P.	11.82		0.77		
T.P.	9.46		0.71		
T.P.	4.29		2.61		

"BENCH MARKS" Cont'd.

Sta	+	H I	-	Elev.	R E M A R K S -
T.P.	0.47		11.86		
T.P.	4.67		8.23		
T.P.	1.68		1.23		
T.P.	0.39		11.60		
T.P.	3.51		9.75		
B. M.#3			6.27	Spike	in S. W. Root 24" Sycamore 58' Rt. Sta 26+78
T.P.	9.61		0.55		
T.P.	12.98		0.21		
T.P.	11.04		0.18		
T.P.	13.12		0.09		
T.P.	11.04		2.53		
T.P.	5.70		0.62		
B. M.#2			1.70	Spike	in W. Root 27" Maple 31' Rt Sta 16+37
T.P.	2.73		12.11		
T.P.	10.46		1.70		
T.P.	6.52		2.40		
T.P.	7.16		0.82		
B.M.#1			1.91	Spike	in N.E. Root 36" B. Hickory 36' Lt. Sta 5+39

H. Patterson
P. Wenzel
D. Gressel
P. King

6/25/73

Haskins Driveway Profiles

1500' S. of US 422

Clear Warm 75°

	℄	℄		
BM	12.98	112.98		100.00 Spk.
T.P.	10.64	123.17	0.45	112.53
19440				℄ Profile Haskins Rd.
430				
19540				
T.P.	11.02	133.49	0.72	122.45
19640				
450				
19940				
450				
193+56	Profile	New Road West (Tanglewood Trail)		
175+04	Profile	Dr. E.		
195+68	Profile	Dr. E.		
196+23	Profile	Dr. W.		
T.P.	1.02	123.47	11.62	122.45
T.P.	1.50	112.29	12.70	110.79
B.M.			12.24	100.03

E. side CEP 641919 ± 540. 19140 W. side Rd.

W. E

124.67
8.50
117.97
5.24
119.77
3.40

126.97
7.00
123.57
4.90
125.57
7.80
133.17
10.36

H² 123.17

9.50	10.20	℄ 10.64
100	30	
113.67	112.27	112.53

3.40 132.57 133.17
130.92 0.90 0.30
30 60

9.90 123.97 123.97 124.07
129.07 9.00 9.50 9.40
30 60 91

133.07 130.87 129.37
0.40 2.60 9.10
150 100 30

5.00 128.47

H. Patterson
D. Wengel
G. Gressel
P. King

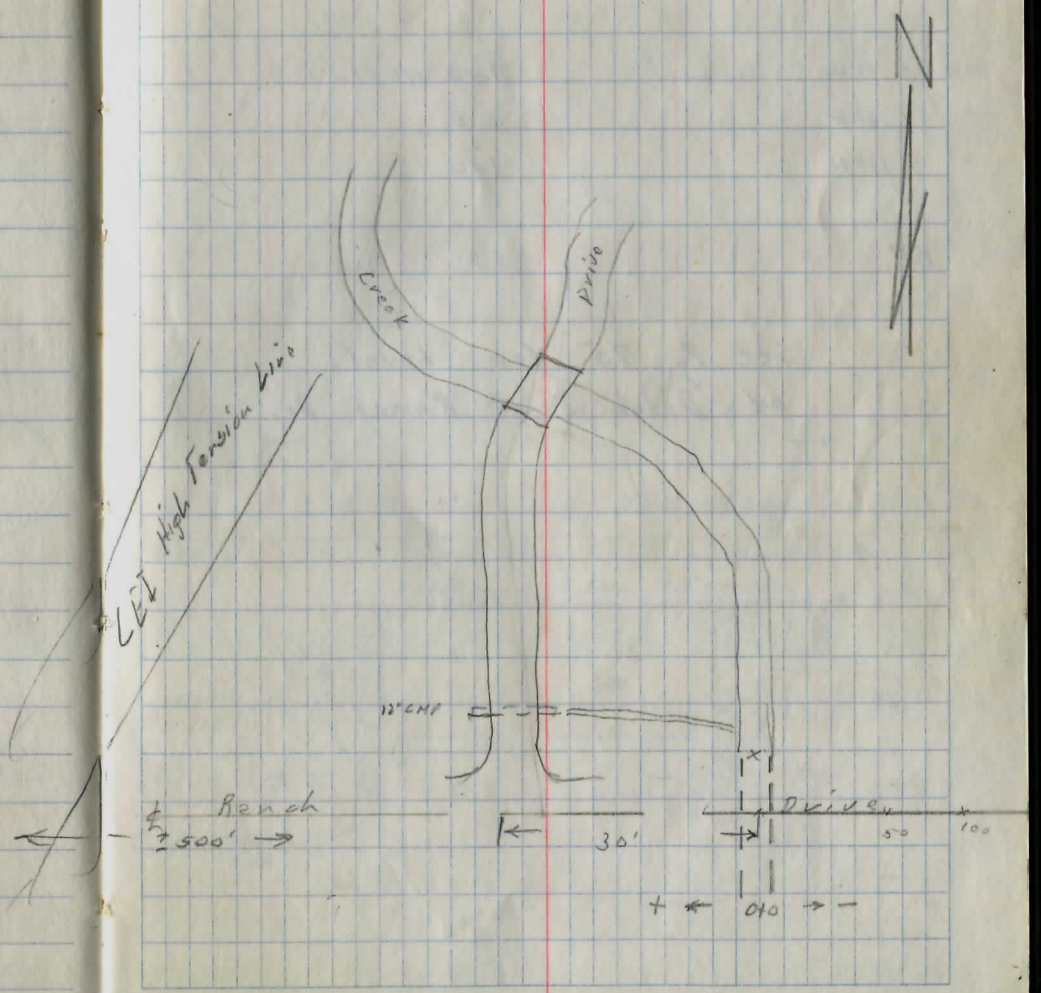
8818 Ranch Drive
Dr. Levels
6-25-73

Hot 80°

B.M.		6.71	106.71	100.00	Spk.
0+0	℄ Rd.	℄ x Rd Cuts.		4.60	
−50		Rd Profile		3.10	
−100				1.50	
0+50				5.10	
1+0				5.20	
+56				4.50	
2+00				3.20	
0+0	℄	Drive Profile		4.90	
+10				5.40	
+29				7.30	
				W. end	E. end
+29		F/L 12" CMP Dr. pipe		10.70	11.20
+50				2.00	
1+0				7.40	
+28	℄	Bridge		6.50	
+50				6.50	
2+0				6.00	

Profile	creek F/L	W. Pipe	E. Pipe
+23	F/L x Rd. Cuts	10.90	12.00
+50	℄ creek		11.70
+70	℄ " at Bend		11.53
1+0	℄ "		10.70
+50	℄ " at Bend		10.80
2+0	℄ " at Bend		11.00

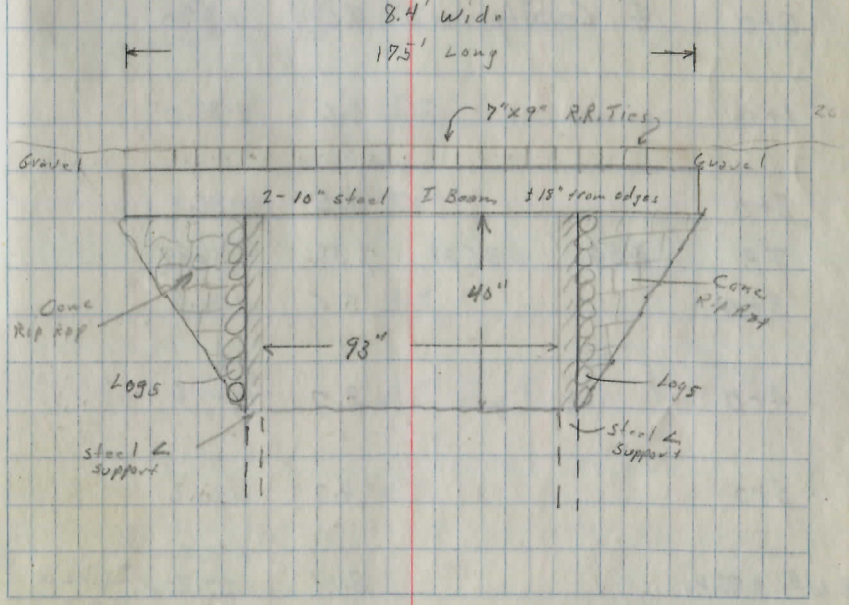
S.I. CEI 71



106.71

0+50 - ℄ 30' N.	(W. Lawn)	9.70	
" " 50 N		10.00	
" " 100 N		9.70	
" " 150 N		8.00	
0+12 - ℄ 30 N	(E. Lawn)	11.40	F/L EPW ditch
" " 50 N		10.10	
" " 100 N		9.50	
B.M.		6.71	100.00

See Pg. 75 for Levels of Ditch S. of Ranch Dr.



"℄ Profile" 1-21-35 (Cold & windy Temp. 10° Above Zero)

Sta	+	H. I	−	Elev.	Remks
B.M. #1	1.91	1134.11		1132.20	Spike
T.P.	4.71	1136.16	2.66	1131.45	
T.P.	6.85	1139.55	3.46	1132.70	
0-200			2.4	1137.2	
0-100			3.5	1136.1	
0-18	℄ S.R. Culvert		4.3	1135.3	
0+0	℄ County Line Rd.		4.6	1133.0	
1+0			6.6	1133.0	
2+0			7.5	1132.1	
T.P.	3.34	1135.31	7.58	1131.97	
3+0			3.5	1131.8	
4+0			3.7	1131.6	
5+0			4.7	1130.6	
B.M.#1 & T.P.			3.11	1132.20 ✓ 1132.20 ✓	Spike in N.E. Root 36" B. Hickory 36' Lt. Sta 5+39

S. Gould Jr.
G. Dietz

HASKINS RD— 38

℄

in N.E. Root 36" B. Hickory 36' Lt. Sta 5+39

		2.4		
		3.5		
	6.4 F.L.	4.3	7.1 F.L.	
5.4 200	3.5 100'	4.6	6.3 100'	
		6.6		
		7.5		
		3.5		
		3.7		
		4.7		

℄ PROFILE

Sta	+	H.I.	−	Elev.	Remis
B.M. #1	1.12	1133.32		1132.20	
6+0			5.2	1128.1	
7+0			8.5	1124.8	
8+0			10.5	1122.8	
T.P.	2.67	1125.06	10.93	1122.39	
9+0			3.5	1121.6	
10+0			3.9	1121.2	
+50	Change in Grade		4.6	1120.5	
11+0			7.0	1118.1	
12+0			11.6	1113.5	
T.P.	2.49	1114.73	12.82	1112.24	
13+0			4.7	1110.0	
13+21	℄ Culvert		4.8	1109.9	
14+0			4.1	1110.6	
15+0			2.1	1117.6	

HASKINS RD-

℄

5.2

8.5

10.5

3.5

3.9

4.6

7.0

11.6

4.7

12.4 / 200' 10.8 / 100' 9L / FL ↔ 10' 5.5 4.8 5.6 / 11' → 9.0 / FL. 7.2 / 50'

4.1

2.1

℄ PROFILE

Sta	+	H.I.	−	Elev.	Remis
		1114.73			
T.P.	10.04	1124.40	0.37	1114.36	
15+43	℄ Drive Rt.		10.0	1114.4	
16+0			6.6	1117.8	
B.M#2			1.84	1122.56	Spike
16+75	Change in Grade		5.0	1119.4	
17+0			6.9	1117.5	
T.P.	0.22	1113.67	10.95	1113.45	
18+0			3.4	1110.3	
19+0			6.4	1107.3	
20+0			8.0	1105.7	
20+50			10.4	1103.3	
T.P.	0.09	1100.66	13.10	1100.57	
21+0			3.0	1097.7	
22+0			8.4	1097.3	
23+0			14.3	1086.4	
T.P.	0.17	1087.74	13.09	1087.57	
24+0			10.2	1077.5	

HASKINS RD.

℄

10.0 $\frac{7.2}{30'}$

6.6

in Wl. Root 27" Maple 31' Rt. Sta 16+37

5.0

6.9

3.4

6.4 $\frac{5.7}{6'}$ ← Trav. Rd.

8.0 $\frac{7.4}{6'}$ ← Trav. Rd.

10.4

3.0

8.4

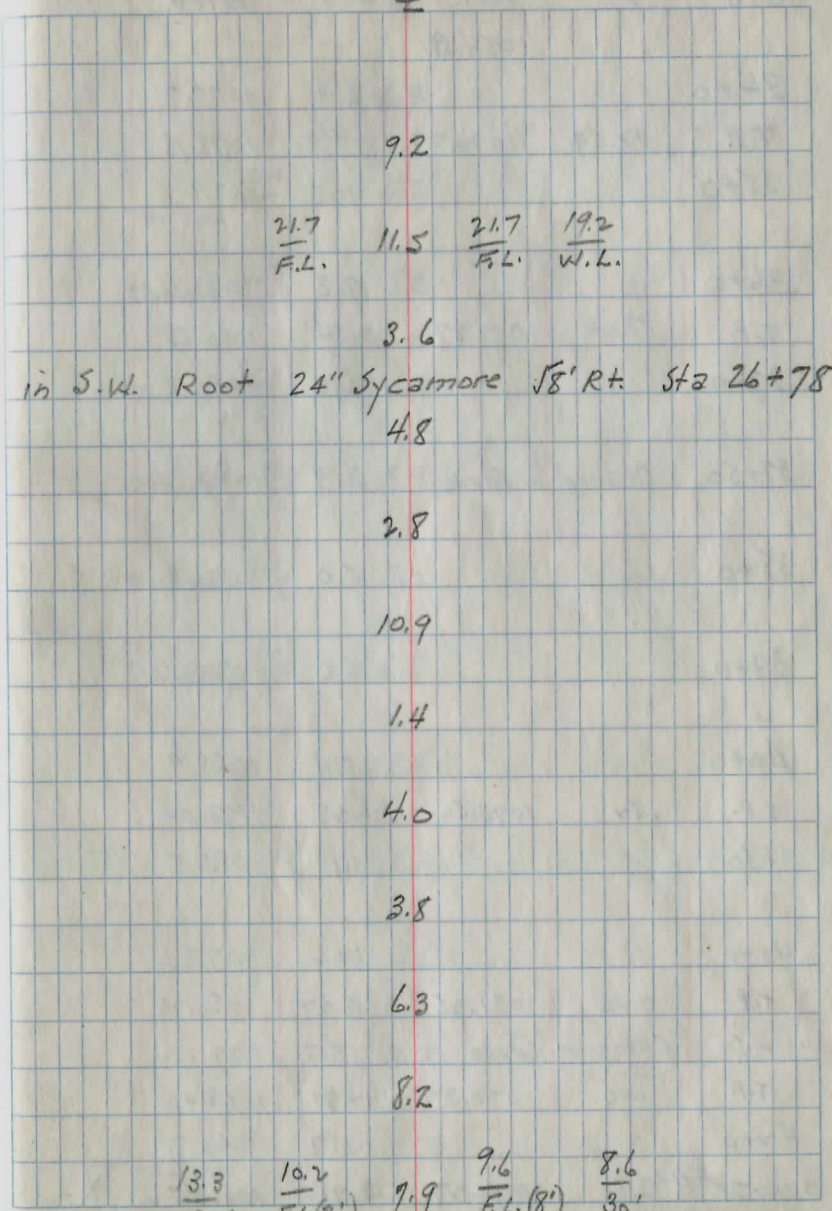
14.3

10.2

℄ PROFILE

Sta	+	H. I.	−	Elev.	Rem's
		1087.74			
T.P.	0.73	1075.89	12.08	1075.66	
25+0			9.2	1066.7	
25+64	℄ Bridge		11.5	1064.4	
T.P.	1.66	1064.90	12.65	1063.24	
26+0			3.6	1061.3	
				1058.69 rec'd	
B.M #3			6.22	1058.68	✓ Spike
27+0			4.8	1060.1	
28+0			2.8	1062.1	
T.P.	12.87	1076.98	0.79	1064.11	
29+0			10.9	1066.1	
30+0			1.4	1075.6	
T.P.	7.77	1084.58	0.17	1076.81	
30+50	Change in Grade		4.0	1080.6	
31+0			3.8	1080.8	
32+0			6.3	1078.3	
33+0			8.2	1076.4	
33+57	℄ Culvert		7.9	1076.7	

℄



℄ PROFILE

Sta	+	H.I.	−	Elev.
		1084.58		
34+0			6.9	1077.7
T.P.	12.59	1090.77	6.40	1078.18
35+0			11.2	1079.6
36+0			7.2	1083.6
T.P.	7.04	1097.27	0.54	1090.23
37+0			6.0	1091.3
37+50	Change in Grade		3.9	1093.4
38+0			5.0	1092.3
39+0			6.6	1090.7
40+0			8.4	1088.9
T.P.	.52	1093.56	4.73	1093.04
+50			5.1	1085.5
41+0			14.6	1079.0
T.P.	0.96	1081.75	13.77	1080.79
41+50	Change in Grade		9.7	1071.6
T.P.	1.96	1070.37	17.84	1068.41
42+0			3.7	1066.7
B.M.&T.P. #4	3.81	1070.27	3.91	1066.46 rec (Used) 1066.45 ✓

X- N.E. Cor. S.E. Wing (Abut.)

℄

		6.9
Trav Rd-	10.9/6'	11.2
Trav Rd-	6.7/6'	7.2
Trav Rd	5.3/6'	6.0
Trav Rd-	3.0/6'	3.9
Trav. Rd-	4.1/6'	5.0
Trav. Rd-	6.0/5'	6.6
		8.4
		8.1
		14.6
		9.7
		3.7

℄ PROFILE

Sta	+	H.I.	-	Elev	Rem's
		1070.27			
42+85	℄ Bridge		3.48	1066.79	Conc. Floor
43+0			4.0	1066.3	
44+0			4.7	1065.6	
45+0			1.0	1069.3	
T.P.	11.02	1081.24	0.05	1070.22	
45+50	Change in Grade		9.4	1071.8	
46+0			3.6	1077.6	
T.P.	10.90	1090.96	1.18	1080.06	
47+0			7.1	1088.9	
T.P.	13.03	1103.88	0.11	1090.85	
48+0			7.5	1096.4	
49+0			1.6	1102.3	
T.P.	11.80	1115.47	0.21	1103.67	

℄

11.6 F.L. 3.48 11.6 F.L. 9.0 W.L.

4.0

Trav. Rd. 3.9/8" 4.7

1.0

9.4

3.6

2.1

7.5

1.6

HASKINS ROAD

℄ PROFILE

Sta	+	H.I.	-	Elev.	Remis
		1115.47			
50+0			8.0	1107.5	
+75	Change in Grade		4.0	1111.5	
B.M. #5			3.71	1112.24 rec'd 1112.26	Spike in West Root 30" Maple 25' Rt. Sta 51+0
51+0			4.2	1111.3	
+85	℄ Culvert		4.7	1110.8	
52+0			4.6	1110.9	
53+0			3.0	1112.5	
T.P.	7.34	1121.64	1.17	1114.30	
54+0			5.2	1116.4	
54+50	Change in Grade		3.4	1118.2	
55+0			4.1	1117.5	
56+0			8.1	1113.5	

℄

8.0

4.0

4.2

10.0/100' 6.5 Fl. 4.7 6.3 F.L. 5.6/30'

4.6

3.0

5.2

3.4

4.1

8.1

℄ PROFILE

Sta	+	H.I.	−	Elev.	Rem's
		1121.64			
57+0			10.9	1110.7	
58+0			13.7	1107.9	
T.P.	1.96	1110.71	17.89	1105.75	
59+0			5.3	1105.4	
59+59	℄ Culvert		4.9	1105.8	
60+0			4.2	1106.5	
61+0			1.3	1109.4	
T.P.	17.37	1127.84	0.74	1110.47	
62+0			4.8	1118.0	
T.P.	11.51	1133.53	0.87	1122.02	
63+0			7.6	1125.9	
64+0			2.8	1130.7	
T.P.	11.43	1144.84	0.12	1133.41	

HASKINS ROAD

℄

10.9

13.7

(Trav. Rd.) 4.7/6. 5.3

10.3/100. 7.6 F.L. 4.9 7.6 F.L. 7.5 W.L. (Pond)

