33

#33

DIETZGEN

ENGINEERS

FIELD BOOK

NO. 404

EUGENE DIETZGEN CO.

DRAWING MATERIALS, MATHEMATICAL and SURVEYING INSTRUMENTS

Chicago New York San Francisco New Orleans Pittsburg Toronto

Distances from Center of Roadway for Cross-Sectioning
Roadway 16 feet wide. Side Slopes 1 on 1.
For Single Track Embankment.

H	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	H
0	8.0	8.1	8.2	8.3	8.4	8.5	8.6	8.7	8.8	8.9	0
1	9.0	9.1	9.2	9.3	9.4	9.5	9.6	9.7	9.8	9.9	1
2	10.0	10.1	10.2	10.3	10.4	10.5	10.6	10.7	10.8	10.9	2
3	11.0	11.1	11.2	11.3	11.4	11.5	11.6	11.7	11.8	11.9	3
4	12.0	12.1	12.2	12.3	12.4	12.5	12.6	12.7	12.8	12.9	4
5	13.0	13.1	13.2	13.3	13.4	13.5	13.6	13.7	13.8	13.9	5
6	14.0	14.1	14.2	14.3	14.4	14.5	14.6	14.7	14.8	14.9	6
7	15.0	15.1	15.2	15.3	15.4	15.5	15.6	15.7	15.8	15.9	7
8	16.0	16.1	16.2	16.3	16.4	16.5	16.6	16.7	16.8	16.9	8
9	17.0	17.1	17.2	17.3	17.4	17.5	17.6	17.7	17.8	17.9	9
10	18.0	18.1	18.2	18.3	18.4	18.5	18.6	18.7	18.8	18.9	10
11	19.0	19.1	19.2	19.3	19.4	19.5	19.6	19.7	19.8	19.9	11
12	20.0	20.1	20.2	20.3	20.4	20.5	20.6	20.7	20.8	20.9	12
13	21.0	21.1	21.2	21.3	21.4	21.5	21.6	21.7	21.8	21.9	13
14	22.0	22.1	22.2	22.3	22.4	22.5	22.6	22.7	22.8	22.9	14
15	23.0	23.1	23.2	23.3	23.4	23.5	23.6	23.7	23.8	23.9	15
16	24.0	24.1	24.2	24.3	24.4	24.5	24.6	24.7	24.8	24.9	16
17	25.0	25.1	25.2	25.3	25.4	25.5	25.6	25.7	25.8	25.9	17
18	26.0	26.1	26.2	26.3	26.4	26.5	26.6	26.7	26.8	26.9	18
19	27.0	27.1	27.2	27.3	27.4	27.5	27.6	27.7	27.8	27.9	19
20	28.0	28.1	28.2	28.3	28.4	28.5	28.6	28.7	28.8	28.9	20
21	29.0	29.1	29.2	29.3	29.4	29.5	29.6	29.7	29.8	29.9	21
22	30.0	30.1	30.2	30.3	30.4	30.5	30.6	30.7	30.8	30.9	22
23	31.0	31.1	31.2	31.3	31.4	31.5	31.6	31.7	31.8	31.9	23
24	32.0	32.1	32.2	32.3	32.4	32.5	32.6	32.7	32.8	32.9	24
25	33.0	33.1	33.2	33.3	33.4	33.5	33.6	33.7	33.8	33.9	25
26	34.0	34.1	34.2	34.3	34.4	34.5	34.6	34.7	34.8	34.9	26
27	35.0	35.1	35.2	35.3	35.4	35.5	35.6	35.7	35.8	35.9	27
28	36.0	36.1	36.2	36.3	36.4	36.5	36.6	36.7	36.8	36.9	28
29	37.0	37.1	37.2	37.3	37.4	37.5	37.6	37.7	37.8	37.9	29
30	38.0	38.1	38.2	38.3	38.4	38.5	38.6	38.7	38.8	38.9	30
31	39.0	39.1	39.2	39.3	39.4	39.5	39.6	39.7	39.8	39.9	31
32	40.0	40.1	40.2	40.3	40.4	40.5	40.6	40.7	40.8	40.9	32
33	41.0	41.1	41.2	41.3	41.4	41.5	41.6	41.7	41.8	41.9	33
34	42.0	42.1	42.2	42.3	42.4	42.5	42.6	42.7	42.8	42.9	34
35	43.0	43.1	43.2	43.3	43.4	43.5	43.6	43.7	43.8	43.9	35
36	44.0	44.1	44.2	44.3	44.4	44.5	44.6	44.7	44.8	44.9	36
37	45.0	45.1	45.2	45.3	45.4	45.5	45.6	45.7	45.8	45.9	37
38	46.0	46.1	46.2	46.3	46.4	46.5	46.6	46.7	46.8	46.9	38
39	47.0	47.1	47.2	47.3	47.4	47.5	47.6	47.7	47.8	47.9	39
40	48.0	48.1	48.2	48.3	48.4	48.5	48.6	48.7	48.8	48.9	40

Example—If point is 22.6 ft. above grade, how far should it be from center line to be a slope stake point? Ans. from Table 30.6. For same slopes but other widths of roadbed, correct above figures by one-half difference in width of roadbed; thus in example above, for 20 ft. roadbed distance will be 30.6+(20—16)÷2 or 2 ft. added to 30.6 =32.6. For slopes of 1 on 1½ see inside of back cover.

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#2

Eugene Schaub CE-
Mem. Am. Soc. CE
Logan, Utah

Oct - 1930

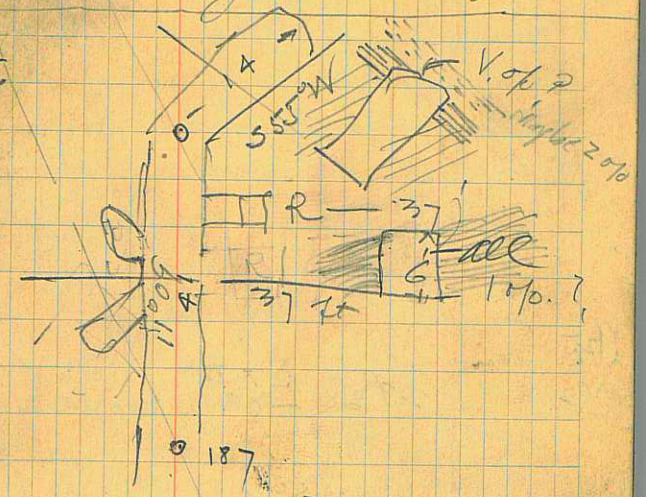
V2 - 1930

Pt.	HI	Az	Bear or V Ang	Hor	Slope	Stadia L	C	U
189			S55°W B		14'			
188 –								
188		11°09'	+3°52'		41'	+2.75		
187	+15							
187		37°21'	+4°43		12x.5	+1.'		
186	+25 5/8							
186		344°30'	−1°51'		25.7	−0.8		
185 –	+24"							
185 +		209°43'	−11°47'	103		10.		
21	4.4±							

Under Ground Sur. Bennie Hecox #1

Dip from working near 21 and S55°40'E is −10' to gum working at #33

Elev. H.I.



6003.0

6000.✓

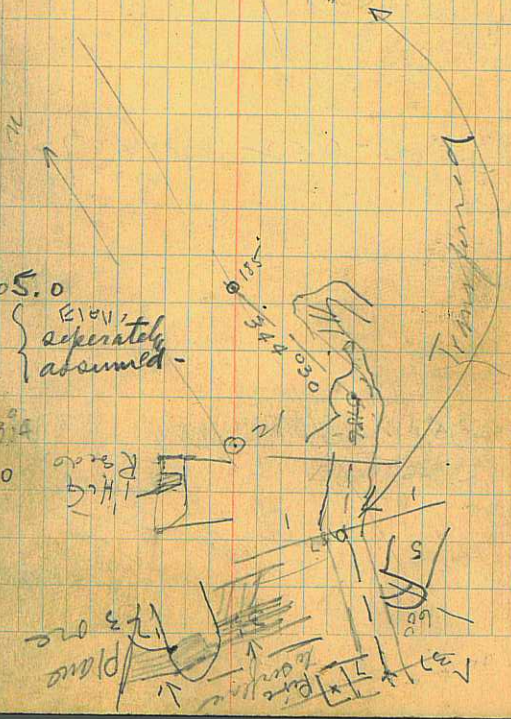
5999.✓

6005.0

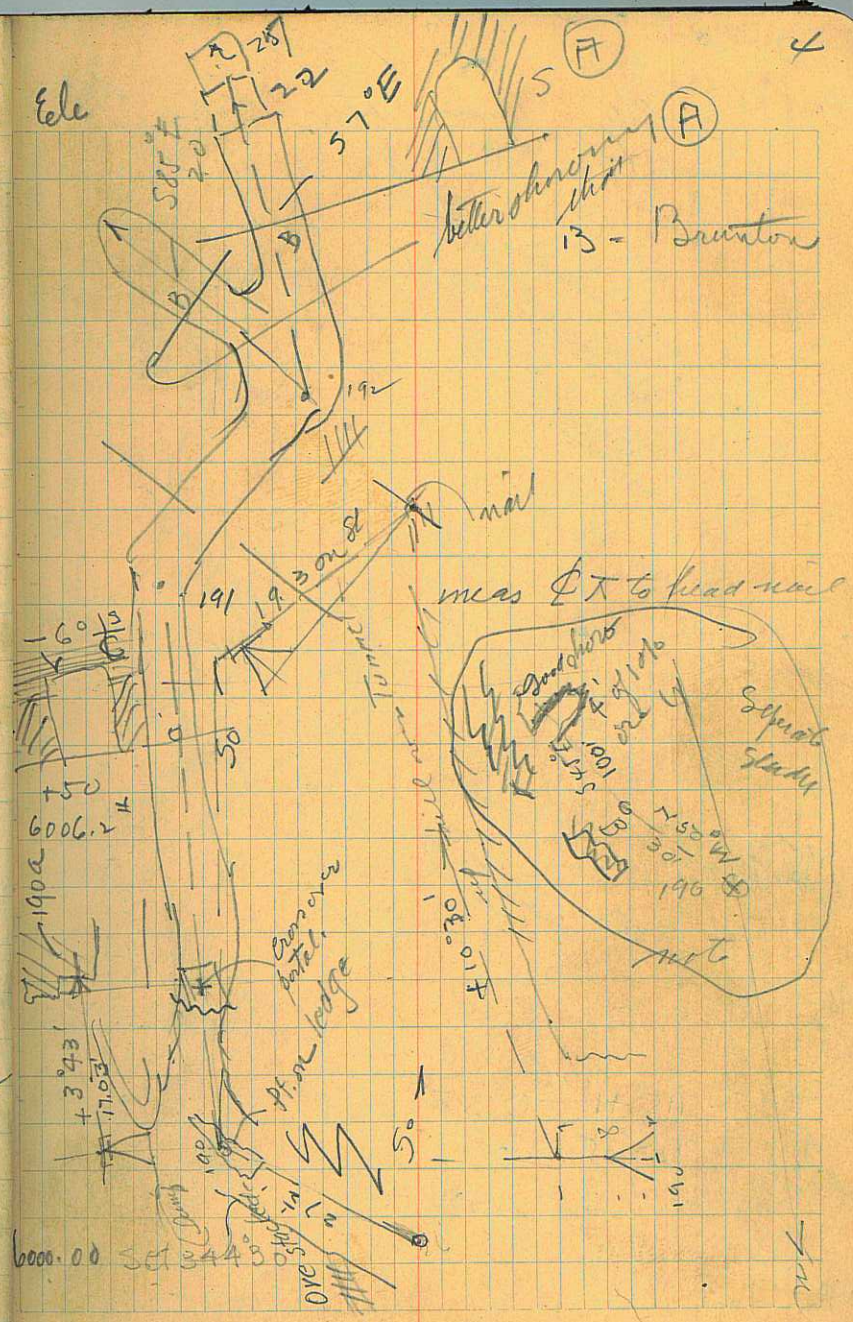
6000.0 ± { Elev. seperately assumed -

6025.6 Set 133°4

BS 620

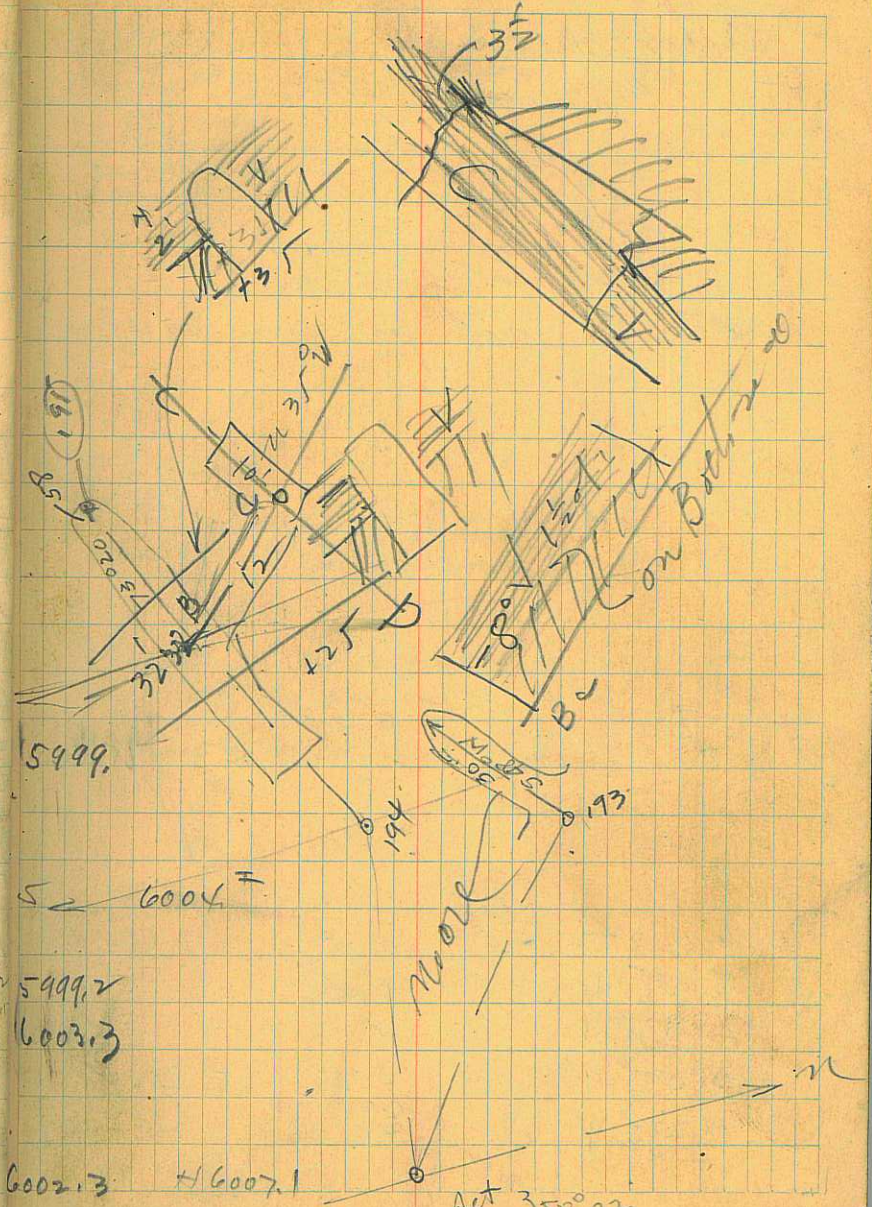


PT	HI	AZ	Bear or V. ANG	Hor Dist or Elev	Slope	Sladi
192 ⊼						
192		29°21'	℄ ⊼ to N −6°13	6004.0	19.3	−2.1
191 ⊼	+23 5/8					
191		358°02'	−0°52	6001.2	72'	−1.1
190 ⊼	+16					
190		294°01'	+4°45	6002.3	27 1/2'	+2.27
185 ⊼	+23 3/8				6004.95	



Pt | H I | Ay | Bear or Hor. slope | Stad
V ANC

195	73°20	-14'	-.2	58'			5999.
194	21'						
194	115°41'	-0°35	-3.2'		2	5.2	5999.2
193	127°45	0°		42.8°	15.4	66	6003.3
190	16½						


3½
+3
+2
+3
+2
+25
+32
14'
B
C
D
19
19
6004
194
193
Moore
Moore
Moore

Oct 29-30 Study of Water
Supply from Indian Creek
Cooper Mill -
Pt az Bear Vert ANG

S22° E from Cooper Mill
to pt not far from Ind Rock

S15° W 34.7 mls
to I. Rock

6	212°22	
5	197°16	+3°45'
4	136°01	
3	333°19 ✓	+2°45 ℄ sight to top
2	235°19	+2°06

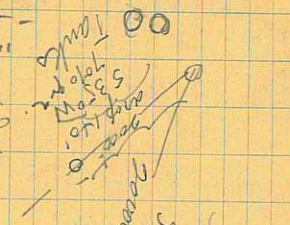
To top ℄ of ⊼

Tanks 62' cir by 12 ft water
two of them -
Reported as 2½ pipe from tanks to mill
Length about 3000 ft -
Water meas. 3½ gal in 5"
Tanks 19' diameter -
300' ± fall from tanks to
springs perhaps 15000' ± L