4.2

(Trav. Rd.) 1.1/8" 1.3

Trav. Rd. 4.5/6. 4.8

7.6

2.8

℄ PROFILE

Sta	+	H.I.	-	Elev.	Rem's
		1144.84			
65+00			10.2	1134.6	
66+00			5.5	1139.3	
B.M. #6			1.41	1143.43	1143.24 rev ✓ Spike
66+50	Change in Grade		4.2	1140.6	
66+77	℄ Drive	Rd.	5.5	1139.3	
67+00			6.3	1138.5	
67+96	℄ Culvert		7.2	1137.6	
68+00			7.3	1137.5	
69+00			6.6	1138.2	
T.P.	8.72	1147.26	6.30	1138.54	
70+00			7.9	1139.4	
71+00			6.2	1141.1	

℄

10.2

Trav Rd. 54/61 5.5

in S.W. Root 24" Pine 42' Rt. Sta 66+10

4.2

5.5 3.0/30'

6.3

13.1/100' 9.8/FL. 7.2 9.2/FL. 7.9/30'

7.3

6.6

7.9

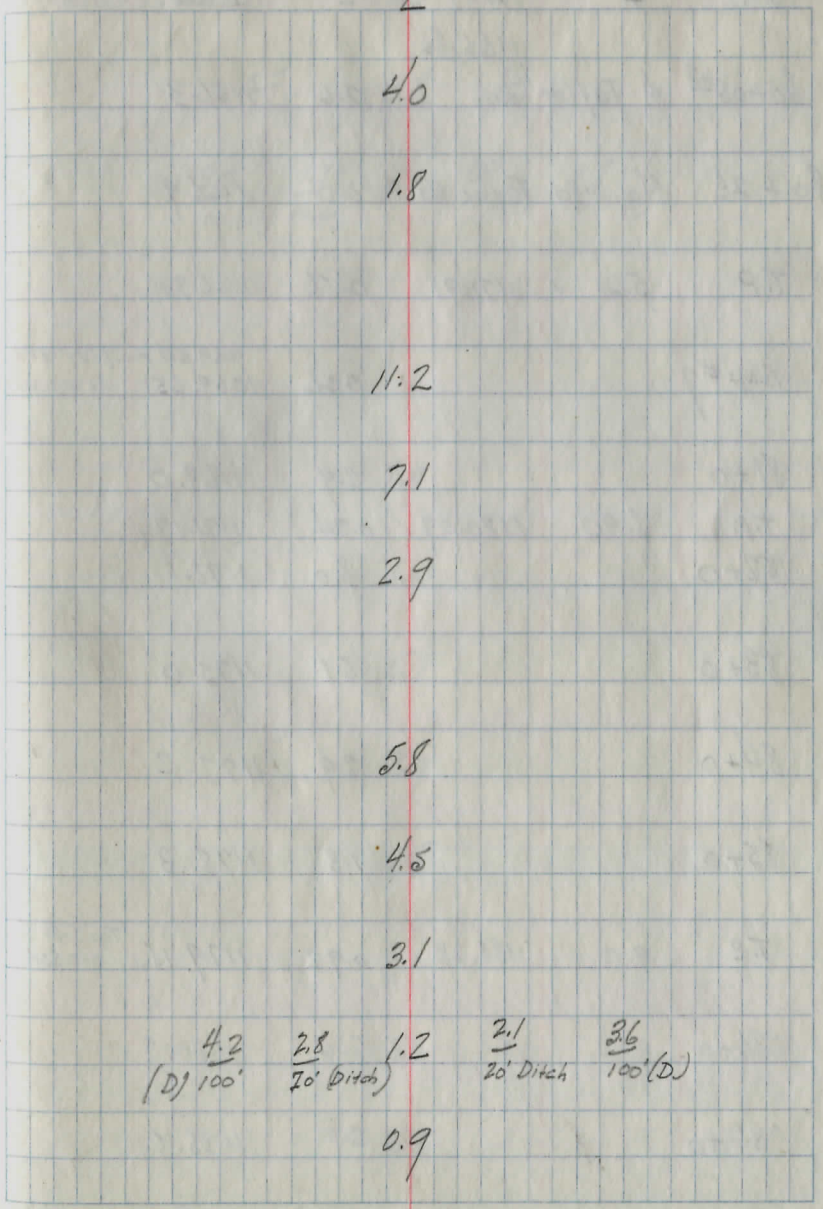
6.2

℄ PROFILE

Sta	+	H.I. 1147.26	−	Elev.	Rem's
72+0			4.0	1143.3	
73+0			1.8	1145.5	
T.P.	13.10	1159.52	0.84	1146.42	
74+0			11.2	1148.3	
75+0			7.1	1152.4	
76+0			2.9	1156.6	
T.P.	8.42	1166.86	1.08	1158.44	
77+0			5.8	1161.1	
78+0			4.5	1162.4	
79+0			3.1	1163.8	
79+92	So. Ditch Taylor Rd.		1.2	1165.7	
80+0			0.9	1166.0	

HASKINS ROAD

℄



℄ PROFILE

Sta	+	H.I. 1166.86	−	Elev.	Remis
80+08.65	℄ Taylor	Rd.	0.6	1166.3	
80+26	No. Ditch	Taylor Rd	0.0	1166.9	
T.P.	5.61 ✓	1171.91	0.56	1166.30 ✓	
B.M. #7			2.26	1069.65	1069.64 rec. (Taylor Rd.) by W.C. Marks
81+0			2.9	1169.0	
T.P.	8.90	1180.07 ✓	0.74	1171.17 ✓	
82+0			8.0	1172.1	
83+0			5.1	1175.0	
84+0			2.9	1177.2	
85+0			1.8	1178.3	
T.P.	9.13	1188.28 ✓	0.92	1179.15 ✓	Top Side Stake Sta 85+0
86+0			7.6	1180.7	
87+0			2.8	1185.5	

HASKINS ROAD —

℄

2.4/100' 0.6 2.1/100'

3.7/100' (D) 1.8/20' (P) 0.0 1.0/20' (D) 2.8/100' (D)

2.9

8.0

5.1

2.9

1.8

7.6

2.8

℄ PROFILE

Sta	+	H.I.	−	Elev.	Rem's
		1188.28 ✓			
87+50			3.1	1185.2	
B.M.#8			3.0 ✓	1185.26	Spike
88+0			3.4	1184.9	
88+29	℄ Culvert (Hillside)		3.2	1185.1	
89+0			3.1	1185.2	
T.P.	7.57	1193.95 ✓	1.90	1186.38 ✓	
90+0			7.7	1186.3	
91+0			6.3	1187.7	
92+0			4.0	1190.0	
93+0			1.4	1192.6	
T.P.	9.74	1203.26 ✓	0.43	1193.52 ✓	
94+0			7.9	1195.4	

HASKINS ROAD—

℄

3.1

in W. Root 12' Walnut 25' Rt Sta 87+17

3.4

5.5 / ℄ 3.2 5.8 / ℄ 8.2 / 100'

3.1

7.7

6.3

4.0

1.4

7.9

HASKINS. ROAD

Sta	+	H.I.	−	Elev.	Rems
		1203.26 ✓			
95+0			5.2	1198.1	
+50			4.3	1199.0	
B.M.#9			5.48	1197.78 ✓	Spike
96+0			4.7	1198.6	
+62	℄ culvert		5.0	1198.3	
97+0			4.5	1198.8	
T.P.	12.77	1211.34 ✓	4.69	1198.57 ✓	
98+0			8.3	1203.0	
99+0			2.5	1208.8	
+50			1.6	1209.7	
100+0			2.2	1209.1	
101+0			2.8	1208.5	
T.P.	4.15	1212.84 ✓	2.65	1208.69 ✓	

℄

5.2

4.3

in S.W. Root 30" Maple 40' Rt Sta 95+55

4.7

7.2 / 25' 7.6 / F.L. 5.0 8.3 / F.L. 12.5 / 100'

4.5

8.3

2.5

1.6

2.2

2.8

Sta	+	H.I.	-	Elev	Rems
		1212.84 ✓			
102+0			5.4	1207.4	
+34	& Culvert		5.5	1207.3	
103+0			5.5	1207.3	
104+0			4.6	1208.2	
105+0			5.9	1206.9	
106+0			7.1	1205.7	
T.P.	0.89	1204.77 ✓	8.96	1203.88 ✓	
107+0			3.5	1201.3	
108+0			9.1	1195.7	
109+0			12.3	1192.5	
T.P. 90 M #10	5.96 ✓	1198.01	12.72	1192.05 ✓	X-N.W.
109+25			6.0	1192.0	

HASKINS ROAD—

℄

5.4

7.2 / 30' | 7.5 / F.L. | 5.5 | 8.0 / F.L. | 9.3 / 100' | 11.6 / 200'

5.5

4.6

5.9

7.1

3.5

9.1

12.3

Cor. West parapet Culvert Sta 109+25

8.2 / 25' | 10.3 / F.L. | 5.96 | 6.0 | 5.90 | 10.0 / F.L. | 13.2 / 100'

Sta	+	H.I.	−	Elev	Rem's
		1198.01 ✓			
110+0			3.9	1194.1	
T.P.	12.80	1210.17 ✓	0.64	1197.37 ✓	
111+0			7.3	1202.9	
112+0			1.5	1208.7	
T.P.	6.78	1216.27 ✓	0.68	1209.49 ✓	
+50			6.4	1209.9	
113+0			5.6	1210.7	
+04	℄ culvert		5.6	1210.7	
114+0			4.8	1211.5	
115+0			2.3	1214.0	
116+0			0.0	1216.3	
T.P.	8.36	1223.57 ✓	1.06	1215.21 ✓	

HASKINS ROAD

52

℄

3.9

7.3

1.5

6.4

5.6

7.4 / 25' 8.3 / F.L. 5.6 9.2 / F.L. 13.3 / 100'

4.8

2.3

0.0

Sta	+	H.I.	-	Elev	Remks
		1223.57 ✓			
117+0			4.4	1219.2	
118+0			5.0	1218.6	
+25			4.8	1218.8	
119+0			4.4	1219.2	
120+0			1.6	1222.0	
B.M.# 11			1.95	1221.62	Spike in N. W. Root 27" Maple 32' Rt. Sta 119+18
121+0			0.8	1222.8	
T.P.	3.53	1225.91 ✓	1.19	1222.38 ✓	
122+0			3.6	1222.3	
123+0			4.2	1221.7	
124+0			5.3	1220.6	
125+0			6.7	1219.2	

℄

4.4

5.0

5.7 / 25' 6.3 / 75' 6.4 / 50' (Ditch) 6.6 / 14' 4.8 6.9 / 25' 8.0 / 50' 10.3 / 100' 12.4 / 150'

4.4

1.6

0.8

3.6

4.2

5.3

6.7

Sta	+	H.I. 1225.91	−	Elev.	Rem's
126+0			7.9	1218.0	
T.P.	0.62	1218.56	7.97	1217.94	
+40	℄ Drive		1.1	1217.5	
127+0			2.6	1216.0	
B.M.#12			2.67	1215.89	Spike
128+0			6.2	1212.4	
129+0			8.3	1210.3	
+40	℄ Culvert		9.2	1209.4	
+85	℄ Drive		9.4	1209.2	
130+0			9.3	1209.3	
T.P.	2.99	1212.16	9.38	1209.18	
131+0			2.5	1209.7	
132+0			4.1	1208.1	

℄

7.9

1.1 0.5/30'

2.6

in S.W. Root 36" Elm 33' Rt 127+98

6.2

8.3

11.0/30' 11.8/F.L. 9.2 12.2/F.L. 14.6/100'

9.3/30' 9.4

9.3

2.5

4.1

Sta	+	H.I.	-	Elev.	Rems
		12/2.15 v			
133+0			6.8	1205.4	
134+0			8.7	1203.5	
135+0			10.6	1201.6	
T.P.	2.33	1203.60 v	10.88	1201.27 v	T/S, Stake 135+0
136+0			3.8	1199.8	
137+0			6.8	1196.8	
138+0			10.3	1193.3	
T.P.	0.11	1192.93 v	10.78	1192.82 v	
139+0			2.5	1190.4	
140+0			4.5	1188.4	
+40	Ditch Fl. El. 1186.2				
141+0			6.4	1186.5	
142+0			8.0	1184.9	

HASKINS ROAD

55

℄

6.8

8.7

10.6

3.8

6.8

10.3

2.5

4.5

6.7/20'

6.4

8.0

Sta	+	H. I.	−	Elev.	Rems
		1192.93 ✓			
143+00			9.1	1183.8	
T.P.	2.15	1186.19 ✓	8.89	1184.04 ✓	T. at 143+
144+00			4.8	1181.4	
+85	℄ Culvert		5.1	1181.1	
145+00			5.3	1180.9	
146+00			2.7	1183.5	
T.P.	8.75	1194.28 ✓	0.66	1185.53 ✓	
147+00			4.4	1189.9	
+29	So. Ditch		4.2	1190.1	
+44.36	(℄ Bainbridge-Auburn Rd.)		5.6	1188.8	
+60	No. Ditch			1183.79 Rec-	
B.M. #13			11.03	1183.25 ✓	
148+00			4.7	1189.6	

℄

9.1

4.8

5.3/30' 9.5/F.L. 4.45/9' 5.1 4.83/9' 9.6/F.L. 12.5/100'

5.3

2.7

4.4

4.9/100' 4.6/(D)30' 4.2 14.0/100'

3.5/100' 5.5

4.3/100(D) 4.6/30(D) 5.5 8.1/25' 17.5/100' 14.0/100'

Spike So. Root 24" Walnut 25' Lt. Sta 46+10 Bainb--Auburn Rd.

3.9/7' 4.7

Sta	+	H. I.	-	Elev.	Rems
		1194.78			
149+0	℄ Drive (Rt.)		4.9	1189.4	
T.P.	1.75	1192.40	3.63	1190.65 ✓	
150+0			3.8	1188.6	
151+0			7.8	1184.6	
B.M.#14			8.12	1184.28	Spike in Kl. Root 15" Maple 29' Rt 151+71
152+0			11.5	1180.9	
T.P.	0.76	1179.58 ✓	13.08	1179.32 ✓	
153+0			6.1	1173.5	
154+0			12.4	1167.2	
T.P.	0.71	1168.06 ✓	12.23	1167.35 ✓	
155+0			5.3	1162.8	
156+0			9.9	1158.2	
T.P.	0.31	1156.12 ✓	12.25	1155.81 ✓	

℄

4.9 $\frac{4.2}{30}$

3.8

7.8

11.5

6.1

12.4

5.3

9.9

Sta	+	H.I.	-	Elev.	Rems.
		1156.12 ✓			
157+0			3.1	1153.0	
158+0			7.4	1148.7	
159+0			11.7	1144.4	
T.P.	0.18	1143.72 ✓	12.58	1143.54 ✓	
160+0			2.7	1141.0	
161+0			12.8	1129.9	
T.P.	0.12	1132.23 ✓	11.61	1132.11 ✓	
162+0			5.4	1176.8	
+30	C.G.		6.9	1125.3	
163+0			14.5	1117.7	
T.P.	0.23	1119.40 ✓	13.06	1119.17 ✓	
+50			5.6	1113.8	

HASKINS ROAD

℄

3.1

7.4

11.7

1.5/30' 1.0/28' 2.9/25' 4.3/17' 3.5/13' 3.4/10' 3.8/5' 4.6/2' 2.7 2.4/30'

8.4/30' 13.8/17' 13.1/10' 13.4/2' 12.8 10.3/4' 9.5/16' 10.0/24' 9.7/30'

12.2/30' 7.1/17' 5.4 5.5/7' 6.2/9' 5.5/12' 5.1/30'

6.9

14.3/30' 9.1/9' 14.5 14.0/7' 14.7/14' 8.9/22' 9.3/30'

5.6 8.5/T.R. (14)

HASKINS ROAD

Sta	+	H.I.	-	Elev.	Rem's
		1119.40			
164+0			13.2	1106.2	
T.P.	0.35	1107.61 ✓	12.14	1107.26 ✓	
+50	Build	Hillside Culvert (18")			
165+0			9.4	1098.2	
166+0	Level across.		13.7	1093.9	
T.P.	1.23	1097.06 ✓	11.78	1095.83 ✓	
167+0			5.6	1091.5	
168+0	(New Location Bridge)		7.5	1089.6	
+63			7.5	1089.6	
+74.5	℄ Bridge		7.5	1089.6	
+86			7.4	1089.7	
169+0			8.9	1088.2	
T.P.	5.61	1093.28 ✓	9.39	1087.67 ✓	
B.M. #15			6.06	1087.22 ✓	Spike

℄

14.4 / 30' 13.2 11.9 / 8' 13.8 / 17' 13.1 / 25' (TR) 13.1 / 30'

80 / 10'

11.7 / 30' 9.4 / 16' 11.4 / 13' 10.1 / 8' 9.4 9.0 / 18' (T/12) 7.0 / 24' 9.6 / 24' 8.9 / 28' 8.7 / 30'

13.7

5.6

7.5 13.9 / F.L. Ditch 17'

7.5

7.5 14.4 / F.L. 13.2 / W.L.

7.4

8.9

in S.E. Root 18" Elm 26' Lt. Sta 169+08

Sta	+	H.I.	-	Elev.	Remks
		1093.28			
170+0			5.0	1088.3	
171+0			3.5	1089.8	
172+0			1.8	1091.5	
T.P.	11.23	1102.54 ✓	1.97	1091.31 ✓	
173+0			8.7	1093.8	
174+0			5.6	1096.9	
175+0			7.0	1100.5	
T.P.	7.46	1108.33 ✓	1.66	1100.88 ✓	T.P. 174+0
+50			5.8	1102.5	
176+0			3.3	1105.0	
T.P.	13.19	1121.48 ✓	0.04	1108.29 ✓	
177+0			8.7	1112.8	

℄	
5.0	
3.5	
1.8	
8.7	
5.6	
7.0	
5.8	9.3 / 21
3.3	
8.7	

Sta	+	H.I.	−	Elev.	Rems
		1121.48 ✓			
177+50			2.7	1118.8	
T.P.	11.11	1132.44 ✓	0.15	1121.33 ✓	
178+0			9.7	1122.7	
+50			6.2	1126.2	
179+0			3.8	1128.6	
180+0			+0.3	1132.7	
T.P.	12.31	1144.11 ✓	0.64	1131.80 ✓	
+50			9.3	1134.8	
181+0			5.4	1138.7	
T.P.	11.83	1155.82 ✓	0.12	1143.99 ✓	
182+0			9.3	1146.5	
183+0			3.1	1152.7	
T.P.	12.18	1167.69 ✓	0.31	1155.51 ✓	
184+0			11.0	1156.7	
185+0			7.6	1160.1	
186+0			3.4	1164.3	

℄

2.7

9.7

6.2

3.8

(+0.3)

9.3

5.4

9.3

3.1

11.0

7.6

3.4

Sta	+	H.I.	-	Elev.	Rems
		1167.69 ✓			
T.P.	12.94	1180.51 ✓	0.12	1167.57	
187+0			12.1	1168.4	
188+0			7.1	1173.4	
189+0			1.7	1178.8	
T.P.	12.73	1192.67 ✓	0.57	1179.94 ✓	
190+0			6.5	1186.2	
+25			3.9	1188.8	
+50			2.5	1190.2	
191+0			0.0	1192.7	
T.P.	12.33	1204.63 ✓	0.37	1192.30 ✓	
192+0			7.8	1196.8	
193+0			7.6	1197.0	
T.P.	12.97	1217.38 ✓	0.22	1204.44 ✓	T/St. 193+0