28.9 mils to tanks
19.4
9.5 miles total

Zero home set to 29 at Tanks
29.7 at mill

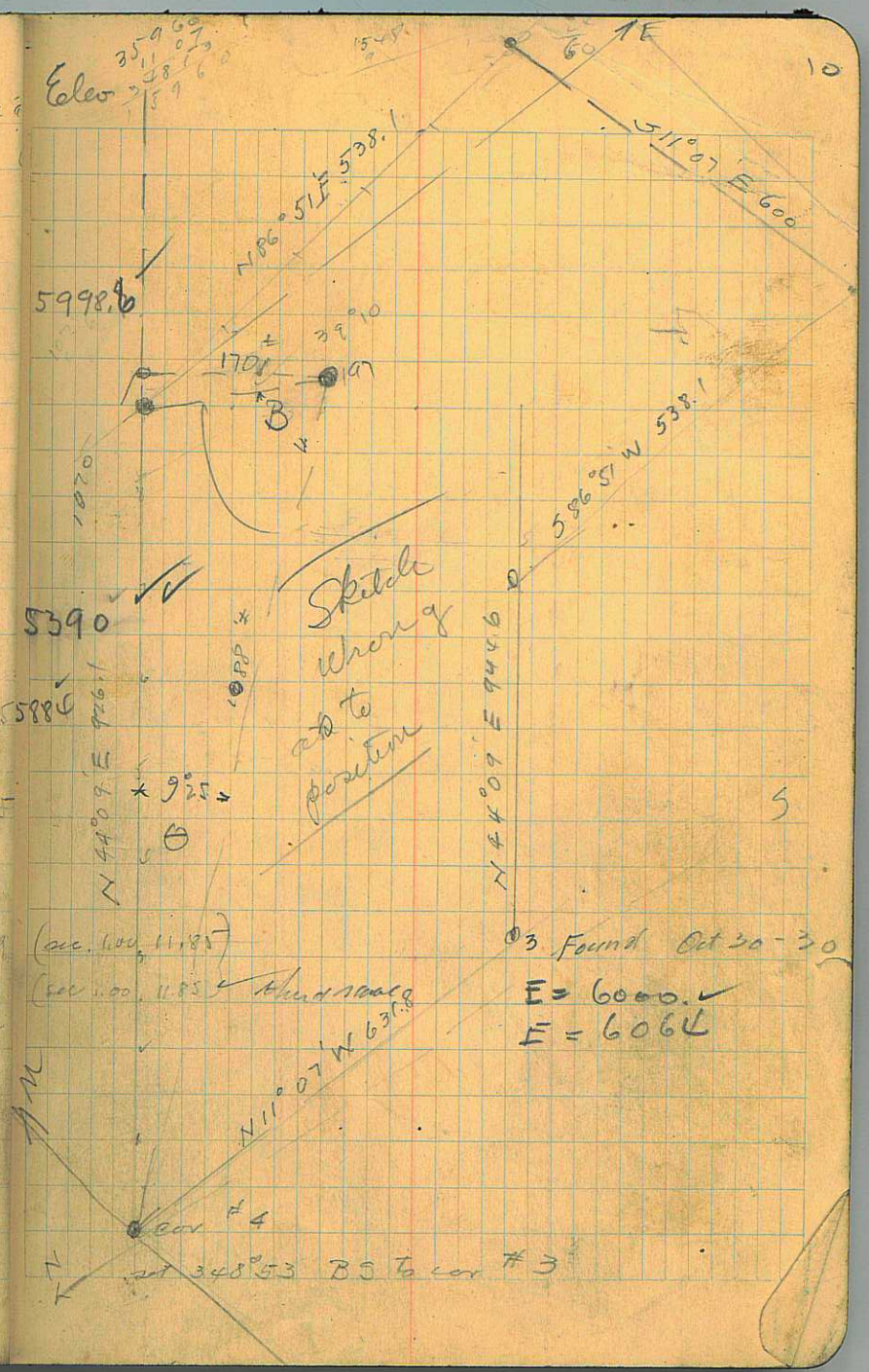
Read ⊼ at 30 on speed
men 55 for 5 miles
even Ordinary
+1°40 up to mill 1800'



Survey of the Wilson
Claims Oct 30-1930

Pt	HI	Az	Bear or VANG	Hor	Slope	Stade L	Stade C
199		47°06					
198		34°					
200							
200		9°10'30"	-2°10	36.18	36.18		
199		44°43	edge of Reef				
198		31°15	to a mon. stake on Reef				
		205°46	-1°53' to Indian Rock				
	1	150°42	to ① of Indian Creek Sur.				
		note: could not see ℄ Bailey's House					
		156°11	To cor -10°13 To Patterson's House Sw cor	Dry tree West side			
		148°22	To ℄ Roaster stack				
cor 5		96°35	-26°35	220 Sur 6340	275	9	11.75
197	6004.35 4.31						
			-26°35			9	11.75
		174°51	-9°01 ℄ Bailey's house				
		208°27	Indian rock				
		162°17	Pt on of Camp			1.0	11.9
197		233°34	N53°34E +1°14			1.00	11.9
cor 3		348°53	+7°35	639.±		5	11.5
		172°34	-8°52	Pats Sw cor house to cor			
196	6'						

E = 5977



N
S
W
E
300 fms
147
500'
400
N. Coast
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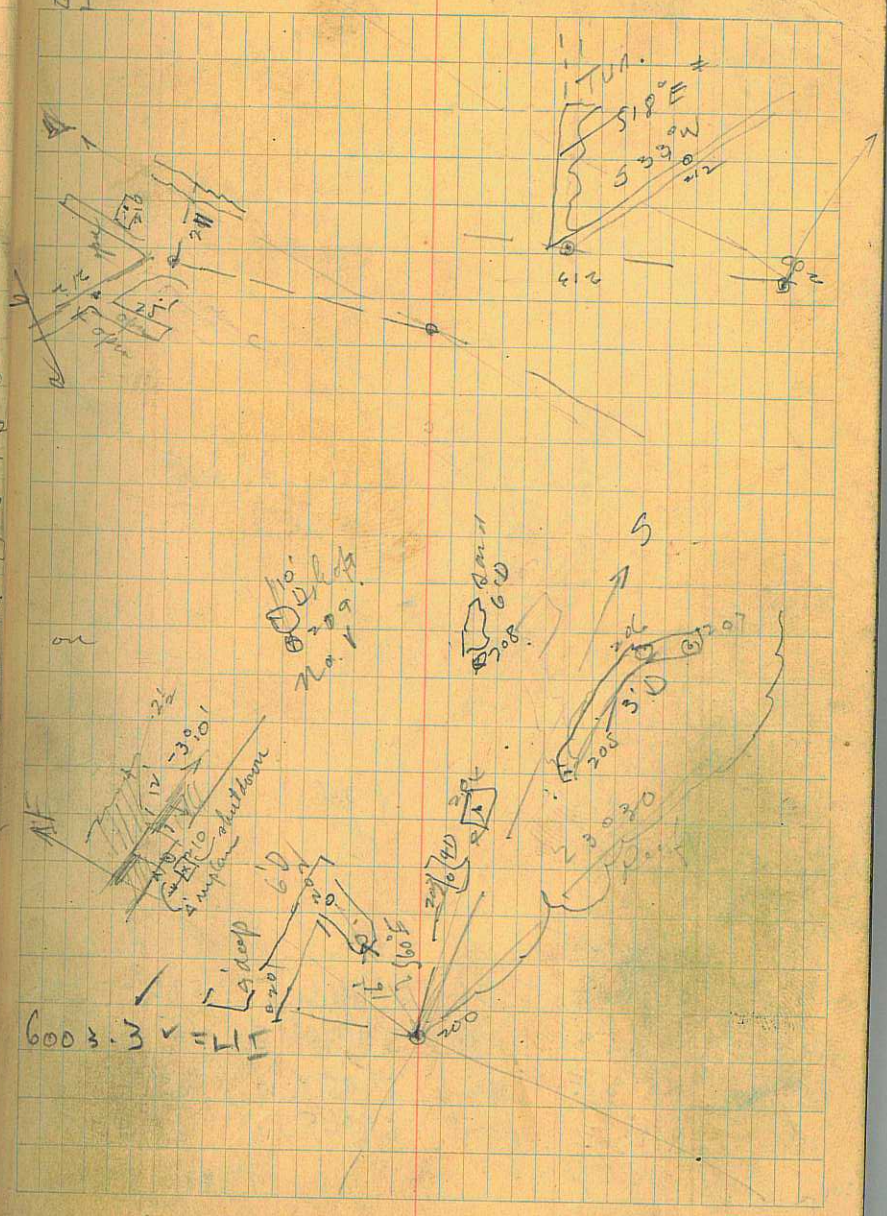
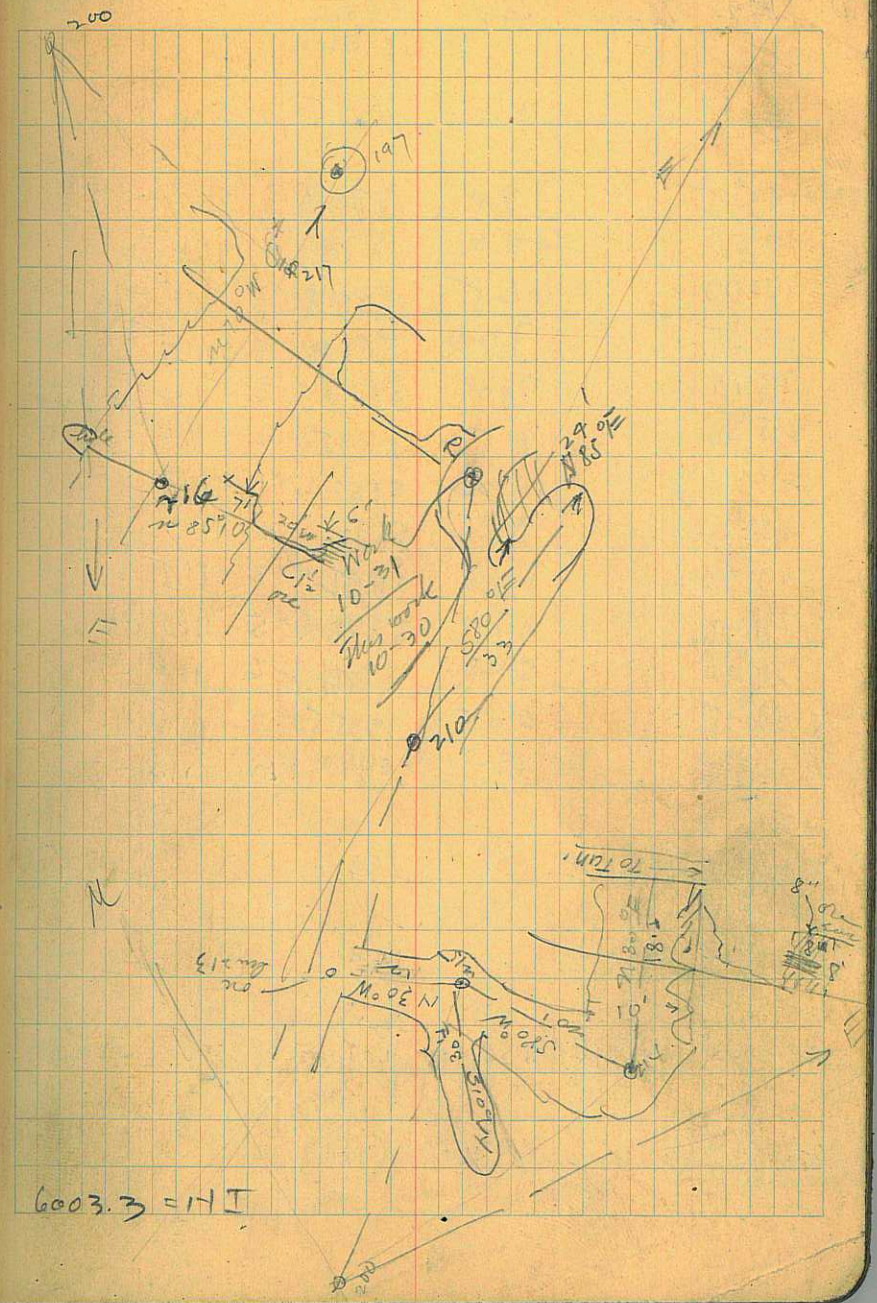
Pt.	HI	Az	Bearing V. ANG	Hor V ANG	Slope Elev		Stadia
214			N 85°10'E	-2°30		5	600
213			N 68°50'E	-22' 212	5991.3	9	11.12
212		258°45	N 78°45'E	+10' 145	5993.7	10	11.45
211		266°40	N 86°40	-2°40 118	5993.2	4	5.18
210		272°30	S 87°30'E	-1°10' 130	5990	10	11.3
209			S 44°30'E	+2°30 128	6000.2	4	5.25
208			S 14 E	-1°30 166	5994	4	5.66
207			S 8°50'W	-1°40	138	5989	10	11.35
206			S 3°45'E	-1°30	127	5989.4	10	11.27
205			S 7°30'W	-30	68	5989.85	11	11.68
204			S 2°45'E	-30	55	5989	11.	
203			S 6°45'E	-30'15	39	5990	11	11.34
202			S 6°15'E	-40'	44	5992	11	11.42
201		250°15	+3°40	3v.0	5990.1	11	11.32
200	4.6						



Pt	Az	Bear	Hor	Slope	Stadia: L	C	U	Vert Ht
217		N55°30'E	36	5994.6	5		536	-5°30
216		N85°10'E	100	5993.4	5		6	-2°30
215		N81°30'E	159	5995.7	10		1159	+1°
214		N82°30'E	193	5996.5	10		1193	+1°15

200

E


200
197
217
216
N85°10'
215
N85°
210
N
Moon
Moon
Moon

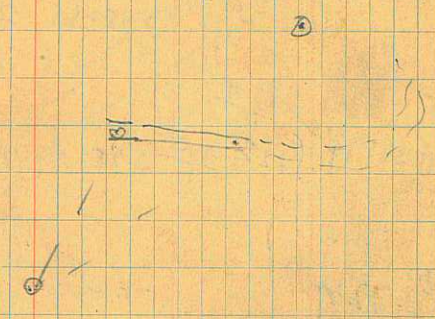
D	AZ	Bear	Hor	Slope or Elev.	Stadia L	C	O	Vert ANG
(2R)	142°45		780	5783	3	11.5		−15°07
	146°50		680	5791	4	11.4		−17°
	172°30		665	5801	4	11.15		−16°25
	180°25		730	5810	4	11.75		−14°25
	198°13		782	5815	3	11.2		−12°50
	215°30		915	5835	2	11.4		−10°05
	219°41		1030	5852.6	1	11.8		−7°45
	227°50		918	5892	2	11.3		6°30
	231°30		830	5892	3	11.5		−7°10
	231°20		675	5898.6	5	11.9		−8°10
	235°40		548	5904	6	11.6		−9°30
	230°35		305	5935.5	8	11.15		−11°
	209°45		154	5929	10	11.8		−22°30
220	275°12	S84°48E		284.00				+2°20
219	286°43	S73°17E		144				−2°19
218	246°21	N66°21E	136.40	−90 137.45				−9°00
197								

HI Elev PR

138

35960
38644
7316

18



.97

Road Sgr to Wilson

6011.64 E

5998.3 E

5979.5 E 3' meas from 197 on pt to 3' on #218 entrance to Hyde Tun

+13

Elev. ass. 6000. HI = 6004.1

Oct 31 - 1930

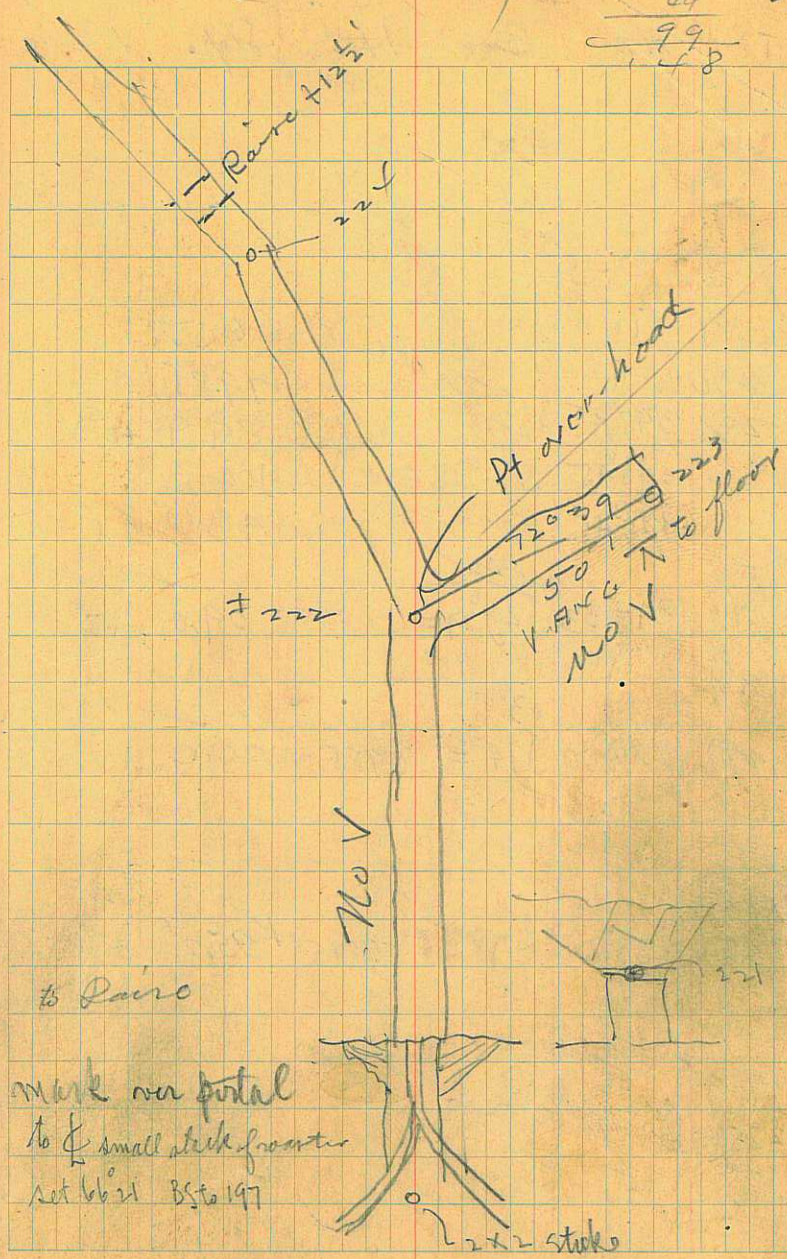
Survey of the Hyde Tunnel on the Wilson #1 dam

Pt.	FIZ	Bear	Horiz Elev	Slope	VANG	HI
226	258°20	N 78°20' E (11' sec)				
225						+25 3/8"
225	329°	S 31° E	5982.65	29.3'	+0°29	
224	337°17'	S 22°43 E (18' sec)	5982.40	70.15	+0°20'	+22 3/4
223	72°39		5979.8	50'	-4°30 ℄ x to floor	
222	355°35		5981.99	147.8 .99	+58'	+22 1/4
221	356° 145°30'30"			℄ x to + 26.15	+6°20	
218			5979.5			+16 5/8

(K + 22 1/4)

148
49
99
148

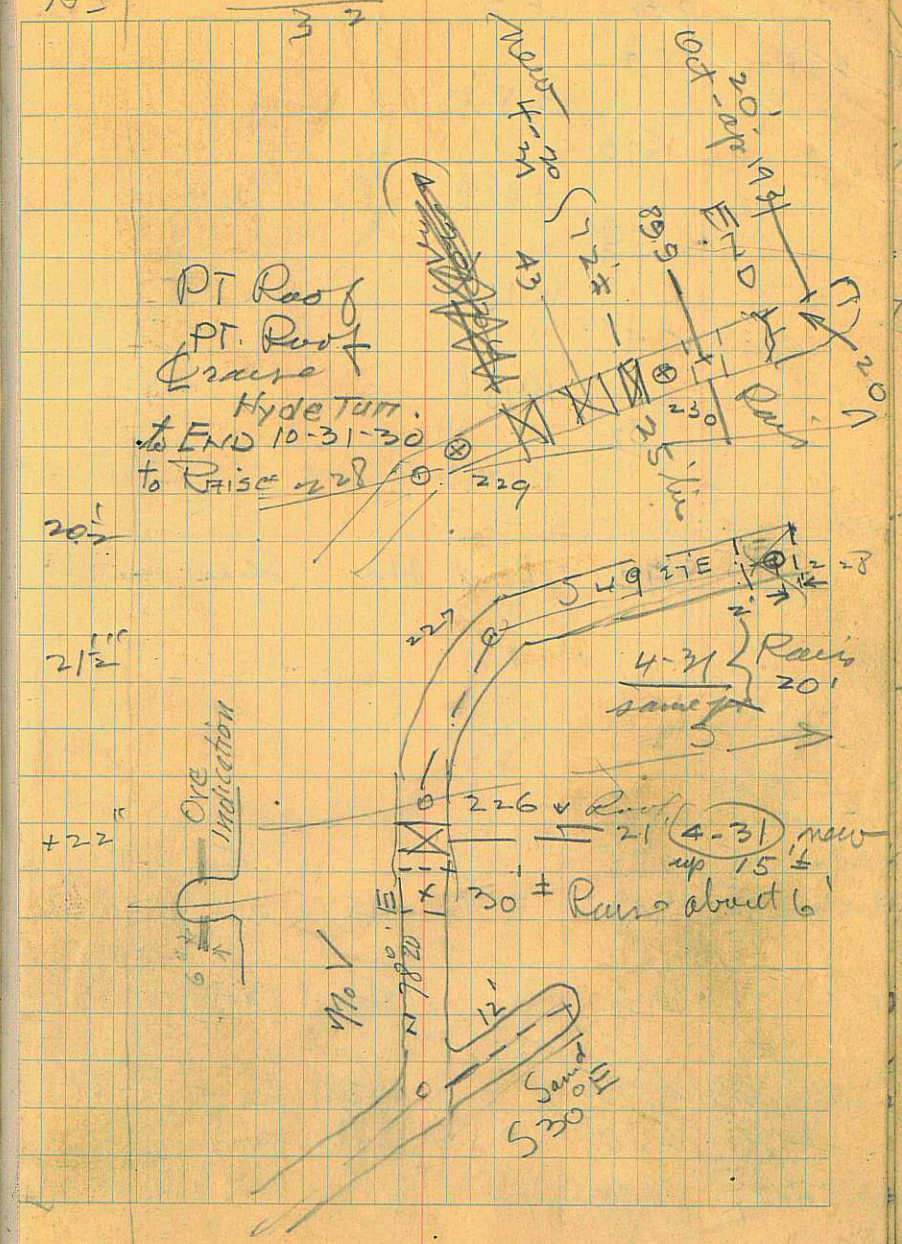
20



mark over portal
to ℄ small stack of roaster
set 66°21 BS to 197

PT	Az	Bear	Hor or Elev	Slope	V. Ang
229	"			6.55	
230	"	345°52' sec		79.85	
231	345°45		5987.50	89.9	+0°39
	345°45	S14°15'E		104.½	
	345°45	"		43'	
228		310°40'			
228	310°33	S49°27'E	5986.58	39.0	+2°01'
227		03' sec			
227	286°00	S74°E	5985.21	20.0	+2°01'
226					
226	258°20	N78°20'E	5984.51	95.2'	+1°07'
225					

HI

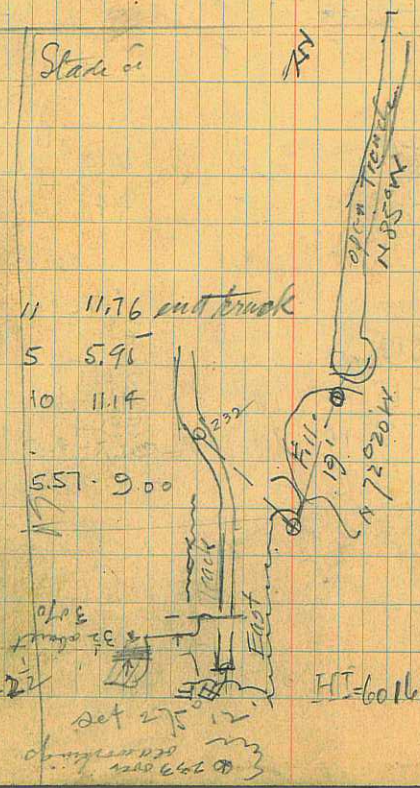


	B S	F S
231	+8 1/4"	
		+28 1/2
	K+3"	
		+26 7/8
	K 5 3/4	
		K+15 1/2
	K 4"	
		K+15"
	even 32"	
		K+27 1/2

Difference + 8.03 ft

outside Hole

PT.	AZ	Bear	Hor	Slope	V.ANG	HI	Stadia	Elev
End b track	272°37				-0°40'	11	11.76 end track	6004.2
235	282°			95	-1°31	5	5.95	6008.52
234	274°08		115		+0°33	10	11.14	6007.16
233	273°23'		342.8	343	+3°57	5.57	9.00	6033.00
232	48°25		19.30	℄ ⊼ to pt. 24.75	-38°45'			6001.02
	148°07'	#1 of Indian Cr.						
220 ⊼						K+22 1/2	HI=6016.52	6011.64



set 275° 12'

	AZ	Bear or V. ANG	Hor	Slope	H
241	30°05	-2°49'		53.00	
240	1°38'	-1°09'		103.7	
239	74°21'	-2°04		44	
238		S15° E		28'	
237	297°42'	-18°20	37.2	39.25 CLA-PG	
236	289°38'	-9°10	58.63	59.4 CLA-PG	

240 ^ 240 ^ 232 ^ 220 ^

6003.2 20 6004.7 +9.4 6016.5

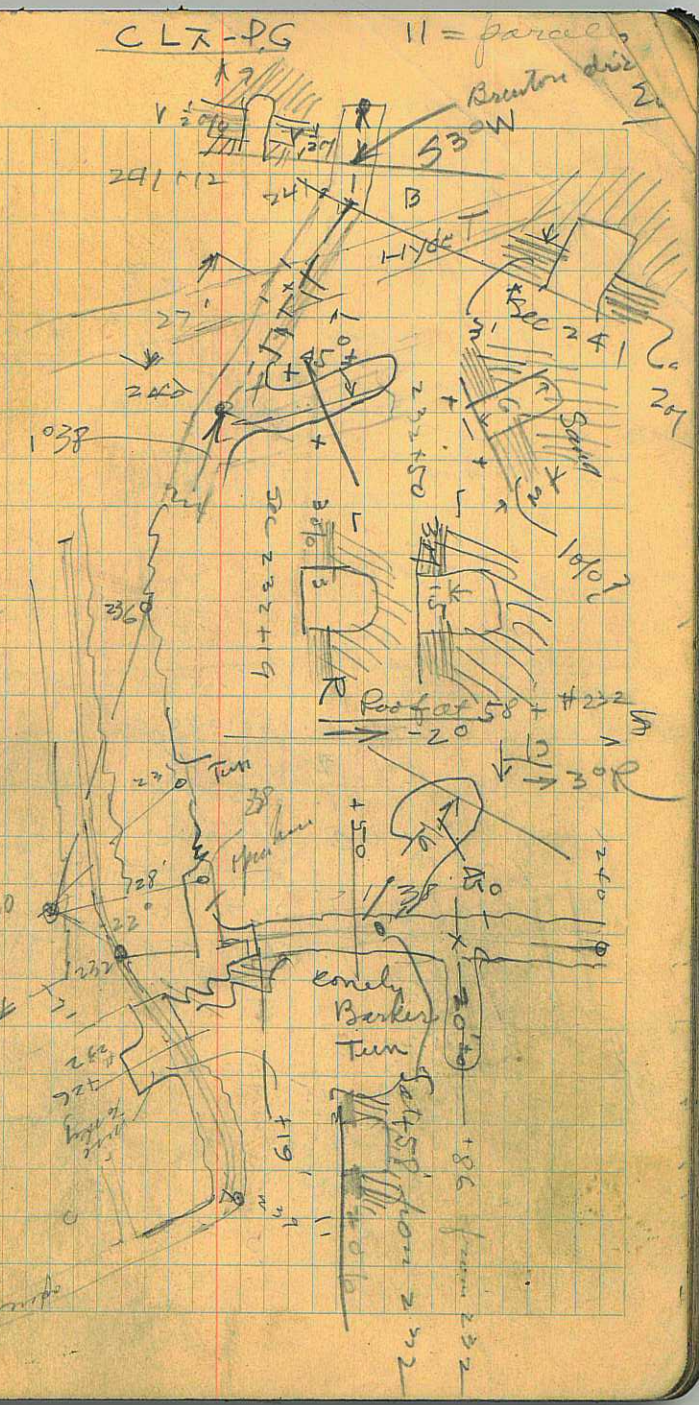
Elev

5996.4 ✓

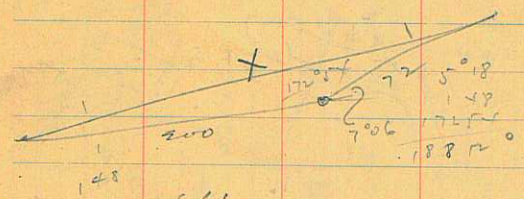
5999.0 ✓

5999.5 ✓

6001.0 ✓



9741
101.6
58446
9741
9741
98.96856



666
706

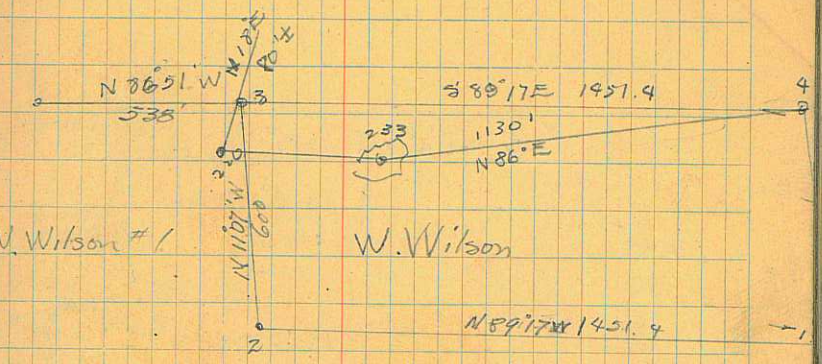
$\frac{x}{\sin 7°06} = \frac{200}{\sin 5°18}$

log 200 = 2. 301030
lin 7°06 − $\bar{1}$ 092024
1. 393054
log − 5°18 $\bar{2}$ 965534
2. 427520 = 267.6
sin 7°56 $\bar{1}$ 139944
1. 567464 − 36.94

272
2666
5.4

log L 2. 427520
cos 7°56 $\bar{1}$ 995823
2. 423343

265.45
44.45
309.45
989
407.35



Computation for surface line
218 and along surface tan − S 32°21' E

sin 27 28 cos 413
.46123 88728 44
50.1 50 369
46123. 44364.00 200
230615
23.107623

13°14
6°08.
sin .10685 .9943 cos .9734 .2289
200 200 72 72
21.36800 198.8600 19468 4578
70.1 68138 16023
268.96 70.0848 16.47
44.45
313.41 4133
99 3134
412.41 99.9
100 for ray

Surface Survey for the Hyde Tunnel

11-1-1930

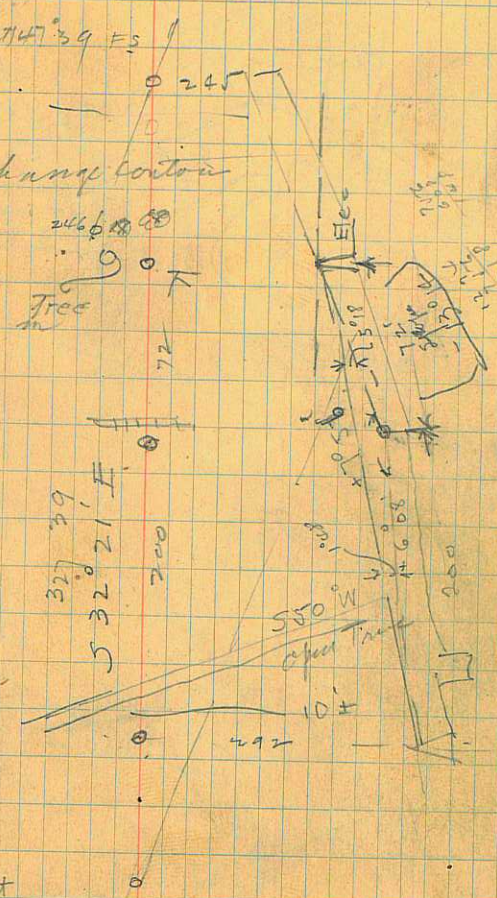
Pt.	AZ	Bear	Hor	Slope	VANG
246	165°45'	N14°15'W	103.1	105	-10°56
245					
245			Trial 412.4	101.6	+13°04
				105	+13
244a				34	+2°04
244					
244	327°39		90.1	72	+13°14
243					
243			198.85	200	+6°08
243				200.00	+6°08
242					
242	327°39	S32°21E	44.45	50.1	+27°28'
218					

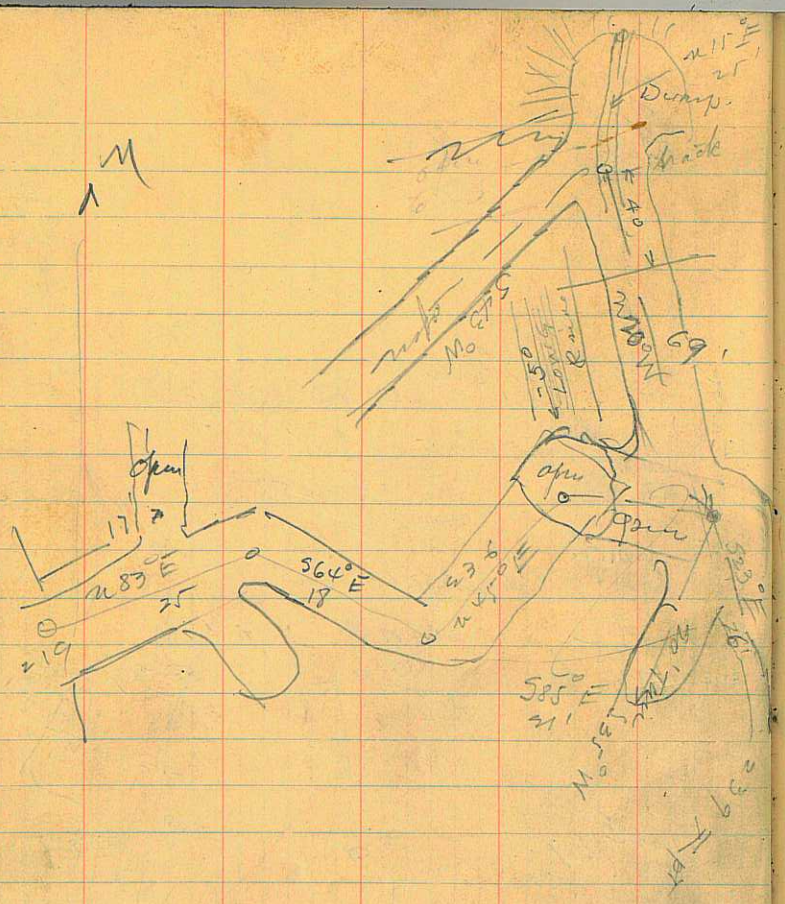
103½

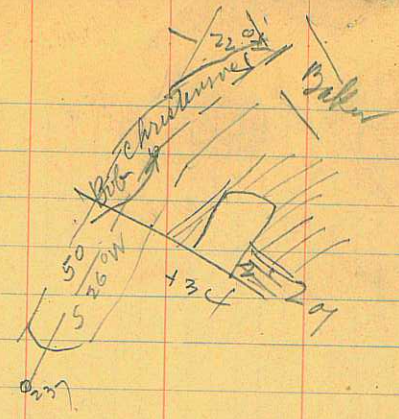
2261
101.6
13566
2261
2261 1 76
229

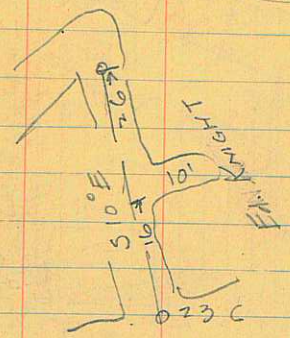
23.11
21.40
44.51
16.47
50.98
23
83.98

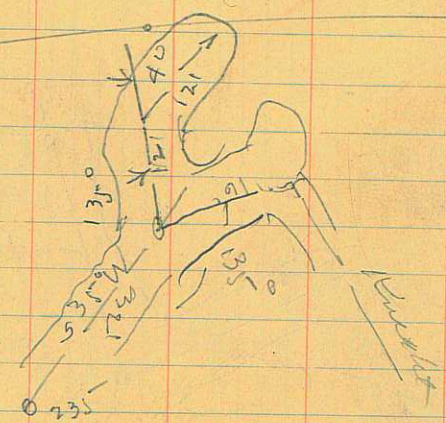
HT	Elev
	6043.5 Dry Cedar 1×2' S48°W 11±
K+21	6063.4 83.88 set 147°39 FS
	6041.7 62.2 change contour
21¾	6040.5 61.00
	6024 44.51
K+22¼	6002.6 23.11
K+19¼	0 set 145°30'30" to ℄ stackwaters

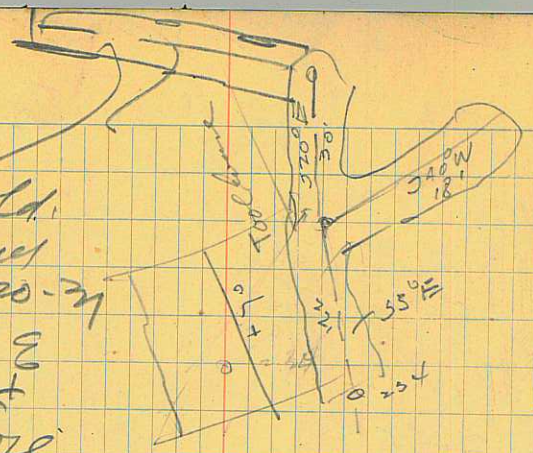



N
Dump
trade
open
open
open
N 83° E
25
S 64° E
18
S 85° E
21
N 11° E
25
N 69°
N 35°
N 35°
N 35