℄

12.1

7.1

1.7

6.5

3.9

2.5

0.0

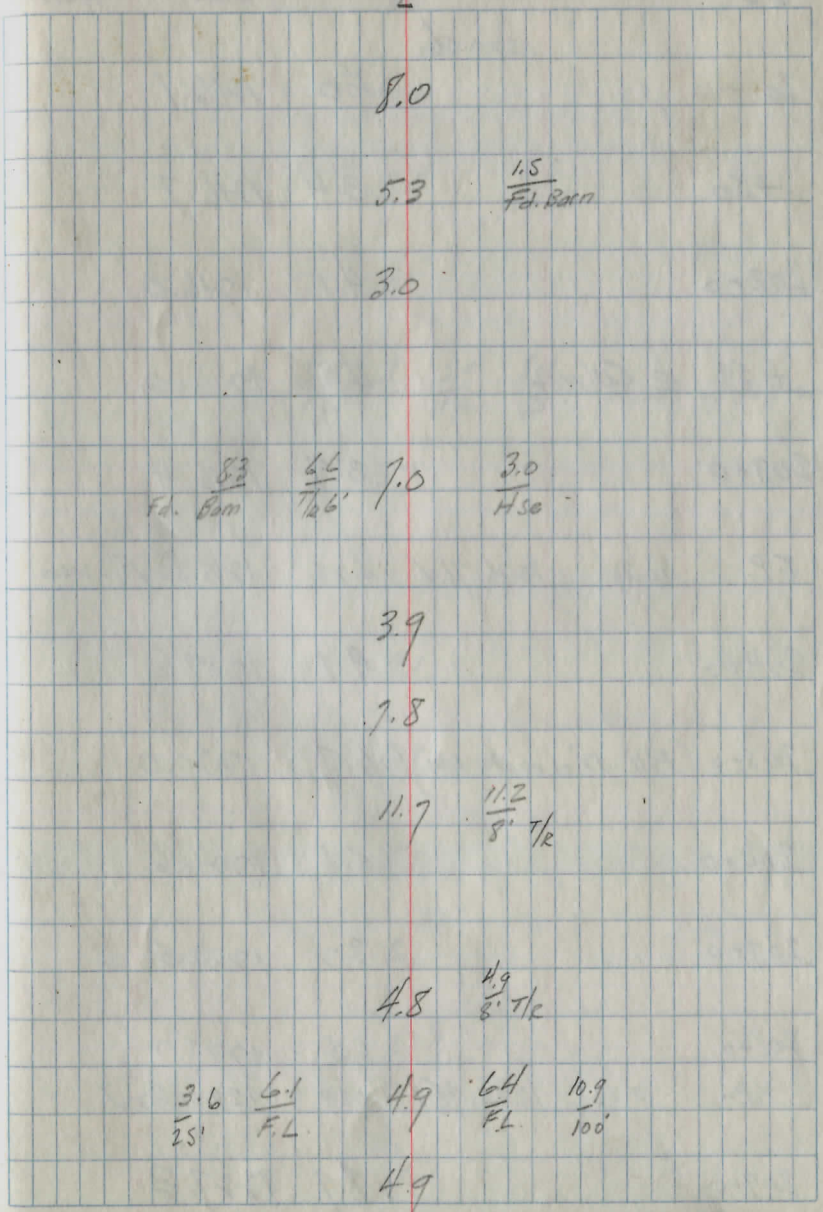
7.8

2.6

Sta	+	H.I.	-	Elev.	Rem's
		1217.38✓			
194+0			8.0	1209.4	
+40	℄ Drive	to Barn	5.3	1212.1	
195+0			3.0	1214.4	
T.P.	11.38	1227.57✓	1.39	1215.99✓	
196+0			7.0	1220.6	
B.M.#16			2.24	1225.33✓	Spike in W. Root 27' maple 196+46
+50			3.9	1223.7	
197+0			7.8	1219.8	29' Rt
198+0			11.7	1215.9	
T.P.	4.63	1220.06✓	12.14	1215.43✓	T/s 198
199+0			4.8	1215.3	
+97	℄ Culvert		4.9	1215.2	
200+0			4.9	1215.2	

HASKINS ROAD

℄



Sta	+	H.I.	-	Elev.	Rems
		1220.06			
201+0			4.0	1216.1	
+50			3.4	1216.7	
202+0			4.1	1216.0	
+59	℄ Culvert		4.1	1216.0	
203+0			3.7	1216.4	
T.P.	10.88	1227.71 ✓	4.23	1215.83 ✓	T/S 203+0
204+0			9.1	1217.6	
205+0	(Fill 12" or more req.)		6.7	1220.0	
206+0			5.1	1221.6	
207+0			3.7	1223.5	
208+0			1.5	1225.7	
T.P-	10.53	1235.95 ✓	1.29	1225.42 ✓	
209+0			8.7	1227.3	

℄

4.0

3.4 — 3.5 Fd Barn

4.1

3.6/25' — 5.5 F.L. — 4.1 — 5.9 F.L. — 8.7/75', plenty of Fall →

3.7

9.1

6.7

5.1

3.7

1.5

8.7

Sta	+	H.I.	-	Elev.	Rem's
		1235.95 ✓			
210+0			5.7	1230.3	
+60	12" V.S.P.		4.7	1231.3	
211+0			4.0	1231.0	
+20.5	S. Edge of Pav.		3.82	1232.13	
+43 45	℄ U.S. #422		3.14	1232.81	
+52.4	N Edge of Pavt		3.14	1232.81	
B.M. #17			3.58	1232.37 ✓ X-	
T.P.	11.58	1246.40 ✓	1.13	1234.82 ✓	
T.P.	11.25	1257.78 ✓	0.37	1246.03 ✓	
T.P.	0.26	1253.46 ✓	1.08	1253.20 ✓ 1243.49 rod	
B.M.	(State)		10.07	1243.39	Spike
B.M. #17	8.06	1240.43 ✓		1232.37 ✓	
+75	℄ S.R. Culvert		7.3	1233.1	
212+0			6.9	1233.5	

℄

5.7

4.7 6.8 F.L.

4.0

3.82

3.14

3.14

N.W. Cor. E. Hd Wall Side ed. Culvert 211+75

in 5" Root 30" Maple 35' Lt Sta 151+95 U.S. #422

9.7 F.L. 6.5 T/H.W. 7.3 5.1 T/HW 10.8 F.L.

6.9

Sta	+	H.I.	-	Elev	Rems
		1240.43 ✓			
213+0			5.3	1235.1	
214+0			3.7	1236.7	
215+0			1.9	1238.5	
T.P.	5.45	1245.19 ✓	0.69	1239.74 ✓	
216+0			4.6	1240.6	
+50	Change in Grade		3.9	1241.3	
217+0			4.1	1241.1	
218+0			5.1	1240.1	
219+0			4.4	1240.8	
T.P.	3.53	1243.84 ✓	4.88	1240.31 ✓	
220+0			3.6	1240.2	
221+0			4.3	1239.5	

℄

5.3

3.7

1.9

4.6

3.9

4.1

5.1

4.4

3.6

4.3

Sta	+	H.I.	-	Elev.	Rem's
		1243.84 ✓			
222+0			4.7	1239.1	
+42	℄ Culvert (No Inlet)		4.5	1239.3	
223+0			4.3	1239.5	
224+0			4.0	1239.8	
225+0			3.0	1240.8	
T.P.	2.88	1244.67 ✓	3.05	1241.79 ✓	Spike
+50	change in Grade		2.9	1241.8	
226+0			4.2	1240.5	
227+0			6.2	1238.5	
228+0			7.1	1237.6	
T.P.	3.28	1240.93 ✓	7.02	1237.65 ✓	
229+0			4.2	1236.7	
B.M. #18			4.10	1236.83	Spike

℄

4.7

3.1/30' 6.0/P.L. 4.5 6.4/P.L. 10.4/100'

4.3

4.0

3.0

in W. Root 12" Hickory 15' Rt Sta 225+05

2.9

4.2

6.2

7.1

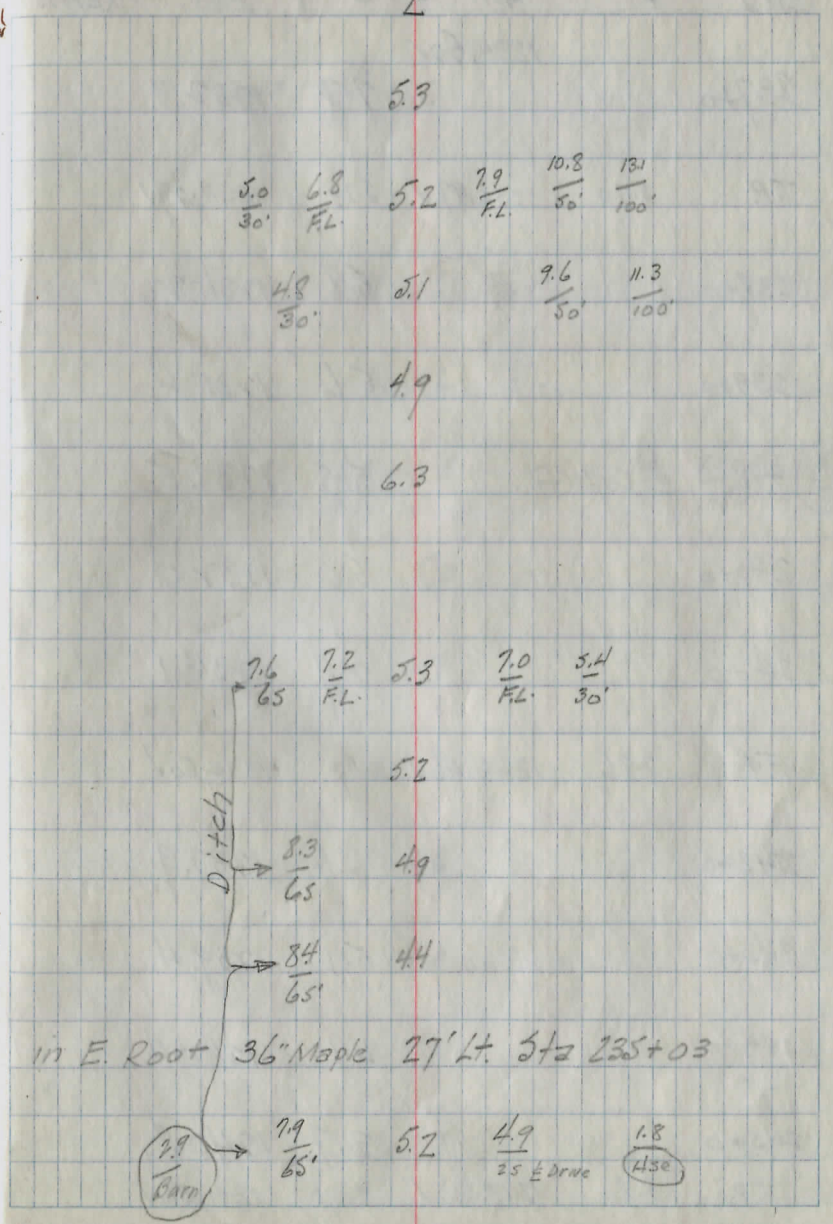
4.2

in So. Root 36" Maple 17' Rt 229+48

Sta	+	H.I.	−	Elev.	Remrks
		1240.93 ✓			
230+0			5.3	1235.6	
+09	℄ Culvert (Side Rd)		5.2	1235.7	
+33.20	℄ Woods Rd-		5.1	1235.8	
231+0			4.9	1236.0	
232+0			6.3	1234.6	
T.P.	4.86	1239.50 ✓	6.29	1234.64 ✓	T/S 232
+90	℄ Culvert		5.3	1234.2 ✓	
233+0			5.2	1234.3	
234+0			4.9	1234.6	
235+0			4.4	1235.1	
B.M. #19			5.16	1234.34 ✓	Spike
236+0			5.2	1234.3	

HASKINS ROAD

℄



Sta	+	H.I.	−	Elev.	Rem's
		1239.50 ✓			
237+0			7.2	1232.3	
T.P.	2.70	1236.97 ✓	5.23	1234.77 ✓	
238+0			5.8	1231.2	
239+0			5.6	1231.4	
+18	℄ Culvert		5.5	1231.5	
240+0			5.0	1232.0	
241+0			2.9	1234.1	
T.P.	7.96	1244.46 ✓	0.47	1236.50 ✓	
242+0			6.6	1237.9	
243+0			5.1	1239.4	
244+0			4.1	1240.4	
245+0			3.7	1240.8	
T.P.	3.80	1245.36 ✓	1.90	1241.56 ✓	

HASKINS ROAD—

℄

End of Ditch → 8.4 / 30' 7.2

5.8 5.2/7' T/R

5.6 5.0/8' T/R

5.5 5.5 W.L. → 5.9/100 6.9 F.L. 4.9/8' T/R 7.4 F.L. 9.5/175' 8.5 W.L. 8.8/Spillway 132/400

5.0

2.9

6.6

5.1

4.1

3.7

HASKINS RD-

℄

Sta	+	H.I	−	Elev.	Rem's
		1245.36 ✓			
245+91	℄ Culvert		5.1	1240.3	
246+0			5.1	1240.3	
B.M. #20			5.86	1239.50 ✓	Spike
247+0			4.7	1240.7	
248+0			3.4	1242.0	
249+0			2.0	1243.4	
T.P.	0.71	1245.15 ✓	0.92	1244.44	T/o 239
250+0			2.5	1242.7	
251+0			4.6	1240.6	
252+0	(Swampy)		5.3	1239.9	
253+0			5.5	1239.7	
254+0			5.2	1240.0	
T.P.	3.09	1245.08 ✓	3.16	1241.99 ✓	

$\frac{9.2}{100'}$ $\frac{6.4}{Ft.}$ 5.1 $\frac{6.2}{Ft.}$ $\frac{4.2}{30'}$

5.1

in X.I.W Root 8" Maple 25' Lt. Sta 246+24

4.7

3.4

2.0

2.5

4.6

5.3

5.5

5.2

Sta	+	H.I.	-	Elev.	Remks
		1245.08 ✓			
255+0			4.5	1240.6	
B.M. #21			2.83	1242.25 ✓	Spike
256+0			5.4	1239.7	
257+0			9.9	1235.2	
258+0			12.5	1232.6	
T.P.	1.11	1235.13 ✓	11.06	1234.07 ✓	T/S 258
259+0			4.0	1231.1	
260+0			4.8	1230.3	
+50			4.7	1230.4	
261+0			6.6	1228.5	
262+0			13.0	1227.1	
T.P.	0.84	1227.85 ✓	13.12	1227.01 ✓	
263+0			3.2	1219.7	

℄

	4.5
in E. Root 30' B. Hickory 97' Lt Sta 255+52	
	5.4
	9.9
	12.5
	4.0
	4.8
	4.7
	6.6
	13.0
	3.2

Sta	+	H.I.	-	Elev.	Remks
		1222.85 V			
264+0			5.5	1217.4	
B.M. #22			4.64	1218.21 V	Spike
265+0			10.7	1212.2	
266+0			13.5	1209.4	
T.P.	0.33	1212.60 V	10.58	1212.7 V	T/S 266
267+0			5.9	1206.7	
268+0			8.4	1204.2	
269+0			10.7	1201.9	
T.P.	1.24	1201.42 V	12.42	1200.18 V	
270+0			2.7	1198.7	
271+0			8.2	1193.2	
272+0			11.4	1190.0	
273+0			12.1	1189.3	
T/P	2.99	1193.21 V	11.20	1190.22 V	T/S 273

℄

5.5

in E. Root 27" Ozk 37' Lt. 264+10

T/L 10.2 / 6' 10.7

T/L 12.6 / 6' 13.5

T/L 4.7 / 6' 5.9

T/L 6.9 / 6' 8.4

T/L 9.7 / 6' 10.7

T/L 2.3 / T/L (6') 2.7

T/L 7.5 / 8' 8.2

T/L 10.5 / 8' 11.4

T/L 11.9 / 8' 12.1

Sta	+	H.I.	-	Elev.	Rems
		1222.85 ✓			
264+0			5.5	1217.4	
B.M. #22			4.64	1218.21 ✓	Spike
265+0			10.7	1217.7	
266+0			13.5	1209.4	
T.P.	0.33	1217.60 ✓	10.58	1217.27 ✓	T/S766
267+0			5.9	1206.7	
268+0			8.4	1204.7	
269+0			10.7	1201.9	
T.P.	1.24	1201.42 ✓	12.42	1200.18 ✓	
270+0			7.7	1198.7	
271+0			5.7	1193.7	
272+0			11.4	1190.0	
273+0			17.1	1189.3	
T/P	7.99	1193.71 ✓	11.70	1190.77 ✓	T/S773

℄

5.5

in E. Root 27" Ozk 37' Lt. 264+10

T/L 10.2/6' 10.7

T/L 17.4/6' 13.5

T/L 4.7/6' 5.9

T/L 6.9/6' 8.4

T/L 9.7/6' 10.7

T/L (6') 7.3 7.7

T/L 7.5/8' 8.7

T/L 10.5/8' 11.4

T/L 11.9/8' 12.1

Sta	+	H.I.	−	Elev.	Remks
273+48	℄ Culvert	1193.71 ✓			
			4.4	1188.8	
B.M. #73			1.56	1191.65 ✓	Spike
274+0			4.3	1188.9	
+17	℄ Drive	Rt.	4.6	1188.6	
275+0			6.3	1186.9	
276+0			17.9	1180.3	
T.P.	4.10	1184.34 ✓	17.97	1180.24 ✓	
277+0			5.6	1178.7	
+47.5	℄ Culvert		5.5	1178.8	
278+0			4.0	1180.3	
T.P.	17.03	1196.31 ✓	0.06	1184.28 ✓	
279+0			8.7	1187.6	
280+0			0.3	1196.0	
T.P.	3.34	1199.28 ✓	0.37	1195.94 ✓	

℄

11.5/100' 6.1 F.L. H.I. 5.3 F.L. 3.9/30'

in N W. Root 30" Maple 30' Rt Sta 273+77

4.3

4.6 3.0/30'

5.9 T/o (L') 6.3

12.9

5.6

10.0 F.L. 5.9/15' 5.5 4.8/5' 10.2 F.L. 12.2/200'

4.0

8.7

0.3

Sta	+	H.I.	—	Elev.	Rem's
		1199.28✓			
280+50	Change in Grade		7.0	1197.3	
281+0			7.6	1196.7	
+50			3.5	1195.8	
281+0	℄ Rd.	Rt. ℄	Toe/Emb. 9.1	1190.2	
+05	F.L. Culvert				
+16.5	S. Edge Ballast		3.7	1195.6	
+21.5	℄ Ballast		3.3	1196.0	
+26.5	N Edge Ballast		3.4	1195.9	
+34.45	Tp. Line		6.6	1197.7	
+42	Toe/Emb.		10.9	1188.4	
+40	F.L. Culvert				
+50			10.1	1189.2	
B.M. #24			8.12	1191.16✓	Ref.
+67			5.3	1194.0	
283+0			7.7	1196.6	
284+0			0.9	1198.4	
285+0			7.3	1197.0	

℄

7.0

7.6

3.5

9.1 7.2/100' 12.5/200'

F.L. 10.2

3.7

3.3

3.4

6.6

10.9

F.L. 12.5 → 14.0/50'

10.1

Spike (3 aw.) S. Side 10" Elm 282+40 (9' Rt.)