Bob Christensen
Baker
50
S 26° W
+34
237

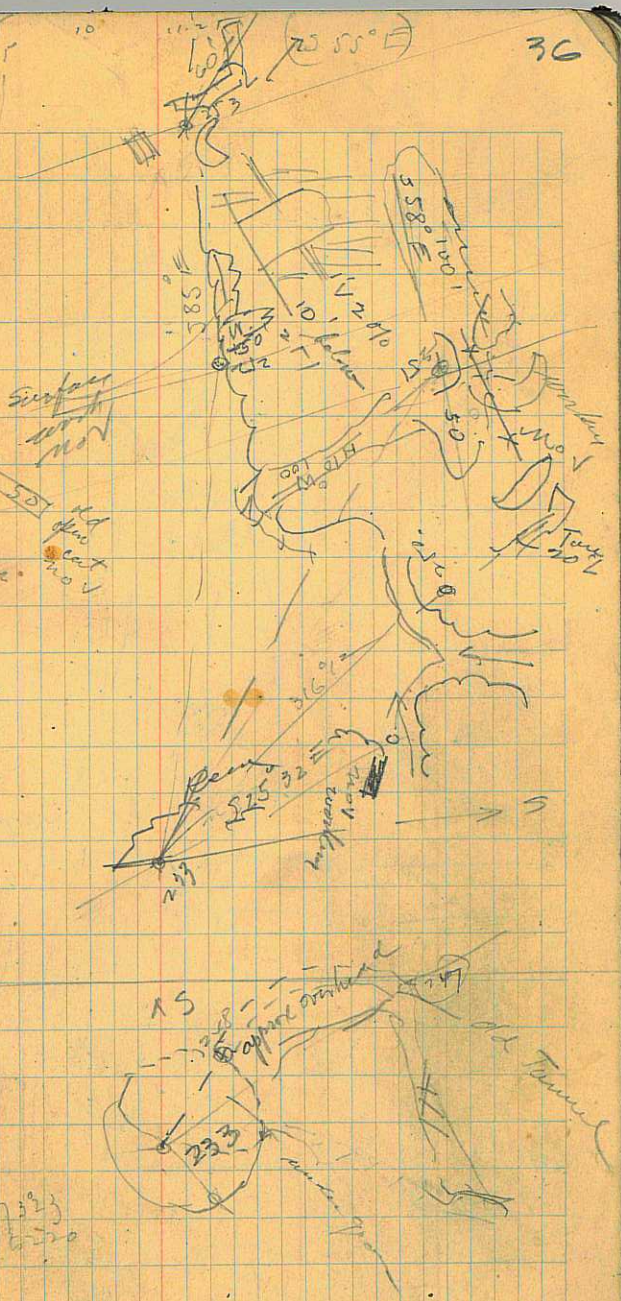

26
10'
S 10° E
16
Ed. Knight
23 C

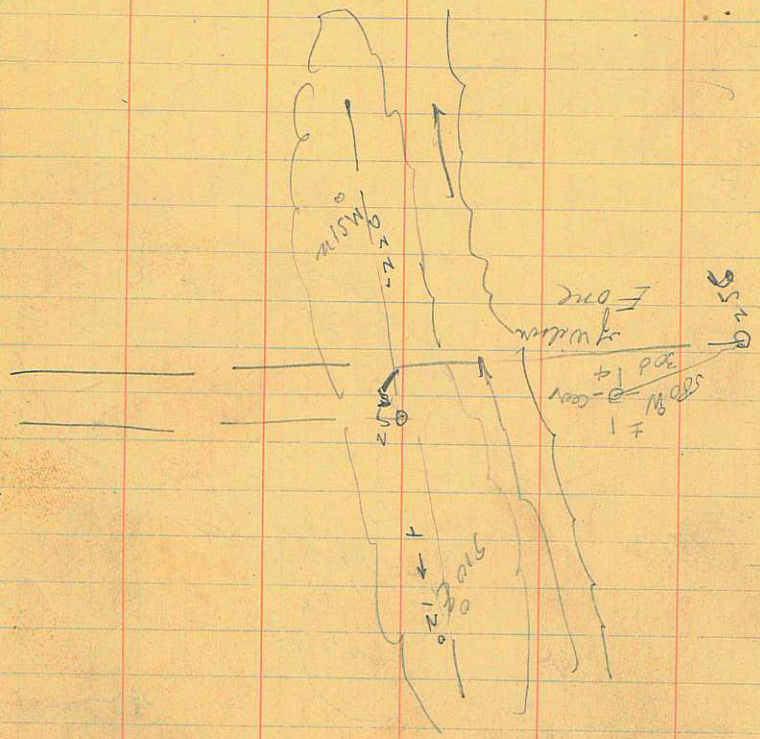

40
121
135°
S 35° W
235

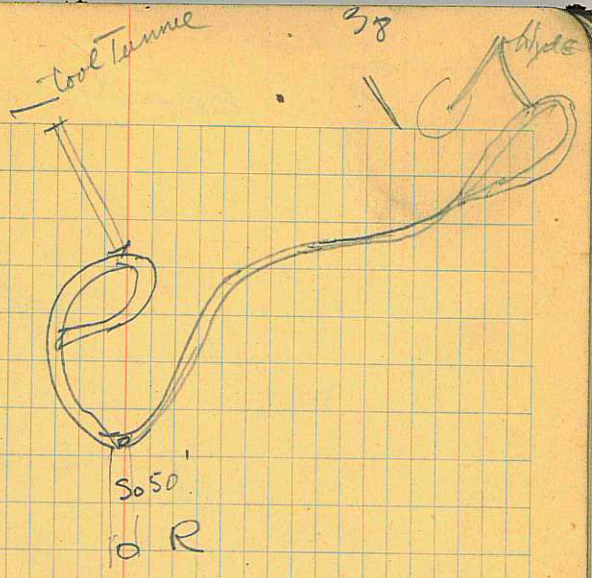

Old
found
4-20-31
S 86° E
35'±
no ore
S 20° E
30'
S 40° W
18'
55° E
234

4 - 11.2

P.T.	AZ	Bear or V ANG	Hor Dist	Slope or Elv	L	D	V ANG H H I
256	264°25				4.	11.2	-1°15' on rock
255	264°52				2	11.75	-1°30'
254	275			6042	4	11.61	+55'
253	275°30			6031	6	11.42	+10'
252	276°34	- 50'		6029	1.0	5.3	-50
stake old 251	311°01'	S48°59'		60.53	1.0	5.6	+2°15
250	316°12	+2°15		6042	8	11.42	
		N86°E					
249	334°28 25	+2°45		6040	9	11.6	
233				6033.0			6038.0
248	57°	+3°40			5.	5.35	
247	78°20	-3°18			10	11.25	
233							4.5

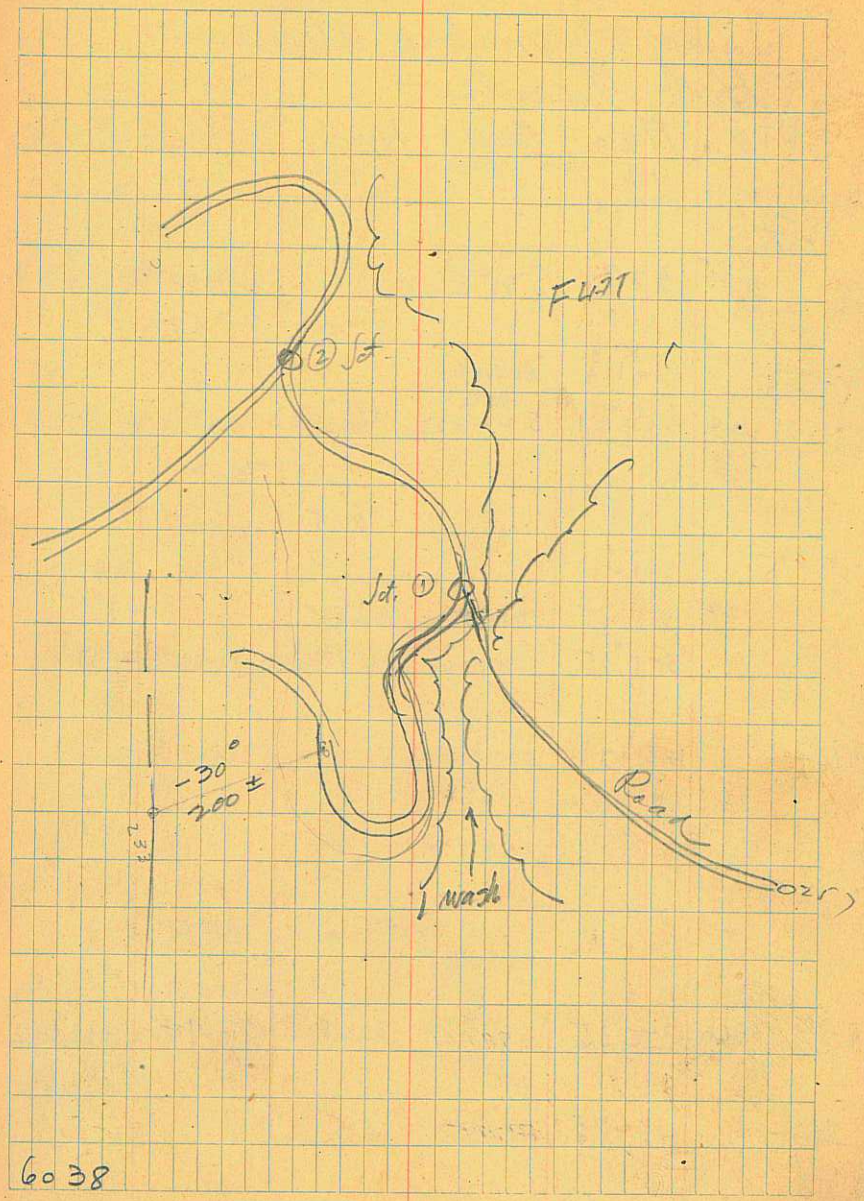





Cool Tunnel
Hyde
So 50'
d R

from Road survey 233.

	Az.	Elev	V ANGL	Stadia	Dist
(R)	156°10'	5901	-16°54'	7 - 11.6	423
	166°45'	5907	-15°20'	7 - 12	468
2 Junc of rd.	184°	5897	-12°54'	5 - 11.3	600
	193°10'	5906	-13°55'	6 - 11.25	495
	204°15'	5911	-14°40'	7 - 11.8	450
1 Junc of road	224°10'	5916	-18°35'	8 - 11.7	334
	235°45'	5917	-15°40'	7 - 11.3	400
233	261°40'	5947	-8°40'	6 - 11.82	570
233 π		6033			



Nov. 2 - 1930

Survey of surface alignment
Hyde Tunnel -

PT.	AZ & HI	Bear. & Elev.	Hor	Slope	V. ANG
	HI K 24"				
225 ⊼					
225	329°	6015.4 S 31° E		29.2	+0°41'
				29.63	+8°38'
224 ⊼	HI = K 11¼	6011.06			
224	337°17	6011.56 S 22 43 E	70.15	70.2	-1°50
				70.2	-2°
			70.15		
222 ⊼	+21½				
222	355 35	6009.1	116.52		+4°55
	355°35	5995.4	67		+37'
	18				
260 ⊼	HI 19½	5999.08			
260	355°35	5999.08	31.28	36.92	+32°02
218 ⊼	HI 18¼	5979.5			

12 1/4 / 67

36 1/2 / 19 / 55 1/2 / 21

335 35 / 15

157.8 / 28 / 116.52

36 / 11 / 47 1/4

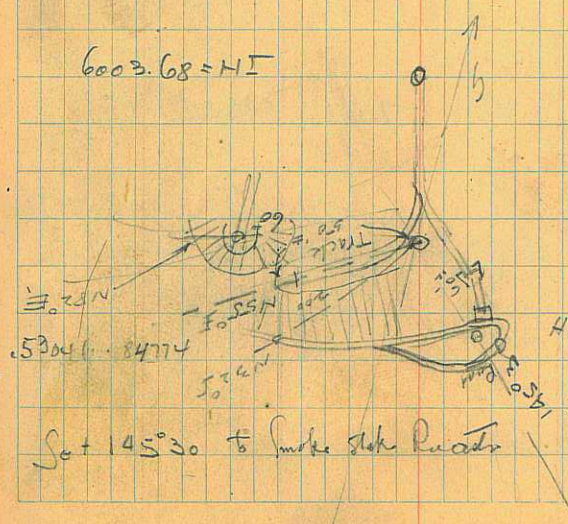
36 1/2 / 21 / 57 1/2 / BC / 21 1/2

HI

Sta	ave
6020.4	
℄ ⊼ to pt 224 must be 225	
6015	
℄ ⊼ to pt 0.5 above top Stab	Elev. Gr. 6010±
6013.8	
℄ ⊼ to pt 9' above shut	
6003.68 = HI	

11700 / 9962 / 17380 / 9962 / 94180 — 9962 / 11

116.52 / 9962 / 116.97 / 16900 / 9962 / 69380 / 59772 / 96080 / 89658 / 64220



.53041 . 84774 — 19.58 — 31.28

Set 145°30 to Smoke Stake Reactor

PT	AZ 4 HI	Bear	Hor	Slope	V. ANG
	348 05				
~62					
262	348 05	6050.6	132		+7°51
	109°53	5976	290	299	−10°
261	93°23'	6032±	32.7'		−1°25'
233		6033.0			
				Elev	
	345°47	S14 13E		6063.2	+10°57
246	HI 19"				
246	310°17		38.96	6043.33 39.4	+8°35
	310°33	S49°27E	39		
227	K+23				
227	286°00	S74°E	20'	6034.5	(0°?)
226	K+26 3/4				
226	258°20	N78°20E	mean Hor 95.2	6030.92	+9°23
225	+24" set 329°				

9 - 11.99 −10°

48
19
57
48
9

44

Sun, cor, Stadia

L C U

cor #6 N. Wilson #1

5.31

To cor #6 of Wilson #1 9 11.99

HI = 5

HI 6037

set 273°23

N 6038

HI

to end of brest over head

℄ brest pt to 4.75 on

Checks

6047.93

℄ X to 2' on 246

6039.45

FS = 20"

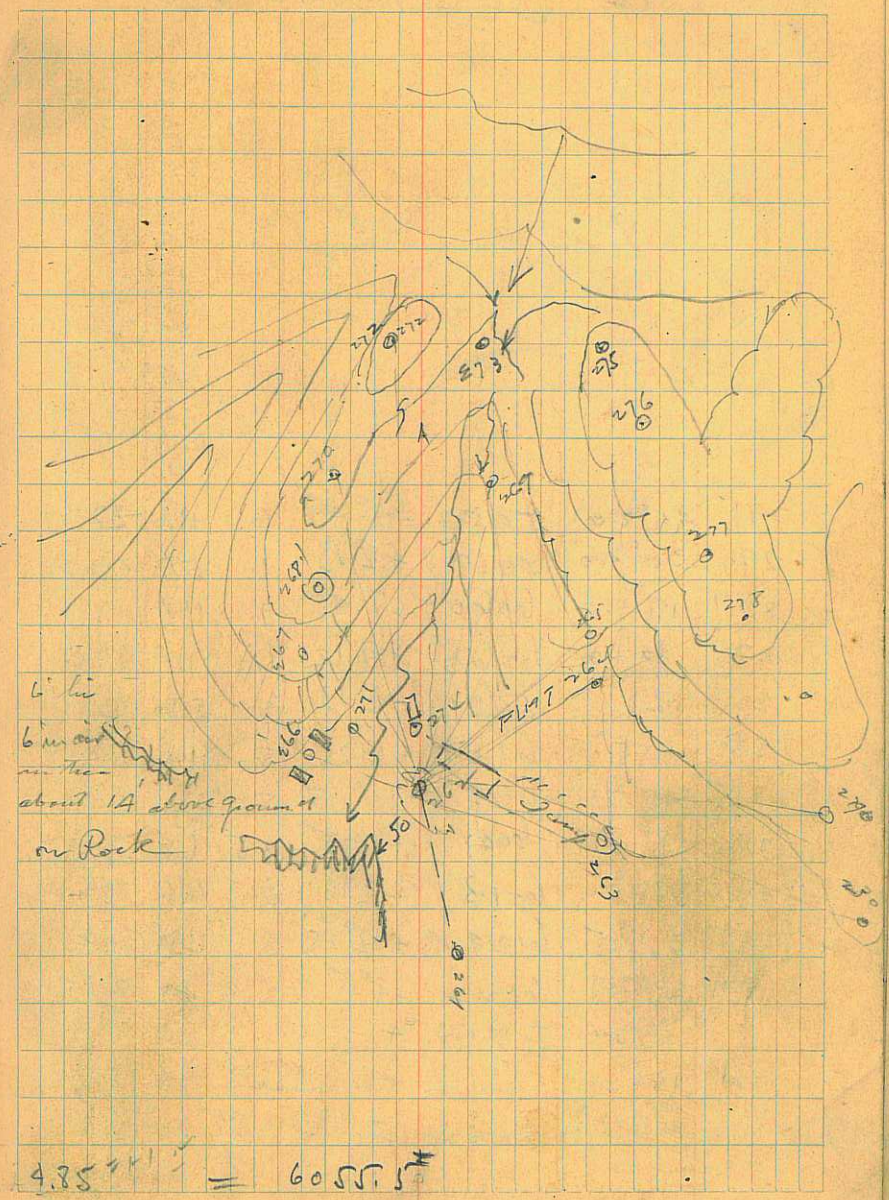
6036.62

6020.4

Topo on Wilsons
Nov 2 - 1930
Elev

280	121°30	6055	5°08	9	11.58	257
279	103°40	6048	-0°48'	3	5.6	240
278	67°30	6079	+9°30	9	11.08	203
277	52°	6098	+11°	3	5.1	240
276	31°10	6119	+11°14	8	11.8	366
275	26°50	6125	+10°	7	11.6	446
274	339°30	6044	-2°30	5	6.3	130
273	8°10	6104	+7°40	7	11.35	425
272	357°40	6111	+9°10	7.	11.1	400
271	315°40	6049	-0°20'	45	6.6	710
270	344°20	6092	+8°	8	11.35	328
269	6°30	6073	+4°43	3	5.7	270
268	330°30	6084	+6°07	2	5	292
267	307°35	6068	+3°	2	5.1	310
266	297°20	6045	-1°05	3.	5.9	290
265	62°20	6059	+2°30	4.	5.3	130
264	74°30	6045	-2°	55	6.7	120
263	113°45	6038	-5°25	5	6.25	125