5.3

7.7

0.9

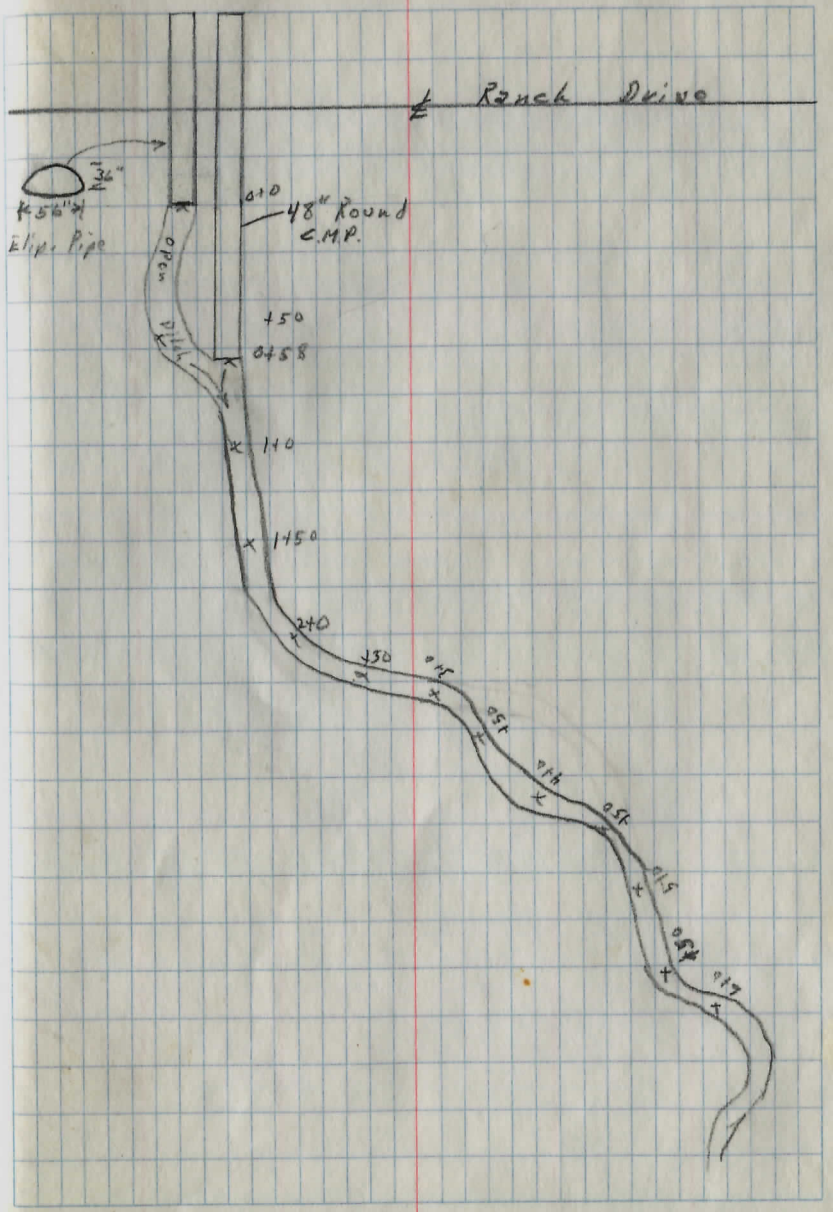
7.3

H. Patterson
D. Wenzel
P. King

Ranch Drive
Ditch Levels south

8/16/73

B.M.	5.00	105.00		100.00
0+0 = F/L Elip. Pipe			9.90	95.10
+50 = Ditch			14.20	90.80
+58 = F/L 48" Round pipe			12.90	92.10
T.P.	1.46	98.39	8.07	96.93
1+0	Ditch		7.60	90.79
+50	"		8.50	89.89
2+00	"		9.00	89.39
+50	"		9.90	88.49
3+00	"		10.00	88.39
+50			10.60	87.79
4+00			11.00	87.39
+50			12.10	86.29
5+00			12.70	85.69
+50			13.00	85.39
6+00			13.20	85.19
T.P.	8.55	105.42	1.52	96.87
B.M.			5.40	100.02



PIPE CULVERTS

0+16 40'x12" (New) Side Rd Culvert

B.M. #7 1177.57

13+21 40'x30" New F.L. 1105.25

C.3.0 F.L. 1105.00 F.L. 1105.50 C.2.9

1083.14

33+50 36'x12" New F.L. 1074.0

B.M.#5 2.84 1115.08 1112.24

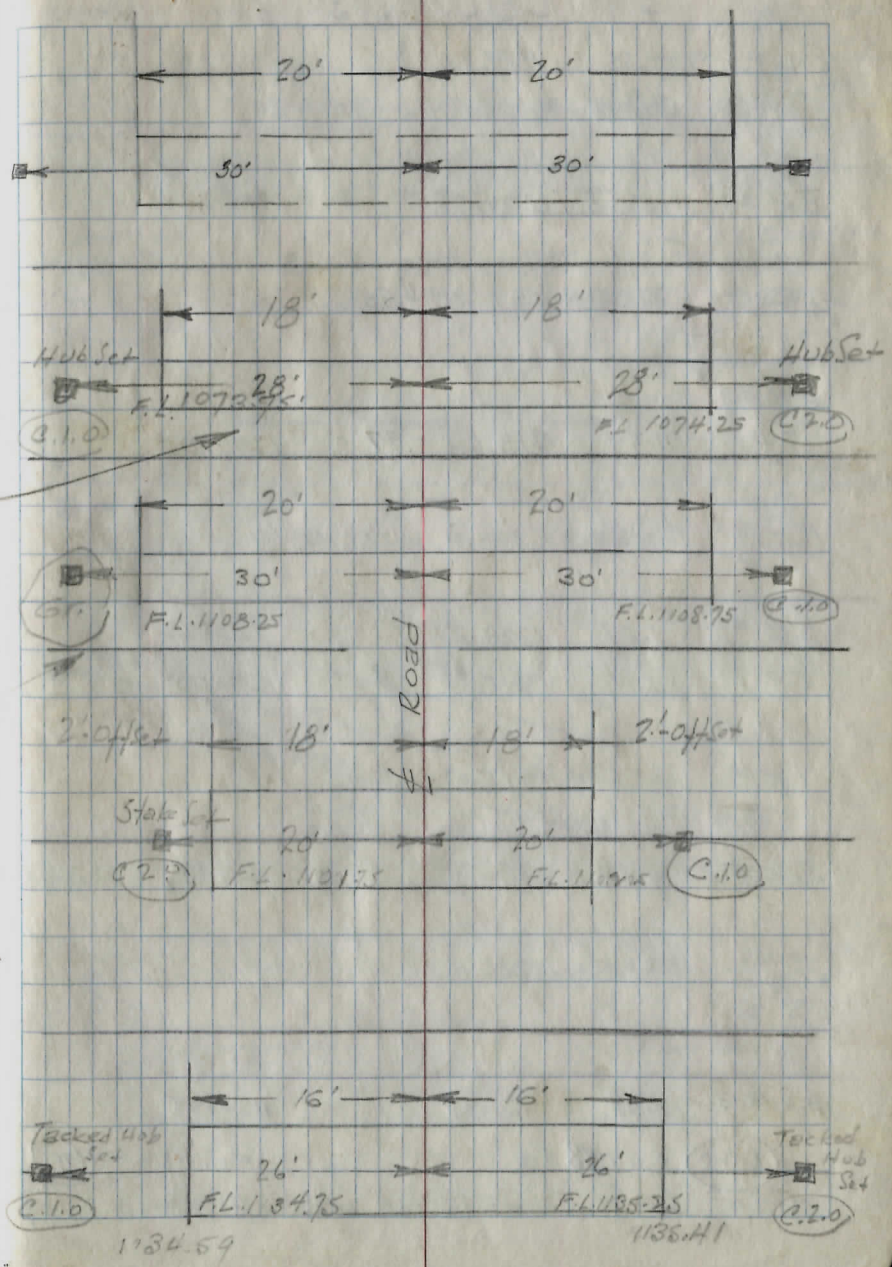
51+85 40'x12" New F.L. 1108.50

1111.81

59+59 36'x15" New F.L. 1107.00

B.M.#6 1.17 1144.61 1143.44

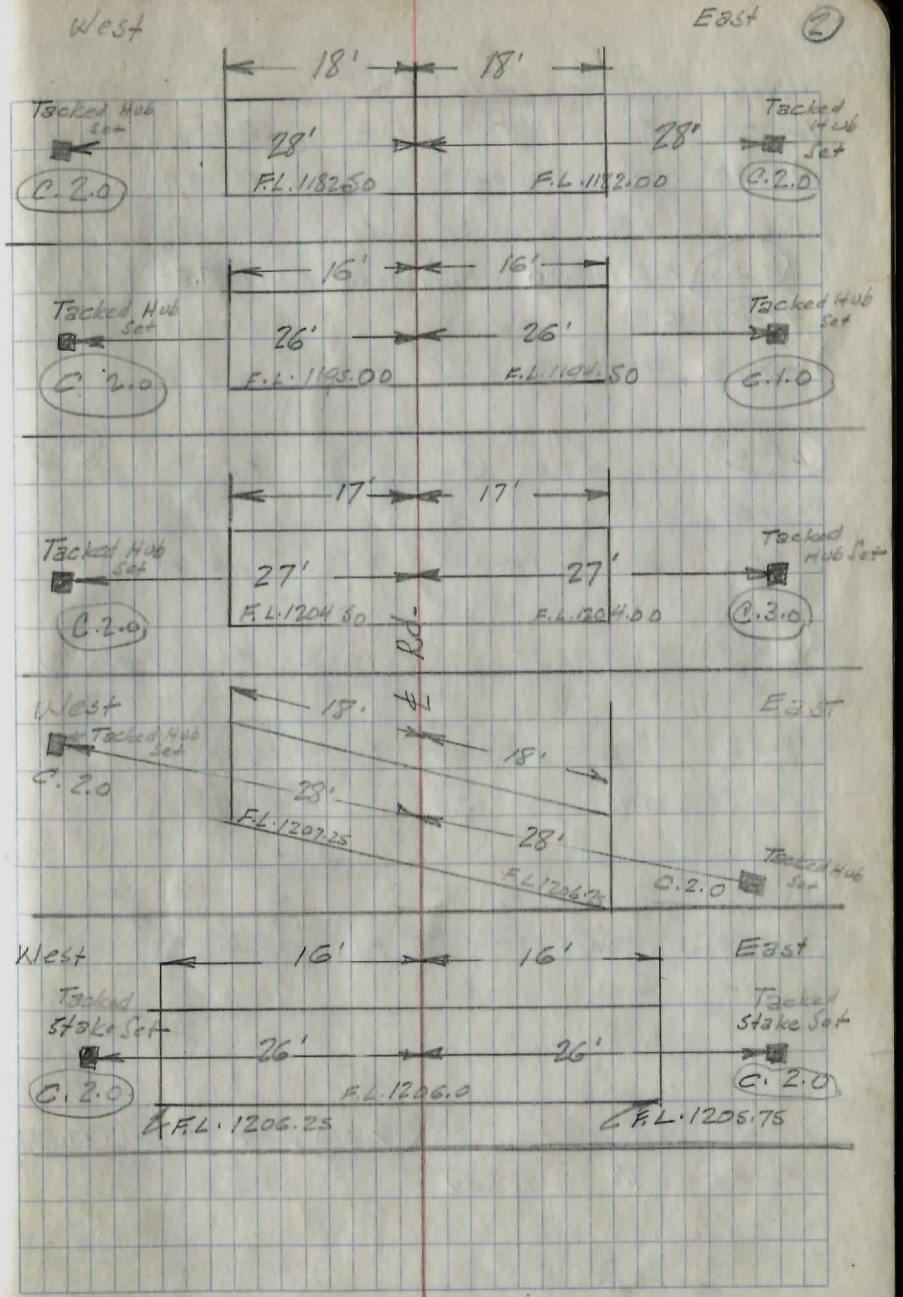
67+96 32'x12" New F.L. 1135.00



17.1 PIPE

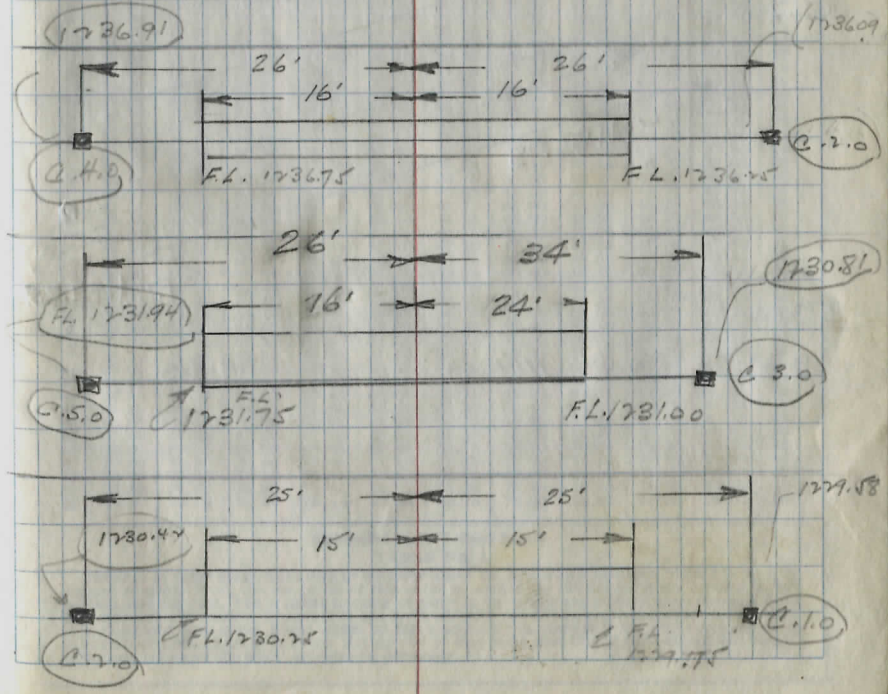
CULVERTS

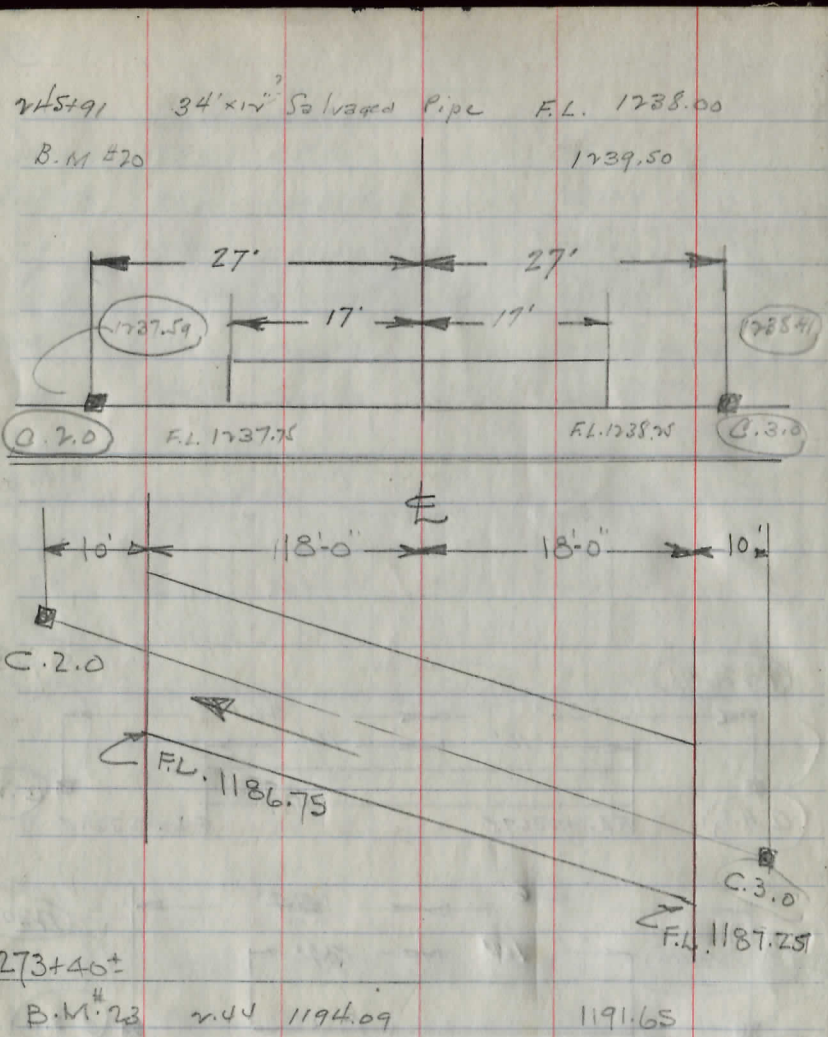
B.M	+		Elev.	Rem's
B.M. #8	4.55	1189.81	1185.26	
88+29	36"x12"	Hillside New	1182.25	
B.M #9	5.20	1202.98	1197.78	
96+62	32'x15"	New	119.475	
B.M #9			1197.78	
T.P.	11.59	1213.60	.97	1202.01
102+34	18'+16'(33137)	34'x10" Corr I.P.	1204.5	
B.M #11	1.59	1223.21		1221.62
T.P.	1.11	1215.31	8.51	1214.70
113+04	36'x15" (Hillside)	1207.0		
B.M #12	0.90	1216.79		1215.89
129+40	32'x15"	New 1206.0		
B.M. #13	10.45	1193.70		1183.25
Civ.D	F.L. 1188.00			F.L. 1186.00 (Gr.)
147+60	Side Rd Culvert	59+59 20'x10"	88+79 20'x16" Corr I.P.	



PIPE CULVERTS

164+60					
164+50	+	H.I.	−	Elev.	Rem's
B.M. #15	7.62	1094.87		1087.25	
T.P.	8.96	1103.37	0.51	1094.36	
C 3.0	F.L. 1099.00	℄ F.L. 1099.05		F.L. 1097.60	C 2.0
199+97	6.90	1226.23		1225.33 ← B.M #16	
T.P.	4.60	1219.03	11.80	1214.43	
C 4.0	F.L. 1213.00	F.L. 1212.75		F.L. 1212.50	C 2.0
202+59					
T.P.	4.11	1220.46	7.68	1216.35	
C 4.0	F.L. 1213.75	F.L. 1213.50		F.L. 1213.25	C 1.0
222+42	12" Relay & Extend		F.L. 1236.50		
B.M. #17	7.95	1244.74		1241.79	
230+09	40'x12" New		F.L. 1231.50		
B.M. #18	4.03	1240.86		1236.83	
239+16	36'x15"		F.L. 1230.00 → orig. 1229.50		
B.M. #19	3.68	1238.04		1234.34	





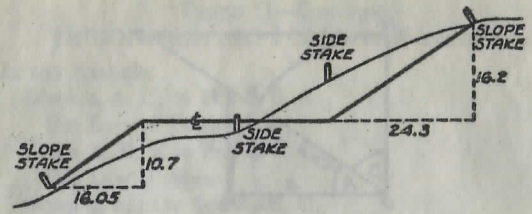


Table I.—Distances from Side Stakes for Cross-Sectioning

Slope 1½ to 1. Roadway of Any Width

	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	
0	0.00	0.15	0.30	0.45	0.60	0.75	0.90	1.05	1.20	1.35	0
1	1.50	1.65	1.80	1.95	2.10	2.25	2.40	2.55	2.70	2.85	1
2	3.00	3.15	3.30	3.45	3.60	3.75	3.90	4.05	4.20	4.35	2
3	4.50	4.65	4.80	4.95	5.10	5.25	5.40	5.55	5.70	5.85	3
4	6.00	6.15	6.30	6.45	6.60	6.75	6.90	7.05	7.20	7.35	4
5	7.50	7.65	7.80	7.95	8.10	8.25	8.40	8.55	8.70	8.85	5
6	9.00	9.15	9.30	9.45	9.60	9.75	9.90	10.05	10.20	10.35	6
7	10.50	10.65	10.80	10.95	11.10	11.25	11.40	11.55	11.70	11.85	7
8	12.00	12.15	12.30	12.45	12.60	12.75	12.90	13.05	13.20	13.35	8
9	13.50	13.65	13.80	13.95	14.10	14.25	14.40	14.55	14.70	14.85	9
10	15.00	15.15	15.30	15.45	15.60	15.75	15.90	16.05	16.20	16.35	10
11	16.50	16.65	16.80	16.95	17.10	17.25	17.40	17.55	17.70	17.85	11
12	18.00	18.15	18.30	18.45	18.60	18.75	18.90	19.05	19.20	19.35	12
13	19.50	19.65	19.80	19.95	20.10	20.25	20.40	20.55	20.70	20.85	13
14	21.00	21.15	21.30	21.45	21.60	21.75	21.90	22.05	22.20	22.35	14
15	22.50	22.65	22.80	22.95	23.10	23.25	23.40	23.55	23.70	23.85	15
16	24.00	24.15	24.30	24.45	24.60	24.75	24.90	25.05	25.20	25.35	16
17	25.50	25.65	25.80	25.95	26.10	26.25	26.40	26.55	26.70	26.85	17
18	27.00	27.15	27.30	27.45	27.60	27.75	27.90	28.05	28.20	28.35	18
19	28.50	28.65	28.80	28.95	29.10	29.25	29.40	29.55	29.70	29.85	19
20	30.00	30.15	30.30	30.45	30.60	30.75	30.90	31.05	31.20	31.35	20
21	31.50	31.65	31.80	31.95	32.10	32.25	32.40	32.55	32.70	32.85	21
22	33.00	33.15	33.30	33.45	33.60	33.75	33.90	34.05	34.20	34.35	22
23	34.50	34.65	34.80	34.95	35.10	35.25	35.40	35.55	35.70	35.85	23
24	36.00	36.15	36.30	36.45	36.60	36.75	36.90	37.05	37.20	37.35	24
25	37.50	37.65	37.80	37.95	38.10	38.25	38.40	38.55	38.70	38.85	25
26	39.00	39.15	39.30	39.45	39.60	39.75	39.90	40.05	40.20	40.35	26
27	40.50	40.65	40.80	40.95	41.10	41.25	41.40	41.55	41.70	41.85	27
28	42.00	42.15	42.30	42.45	42.60	42.75	42.90	43.05	43.20	43.35	28
29	43.50	43.65	43.80	43.95	44.10	44.25	44.40	44.55	44.70	44.85	29
30	45.00	45.15	45.30	45.45	45.60	45.75	45.90	46.05	46.20	46.35	30
31	46.50	46.65	46.80	46.95	47.10	47.25	47.40	47.55	47.70	47.85	31
32	48.00	48.15	48.30	48.45	48.60	48.75	48.90	49.05	49.20	49.35	32
33	49.50	49.65	49.80	49.95	50.10	50.25	50.40	50.55	50.70	50.85	33
34	51.00	51.15	51.30	51.45	51.60	51.75	51.90	52.05	52.20	52.35	34
35	52.50	52.65	52.80	52.95	53.10	53.25	53.40	53.55	53.70	53.85	35
36	54.00	54.15	54.30	54.45	54.60	54.75	54.90	55.05	55.20	55.35	36
37	55.50	55.65	55.80	55.95	56.10	56.25	56.40	56.55	56.70	56.85	37
38	57.00	57.15	57.30	57.45	57.60	57.75	57.90	58.05	58.20	58.35	38
39	58.50	58.65	58.80	58.95	59.10	59.25	59.40	59.55	59.70	59.85	39
40	60.00	60.15	60.30	60.45	60.60	60.75	60.90	61.05	61.20	61.35	40
41	61.50	61.65	61.80	61.95	62.10	62.25	62.40	62.55	62.70	62.85	41
42	63.00	63.15	63.30	63.45	63.60	63.75	63.90	64.05	64.20	64.35	42
43	64.50	64.65	64.80	64.95	65.10	65.25	65.40	65.55	65.70	65.85	43
44	66.00	66.15	66.30	66.45	66.60	66.75	66.90	67.05	67.20	67.35	44
45	67.50	67.65	67.80	67.95	68.10	68.25	68.40	68.55	68.70	68.85	45
46	69.00	69.15	69.30	69.45	69.60	69.75	69.90	70.05	70.20	70.35	46
47	70.50	70.65	70.80	70.95	71.10	71.25	71.40	71.55	71.70	71.85	47
48	72.00	72.15	72.30	72.45	72.60	72.75	72.90	73.05	73.20	73.35	48
49	73.50	73.65	73.80	73.95	74.10	74.25	74.40	74.55	74.70	74.85	49
50	75.00	75.15	75.30	75.45	75.60	75.75	75.90	76.05	76.20	76.35	50

Computed by L. Leland Locke.

TABLE No. 1

Distance of slope stake from side or shoulder stake for any width roadway, slope 1½ to 1. If ground is nearly level, the cut or fill at side stake is located by the double entry method in left column and top row. The number in body of table in same row and column gives distance from side stake to slope stake. If ground is not level estimate the difference in elevation between the side stake and slope stake, lower target by this amount if cut, elevate if fill. Add this amount to cut or fill and find distance in table. Set up rod at this point, and line of sight should cut target. If it does not make the slight adjustment necessary.

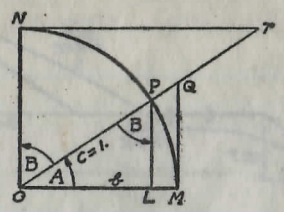


Table II

TRIGONOMETRIC FORMULAE

$\angle A = \angle MOP \qquad \angle B = \angle PON = \angle OPL$

$R = OB = c = 1$

$$\sin A = \frac{a}{c} = \frac{a}{1} = a = \cos B = LP$$

$$\cos A = \frac{b}{c} = \frac{b}{1} = b = \sin B = OL$$

$$\tan A = \frac{a}{b} = \frac{MQ}{OM} = \frac{MQ}{1} = MQ = \cot B = MQ$$

$$\cot A = \frac{NT}{ON} = \frac{NT}{1} = NT = \tan B = NT$$

$$\sec A = \frac{OQ}{OM} = \frac{OQ}{1} = OQ = \csc B = OQ$$

$$\csc A = \frac{OT}{ON} = \frac{OT}{1} = OT = \sec B = OT$$

$$\text{vers } A = \frac{LM}{OP} = LM = \text{covers } B \#$$

$$\text{covers } A = \frac{OP - LP}{OP} = OP - LP = \text{vers } B$$

$$\text{exsec } A = PQ = \text{coexsec } B$$

$$\text{coexsec } A = PT = \text{exsec } B$$

$$\sin \tfrac{1}{2}A = \sqrt{\frac{1 - \cos A}{2}} \qquad \cos \tfrac{1}{2}A = \sqrt{\frac{1 + \cos A}{2}}$$

$$\sin 2A = 2 \sin A \cos \qquad \cos 2A = \cos^2 A - \sin^2 A$$

$$\text{Law of Sines} \quad \frac{\sin A}{a} = \frac{\sin B}{B} = \frac{\sin C^1}{C}$$

$$\text{Law of Cosines} \quad c^2 = a^2 + p^2 - 2ab \cos C$$

$$\text{Law of Tangents} \quad \frac{a+b}{a-b} = \frac{\tan \frac{1}{2}(A+B)}{\tan \frac{1}{2}(A-B)}$$

Table II—Continued

TRIGONOMETRIC FORMULAE (continued)

In any triangle:

Given a, b, C; to find c, B, A.

Use Law of Tangents.

Given A, B, c; to find a, b, C.

Use Law of Sines.

Given a, b, c; to find A, B, C.

$$\text{Let } \frac{a+b+c}{2} = s, \sqrt{\frac{(s-a)\ (s-b)\ (s-c)}{s}} = r$$

$$\cos \tfrac{1}{2}A = \sqrt{\frac{s(s-a)}{bc}}$$

$$\tan \tfrac{1}{2}A = \frac{r}{s-a}$$

$$\tan \tfrac{1}{2}B = \frac{r}{s-b}$$

$$\tan \tfrac{1}{2}C = \frac{r}{s-c}$$

Area of a triangle:

$$\text{Area} = \tfrac{1}{2}\, ab \sin C$$

$$\text{Area} = \sqrt{s(s-a)\ (s-b)\ (s-c)}$$

PRISMOIDAL FORMULA

$$\text{Vol.} = \frac{h}{6}(B + b + 4M)$$

h = altitude; b B = bases; M = midsection

Table III

Minutes in Decimals of a Degree

1′	.0167	11′	.1833	21′	.3500	31′	.5167	41′	.6833	51′	.8500
2	.0333	12	.2000	22	.3667	32	.5333	42	.7000	52	.8667
3	.0500	13	.2167	23	.3833	33	.5500	43	.7167	53	.8833
4	.0667	14	.2333	24	.4000	34	.5667	44	.7333	54	.9000
5	.0833	15	.2500	25	.4167	35	.5833	45	.7500	55	.9167
6	.1000	16	.2667	26	.4333	36	.6000	46	.7667	56	.9333
7	.1167	17	.2833	27	.4500	37	.6167	47	.7833	57	.9500
8	.1333	18	.3000	28	.4667	38	.6333	48	.8000	58	.9667
9	.1500	19	.3167	29	.4833	39	.6500	49	.8167	59	.9833
10	.1667	20	.3333	30	.5000	40	.6667	50	.8333	60	.10000

Table IV

Inches in Decimals of a Foot

1/16 .0052	3/32 .0078	1/8 .0104	3/16 .0156	1/4 .0208	5/16 .0260	3/8 .0313	1/2 .0417	5/8 .0521	3/4 .0625	7/8 .0729

1 .0833	2 .1667	3 .2500	4 .3333	5 .4167	6 .5000	7 .5833	8 .6667	9 .7500	10 .8333	11 .9167

Table V.—Radii, Ordinates and Deflections

Deg.	Radius	Mid. Ord.	Tan. Offset	Def. for 1 Foot	Deg.	Radius	Mid. Ord.	Tan. Offset	Def. for 1 Foot
0° 10′	34377.5	.036	.145	0.05′	7°	819.02	1.528	6.105	2.10′
20	17188.8	.073	.291	0.10	20′	781.84	1.600	6.395	2.20
30	11459.2	.109	.436	0.15	30	764.49	1.637	6.540	2.25
40	8594.42	.145	.582	0.20	40	747.89	1.673	6.685	2.30
50	6875.55	.182	.727	0.25					
					8	716.78	1.746	6.976	2.40
1	5729.65	.218	.873	0.30	20	688.16	1.819	7.266	2.50
10	4911.15	.255	1.018	0.35	30	674.69	1.855	7.411	2.55
20	4297.28	.291	1.164	0.40	40	661.74	1.892	7.556	2.60
30	3819.83	.327	1.309	0.45					
40	3437.87	.364	1.454	0.50	9	637.28	1.965	7.846	2.70
50	3125.36	.400	1.600	0.55	20	614.56	2.037	8.136	2.80
					30	603.80	2.074	8.281	2.85
2	2864.93	.436	1.745	0.60	40	593.42	2.110	8.426	2.90
10	2644.58	.473	1.891	0.65					
20	2455.70	.509	2.036	0.70	10	573.69	2.183	8.716	3.00
30	2292.01	.545	2.181	0.75	30	546.44	2.292	9.150	3.15
40	2148.79	.582	2.327	0.80	11	521.67	2.402	9.585	3.30
50	2022.41	.618	2.472	0.85	30	499.06	2.511	10.02	3.45
					12	478.34	2.620	10.45	3.60
3	1910.08	.655	2.618	0.90	30	459.28	2.730	10.89	3.75
10	1809.57	.691	2.763	0.95	13	441.68	2.839	11.32	3.90
20	1719.12	.727	2.908	1.00	30	425.40	2.949	11.75	4.05
30	1637.28	.764	3.054	1.05	14	410.28	3.058	12.18	4.20
40	1562.88	.800	3.199	1.10	30	396.20	3.168	12.62	4.35
50	1494.95	.836	3.345	1.15					
					15	383.07	3.277	13.05	4.50
4	1432.69	.873	3.490	1.20	30	370.78	3.387	13.49	4.65
10	1375.40	.909	3.635	1.25	16	359.27	3.496	13.92	4.80
20	1322.53	.945	3.718	1.30	30	348.45	3.606	14.35	4.95
30	1273.57	.982	3.926	1.35	17	338.27	3.716	14.78	5.10
40	1228.11	1.018	4.071	1.40	18	319.62	3.935	15.64	5.40
50	1185.78	1.055	4.217	1.45	19	302.94	4.155	16.51	5.70
5	1146.28	1.091	4.362	1.50	20	287.94	4.374	17.37	6.00
10	1109.33	1.127	4.507	1.55	21	274.37	4.594	18.22	6.30
20	1074.68	1.164	4.653	1.60	22	262.04	4.814	19.08	6.60
30	1042.14	1.200	4.798	1.65	23	250.79	5.035	19.94	6.90
40	1011.51	1.237	4.943	1.70	24	240.49	5.255	20.79	7.20
50	982.64	1.273	5.088	1.75					
					25	231.01	5.476	21.64	7.50
6	955.37	1.309	5.234	1.80	26	222.27	5.697	22.50	7.80
10	929.57	1.346	5.379	1.85	27	214.18	5.918	23.35	8.10
20	905.13	1.382	5.524	1.90	28	206.68	6.139	24.19	8.40
30	881.95	1.418	5.669	1.95	29	199.70	6.360	25.04	8.70
40	859.92	1.455	5.814	2.00	30	193.18	6.583	25.88	9.00

Note. Chord Deflection = 2 times tangent deflection.

Table VI.—Tangents and Externals to a 1° Curve

Central Angle	Tangent	External	Central Angle	Tangent	External	Central Angle	Tangent	External
1°	50.00	.22	11°	551.70	26.50	21°	1061.9	97.57
10′	58.34	.30	10′	560.11	27.31	10′	1070.6	99.16
20	66.67	.39	20	568.53	28.14	20	1079.2	100.75
30	75.01	.49	30	576.95	28.97	30	1087.8	102.35
40	83.34	.61	40	585.36	29.82	40	1096.4	103.97
50	91.68	.73	50	593.79	30.68	50	1105.1	105.60
2	100.01	.87	12	602.21	31.56	22	1113.7	107.24
10	108.35	1.02	10	610.64	32.45	10	1122.4	108.90
20	116.68	1.19	20	619.07	33.35	20	1131.0	110.57
30	125.02	1.36	30	627.50	34.26	30	1139.7	112.25
40	133.36	1.55	40	635.93	35.18	40	1148.4	113.95
50	141.70	1.75	50	644.37	36.12	50	1157.0	115.66
3	150.04	1.96	13	652.81	37.07	23	1165.7	117.38
10	158.38	2.19	10	661.25	38.03	10	1174.4	119.12
20	166.72	2.43	20	669.70	39.01	20	1183.1	120.87
30	175.06	2.67	30	678.15	39.99	30	1191.8	122.63
40	183.40	2.93	40	686.60	40.99	40	1200.5	124.41
50	191.74	3.21	50	695.06	42.00	50	1209.2	126.20
4	200.08	3.49	14	703.51	43.03	24	1217.9	128.00
10	208.43	3.79	10	711.97	44.07	10	1226.6	129.82
20	216.77	4.10	20	720.44	45.12	20	1235.3	131.65
30	225.12	4.42	30	728.90	46.18	30	1244.0	133.50
40	233.47	4.76	40	737.37	47.25	40	1252.8	135.35
50	241.81	5.10	50	745.85	48.34	50	1261.5	137.23
5	250.16	5.46	15	754.32	49.44	25	1270.2	139.11
10	258.51	5.83	10	762.80	50.55	10	1279.0	141.01
20	266.86	6.21	20	771.29	51.68	20	1287.7	142.93
30	275.21	6.61	30	779.77	52.89	30	1296.5	144.85
40	283.57	7.01	40	788.26	53.97	40	1305.3	146.79
50	291.92	7.43	50	796.75	55.13	50	1314.0	148.75
6	300.28	7.86	16	805.25	56.31	26	1322.8	150.71
10	308.64	8.31	10	813.75	57.50	10	1331.6	152.69
20	316.99	8.76	20	822.25	58.70	20	1340.4	154.69
30	325.35	9.23	30	830.76	59.91	30	1349.2	156.70
40	333.71	9.71	40	839.27	61.14	40	1358.0	158.72
50	342.08	10.20	50	847.78	62.38	50	1366.8	160.76
7	350.44	10.71	17	856.30	63.63	27	1375.6	162.81
10	358.81	11.22	10	864.82	64.90	10	1384.4	164.86
20	367.17	11.75	20	873.35	66.18	20	1393.2	166.95
30	375.54	12.29	30	881.88	67.47	30	1402.0	169.04
40	383.91	12.85	40	890.41	68.77	40	1410.9	171.15
50	392.28	13.41	50	898.95	70.09	50	1419.7	173.27
8	400.66	13.99	18	907.49	71.42	28	1428.6	175.41
10	409.03	14.58	10	916.03	72.76	10	1437.4	177.55
20	417.41	15.18	20	924.58	74.12	20	1446.3	179.72
30	425.79	15.80	30	933.13	75.49	30	1455.1	181.89
40	434.17	16.43	40	941.69	76.86	40	1464.0	184.08
50	442.55	17.07	50	950.25	78.26	50	1472.9	186.29
9	450.93	17.72	19	958.81	79.67	29	1481.8	188.51
10	459.32	18.38	10	967.38	81.09	10	1490.7	190.74
20	467.71	19.06	20	975.96	82.53	20	1499.6	192.99
30	476.10	19.75	30	984.53	83.97	30	1508.5	195.25
40	484.49	20.45	40	993.12	85.43	40	1517.4	197.53
50	492.88	21.16	50	1001.7	86.90	50	1526.3	199.82
10	501.28	21.89	20	1010.3	88.39	30	1535.3	202.12
10	509.68	22.62	10	1018.9	89.89	10	1544.2	204.44
20	518.08	23.38	20	1027.5	91.40	20	1553.1	206.77
30	526.48	24.14	30	1036.1	92.92	30	1562.1	209.12
40	534.89	24.91	40	1044.7	94.46	40	1571.0	211.48
50	543.29	25.70	50	1053.3	96.01	50	1580.0	213.86

Table VI.—Tangents and Externals to a 1° Curve

Central Angle	Tangent	External	Central Angle	Tangent	External	Central Angle	Tangent	External
31°	1589.0	216.3	41°	2142.2	387.4	51°	2732.9	618.4
10′	1598.0	218.7	10′	2151.7	390.7	10′	2743.1	622.8
20	1606.9	221.1	20	2161.2	394.1	20	2753.4	627.2
30	1615.9	223.5	30	2170.8	397.4	30	2763.7	631.7
40	1624.9	226.0	40	2180.3	400.8	40	2773.9	636.2
50	1633.9	228.4	50	2189.9	404.2	50	2784.2	640.7
32	1643.0	230.9	42	2199.4	407.6	52	2794.5	645.2
10	1652.0	233.4	10	2209.0	411.1	10	2804.9	649.7
20	1661.0	235.9	20	2218.6	414.5	20	2815.2	654.3
30	1670.0	238.4	30	2228.1	418.0	30	2825.6	658.3
40	1679.1	241.0	40	2237.7	421.4	40	2835.9	663.4
50	1688.1	243.5	50	2247.3	425.0	50	2846.3	668.0
33	1697.2	246.1	43	2257.0	428.5	53	2856.7	672.7
10	1706.3	248.7	10	2266.6	432.0	10	2867.1	677.3
20	1715.3	251.3	20	2276.2	435.6	20	2877.5	682.0
30	1724.4	253.9	30	2285.9	439.2	30	2888.0	686.7
40	1733.5	256.5	40	2295.6	442.8	40	2898.4	691.4
50	1742.6	259.1	50	2305.2	446.4	50	2908.9	696.1
34	1751.7	261.8	44	2314.9	450.0	54	2919.4	700.9
10	1760.8	264.5	10	2324.6	453.6	10	2929.9	705.7
20	1770.0	267.2	20	2334.3	457.3	20	2940.4	710.5
30	1779.1	269.9	30	2344.1	461.0	30	2951.0	715.3
40	1788.2	272.6	40	2353.8	464.6	40	2961.5	720.1
50	1797.4	275.3	50	2363.5	468.4	50	2972.1	725.0
35	1806.6	278.1	45	2373.3	472.1	55	2982.7	729.9
10	1815.7	280.8	10	2383.1	475.8	10	2993.3	734.8
20	1824.9	283.6	20	2392.8	479.6	20	3003.9	739.7
30	1834.1	286.4	30	2402.6	483.8	30	3014.5	744.6
40	1843.3	289.2	40	2412.4	487.2	40	3025.2	749.6
50	1852.5	292.0	50	2422.3	491.0	50	3035.8	754.6
36	1861.7	294.9	46	2432.1	494.8	56	3046.5	759.6
10	1870.9	297.7	10	2441.9	498.7	10	3057.2	764.6
20	1880.1	300.6	20	2451.8	502.5	20	3067.9	769.7
30	1889.4	303.5	30	2461.7	506.4	30	3078.7	774.7
40	1898.6	306.4	40	2471.5	510.3	40	3089.4	779.8
50	1907.9	309.3	50	2481.4	514.3	50	3100.2	784.9
37	1917.1	312.2	47	2491.3	518.2	57	3110.9	790.1
10	1926.4	315.2	10	2501.2	522.2	10	3121.7	795.2
20	1935.7	318.1	20	2511.2	526.1	20	3132.6	800.4
30	1945.0	321.1	30	2521.1	530.1	30	3143.4	805.6
40	1954.3	324.1	40	2531.1	534.2	40	3154.2	810.9
50	1963.6	327.1	50	2541.0	538.2	50	3165.1	816.1
38	1972.9	330.2	48	2551.0	542.2	58	3176.0	821.4
10	1982.2	333.2	10	2561.0	546.3	10	3186.9	826.7
20	1991.5	336.3	20	2571.0	550.4	20	3197.8	832.0
30	2000.9	339.3	30	2581.0	554.5	30	3208.8	837.3
40	2010.2	342.4	40	2591.0	558.6	40	3219.7	842.7
50	2019.6	345.5	50	2601.1	562.8	50	3230.7	848.1
39	2029.0	348.6	49	2611.2	566.9	59	3241.7	853.5
10	2038.4	351.8	10	2621.2	571.1	10	3252.7	858.9
20	2047.8	354.9	20	2631.3	575.3	20	3263.7	864.3
30	2057.2	358.1	30	2641.4	579.5	30	3274.8	869.8
40	2066.6	361.3	40	2651.5	583.8	40	3285.8	875.3
50	2076.0	364.5	50	2661.6	588.0	50	3296.9	880.8
40	2085.4	367.7	50	2671.8	592.3	60	3308.0	886.4
10	2094.9	371.0	10	2681.9	596.6	10	3319.1	892.0
20	2104.3	374.2	20	2692.1	600.9	20	3330.3	897.5
30	2113.8	377.5	30	2702.3	605.3	30	3341.4	903.2
40	2123.3	380.8	40	2712.5	609.6	40	3352.6	908.8
50	2132.7	384.1	50	2722.7	614.0	50	3363.8	914.5