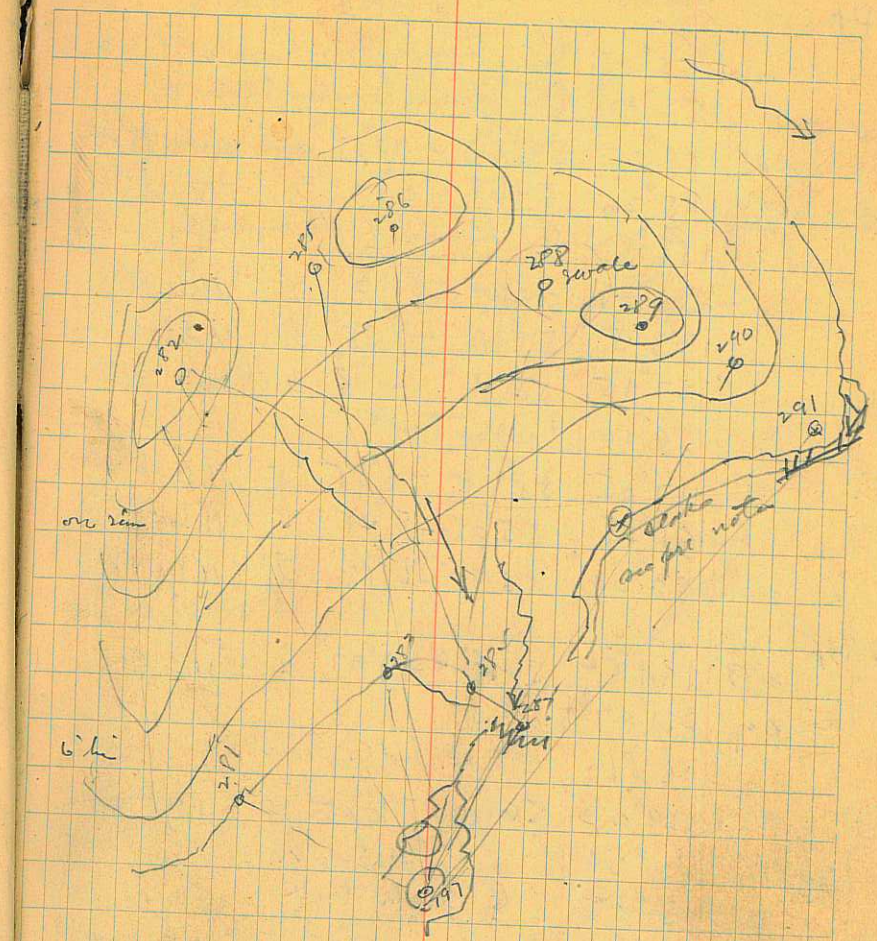
262 = 6050.6



4.85 = 6055.5

Nov 2. 1930

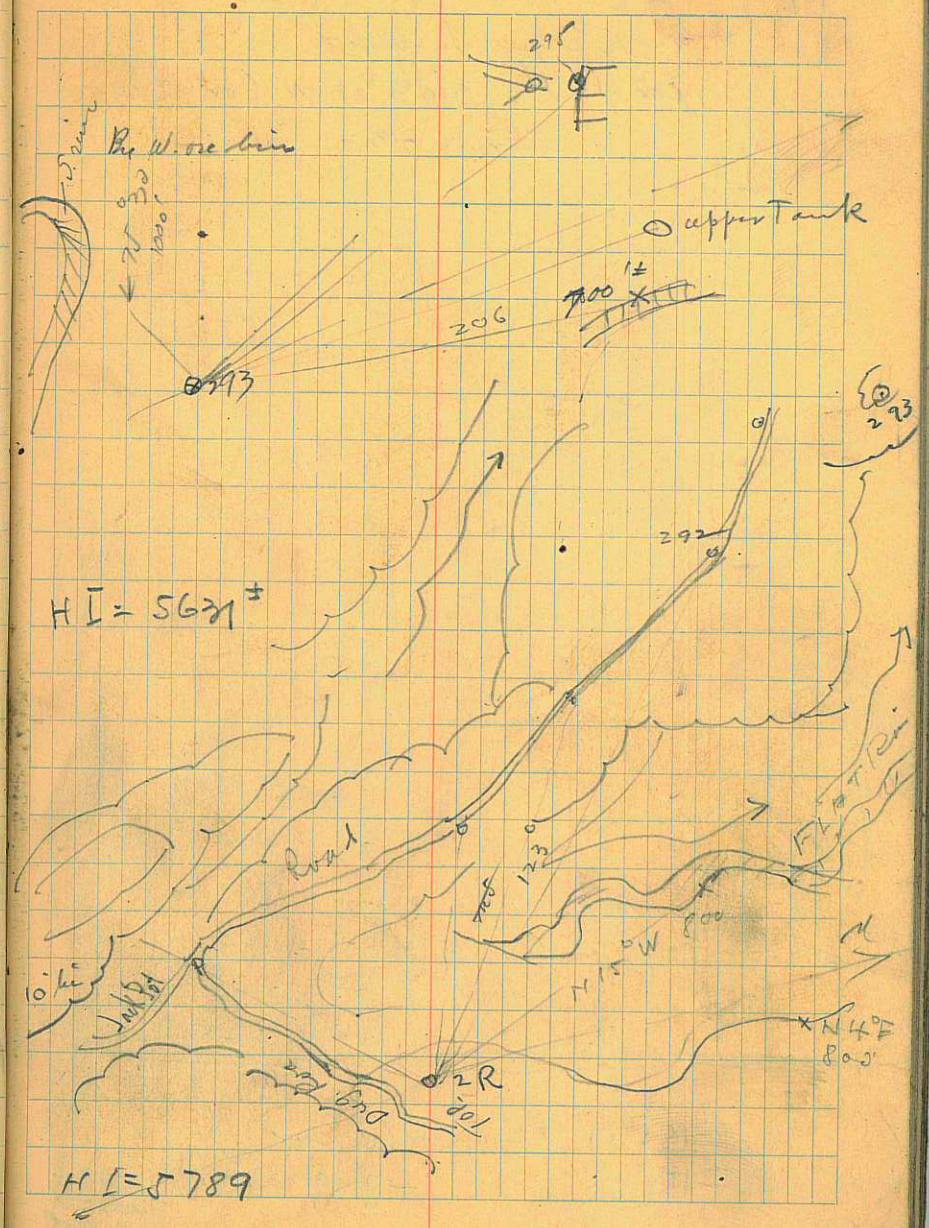
PT.	AZ	~~B~~ Elev	V. ANG	Stadia L	C	U
291	44°20	5989	-0°49'	6	11.0	500
290	30°40'	6018	+2°13	1.	5.3	430
289	14°40	6060 ✓	+7°48	7	11.8	470
288	6°10	6063 ✓	+7°12	6	11.4	530
287	21°	5989	-2°13	3	5.80	280
286	355°	6117	+10°25' ✓	5	11.8	660
285	345°30	6115	+10°05'	5	12.0	680
284	7°	6007	+1°25	3.5	6.8	3.30
283	348°	6013 ✓	+2°16'	3	6.6	360
282	329°25	6129 ✓	+12°25'	5	11.35	604
281	298°05'	6022	+4°15	2	4.8	280
	53°34	to W. cor. #4				
	156°10	SW cor Pit's House				
	6004.35					
197 F	HI = 4.35	6000.00				



set 53°34. Mob', HI about 25' above first pt West Indian Rock

Main Road Survey. Weltron VANG Stadia

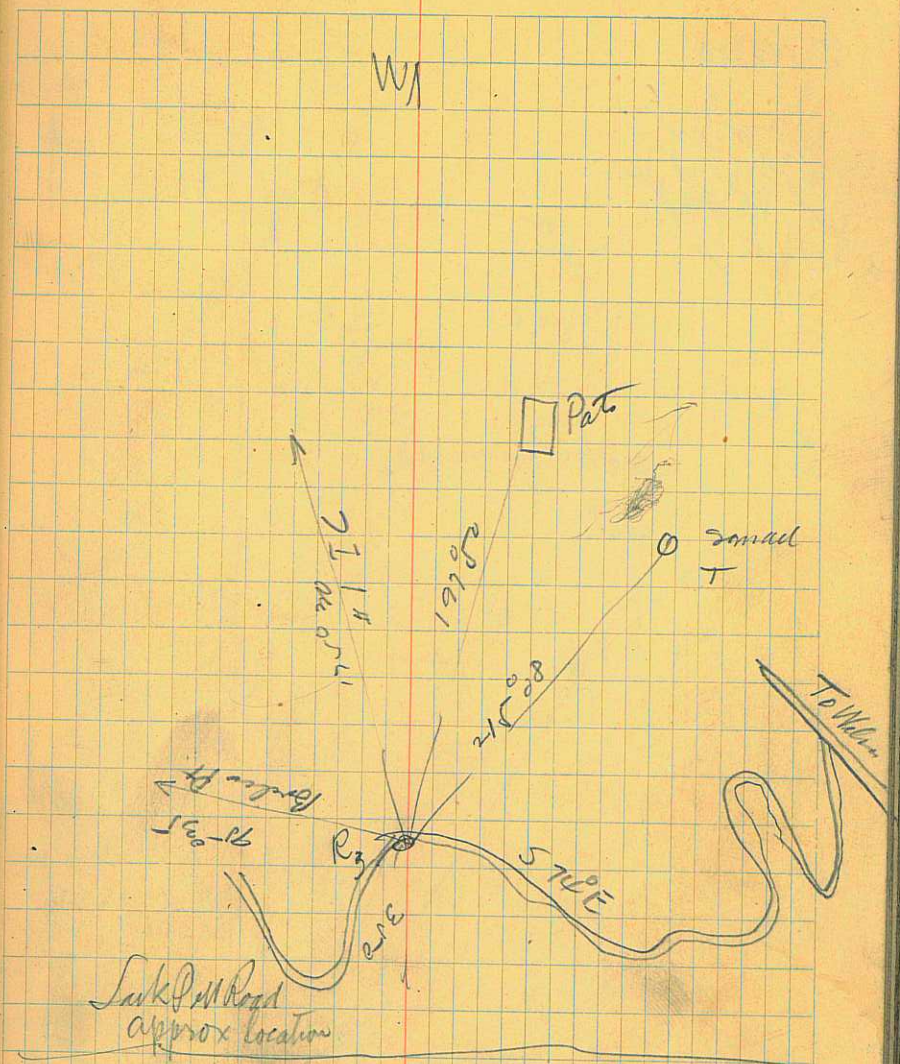
Pt.	Azm.					
	152°47					
	155°27	℄ Large Hor. Roaster Stack				
	152°42	℄ Steam Boiler Stack				
295	148°55	5486.3	−10°27'	2	11.4	917
294	145°20	5467	−10°27	3	11.8	850
	156°53	℄ Roaster Stack small				
	135°39	5495	−8°13	2	11.1	890
	133°15	5511	−7°55'	3	11.3	810
	127°45	5511	−7°03		11.7	850
	189°20	upper tank				
R	117°05	5545	−6°55	5	11.5	642
R	96°35	5585	−5°45	8	11.6	357
R	83°20	5591	−6°15'	9	11.8	275
293	144°50	5615.4	−9°47'	2	11.3	903
197	321°47					
	152°17	#1 of Ind Cr. Sur.				
	129°03	5610	−10°05	2	11.95	965
	160°34	Pat. Sur. cor				
	151°06	℄ Roaster stack				
	135°10	5643	−12°45'	5	11.9	608
197	131°07	5667	−12°08	6	11.5	526
	123°	5685	−13°05	7	11.3	410
	113°25	5700	−15°25	8	11.1	288
	79°30	5748	−6°47	9	11.7	266
2R		5784				



Pt A2 V. ANG Slading
NE cor Sack Pt. L C O
cor 1-4 S 43°23' W 600 to co
cors 2-3-