Table VI.—Tangents and Externals to a 1° Curve

Central Angle	Tangent	External	Central Angle	Tangent	External	Central Angle	Tangent	External
61°	3375.0	920.2	71°	4086.9	1308.2	81°	4893.6	1805.3
10′	3386.3	925.9	10′	4099.5	1315.6	10′	4908.0	1814.7
20	3397.5	931.6	20	4112.1	1322.9	20	4922.5	1824.1
30	3408.8	937.3	30	4124.8	1330.3	30	4937.0	1833.6
40	3420.1	943.1	40	4137.4	1337.7	40	4951.5	1843.1
50	3431.4	948.9	50	4150.1	1345.1	50	4966.1	1852.6
62	3442.7	954.8	72	4162.8	1352.6	82	4980.7	1862.2
10	3454.1	960.6	10	4175.6	1360.1	10	4995.4	1871.8
20	3465.4	966.5	20	4188.5	1367.6	20	5010.0	1881.5
30	3476.8	972.4	30	4201.2	1375.2	30	5024.8	1891.2
40	3488.3	978.3	40	4214.0	1382.8	40	5039.5	1900.9
50	3499.7	984.3	50	4226.8	1390.4	50	5054.3	1910.7
63	3511.1	990.2	73	4239.7	1398.0	83	5069.2	1920.5
10	3522.6	996.2	10	4252.6	1405.7	10	5084.0	1930.4
20	3534.1	1002.3	20	4265.6	1413.5	20	5099.0	1940.3
30	3545.6	1008.3	30	4278.5	1421.2	30	5113.9	1950.3
40	3557.2	1014.4	40	4291.5	1429.0	40	5128.9	1960.2
50	3568.7	1020.5	50	4304.6	1436.8	50	5143.9	1970.3
64	3580.3	1026.6	74	4317.6	1444.6	84	5159.0	1980.4
10	3591.9	1032.8	10	4330.7	1452.5	10	5174.1	1990.5
20	3603.5	1039.0	20	4343.8	1460.4	20	5189.3	2000.6
30	3615.1	1045.2	30	4356.9	1468.4	30	5204.4	2010.8
40	3626.8	1051.4	40	4370.1	1476.4	40	5219.7	2021.1
50	3638.5	1057.7	50	4383.3	1484.4	50	5234.9	2031.4
65	3650.2	1063.9	75	4396.5	1492.4	85	5250.3	2041.7
10	3661.9	1070.2	10	4409.8	1500.5	10	5265.6	2052.1
20	3673.7	1076.6	20	4423.1	1508.6	20	5281.0	2062.5
30	3685.4	1082.9	30	4436.4	1516.7	30	5296.4	2073.0
40	3697.2	1089.3	40	4449.7	1524.9	40	5311.9	2083.5
50	3709.0	1095.7	50	4463.1	1533.1	50	5327.4	2094.1
66	3720.9	1102.2	76	4476.5	1541.4	86	5343.0	2104.7
10	3732.7	1108.6	10	4489.9	1549.7	10	5358.6	2115.3
20	3744.6	1115.1	20	4503.4	1558.0	20	5374.2	2126.0
30	3756.5	1121.7	30	4516.9	1566.3	30	5389.9	2136.7
40	3768.5	1128.2	40	4530.4	1574.7	40	5405.6	2147.5
50	3780.4	1134.8	50	4544.0	1583.1	50	5421.4	2158.4
67	3792.4	1141.4	77	4557.6	1591.6	87	5437.2	2169.2
10	3804.4	1148.0	10	4571.2	1600.1	10	5453.1	2180.2
20	3816.4	1154.7	20	4584.8	1608.6	20	5469.0	2191.1
30	3828.4	1161.3	30	4598.5	1617.1	30	5484.9	2202.2
40	3840.5	1168.1	40	4612.2	1625.7	40	5500.9	2213.2
50	3852.6	1174.8	50	4626.0	1634.4	50	5517.0	2224.3
68	3864.7	1181.6	78	4639.8	1643.0	88	5533.1	2235.5
10	3876.8	1188.4	10	4653.6	1651.7	10	5549.2	2246.7
20	3889.0	1195.2	20	4667.4	1660.5	20	5565.4	2258.0
30	3901.2	1202.0	30	4681.3	1669.2	30	5581.6	2269.3
40	3913.4	1208.9	40	4695.2	1678.1	40	5597.8	2280.6
50	3925.6	1215.8	50	4709.2	1686.9	50	5614.2	2292.0
69	3937.9	1222.7	79	4723.2	1695.8	89	5630.5	2303.5
10	3950.2	1229.7	10	4737.2	1704.7	10	5646.9	2315.0
20	3962.5	1236.7	20	4751.2	1713.7	20	5663.4	2326.6
30	3974.8	1243.7	30	4765.3	1722.7	30	5679.9	2338.2
40	3987.2	1250.8	40	4779.4	1731.7	40	5696.4	2349.8
50	3999.5	1257.9	50	4793.6	1740.8	50	5713.0	2361.5
70	4011.9	1265.0	80	4807.7	1749.9	90	5729.7	2373.3
10	4024.4	1272.1	10	4822.0	1759.0	10	5746.3	2385.1
20	4036.8	1279.3	20	4836.2	1768.2	20	5763.1	2397.0
30	4049.3	1286.5	30	4850.5	1777.4	30	5779.9	2408.9
40	4061.8	1293.6	40	4864.8	1786.7	40	5796.7	2420.9
50	4074.4	1300.9	50	4879.2	1796.0	50	5813.6	2432.9

Table VI.—Tangents and Externals to a 1° Curve

Central Angle	Tangent	External	Central Angle	Tangent	External	Central Angle	Tangent	External
91°	5830.5	2444.9	101°	6950.6	3278.1	111°	8336.7	4386.1
10′	5847.5	2457.1	10′	6971.3	3294.1	10′	8362.7	4407.6
20	5864.6	2469.3	20	6992.0	3310.1	20	8388.9	4429.2
30	5881.7	2481.5	30	7012.7	3326.1	30	8415.1	4450.9
40	5898.8	2493.8	40	7033.6	3342.3	40	8441.5	4472.7
50	5916.0	2506.1	50	7054.5	3358.5	50	8468.0	4494.6
92	5933.2	2518.5	102	7075.5	3374.9	112	8494.6	4516.6
10	5950.5	2531.0	10	7096.6	3391.2	10	8521.3	4538.8
20	5967.9	2543.5	20	7117.8	3407.7	20	8548.1	4561.1
30	5985.3	2556.0	30	7139.0	3424.3	30	8575.0	4583.4
40	6002.7	2568.6	40	7160.3	3440.9	40	8602.1	4606.0
50	6020.2	2581.3	50	7181.7	3457.6	50	8629.3	4628.6
93	6037.8	2594.0	103	7203.2	3474.4	113	8656.6	4651.3
10	6055.4	2606.8	10	7224.7	3491.3	10	8684.0	4674.2
20	6073.1	2619.7	20	7246.3	3508.2	20	8711.5	4697.2
30	6090.8	2632.6	30	7268.0	3525.2	30	8739.2	4720.3
40	6108.6	2645.5	40	7289.8	3542.4	40	8767.0	4743.6
50	6126.4	2658.5	50	7311.7	3559.6	50	8794.9	4766.9
94	6144.3	2671.6	104	7333.6	3576.8	114	8822.9	4790.4
10	6162.6	2684.7	10	7355.6	3594.2	10	8851.0	4814.1
20	6180.2	2697.9	20	7377.8	3611.7	20	8879.3	4837.8
30	6198.3	2711.2	30	7399.9	3629.2	30	8907.7	4861.7
40	6216.4	2724.5	40	7422.2	3646.8	40	8936.3	4885.7
50	6234.6	2737.9	50	7444.6	3664.5	50	8965.0	4909.9
95	6252.8	2751.3	105	7467.0	3682.3	115	8993.8	4934.1
10	6271.1	2764.8	10	7489.6	3700.2	10	9022.7	4958.6
20	6289.4	2778.3	20	7512.2	3718.2	20	9051.7	4983.1
30	6307.9	2792.0	30	7534.9	3736.2	30	9080.9	5007.8
40	6326.3	2805.6	40	7557.7	3754.4	40	9110.3	5032.6
50	6344.8	2819.4	50	7580.5	3772.6	50	9139.8	5057.6
96	6363.4	2833.2	106	7603.5	3791.0	116	9169.4	5082.7
10	6382.1	2847.0	10	7626.6	3809.4	10	9199.1	5107.9
20	6400.8	2861.0	20	7649.7	3827.9	20	9229.0	5133.3
30	6419.5	2875.0	30	7672.9	3846.5	30	9259.0	5158.8
40	6438.4	2889.0	40	7696.3	3865.2	40	9289.2	5184.5
50	6457.3	2903.1	50	7719.7	3884.0	50	9319.5	5210.3
97	6476.2	2917.3	107	7743.2	3902.9	117	9349.9	5236.2
10	6495.2	2931.6	10	7766.8	3921.9	10	9380.5	5262.3
20	6514.3	2945.9	20	7790.5	3940.9	20	9411.3	5288.6
30	6533.4	2960.3	30	7814.3	3960.1	30	9442.2	5315.0
40	6552.6	2974.7	40	7838.1	3979.4	40	9473.2	5341.5
50	6571.9	2989.2	50	7862.1	3998.7	50	9504.4	5368.2
98	6591.2	3003.8	108	7886.2	4018.2	118	9535.7	5395.1
10	6610.6	3018.4	10	7910.4	4037.8	10	9567.2	5422.1
20	6630.1	3033.1	20	7934.6	4057.4	20	9598.9	5449.2
30	6649.6	3047.9	30	7959.0	4077.2	30	9630.7	5476.5
40	6669.2	3062.8	40	7983.5	4097.1	40	9662.6	5504.0
50	6688.8	3077.7	50	8008.0	4117.0	50	9694.7	5531.7
99	6708.6	3092.7	109	8032.7	4137.1	119	9727.0	5559.4
10	6728.4	3107.7	10	8057.4	4157.3	10	9759.4	5587.4
20	6748.2	3122.9	20	8082.3	4177.5	20	9792.0	5615.5
30	6768.1	3138.1	30	8107.3	4197.9	30	9824.8	5643.8
40	6788.1	3153.3	40	8132.3	4218.4	40	9857.7	5672.3
50	5808.2	3168.7	50	8157.5	4239.0	50	9890.8	5700.9
100	6828.3	3184.1	110	8182.8	4259.7	120	9924.0	5729.7
10	6848.5	3199.6	10	8208.2	4280.5	10	9957.5	5758.6
20	6868.8	3215.1	20	8233.7	4301.4	20	9991.0	5787.7
30	6889.2	3230.8	30	8259.3	4322.4	30	10025.0	5817.0
40	6909.6	3246.5	40	8285.0	4343.6	40	10059.0	5846.5
50	6930.1	3262.3	50	8310.8	4364.8	50	10093.0	5876.1

Table VII.—Corrections for Tangents and Externals

These corrections are to be added to the approximate values, found by dividing the tangent, or external, for a 1° curve (Table VI) by the degree of curve, in order to obtain the true tangents, or externals. Intermediate values may be obtained by interpolation.

For Tangents Add

Central Angle	Degree of Curve													
	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°	55°	60°	65°	70°
10°	.03	.06	.09	.13	.16	.19	.22	.25	.28	.31	.34	.38	.42	.46
15°	.04	.10	.14	.19	.24	.29	.34	.39	.45	.51	.53	.58	.63	.68
20°	.06	.13	.19	.26	.32	.39	.45	.51	.58	.65	.72	.79	.84	.90
25°	.08	.16	.24	.33	.40	.49	.58	.67	.75	.83	.90	.99	1.06	1.14
30°	.10	.19	.29	.39	.49	.59	.69	.79	.89	.99	1.09	1.20	1.29	1.39
35°	.11	.22	.34	.47	.58	.69	.70	.81	.92	1.04	1.29	1.42	1.54	1.66
40°	.13	.26	.40	.53	.67	.80	.93	1.06	1.20	1.34	1.49	1.64	1.79	1.94
45°	.15	.30	.44	.60	.76	.91	1.06	1.21	1.37	1.52	1.70	1.87	2.04	2.21
50°	.17	.34	.51	.68	.85	1.02	1.19	1.36	1.54	1.72	1.91	2.10	2.29	2.48
55°	.19	.38	.57	.76	.95	1.14	1.32	1.52	1.72	1.92	2.14	2.35	2.56	2.77
60°	.21	.42	.63	.84	1.05	1.27	1.49	1.71	1.94	2.17	2.38	2.60	2.83	3.07
65°	.23	.46	.69	.93	1.16	1.40	1.64	1.88	2.13	2.38	2.63	2.88	3.13	3.39
70°	.25	.51	.76	1.02	1.28	1.54	1.80	2.06	2.33	2.60	2.88	3.16	3.44	3.72
75°	.27	.56	.83	1.12	1.40	1.69	1.98	2.27	2.57	2.87	3.16	3.47	3.78	4.09
80°	.30	.61	.91	1.22	1.53	1.84	2.15	2.46	2.78	3.10	3.44	3.78	4.12	4.46
85°	.33	.66	1.00	1.33	1.68	2.02	2.36	2.70	3.05	3.40	3.77	4.14	4.55	4.89
90°	.36	.72	1.09	1.45	1.83	2.20	2.57	2.94	3.32	3.70	4.10	4.50	4.91	5.32
95°	.39	.79	1.19	1.55	2.00	2.40	2.80	3.20	3.61	4.02	4.40	4.98	5.38	5.83
100°	.43	.86	1.30	1.74	2.18	2.62	3.06	3.50	3.95	4.40	4.88	5.37	5.85	6.34
110°	.51	1.03	1.56	2.08	2.61	3.14	3.67	4.21	4.76	5.31	5.86	6.43	7.01	7.60
120°	.62	1.25	1.93	2.52	3.16	3.81	4.45	5.11	5.77	6.44	7.12	7.80	8.50	9.22

For Externals Add

Central Angle	Degree of Curve													
	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°	55°	60°	65°	70°
10°	.001	.003	.004	.006	.007	.008	.009	.011	.012	.014	.015	.017	.018	.020
15°	.003	.007	.010	.014	.018	.023	.027	.029	.032	.035	.039	.043	.047	.051
20°	.006	.011	.017	.022	.028	.034	.038	.045	.051	.057	.063	.070	.076	.083
25°	.009	.018	.027	.036	.046	.056	.065	.074	.083	.093	.106	.120	.127	.135
30°	.013	.025	.038	.051	.065	.078	.090	.103	.116	.129	.149	.170	.179	.188
35°	.018	.035	.054	.072	.086	.109	.131	.153	.175	.197	.213	.230	.247	.264
40°	.023	.046	.070	.093	.117	.141	.172	.203	.234	.265	.277	.290	.315	.341
45°	.030	.060	.093	.119	.153	.184	.216	.254	.289	.325	.351	.378	.411	.445
50°	.037	.075	.116	.151	.189	.227	.266	.305	.345	.384	.425	.467	.508	.550
55°	.046	.093	.142	.188	.236	.283	.332	.381	.420	.479	.530	.582	.641	.700
60°	.056	.112	.168	.225	.283	.340	.398	.457	.516	.575	.636	.697	.774	.851
65°	.067	.135	.204	.273	.343	.412	.483	.554	.625	.697	.711	.845	.922	1.01
70°	.080	.159	.240	.321	.403	.485	.568	.652	.735	.819	.906	.994	1.08	1.17
75°	.095	.182	.286	.383	.480	.578	.678	.777	.877	.977	1.07	1.18	1.29	1.39
80°	.110	.220	.332	.445	.558	.671	.787	.903	1.02	1.13	1.25	1.38	1.50	1.62
85°	.128	.259	.391	.524	.657	.790	.926	1.06	1.20	1.34	1.47	1.62	1.76	1.91
90°	.149	.299	.450	.603	.756	.910	1.07	1.22	1.38	1.54	1.70	1.87	2.03	2.20
95°	.174	.350	.522	.706	.985	1.06	1.25	1.43	1.62	1.80	1.99	2.18	2.38	2.58
100°	.200	.401	.604	.809	1.01	1.22	1.43	1.64	1.85	2.06	2.28	2.50	2.73	2.96
110°	.268	.536	.806	1.08	1.35	1.63	1.91	2.20	2.48	2.76	3.05	3.35	3.66	3.96
120°	.360	.721	1.08	1.45	1.82	2.19	2.57	2.95	3.33	3.72	4.11	4.50	4.91	5.32

Table VIII.—Corrections for Sub-Chords and Long Chords

D	FOR SUB-CHORDS ADD 10	20	30	40	50	60	70	80	90	Excess of Arc per 100 ft.
4°	.00	.00	.01	.01	.01	.01	.01	.01	.00	.02
6	.00	.01	.01	.02	.02	.02	.02	.01	.01	.05
8	.01	.02	.02	.03	.03	.03	.03	.02	.01	.08
10	.01	.02	.03	.04	.05	.05	.05	.04	.02	.13
12	.02	.04	.05	.06	.07	.07	.07	.05	.03	.18
14	.02	.05	.07	.08	.09	.10	.09	.07	.04	.25
16	.03	.06	.09	.11	.12	.12	.12	.09	.05	.33
18	.04	.08	.11	.14	.15	.16	.15	.12	.07	.41
20	.05	.10	.14	.17	.19	.20	.18	.15	.09	.51
22	.06	.12	.17	.21	.23	.24	.22	.18	.10	.62
24	.07	.14	.20	.25	.28	.28	.26	.21	.12	.74
26	.09	.17	.24	.29	.32	.33	.31	.25	.15	.86
28	.10	.19	.27	.34	.37	.38	.36	.29	.17	1.00
30	.11	.22	.31	.39	.43	.44	.41	.33	.19	1.15
32	.13	.25	.36	.44	.49	.50	.47	.38	.22	1.31
34	.15	.28	.40	.50	.55	.57	.53	.43	.25	1.48
36	.17	.32	.45	.56	.62	.64	.59	.48	.28	1.66
38	.18	.36	.51	.62	.70	.71	.66	.53	.31	1.86
40	.21	.40	.56	.69	.77	.79	.73	.59	.35	2.06
42	.23	.44	.62	.76	.85	.87	.81	.65	.38	2.28
44	.25	.48	.68	.84	.94	.96	.89	.72	.42	2.50
46	.27	.52	.75	.92	1.02	1.05	.98	.78	.46	2.74
48	.30	.57	.81	1.00	1.12	1.14	1.06	.86	.50	2.99
50	.32	.62	.89	1.09	1.21	1.24	1.15	.93	.55	3.24
52	.35	.67	.96	1.18	1.31	1.35	1.25	1.01	.59	3.52
54	.38	.73	1.04	1.28	1.42	1.46	1.35	1.09	.64	3.80
56	.41	.78	1.12	1.38	1.53	1.57	1.46	1.17	.69	4.09
58	.44	.84	1.20	1.48	1.65	1.69	1.57	1.26	.74	4.40
60	.47	.91	1.29	1.59	1.76	1.81	1.68	1.35	.80	4.72

D	LONG CHORDS 200	300	400	500
1	199.99	299.97	399.92	499.85
2	199.97	299.88	399.70	499.39
3	199.93	299.73	399.32	498.63
4	199.88	299.51	398.78	497.57
5	199.81	299.24	398.10	496.20
6	199.73	298.90	397.26	494.53
7	199.63	298.51	396.28	492.57
8	199.51	298.05	395.14	490.31
9	199.38	297.54	393.86	487.75
10	199.24	296.96	392.42	484.90
12	198.90	295.63	389.12	478.34
14	198.51	294.06	385.22	470.65
16	198.05	292.25	380.76	461.86
18	197.54	290.21	375.74	452.02
20	196.96	287.94	370.17	441.15
22	196.32	285.44	364.06	429.30
24	195.63	282.71	357.43	416.53
26	194.87	279.76	350.30	402.89
28	194.06	276.59	342.69	388.43
30	193.18	273.20	334.61	373.20
32	192.25	269.61	326.08	357.28
34	191.26	265.81	317.12	340.73
36	190.21	261.80	307.77	323.61
38	189.10	257.60	298.03	305.99
40	187.94	253.21	287.94	287.94
42	186.72	248.63	277.51	269.54
44	185.44	243.87	266.78	250.85
46	184.10	239.93	255.78	231.95
48	182.71	233.83	244.51	212.92

Note.—When a chord of less than 100 ft. is used the corrections given in the above table should be added to the nominal length of chord to get the length which should be used in order that the 100 ft. points will check with those obtained by using the standard 100 ft. chord. Thus in locating a 14° curve by 25 ft. chords measure 25′.06 for each chord. Long chords are useful in passing obstacles.

Table IX.—Middle Ordinates for Rails in Feet

Deg. of Curve	LENGTH OF RAILS 32	30	28	26	24	22	20
1°	.022	.020	.016	.013	.011	.009	.008
2	.045	.038	.034	.029	.025	.021	.017
3	.037	.058	.051	.044	.037	.031	.026
4	.089	.079	.069	.060	.050	.042	.035
5	.112	.099	.086	.074	.063	.053	.044
6	.134	.117	.102	.088	.076	.064	.052
7	.156	.137	.120	.104	.088	.074	.061
8	.179	.158	.137	.119	.100	.085	.070
9	.201	.175	.153	.133	.112	.095	.078
10	.223	.196	.171	.148	.125	.106	.087
11	.245	.216	.188	.163	.139	.117	.096
12	.268	.236	.206	.179	.151	.128	.105
13	.290	.254	.222	.192	.163	.138	.113
14	.312	.275	.239	.207	.175	.148	.122
15	.334	.295	.257	.223	.188	.159	.131

Deg. of Curve	LENGTH OF RAILS 32	30	28	26	24	22	20
16°	.356	.313	.273	.236	.200	.170	.139
17	.378	.333	.290	.252	.213	.180	.148
18	.400	.351	.306	.265	.225	.190	.156
19	.423	.371	.324	.280	.238	.201	.165
20	.445	.392	.341	.296	.250	.212	.174
21	.466	.410	.357	.309	.262	.222	.182
22	.487	.430	.375	.325	.275	.233	.191
23	.509	.450	.390	.338	.287	.243	.199
24	.531	.469	.408	.354	.299	.253	.208
25	.552	.486	.424	.367	.311	.263	.216
26	.573	.506	.441	.382	.323	.274	.225
27	.594	.524	.457	.396	.335	.284	.233
28	.618	.545	.475	.411	.348	.294	.242
29	.638	.564	.491	.424	.361	.303	.250
30	.660	.583	.508	.438	.374	.313	.259

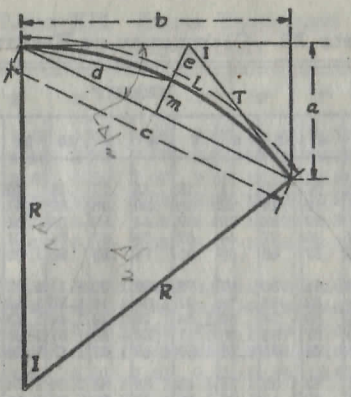


Table X

Curve Formulae for Simple Curves

Compiled by J. Calvin Locke, C.E.

(1) $c = \sqrt{2Ra}$ (2) $c = \sqrt{a^2+b^2}$

(3) $c = \sqrt{2R\,(R-\sqrt{(R+b)\,(R-b)}} = \sqrt{2R(R-\sqrt{R^2-b^2})}$

(4) $c = 2\sqrt{m\,(2R-m)}$

(5) $c = 2R \sin \frac{1}{2} I$ (6) $c = 2T \cos \frac{1}{2} I$

(7) $e = R \operatorname{exsec} \frac{1}{2} I$

(8) $e = R \tan \frac{1}{2} I \tan \frac{1}{4} I$ (9) $e = T \tan \frac{1}{4} I$

(10) $b = \sqrt{a\,(2R-a)}$

(11) $b = \sqrt{\left(c+\frac{c^2}{2R}\right)\left(c-\frac{c^2}{2R}\right)} = \sqrt{c^2-\frac{c^4}{4R^2}}$

(12) $b = R \sin I$ (13) $b = a \cot \frac{1}{2} I$

(14) $R = \frac{a^2+b^2}{2a} = \frac{c^2}{2a}$ (15) $R = \frac{d^2}{2m} = \frac{c^2+4m^2}{8m}$

(16) $d = \sqrt{R\,(2R-\sqrt{(2R+c)\,(2R-c)}} = \sqrt{R(2R-\sqrt{4R^2-c^2})}$

(17) $d = \sqrt{2Rm}$ (18) $d = 2R \sin \frac{1}{4} I$ (19) $m = \frac{d^2}{2R}$

(20) $m = R \mp \sqrt{\left(R+\frac{c}{2}\right)\left(R-\frac{c}{2}\right)} = R \mp \sqrt{R^2-\frac{c^2}{4}}$

(21) $m = R \operatorname{vers} \frac{1}{2} I$ (22) $m = R \sin \frac{1}{2} I \tan \frac{1}{4} I$ (23) $m = \frac{1}{2} c \tan \frac{1}{4} I$

(24) $a = \frac{c^2}{2R}$ (25) $a = R - \sqrt{(R+b)\,(R-b)} = R - \sqrt{R^2-b^2}$

(26) $a = 2R\,(\sin^2 \frac{1}{2} I)^2$ (27) $a = R \operatorname{vers} I$ (28) $a = R \sin I \tan \frac{1}{2}$

(29) $a = b \tan \frac{1}{2} I$ (30) $a = T \sin I$ (31) $T = R \tan \frac{1}{2} I$

(32) $I = \frac{L}{R} \times 57.295780$ (33) $R = \frac{L}{I} \times 57.295780$

(34) $L = IR \times 0.01745329$ (35) $L = \frac{8d-c}{3}$

(36) Area Seg. $= \frac{LR - R^2 \operatorname{Sin} I}{2} = \frac{LR - Rb}{2}$

Table XI.—Calculation of Earthwork

Width	Height														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	.02	.04	.06	.07	.09	.11	.13	.15	.17	.18	.20	.22	.24	.26	.28
2	.04	.07	.11	.15	.18	.22	.26	.30	.33	.37	.41	.44	.48	.52	.56
3	.06	.11	.17	.22	.28	.33	.39	.44	.50	.56	.61	.67	.72	.78	.83
4	.07	.15	.22	.30	.37	.44	.52	.59	.67	.74	.81	.89	.96	1.04	1.11
5	.09	.19	.28	.37	.46	.56	.65	.74	.83	.93	1.02	1.11	1.20	1.30	1.39
6	.11	.22	.33	.44	.56	.67	.78	.89	1.00	1.11	1.22	1.33	1.44	1.55	1.67
7	.13	.26	.39	.52	.65	.78	.91	1.04	1.16	1.30	1.42	1.55	1.68	1.81	1.94
8	.15	.30	.44	.59	.74	.89	1.04	1.19	1.33	1.48	1.63	1.78	1.92	2.08	2.22
9	.17	.33	.50	.67	.83	1.00	1.17	1.33	1.50	1.67	1.83	2.00	2.17	2.33	2.50
10	.18	.37	.56	.74	.93	1.11	1.30	1.48	1.67	1.85	2.04	2.22	2.41	2.59	2.78
11	.20	.41	.61	.82	1.02	1.22	1.43	1.63	1.83	2.04	2.24	2.44	2.65	2.85	3.06
12	.22	.44	.67	.89	1.11	1.33	1.56	1.78	2.00	2.22	2.44	2.67	2.89	3.11	3.33
13	.24	.48	.72	.96	1.20	1.44	1.68	1.92	2.16	2.41	2.65	2.89	3.13	3.37	3.61
14	.26	.52	.78	1.04	1.30	1.55	1.81	2.08	2.33	2.59	2.85	3.11	3.37	3.63	3.89
15	.28	.56	.83	1.11	1.39	1.67	1.94	2.22	2.50	2.78	3.06	3.33	3.61	3.89	4.17
16	.30	.59	.89	1.18	1.48	1.78	2.07	2.37	2.67	2.96	3.26	3.56	3.85	4.15	4.44
17	.31	.63	.94	1.26	1.57	1.89	2.20	2.52	2.83	3.15	3.46	3.78	4.09	4.41	4.72
18	.33	.67	1.00	1.33	1.67	2.00	2.33	2.67	3.00	3.33	3.67	4.00	4.33	4.67	5.00
19	.35	.70	1.06	1.41	1.76	2.11	2.46	2.82	3.17	3.52	3.87	4.22	4.57	4.92	5.28
20	.37	.74	1.11	1.48	1.85	2.22	2.59	2.96	3.33	3.70	4.07	4.44	4.81	5.18	5.56
21	.39	.78	1.17	1.55	1.94	2.33	2.72	3.11	3.50	3.89	4.28	4.67	5.06	5.44	5.83
22	.41	.81	1.22	1.63	2.04	2.44	2.85	3.26	3.67	4.07	4.48	4.89	5.30	5.70	6.11
23	.43	.85	1.28	1.70	2.13	2.56	2.98	3.41	3.83	4.26	4.68	5.11	5.54	5.96	6.39
24	.44	.89	1.33	1.78	2.22	2.67	3.11	3.56	4.00	4.44	4.89	5.33	5.78	6.22	6.67
25	.46	.92	1.39	1.85	2.31	2.78	3.24	3.70	4.17	4.63	5.09	5.56	6.02	6.48	6.94
26	.48	.96	1.44	1.92	2.41	2.89	3.37	3.85	4.33	4.82	5.30	5.78	6.26	6.74	7.24
27	.50	1.00	1.50	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.50	6.00	6.50	7.00	7.50
28	.52	1.04	1.55	2.07	2.59	3.11	3.63	4.15	4.67	5.18	5.70	6.22	6.74	7.26	7.78
29	.54	1.07	1.61	2.15	2.68	3.22	3.76	4.30	4.83	5.37	5.91	6.44	6.98	7.52	8.06
30	.56	1.11	1.67	2.22	2.78	3.33	3.89	4.44	5.00	5.55	6.11	6.67	7.22	7.78	8.33
31	.57	1.15	1.72	2.30	2.87	3.44	4.02	4.59	5.17	5.74	6.32	6.89	7.46	8.04	8.61
32	.59	1.18	1.78	2.37	2.96	3.56	4.15	4.74	5.33	5.92	6.52	7.11	7.70	8.30	8.89
33	.61	1.22	1.83	2.44	3.05	3.67	4.28	4.89	5.50	6.11	6.72	7.33	7.94	8.55	9.17
34	.63	1.26	1.89	2.52	3.15	3.78	4.40	5.04	5.67	6.29	6.93	7.56	8.18	8.81	9.44
35	.65	1.30	1.94	2.59	3.24	3.89	4.53	5.18	5.83	6.48	7.13	7.78	8.42	9.08	9.72
36	.67	1.33	2.00	2.67	3.33	4.00	4.66	5.33	6.00	6.67	7.33	8.00	8.67	9.33	10.00
37	.68	1.37	2.06	2.74	3.42	4.11	4.79	5.48	6.17	6.85	7.54	8.22	8.91	9.59	10.28
38	.70	1.41	2.11	2.82	3.52	4.22	4.92	5.63	6.33	7.03	7.74	8.44	9.15	9.85	10.56
39	.72	1.44	2.17	2.89	3.61	4.33	5.05	5.78	6.50	7.22	7.95	8.67	9.39	10.11	10.83
40	.74	1.48	2.22	2.96	3.70	4.44	5.18	5.92	6.67	7.41	8.15	8.89	9.63	10.37	11.11

Table gives cu. yds. in 1 ft. of a triangle of given width and height. Corrections for tenths of width are one tenth the values found under each height considering the widths from 1 to 9 as tenths and similarly the corrections for tenths of height are one tenth the figures opposite width considering the heights from 1 to 9 as tenths. Thus if w = 16.2 and h = 5.3, cu. yds. = 1.48 + .028 + .089 = 1.597 cu. yds. or practically 160 cu. yds. per 100 ft. If w exceeds 40 ft., use one-half and multiply result by 2, if both w and h are large use one-half of each and multiply result by 4. Any cross-section may be divided into triangles by the following rule. To the triangle of the sum of the outside cuts (or fills) = h, and ½ the roadbed = w, add the triangles formed by taking the distance out to each break in turn (= w's) by the difference between the cuts (or fills) on each side of it (= h's) always subtracting the outer from the inner.

Table XII. Stadia Reductions

Vertical Heights

Minutes	0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°
0....	0.00	1.74	3.49	5.23	6.96	8.68	10.40	12.10	13.78	15.45	17.10
2....	0.06	1.80	3.55	5.28	7.02	8.74	10.45	12.15	13.84	15.51	17.16
4....	0.12	1.86	3.60	5.34	7.07	8.80	10.51	12.21	13.89	15.56	17.21
6....	0.17	1.92	3.66	5.40	7.13	8.85	10.57	12.26	13.95	15.62	17.26
8....	0.23	1.98	3.72	5.46	7.19	8.91	10.62	12.32	14.01	15.67	17.32
10....	0.29	2.04	3.78	5.52	7.25	8.97	10.68	12.38	14.06	15.73	17.37
12....	0.35	2.09	3.84	5.57	7.30	9.03	10.74	12.43	14.12	15.78	17.43
14....	0.41	2.15	3.90	5.63	7.36	9.08	10.79	12.49	14.17	15.84	17.48
16....	0.47	2.21	3.95	5.69	7.42	9.14	10.85	12.55	14.23	15.89	17.54
18....	0.52	2.27	4.01	5.75	7.48	9.20	10.91	12.60	14.28	15.95	17.59
20....	0.58	2.33	4.07	5.80	7.53	9.25	10.96	12.66	14.34	16.00	17.65
22....	0.64	2.38	4.13	5.86	7.59	9.31	11.02	12.72	14.40	16.06	17.70
24....	0.70	2.44	4.18	5.92	7.65	9.37	11.08	12.77	14.45	16.11	17.76
26....	0.76	2.50	4.24	5.98	7.71	9.43	11.13	12.83	14.51	16.17	17.81
28....	0.81	2.56	4.30	6.04	7.76	9.48	11.19	12.88	14.56	16.22	17.86
30....	0.87	2.62	4.36	6.09	7.82	9.54	11.25	12.94	14.62	16.28	17.92
32....	0.93	2.67	4.42	6.15	7.88	9.60	11.30	13.00	14.67	16.33	17.97
34....	0.99	2.73	4.48	6.21	7.94	9.65	11.36	13.05	14.73	16.39	18.03
36....	1.05	2.79	4.53	6.27	7.99	9.71	11.42	13.11	14.79	16.44	18.08
38....	1.11	2.85	4.59	6.33	8.05	9.77	11.47	13.17	14.84	16.50	18.14
40....	1.16	2.91	4.65	6.38	8.11	9.83	11.53	13.22	14.90	16.55	18.19
42....	1.22	2.97	4.71	6.44	8.17	9.88	11.59	13.28	14.95	16.61	18.24
44....	1.28	3.02	4.76	6.50	8.22	9.94	11.64	13.33	15.01	16.66	18.30
46....	1.34	3.08	4.82	6.56	8.28	10.00	11.70	13.39	15.06	16.72	18.35
48....	1.40	3.14	4.88	6.61	8.34	10.05	11.76	13.45	15.12	16.77	18.41
50....	1.45	3.20	4.94	6.67	8.40	10.11	11.81	13.50	15.17	16.83	18.46
52....	1.51	3.26	4.99	6.73	8.45	10.17	11.87	13.56	15.23	16.88	18.51
54....	1.57	3.31	5.05	6.79	8.51	10.22	11.93	13.61	15.28	16.94	18.57
56....	1.63	3.37	5.11	6.84	8.57	10.28	11.98	13.67	15.34	16.99	18.62
58....	1.69	3.43	5.17	6.90	8.63	10.34	12.04	13.73	15.40	17.05	18.68
60....	1.74	3.49	5.23	6.96	8.68	10.40	12.10	13.78	15.45	17.10	18.73

Horizontal Corrections

Dist.	0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°
100...	0.0	0.0	0.1	0.3	0.5	0.8	1.1	1.5	1.9	2.5	3.0
200...	0.0	0.1	0.2	0.5	1.0	1.5	2.2	3.0	3.9	4.9	6.0
300...	0.0	0.1	0.4	0.8	1.5	2.3	3.3	4.5	5.8	7.4	9.1
400...	0.0	0.1	0.5	1.1	2.0	3.0	4.4	6.0	7.8	9.8	12.1
500...	0.0	0.2	0.6	1.4	2.5	3.8	5.5	7.5	9.7	12.3	15.1
600...	0.0	0.2	0.7	1.6	2.9	4.6	6.5	8.9	11.6	14.7	18.1
700...	0.0	0.2	0.8	1.9	3.4	5.3	7.6	10.4	13.6	17.2	21.1
800...	0.0	0.2	1.0	2.2	3.9	6.1	8.7	11.9	15.5	19.6	24.2
900...	0.0	0.3	1.1	2.4	4.4	6.8	9.8	13.4	17.5	22.1	27.2
1000...	0.0	0.3	1.2	2.7	4.9	7.6	10.9	14.9	19.4	24.5	30.2

Table XII. Stadia Reductions

Vertical Heights

Minutes	11°	12°	13°	14°	15°	16°	17°	18°	19°	20°
0	18.73	20.34	21.92	23.47	25.00	26.50	27.96	29.39	30.78	32.14
2	18.78	20.39	21.97	23.52	25.05	26.55	28.01	29.44	30.83	32.18
4	18.84	20.44	22.02	23.58	25.10	26.59	28.06	29.48	30.87	32.23
6	18.89	20.50	22.08	23.63	25.15	26.64	28.10	29.53	30.92	32.27
8	18.95	20.55	22.13	23.68	25.20	26.69	28.15	29.58	30.97	32.32
10	19.00	20.60	22.18	23.73	25.25	26.74	28.20	29.62	31.01	32.36
12	19.05	20.66	22.23	23.78	25.30	26.79	28.25	29.67	31.06	32.41
14	19.11	20.71	22.28	23.83	25.35	26.84	28.30	29.72	31.10	32.45
16	19.16	20.76	22.34	23.88	25.40	26.89	28.34	29.76	31.15	32.49
18	19.21	20.81	22.39	23.93	25.45	26.94	28.39	29.81	31.19	32.54
20	19.27	20.87	22.44	23.99	25.50	26.99	28.44	29.86	31.24	32.58
22	19.32	20.92	22.49	24.04	25.55	27.04	28.49	29.90	31.28	32.63
24	19.38	20.97	22.54	24.09	25.60	27.09	28.54	29.95	31.33	32.67
26	19.43	21.03	22.60	24.14	25.65	27.13	28.58	30.00	31.38	32.72
28	19.48	21.08	22.65	24.19	25.70	27.18	28.63	30.04	31.42	32.76
30	19.54	21.13	22.70	24.24	25.75	27.23	28.68	30.09	31.47	32.80
32	19.59	21.18	22.75	24.29	25.80	27.28	28.73	30.14	31.51	32.85
34	19.64	21.24	22.80	24.34	25.85	27.33	28.77	30.19	31.56	32.89
36	19.70	21.29	22.85	24.39	25.90	27.38	28.82	30.23	31.60	32.93
38	19.75	21.34	22.91	24.44	25.95	27.43	28.87	30.28	31.65	32.98
40	19.80	21.39	22.96	24.49	26.00	27.48	28.92	30.32	31.69	33.02
42	19.86	21.45	23.01	24.55	26.05	27.52	28.96	30.37	31.74	33.07
44	19.91	21.50	23.06	24.60	26.10	27.57	29.01	30.41	31.78	33.11
46	19.96	21.55	23.11	24.65	26.15	27.62	29.06	30.46	31.83	33.15
48	20.02	21.60	23.16	24.70	26.20	27.67	29.11	30.51	31.87	33.20
50	20.07	21.66	23.22	24.75	26.25	27.72	29.15	30.55	31.92	33.24
52	20.12	21.71	23.27	24.80	26.30	27.77	29.20	30.60	31.96	33.28
54	20.18	21.76	23.32	24.85	26.35	27.81	29.25	30.65	32.01	33.33
56	20.23	21.81	23.37	24.90	26.40	27.86	29.30	30.69	32.05	33.37
58	20.28	21.87	23.42	24.95	26.45	27.91	29.34	30.74	32.09	33.41
60	20.34	21.92	23.47	25.00	26.50	27.96	29.39	30.78	32.14	33.46

Horizontal Corrections

District	11°	12°	13°	14°	15°	16°	17°	18°	19°	20°
100	3.6	4.3	5.1	5.9	6.7	7.6	8.5	9.5	10.6	11.7
200	7.3	8.6	10.1	11.7	13.4	15.2	17.1	19.1	21.2	23.4
300	10.9	13.0	15.2	17.6	20.1	22.8	25.6	28.6	31.8	35.1
400	14.6	17.3	20.2	23.4	26.8	30.4	34.2	38.2	42.4	46.8
500	18.2	21.6	25.3	29.3	33.5	38.0	42.7	47.7	53.0	58.5
600	21.8	25.9	30.4	35.1	40.2	45.6	51.3	57.3	63.6	70.2
700	25.5	30.2	35.4	41.0	46.9	53.2	59.8	66.8	74.2	81.9
800	29.1	34.6	40.5	46.8	53.6	60.8	68.4	76.4	84.8	93.6
900	32.8	38.9	45.5	52.7	60.3	68.4	76.9	85.9	95.4	105.3
1000	36.4	43.2	50.6	58.5	67.0	76.0	85.5	95.5	106.0	117.0