154°17 #1 of Ch. Cr. Sur
168°50 -7°39' 3. 11.7 5390
Δ Sol

293 ⊼



SW cor Pat house

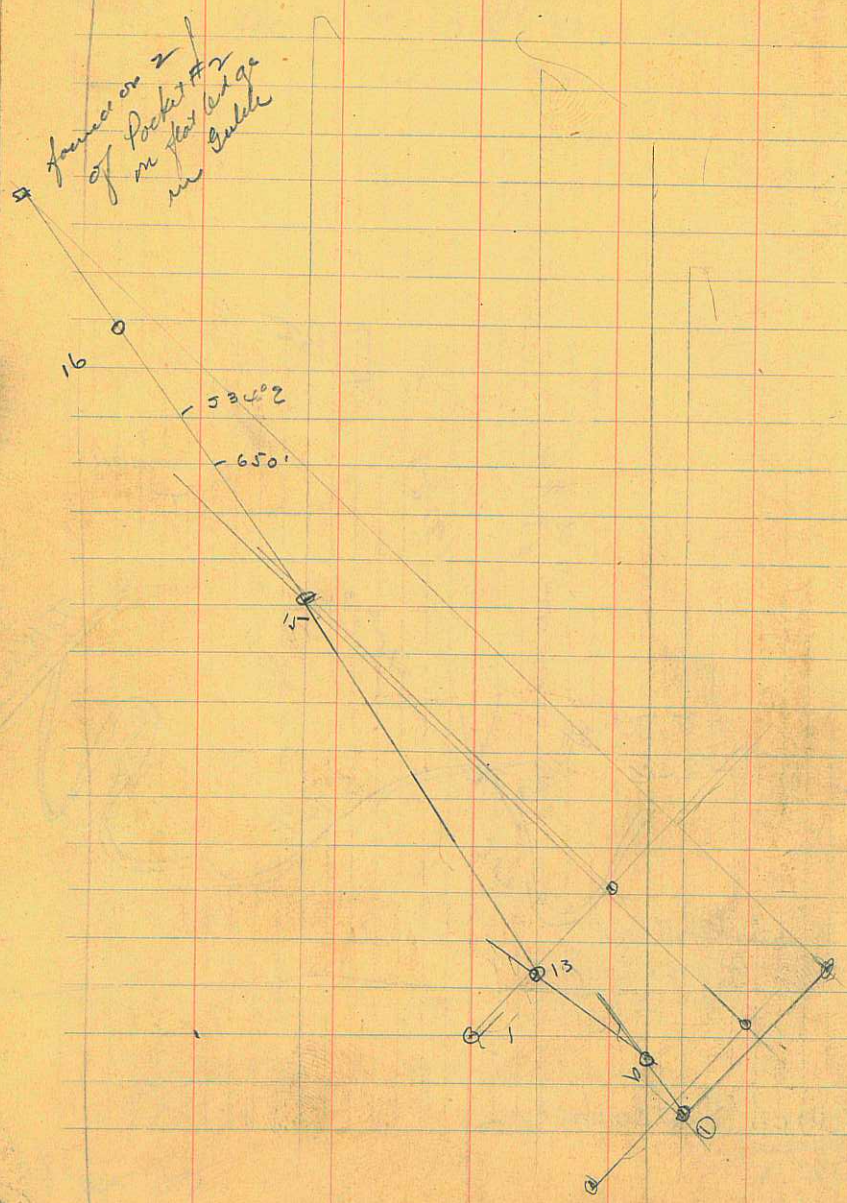
5631

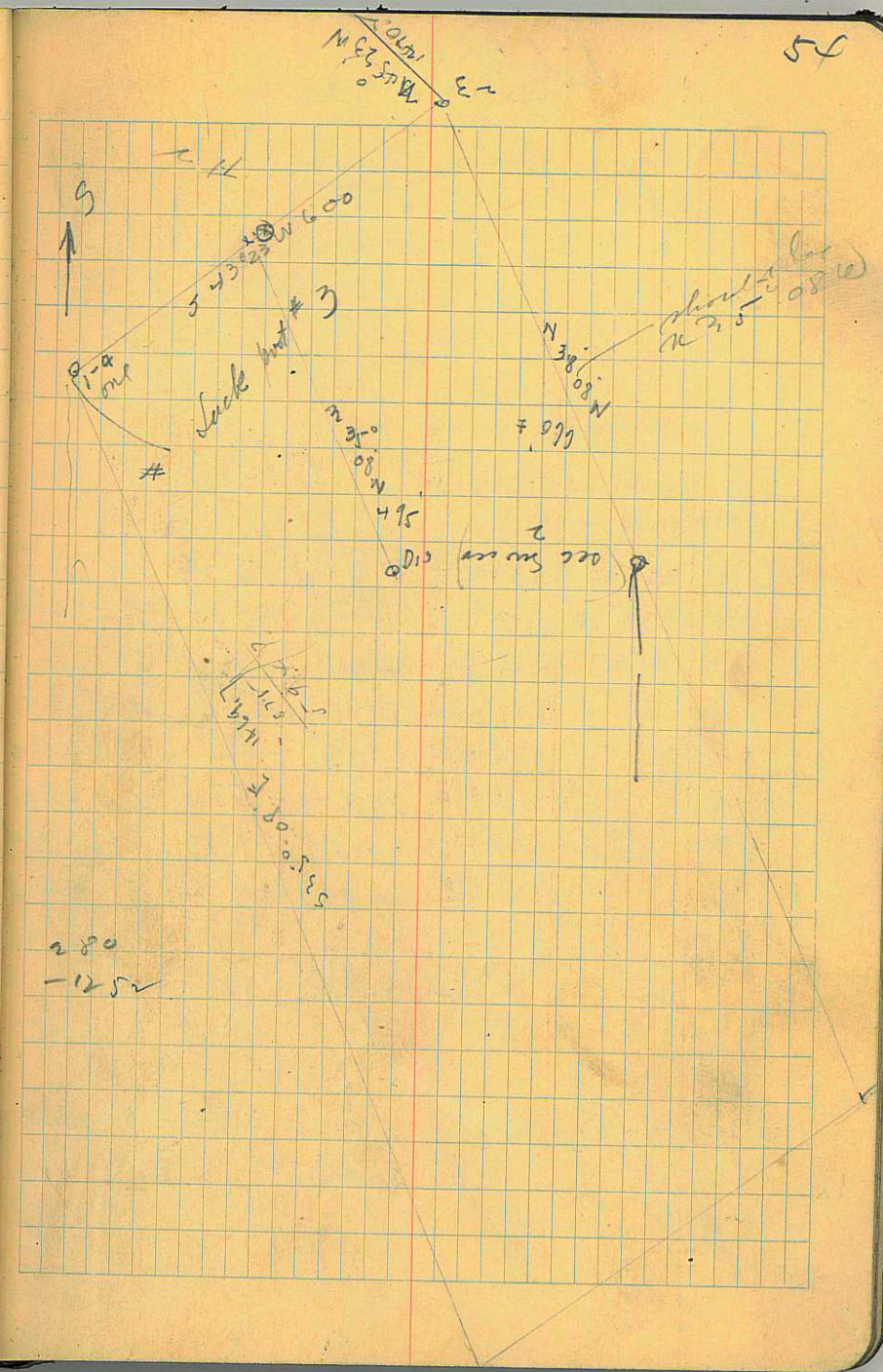
Pocket

Pt

① S43°23'W

found on 2 of Pocket #2 on flat bed ge in Gulch

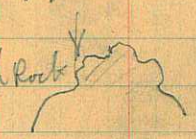


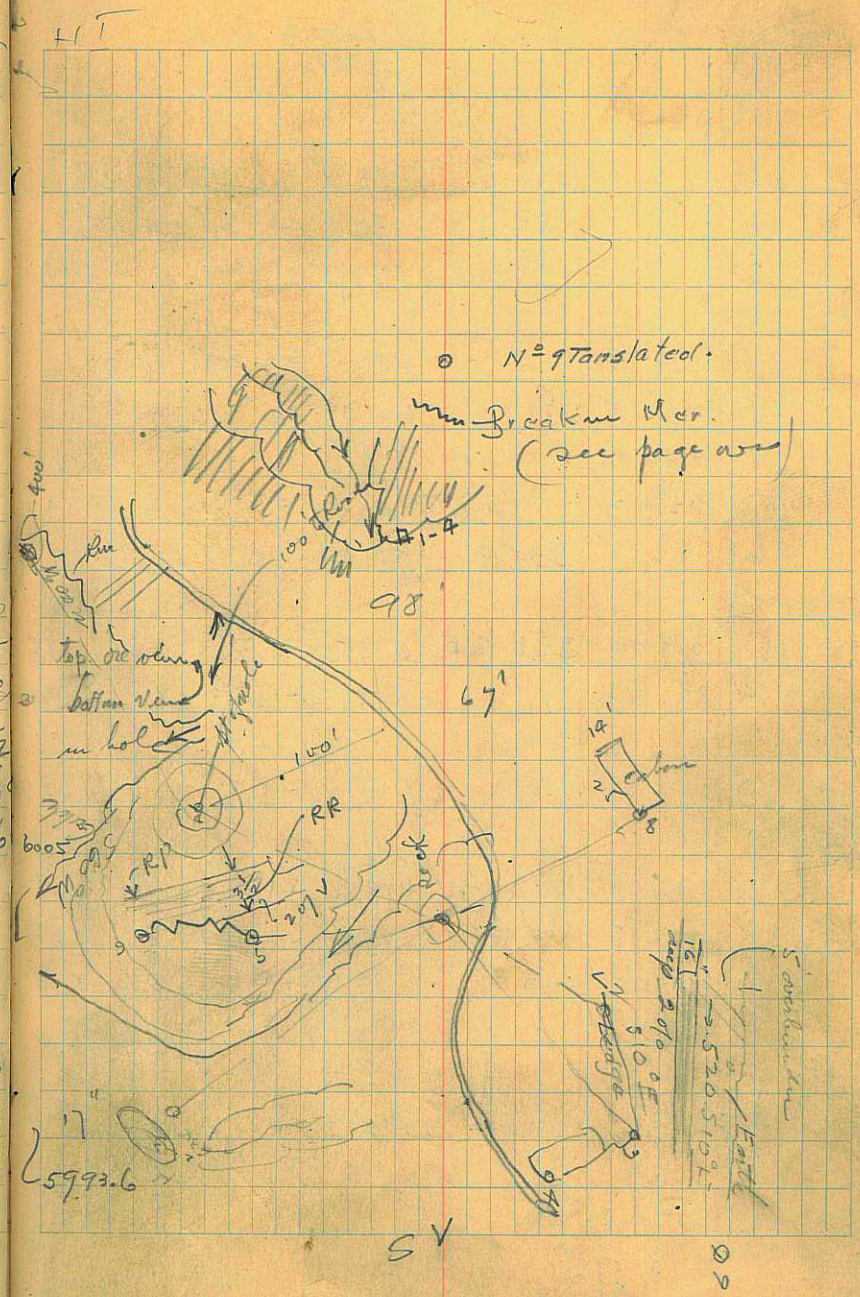


280
-1252

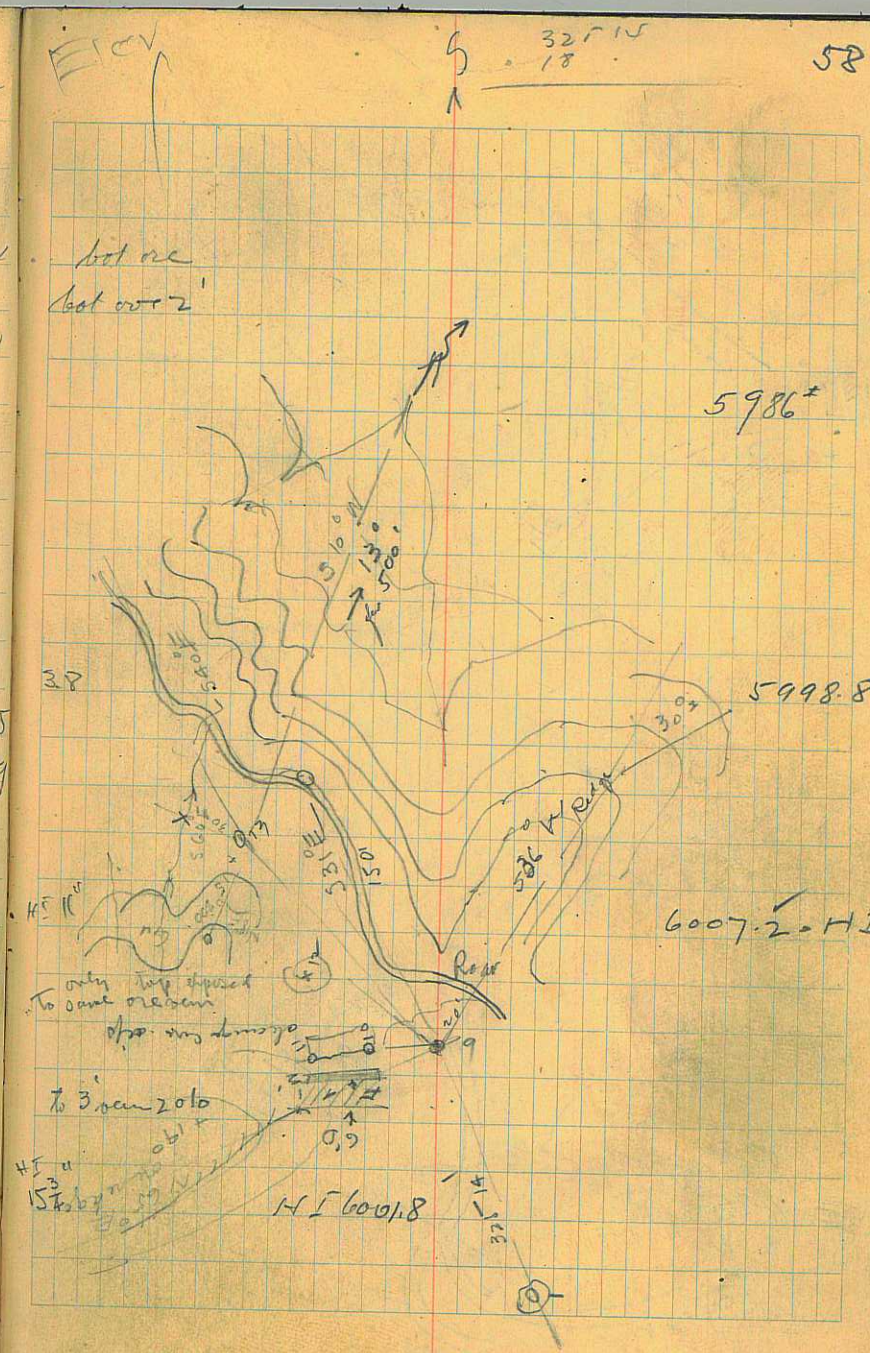
Jack Pot #3
Nov 3 - 1930 V
new numbers

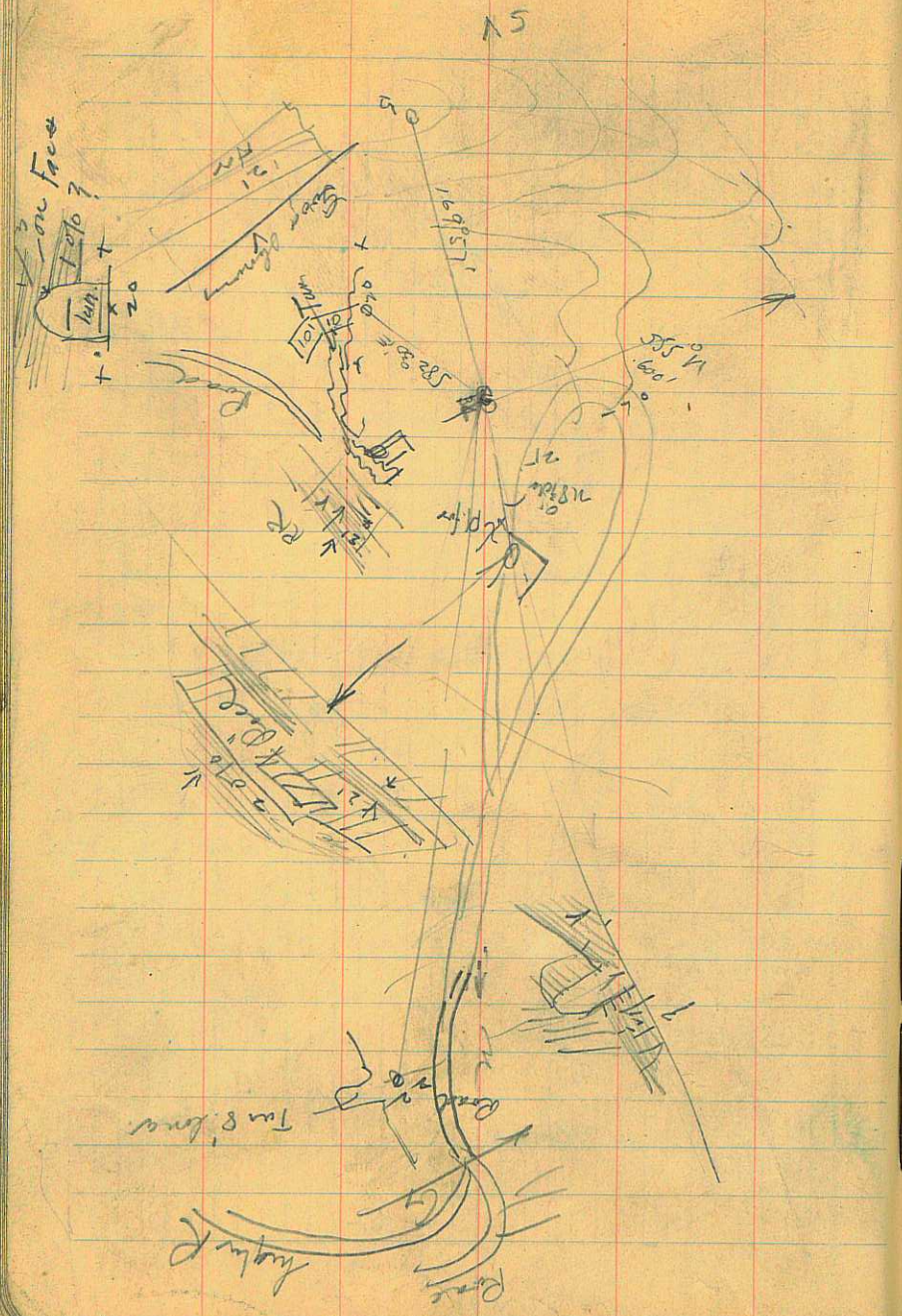
	Ay	Bear	Slope & Elev			
9	325°14	S 3°46' E	5997.5 / 87.4	+5°26		
8	233°30	N 53°30' E	5993.4 / Cabin	+3°30	5	5.86
7	111°47	N 68°13' W	6003.3	+9°	5	6.00
6		S 77°20' W	5974	-7°	4	5.25
5		S 72°50' W	5973	-8°15	11	11.68
4		S 21°39' E	5986.7	-55'	5	5.52
3	312°	S 48° E	5994	+4°30	5	5.6
N		S 58°20' E	5995.±	+8°	5	5.46
	59°31	to S Church Rock				
cor 2-3 S. #3-2	43°23	266' hor	5928.4	-12°52'	3.0	5.80
			5889.25			

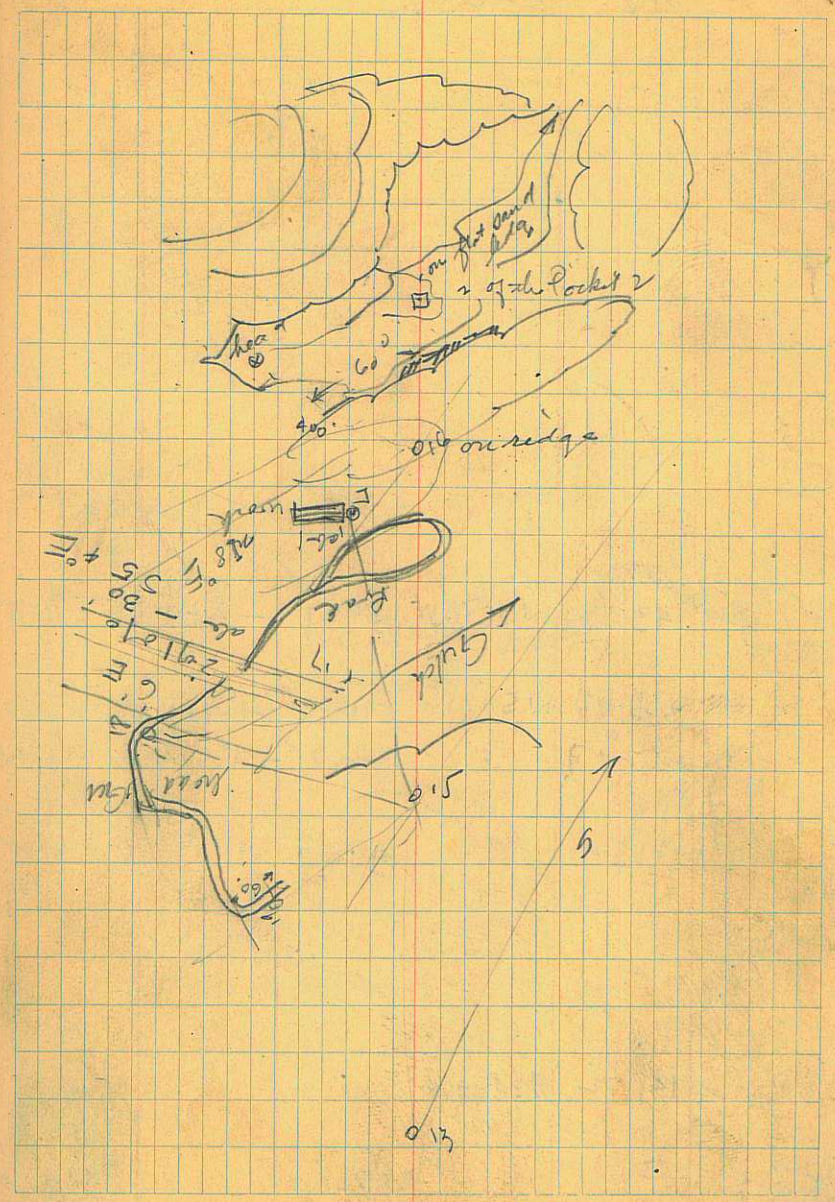




Pt	Az	Bear	Slope or Elev.	VANG		Stat
22		N7½°E	5983.3	+6°45	11	11.74
21		N59°11'E	5980.4	− 30'	5	5.41
20		S82°30'E	5979.	−1°30	5	5.61
14						
14	169°57		5981.	−3°33	3.9	6
19	205°47	Road	6010	+2°34	2	5.2
18	282°01	Road	5973.0	−4°15	2	5.19
17	312°43	to work pt bot	5958 2 ore V	−5°30	2	5.89
16		S34°E	5943.	−6°45	1	5.49
15						
15	328°20	S31 40'E	5995.2	− 55.	0.0	5.75
14	316°51		5981	−2°24	8	11.89
9				−3°05	HI 136.6 on pt 9	
13						
13	306°58	S53°02E	6003.1 179.6	+1°50		
12	276°15	S83°45E	5993.7	−2°30'	5	5.6
11	243°55	N63°55	5997	+ 20'	5	5.53
10	252°40		5993	−6°31	5.75	6
9			5997.5			







	Az	Bear		V ANG	Stadia	
cor 2 Puzzle claim	143°50	N36°10'W	5927	−2°20'	6	11.95
25	230 28	N50°28'E	5952.4	−1°30	5	5.82
24	262°07		5946.3	−1°50	1	4.44
23 T 23	141°52		5954.7	+1°55	3	11.75
	141°52	N38°08'W				
cor 2-3 Pock. 2-3 T			5928.4			

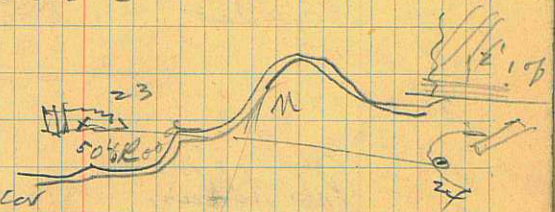
66
8
128

875
660
215

14152
3808
17960

prospect bears N 20°E 100' on Lode line

Pinion 6" air bears S82°E 21



to stake may be sector

5960 ±

3 43°23

= 5933.0 ±

Nov 4 - 1930

Survey of Mill

Site -

set on cor com. to 27 | 26
34 | 35

Tp 30 S - 24 E

6th Stan Para So. = 38° 09 30"

one mile N = 52.19

38 09 82.19

= 38° 10 22

Long. 112 07

Co-Lat = 89 59 60

38 10 22

51° 49' 38"

89 60
38 11
51 49

Pats House SWW

1 286° 07

2 286° 07'