Table XIII.—Sines, Cosines, Tangents, Cotangents

Deg.	sin 0′	tan 0′	sin 10′	tan 10′	sin 20′	tan 20′	sin 30′	tan 30′	sin 40′	tan 40′	sin 50′	tan 50′	Deg.
0	0000	0000	0029	0029	0058	0058	0087	0087	0116	0116	0145	0145	89
1	175	0175	0204	0204	0233	0233	0262	262	291	291	320	320	88
2	349	349	378	378	407	407	436	437	465	466	494	495	87
3	523	524	552	553	581	582	610	612	640	641	669	706	86
4	698	699	727	729	756	758	785	787	814	816	843	864	85
5	872	875	901	904	929	934	958	963	987	992	1016	1022	84
6	1045	1051	1074	1080	1103	1110	1132	1139	1161	1169	190	198	83
7	219	228	248	257	279	287	305	317	334	346	363	376	82
8	392	405	421	435	449	465	478	495	507	524	536	554	81
9	564	584	593	614	622	644	650	673	679	703	708	733	80
10	736	763	765	793	794	823	822	853	851	883	880	914	79
11	908	944	937	974	965	2004	994	2035	2022	2065	2051	2095	78
12	2079	2126	2108	2156	2136	186	2164	217	193	247	221	278	77
13	250	309	278	339	306	370	334	401	363	432	391	462	76
14	419	493	447	524	476	555	504	586	532	617	560	648	75
15	588	679	616	711	644	742	672	773	700	805	728	836	74
16	756	867	784	899	812	931	840	962	868	994	896	3026	73
17	924	3057	952	3089	939	3121	3007	3153	3035	3185	3062	217	72
18	3090	249	3118	281	3145	314	173	346	201	378	228	411	71
19	256	443	283	476	311	508	338	541	365	574	393	607	70
20	420	640	448	673	475	706	502	739	529	772	557	805	69
21	584	839	611	872	638	906	665	939	692	973	719	4006	68
22	746	4040	773	4074	800	4108	827	4142	854	4176	881	210	67
23	907	245	934	279	961	314	987	348	4014	383	4041	417	66
24	4067	452	4094	487	4120	522	4147	557	173	592	200	628	65
25	226	663	253	699	279	734	305	770	331	806	358	841	64
26	384	877	410	913	436	950	4462	986	488	5022	514	5059	63
27	540	5095	566	5132	592	5169	617	5206	643	243	669	280	62
28	695	317	720	354	746	392	772	430	797	467	823	505	61
29	848	543	874	581	899	619	924	658	950	696	975	735	60
30	5000	774	5025	5812	5050	851	5075	890	5100	930	5125	969	59
31	150	6009	175	6048	200	6088	225	6128	250	6168	275	6208	58
32	299	249	324	289	348	330	5373	371	398	412	422	453	57
33	446	494	471	536	495	577	519	619	544	661	568	703	56
34	592	745	616	787	640	830	664	873	688	916	712	959	55
35	736	7002	760	7046	783	7089	807	7133	831	7177	854	7221	54
36	878	265	901	310	925	355	948	400	972	445	995	490	53
37	6018	536	6041	581	6065	627	6088	673	6111	720	6134	766	52
38	157	813	180	860	202	907	225	954	248	8002	271	8050	51
39	293	8098	316	8146	338	8195	361	8243	383	292	406	342	50
40	428	391	450	441	472	491	494	541	517	591	539	642	49
41	561	693	583	744	604	796	626	847	648	899	670	952	48
42	691	9004	713	9057	734	9110	756	9163	777	9217	799	9271	47
43	820	325	841	380	862	435	884	490	905	545	926	601	46
44	947	657	967	713	988	770	7009	827	7030	884	7050	942	45
45	7071	1.0000	7092	1.0058	7112	1.0117	133	1.0176	153	1.0235	173	1.0295	44
Deg.	60′ cos	60′ cot	50′ cos	50′ cot	40′ cos	40′ cot	30′ cos	30′ cot	20′ cos	20′ cot	10′ cos	10′ cot	Deg.

Table XIII.—Sines, Cosines, Tangents, Cotangents (Continued)

Deg.	sin 0′	tan 0′	sin 10′	tan 10′	sin 20′	tan 20′	sin 30′	tan 30′	sin 40′	tan 40′	sin 50′	tan 50′	Deg.
46	7193	1.0355	7214	1.0416	7234	1.0477	7254	1.0533	7274	1.0599	7294	1.0661	43
47	314	.0724	333	.0786	353	.0850	373	.0913	392	.0977	412	.1041	42
48	431	.1106	451	.1171	470	.1237	490	.1303	509	.1369	528	.1436	41
49	547	.1504	566	.1571	585	.1640	604	.1708	623	.1778	642	.1847	40
50	660	1.1918	7679	1.1988	7698	1.2059	7716	1.2131	7735	1.2203	7753	1.2276	39
51	771	.2349	790	.2423	808	.2497	826	.2572	844	.2647	862	.2723	38
52	880	.2799	898	.2876	916	.2954	934	.3032	951	.3111	969	.3190	37
53	986	.3270	8004	.3351	8021	.3452	8039	.3514	8056	.3597	8073	.3680	36
54	8090	.3764	107	.3848	124	.3934	141	.4019	158	.4106	175	.4193	35
55	192	.4281	208	.4370	225	.4460	241	.4550	258	.4641	274	.4733	34
56	290	.4826	307	.4919	323	.5013	339	.5108	355	.5204	371	.5301	33
57	387	.5399	403	.5497	418	.5597	434	.5697	450	.5798	465	.5900	32
58	480	.6003	496	.6107	511	.6212	526	.6319	542	.6426	557	.6534	31
59	572	.6643	587	.6753	601	.6864	616	.6977	631	.7090	646	.7205	30
60	660	1.7321	8675	1.7437	8689	1.7556	8704	1.7675	8718	1.7797	8732	1.7917	29
61	746	.8040	760	.8165	774	.8291	788	.8418	802	.8546	816	.8676	28
62	829	.8807	843	.8940	857	.9074	870	.9210	884	.9347	897	.9486	27
63	910	.9626	923	.9768	936	.9912	949	2.0057	962	2.0204	975	2.0353	26
64	988	2.0503	9001	2.0655	9013	2.0809	9026	.0965	9038	.1123	9051	.1283	25
65	9063	.1445	075	.1609	088	.1775	100	.1943	112	.2113	124	.2286	24
66	135	.2460	147	.2637	159	.2817	171	.2998	182	.3183	194	.3369	23
67	205	.3559	216	.3750	228	.3945	239	.4142	250	.4342	261	.4545	22
68	272	.4751	283	.4960	293	.5172	304	.5386	315	.5605	325	.5826	21
69	336	.6051	346	.6279	356	.6511	367	.6746	377	.6985	387	.7228	20
70	397	2.7475	9407	2.7725	9417	2.7980	9426	2.8239	9436	2.8502	9446	2.8770	19
71	455	.9042	465	.9319	474	.9600	483	.9887	492	3.0178	502	3.0475	18
72	511	3.0777	520	3.1084	528	3.1397	537	3.1716	546	.2041	555	.2371	17
73	563	.2709	572	.3052	580	.3402	588	.3759	596	.4124	605	.4495	16
74	613	.4874	621	.5261	628	.5656	636	.6059	644	.6470	652	.6891	15
75	659	.7321	667	.7760	674	.8208	681	.8657	689	.9136	696	.9617	14
76	703	4.0108	710	4.0611	717	4.1126	724	4.1653	730	4.2193	737	4.2747	13
77	744	.3315	750	.3897	757	.4494	763	.5107	769	.5736	775	.6382	12
78	781	.7046	787	.7729	793	.8430	799	.9152	805	.9894	811	5.0658	11
79	816	.1446	822	5.2257	827	5.3093	833	5.3955	838	5.4845	843	.5764	10
80	9848	5.6713	9853	5.7694	9858	5.8708	9863	5.9758	9868	6.0844	9872	6.1970	9
81	877	6.3138	881	6.4348	886	6.5606	890	6.6912	894	.8269	899	.9682	8
82	903	7.1154	907	7.2687	911	7.4287	914	7.5958	918	7.7704	922	7 9530	7
83	925	8.1443	929	8.3450	932	8.5555	936	8.7769	939	9.0098	942	9.2553	6
84	945	9.5144	948	9.7882	951	10.078	954	10.385	957	10.711	959	11.059	5
85	962	11.430	964	11.826	967	12.250	969	12.706	971	13.197	974	13.727	4
86	976	14.300	978	14.924	980	15.605	981	16.350	983	17.169	985	18.075	3
87	986	19.081	988	20.206	989	21.470	990	22.903	992	24.542	993	26.432	2
88	994	28.636	9995	31.242	9996	34.368	997	38.189	997	42.964	9998	49.104	1
89	9998	57.290	9999	68.750	9999	85.940	9999	114.58	1.000	171.88	1.000	343.77	0
Deg.	60′ cos	60′ cot	50′ cos	50′ cot	40′ cos	40′ cot	30′ cos	30′ cot	20′ cos	30′ cot	10′ cos	10′ cot	Deg.

X-sections
Haskins Rd

Bob Hosie
Paul Rennes
10/6/69

Dr. Profiles Field Book 149 Pg. 35

Hoskins Rd
X sections

B. Kosic
P. Rooney
10/6/69

Sta	L.	R.
194+50		
194+0		
193+50		
193+0		
192+50		
192+0	22	Hog fence 5' high
192+0		

Assumed B.M. 100.00 Nail in Pole # C41919 Approx 1 91+0 W. side

L. R.

	2.98 / 22	4.00 / 18	P 5.93 / 14.5	E.P. 5.33 / 12	(117.6) 5.06	E.P. 5.00 / 7	5.00 / 12	2.31 / 30
194+0	6.96 / 21	8.10 / 17	D 9.28 / 15	E.P. 8.15 / 11	(114.7) 7.97	E.P. 8.05 / 8	6.66 / 30	
193+50	9.85 / 21	T.B 11.60 / 17	D 13 / 15	E.P. 11.78 / 11	(111.0) 11.68	E.P. 11.81 / 9	D 12.0 / 14.5	T.B 10.68 / 14 / 10.90 / 30
								H.I. 122.65
193+0	1.18 / 21	T.B. 2.91 / 16	D 4.38 / 14.5	E.P. 3.40 / 11	(107.8) 3.26	E.P. 3.32 / 13	D 4.05 / 14	3.40 / 30
192+50	4.15 / 21	T.B. 5.54 / 16	D 6.81 / 14	E.P. 5.78 / 11	(105.2) 5.30	E.P. 6.03 / 11	D 6.78 / 14.5	6.63 / 30
192+0	10.80 / 36	T.B 8.36 / 15	P 9.64 / 13	E.P. 9.45 / 10	(102.6) 9.10	E.P. 9.49 / 11	D 9.31 / 14	9.95 / 30

H.I. 110.95

Sta	L.	R.		
198+0				
197+50				
197+56	21'		15"	catalpa
197+35	22'		15"	catalpa
197+0				
196+78.7	23'		8"	Pine
196+50				
196+0				
195+50				
195+25	22'		End	Hog Fence
195+0				

L. C R

1.80 / 30 — 126.33

T.B. 1.90 / 25 — 124.45

P 6.47 / 1 — 121.58

E.P. 4.55 / 7 — 122.00

(122.1) 4.50

E.P. 4.95 / 1 — 121.58

7.96 / 33 — 118.59

H.I. 126.55

4.10 / 36 — 127.28

P 8.06 / 13 — 123.32

E.P. 8.20 / 6 — 123.18

(123.3) 8.41

E.P. 8.48 / 15 — 122.90

10.15 / 36 — 121.23

1.50 / 30 — 129.88

T.B. 3.00 / 22 — 128.38

E.P. 5.82 / 8 — 125.56

(125.6) 5.83

E.P. 6.10 / 14 — 125.28

T.P. 5.19 / 2 — 126.21

5.20 / 30 — 126.18

1.05 / 30 — 130.33

E.P. 2.62 / 7 — 128.70

(129.1) 2.52

E.P. 2.51 / 13 — 128.82

1.26 / 30 — 130.18

E.P. 5.93 / 30 — 125.93

E.P. 5.53 / 9 — 125.85

(126.1) 5.29

E.P. 5.13 / 13 — 126.25

2.00 / 30 — 129.38

8.00 / 30 — 123.38

E.P. 8.38 / 12 — 122.7

(122.5) 8.82

E.P. 0.00 / 2 — 122.58

7.62 / 39 — 123.76

H.I. 131.38

1.80 / 1 — 121.49

2.29 / 18 — 120.98

D 4.11 / 16 — 118.54

E.P. 3.00 / 13 — 119.85

(119.8) 2.85

E.P. 2.94 / 5 — 119.65

D 5.19 / 16 — 119.76

2.42 / 14 — 120.23

1.56 / 30 — 121.09

H.I. 122.65

Sta	L.	R.	
200+00			
199+50			
199+00			
198+50			
198+50	12.5		End 12" C.M.P. & D.I. & DR
198+32			6.36
198+21	12.5		Begin 12" C.M.P.
			5.85

L.

R.

200+00

A.50 / 30 — 122.00

T.B. 4.62 / 20 — 93 — 121.93

D 9.25 / 13 — 30 — 119.30

E.P. 6.15 / 8 — 120.45

(120.6) 5.98

E.P. 6.54 / 16 — 120.61

D 8.25 / 19 — 118.30

8.08 / 30 — 118.42

199+50

A.00 / 30 — 122.55

T.B. 4.00 / 17 — 122.55

D 9.10 / 13 — 119.45

E.P. 6.20 / 9 — 120.35

(120.5) 6.09

E.P. 6.42 / 15 — 120.13

Brook 7.90 / 25 — 118.65

8.00 / 30 — 118.55

199+00

A.50 / 30 — 122.55

T.B. 4.65 / 17 — 122.20

D 6.88 / 13 — 119.88

E.P. 5.99 / 8 — 120.58

(120.6) 5.92

E.P. 6.14 / 16 — 120.41

8.35 / 33 — 118.20

198+50

3.15 / 30 — 123.10

T.B. 4.64 / 20 — 122.46

D 6.36 / 13 — 120.12

E.P. 5.36 / 9 — 121.19

(121.2) 5.33

E.P. 5.63 / 15 — 120.92

8.90 / 33 — 117.65

H.I. 126.55

Haskins Rd

I.P. 100.00

+10.95

119.95 H.I. ✓

-0.19

110.76 Elev.

+11.89

122.65 H.I. ✓

-1.02

121.63 Elev.

+9.75

131.38 H.I. ✓

-8.82

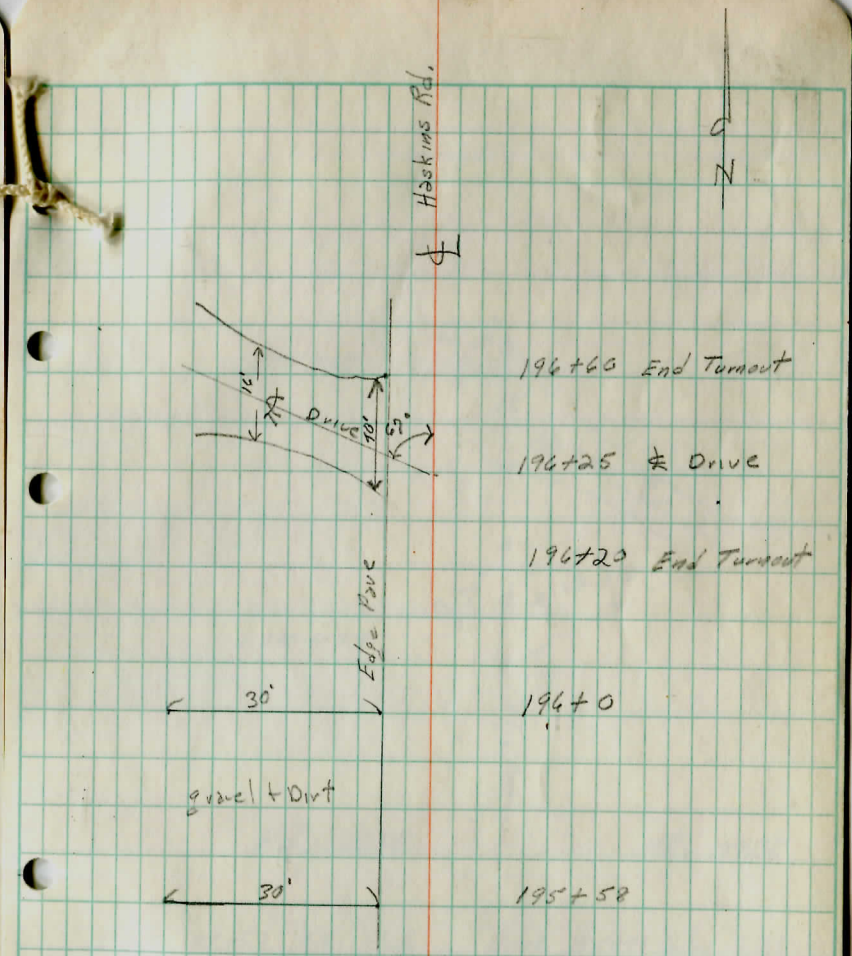
122.56 Elev.

+3.99

126.55 H.I. ✓

+	−
10.95	.19
11.89	1.02
9.75	8.82
3.99	
36.58	10.03

26.58



196+60 End Turnout

196+25 ℄ Drive

196+20 End Turnout

196+0

195+58

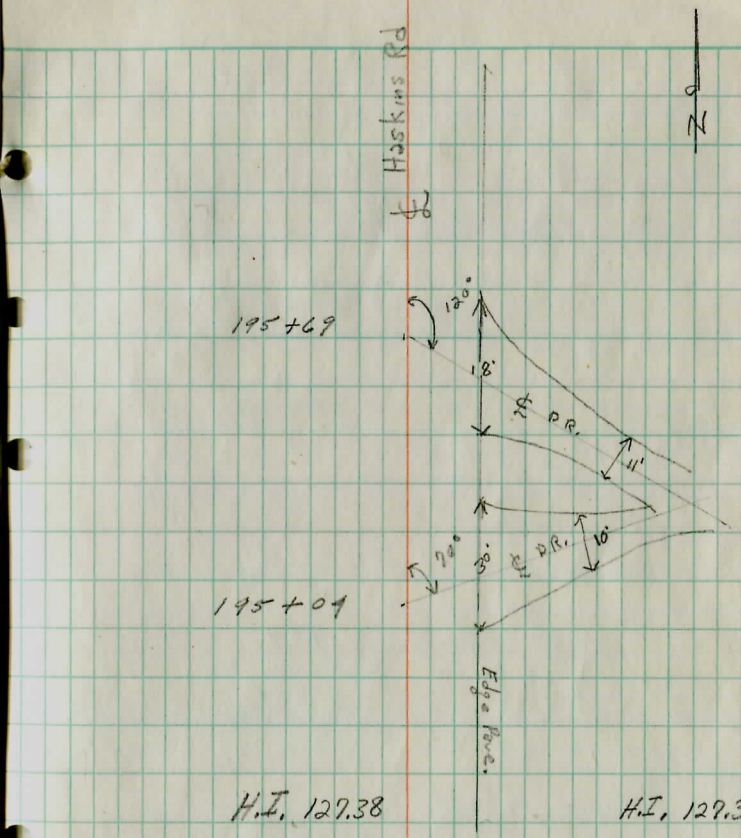
H.I. 131.37

H.I. 127.38

Drive 196+25

0+0	℄	6.03
0+25		4.96
0+50		4.10
0+75		3.22
1+0		2.45

196+0 E.P.	1.50
30' West	1.96
195+58 E.P.	3.60
30' West	2.86



H.I. 127.38

Drive	195+69	3.69
	0+25	3.52
	0+50	3.16
P.I. Drives	0+75	3.21

H.I. 127.38

Drive	195+04	7.31
	0+25	6.27
	0+50	1.86
P.I. Drive	0+75	3.06

39+83

Paterak

Hegells

200+97	211+43.45
	196+46.15
10+46.	14 97.30

211+44
196 00
15 44

PLEASE RETURN TO
GEAUGA COUNTY ENGINEER
COURT HOUSE
CHARDON, O.
PHONE 250-X

60
27
179-83