3 06

4 286° 06

27 26

N 89° 55 E 79.62

34 35

070 60 36 24
100 12 24 15
120

4 60

112 60
46.54
5.5

112.12 15
105
71
111

9.48 12
9.48 hours
4.52

23270
23270
255.970

9 50
5
4 50

4.50 hours for 9:30 am

256 160
290
160
120
40

4.16" 15 14 22.5
3 29.5

46.56
4.50

46.56
4.55

15 13 82.5
3 29.5

15 10 53 0
2 4

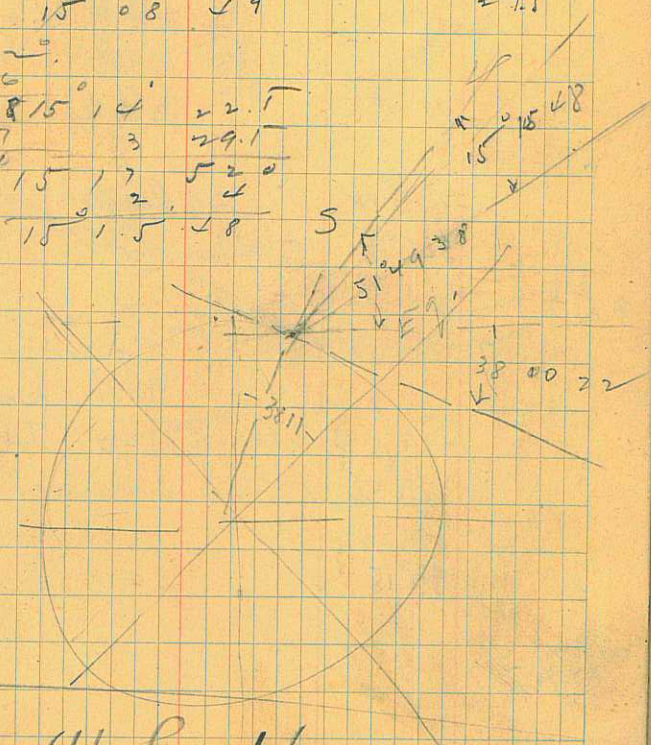
net L - 15 08 49

23280
18624 60
20952 06
180 3
29.5

15° 14' 22"
4.16
15° 18' 38
1 37
15° 17' 01

15° 14' 22.5
3 29.5
15 17 52 0
2 4

net 15° 15' 48



W. L. Hudson

Survey for

27 | 26
34 | 35

172 Bear Dist. Hor
90°51 ℄ Roster Stick mace
see over

4 — 4 South 1328
0° South 842 peg

3 — 3 269°52' 2628.8 fell 8.15
2323.0
2000 pins
1394
1336.7

339°12 to ℄ Roaster Stack
346°18 to Wilson cor

2 — 2 1317
1215 Tele line bears S20°E
964 Road to Indian Cr.
920 To Rg Bea N60°W ±

go
269°52'
359°56'
286°07
83°15

cor. 26-27
34-35

66

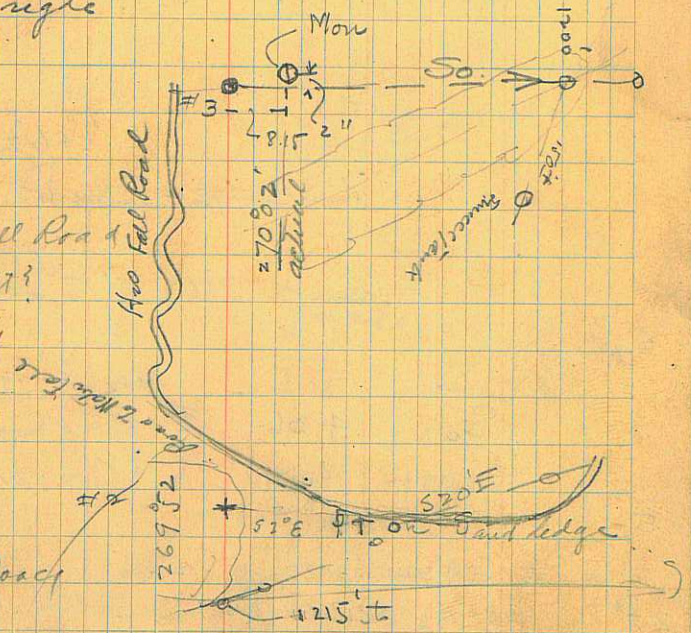
200
117
83
1317
1317
1317
1336.7

89°55
26955
105430

1317
102
1215
200
123
77

13241
13007
2342 (7962
39.81
66
23886
23886
2 (2627.46
1313.73
1317
1313.73
3.27

On sandy ridge



To H2O Fall Road
To F △ pt?

paro. other Roads

to Stake on sky line should be 359 59'
to Pats SW cor
to Stake on white Rock

PT	AZ	Bear	Dist Hor	VANG Hor
				+6°20' 200
			245 Road	
			107	to ¢ wash
6				
6	So	706 –	peg change pin	
	So	436	to Roadbear SE	
	SOUTH	4.07	to ¼ of ¼ cor	
5				
5	89°52	S89°52'W	2.60	
2				
	55°37'		57.5	Pine 14" dia
	180°57		64.2	pine tree 10" dia
4				

68

$\frac{2627.5}{2628.8} = \frac{1313.73}{x}$

$\frac{2628.8}{2627.5} = \frac{x}{1313.76}$

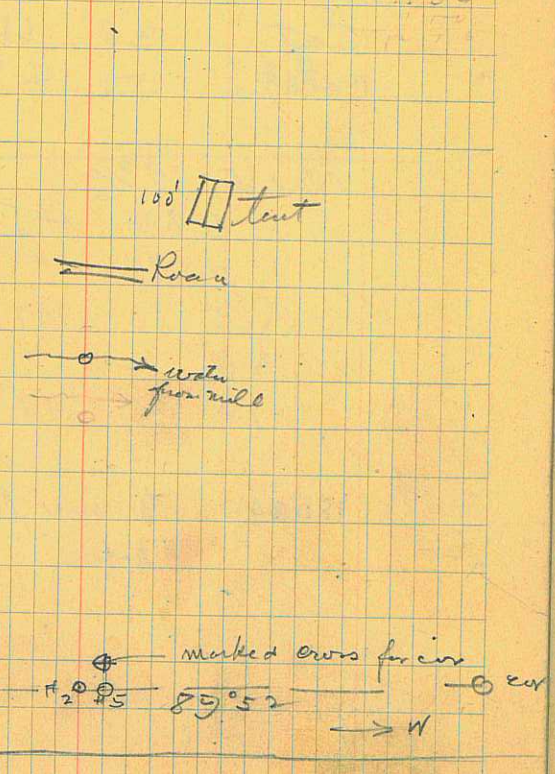
2 (2628.8
1314.4
1317
1314.4
2.6

Total Dist Hor	
398.8	100' ▯ tent
245	to Road ═ Road
200	

water from mill

marked cross for cor

H_2 H_5 89°52 cor



→ W

⊙ cedar stake 2½" dia

Nov 5 - 1930

Ob on # 6

of Site Survey

8:30 am

$\delta = -15^\circ\ 33$

Lat 38° 11'

Collat. 51 49

Nov 5 - 1930

1. 86° 45' → to White Rock

2 " "

3 86° 47 " "

4 " " } used ANG to

5 86° 47' } white Rock

180° 4' to our line of the day before

^6-

89 56

89 52

89 56

06 8

1.00116

1320

2320

348

116

1.531 20

B. D. Hatch — nov 5 - 1930

started 9:30am +11°40 200

72

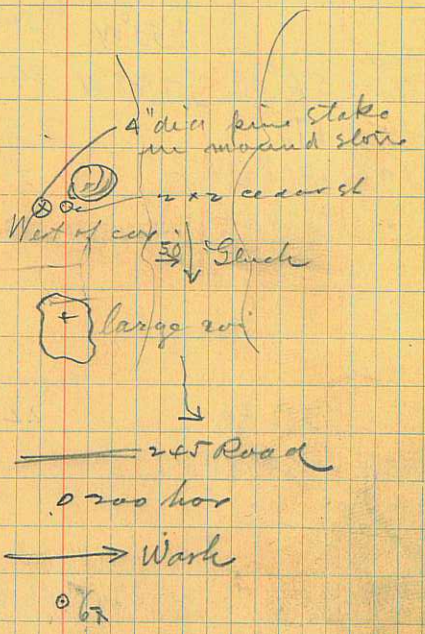
	AZ	Bear Hor	Slope	VA 1-76	Total Hor
	254°09	△ point			
	253°53	SM cor Pats house			
	329°45	A on pt rock Road sur			
	320°33	℄ small stack Ponstow			
197	326°93				
6					
9	229°57'30"		108	−3°10	
	89°16'	To Stake on White Rock			
	270°07	hit flag 4 S0°04W 1320' of M 4 cor 35			
8					
8	270°06		164	+4°40	
7					
7		23.4			
		195.9	200	+11°40	
		198.8	200	+6°20	
		200	200		
	0°04'	S0°04W	107		
197	326°43		℄ to pt. 197 +10°02'		
6					
6		706			

set 180°04

HI 4.0

1324.1 to pt 1.53 West of cor

1300.7



to wash a?

set 180°04 BS to 5 on new cy.

Ob nov. 5 - 1930

Pt	Az	Bear	Hor	Slope	Elev
15					
14					
13					
12					
9	23°59 ✓	on Rock			
11	283°53 ✓			+3°30	7 – 11.65
		West	for 3000'±	-1°40	
		N53°W	for 1500'±	-2°10'	
mill-site cor	56°08	S56°08W	75.5'		
	177°		1.85 ft. To SW cor Pats House		
197	336°21		To F on pt of cliff.		
196	352°46		to nw cor W Hse		
△10					5390
	322°40		229.8		
10△	254°09			582.15	+1°08
			187	to tele line	
		N74°09E	160	to Road	
	254°09	N74°09E	along base towards Pat's H		
6					

Elev (156°10 / 197) CP 400 (172°24) 200 / 17.85 / 182 15

00116 / 1320 / 2320 / 348 / 116 / 1.53 120

74

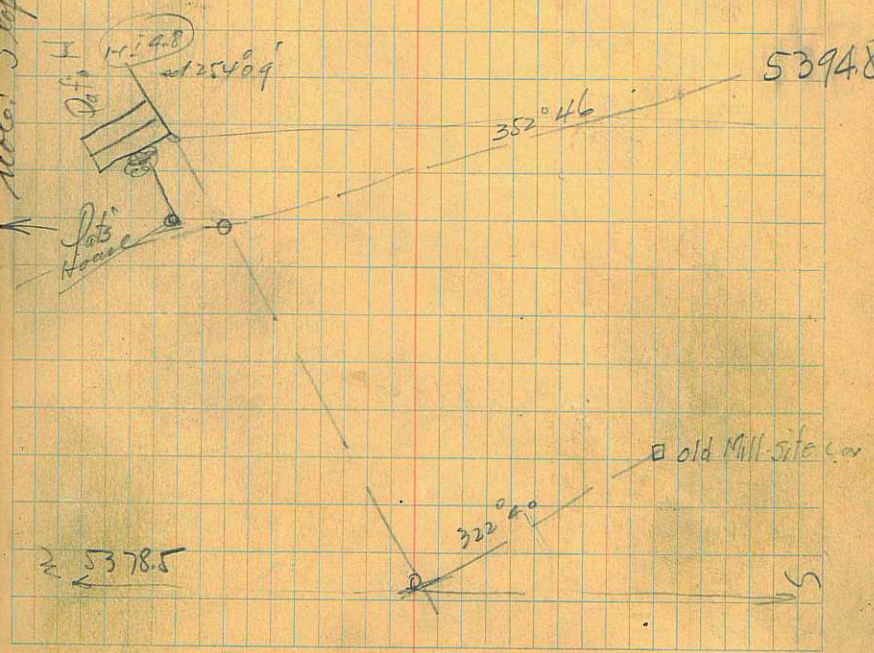
CP = con. Point

on CP base Rock plane
on CP base Rock plane
on CP base Rock plane
on ridge 4½ above G

0029 / 600 / 1.7400

5414
on ridge con. pt

note: 5 lap west for ½ mile -1°40'



Mill properties nov-5-1930

PT. A2 Bear

Nov

21

20

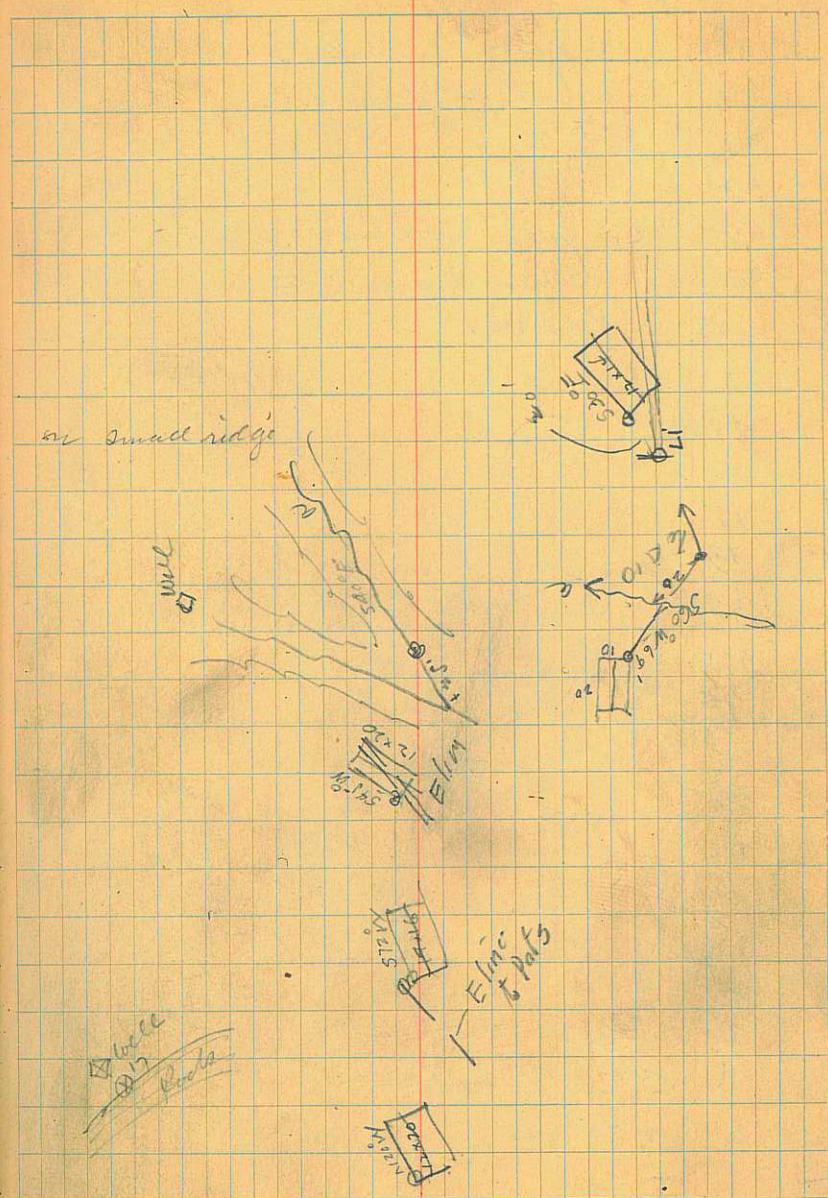
19

18

17

16

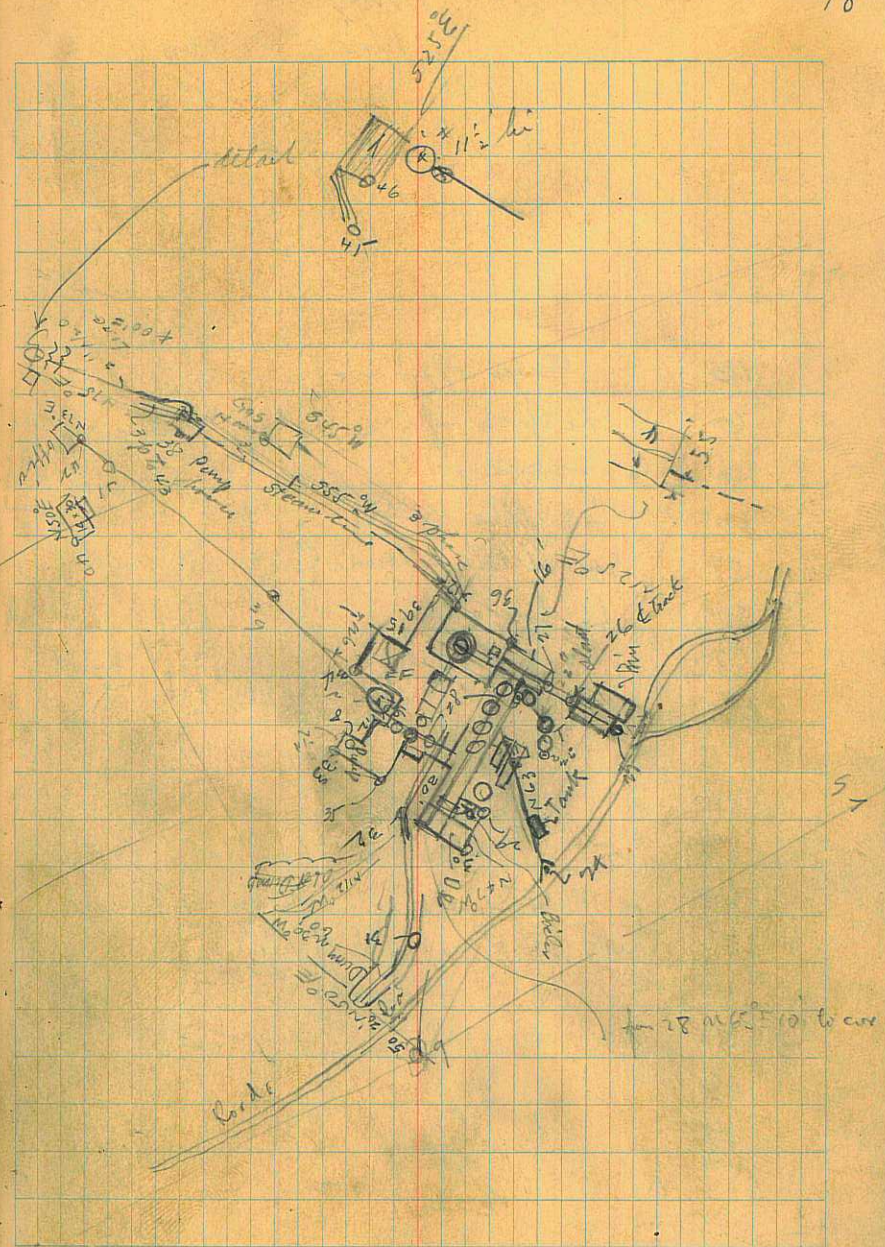
10 Δ



A2

46
45 3 phas 2" Blk pipe
44 3 phase 2 Blk pipe pole
10' at ⊥
43
42
41 L. pole with Light & Tele
40 Sewer Assayer cab
39 Pole 110V
38
37
36
35
33
32
31
30
29
28
27
26
25
24
23
6 155°56
Δ10 203 59 FS

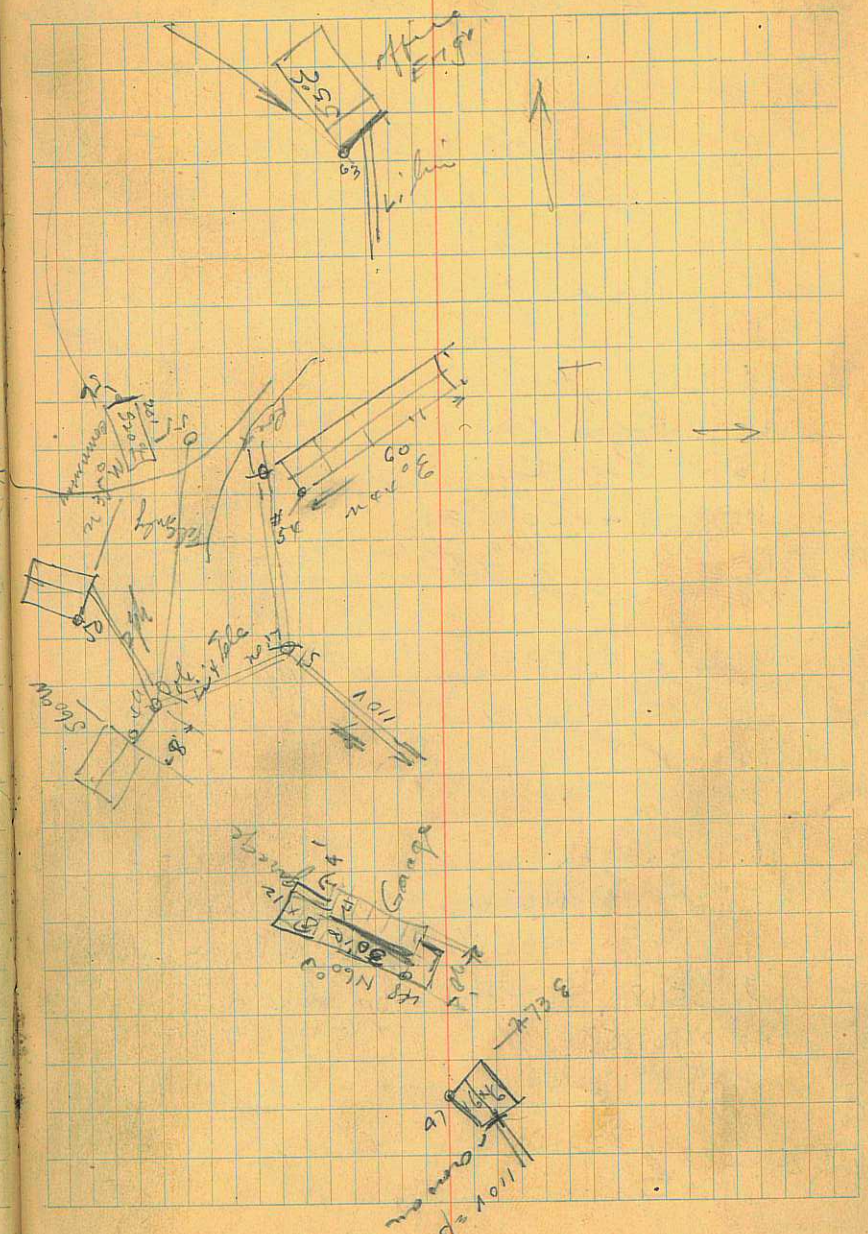
9



Millsite Survey
Nov. 5 - 1930

63 Energy office
62 Li pole for Li only near cabin
61 ℄ scales
60 Tele pole only
59 in Water channel
58 Li pole only
57 Li pole only
56
55
54 SE cor cook house
53 in water channel
52 Well near Cook House
51 Light pole only incl light
50
49
48
47

9



B S47°W = Brunton Ob. 270 05

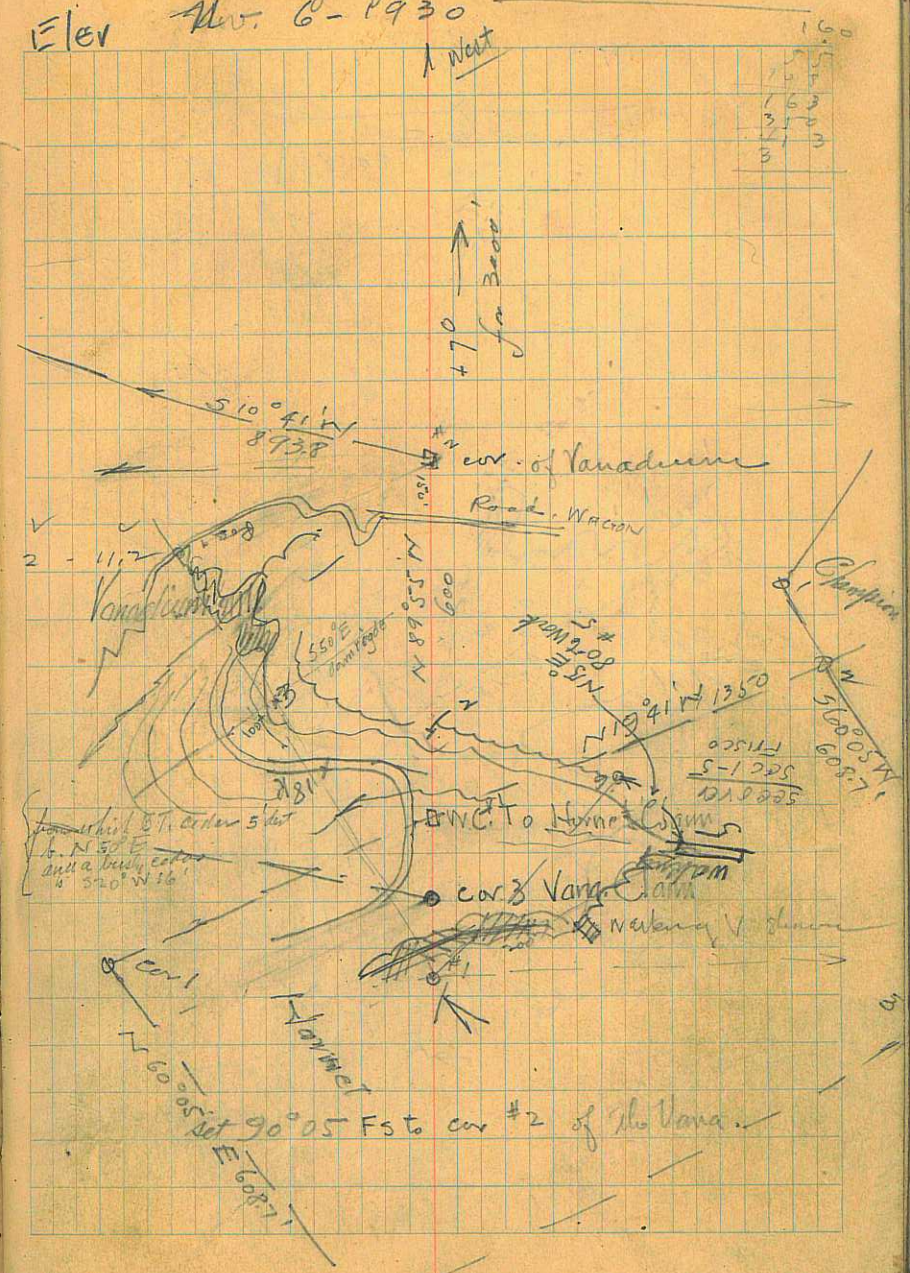
Pt	Az	Bear	Hor	Slope	VANG
20	R				
19	R	opp. WC #1 of Hornet			
18					
17	R				
16	R				
15	R				
14	R	see (over)			
13	Road				
12	Road				
11	359°42	S0°18'E			
10		Ledge practically a — line from 9 a stake no marks apparent under ledge			
9					-1°39'
W.C. 3-4 6319 #8		S19 55'W	BT S40°W 17' cedar 18" dia		
7		BS47°W			
cor # 2 of V					
6.	cor has it in Blk. Bark				
5		N60°W	550±	working	
4		N58°W	350±	on ledge working	
3	35°18	to Pitts Lode stake on pt on V. Ledge by Pitts Stake			
2	90°05				

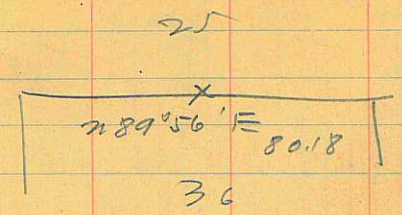
1

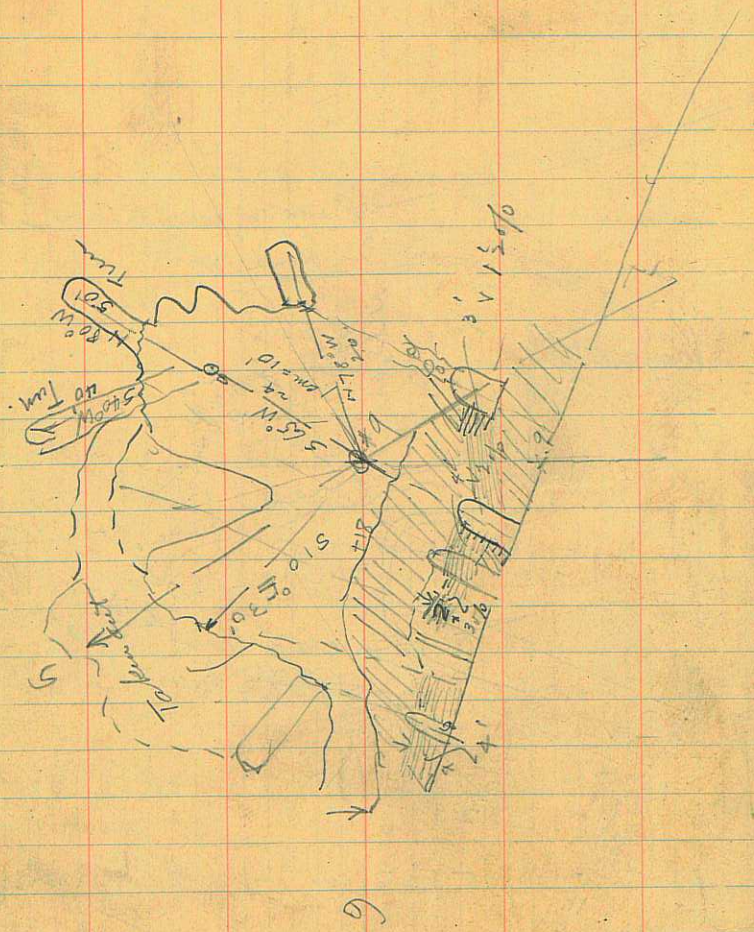
Survey of the Frisco Group 82

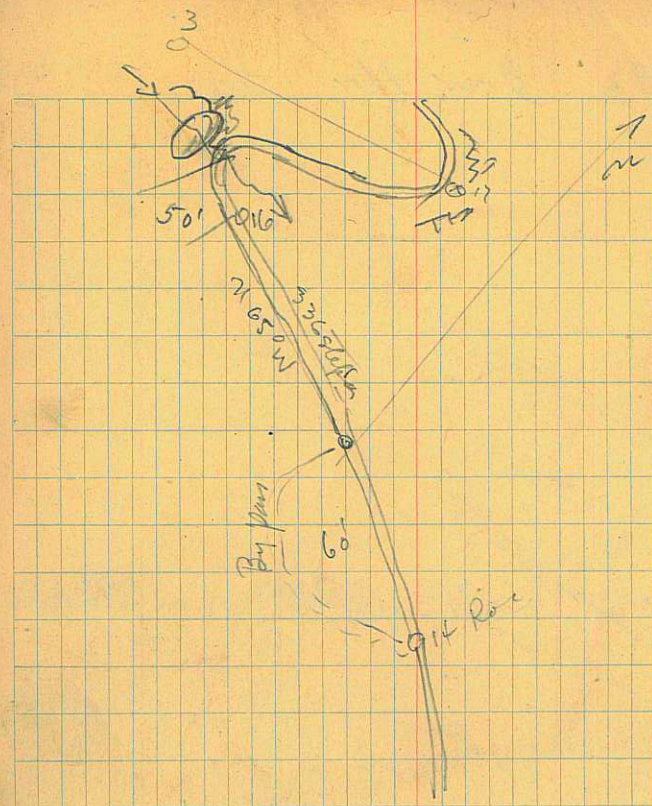
Nov. 6 - 1930

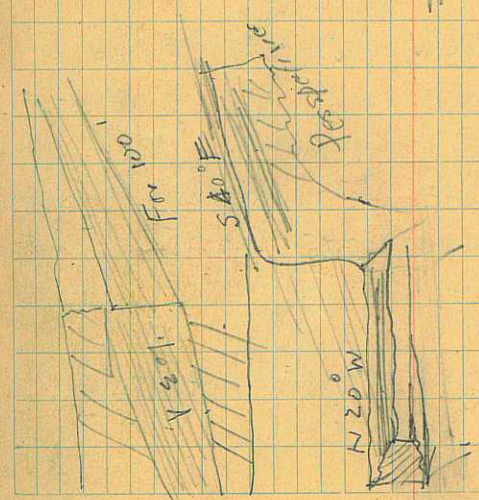
Elev



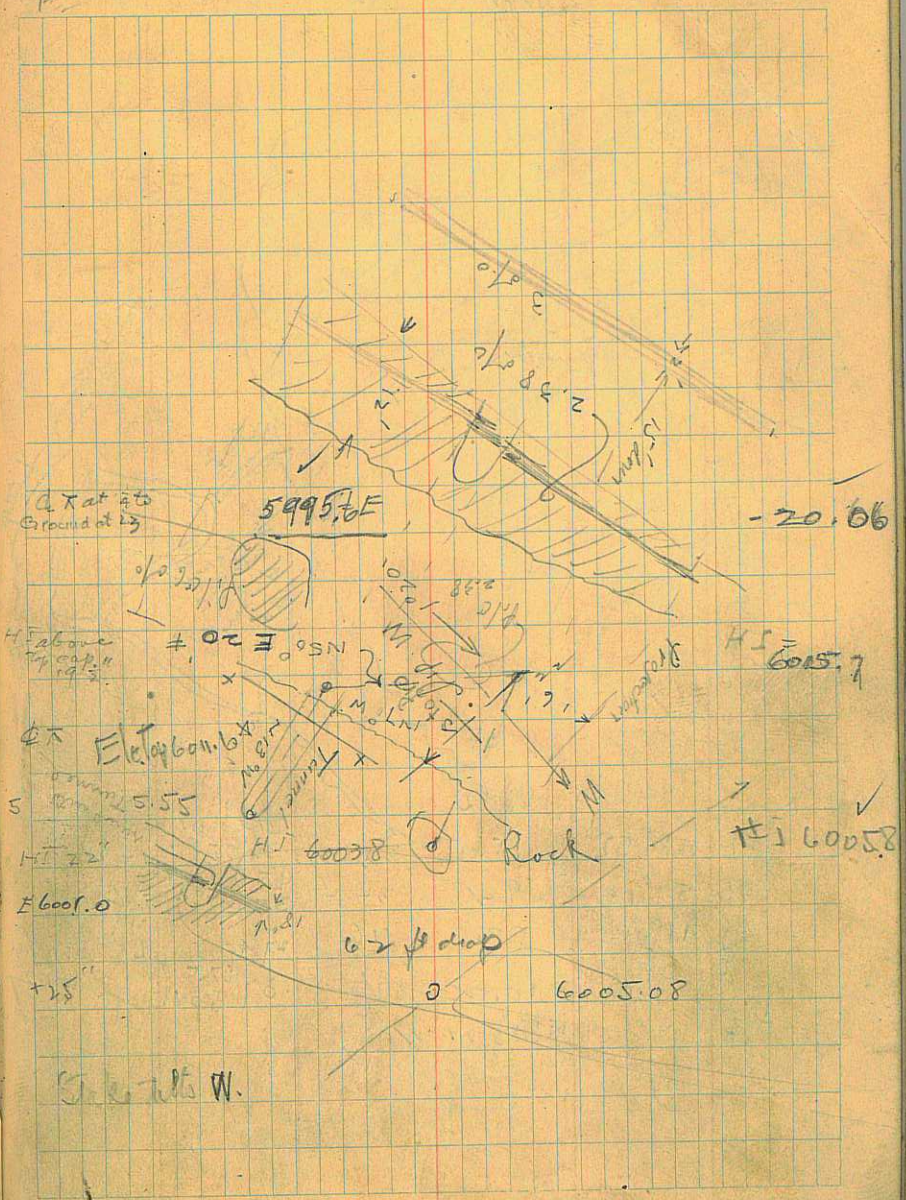

25
N 89°56' E
80.18
36


Tum
N 80° W
40' Tum
S 40° W
S 65° W
S 10° E
3' V 1½%
6

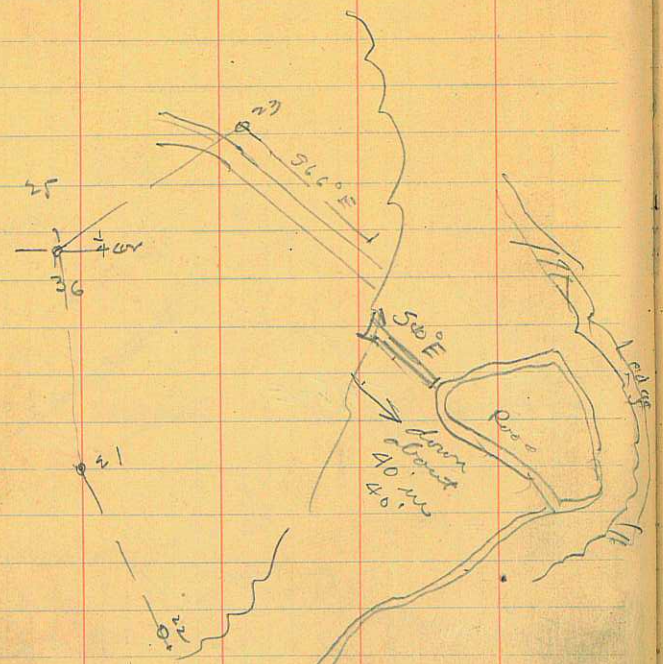

3
50'
N 65° W
336 steps
60'
14 Rise

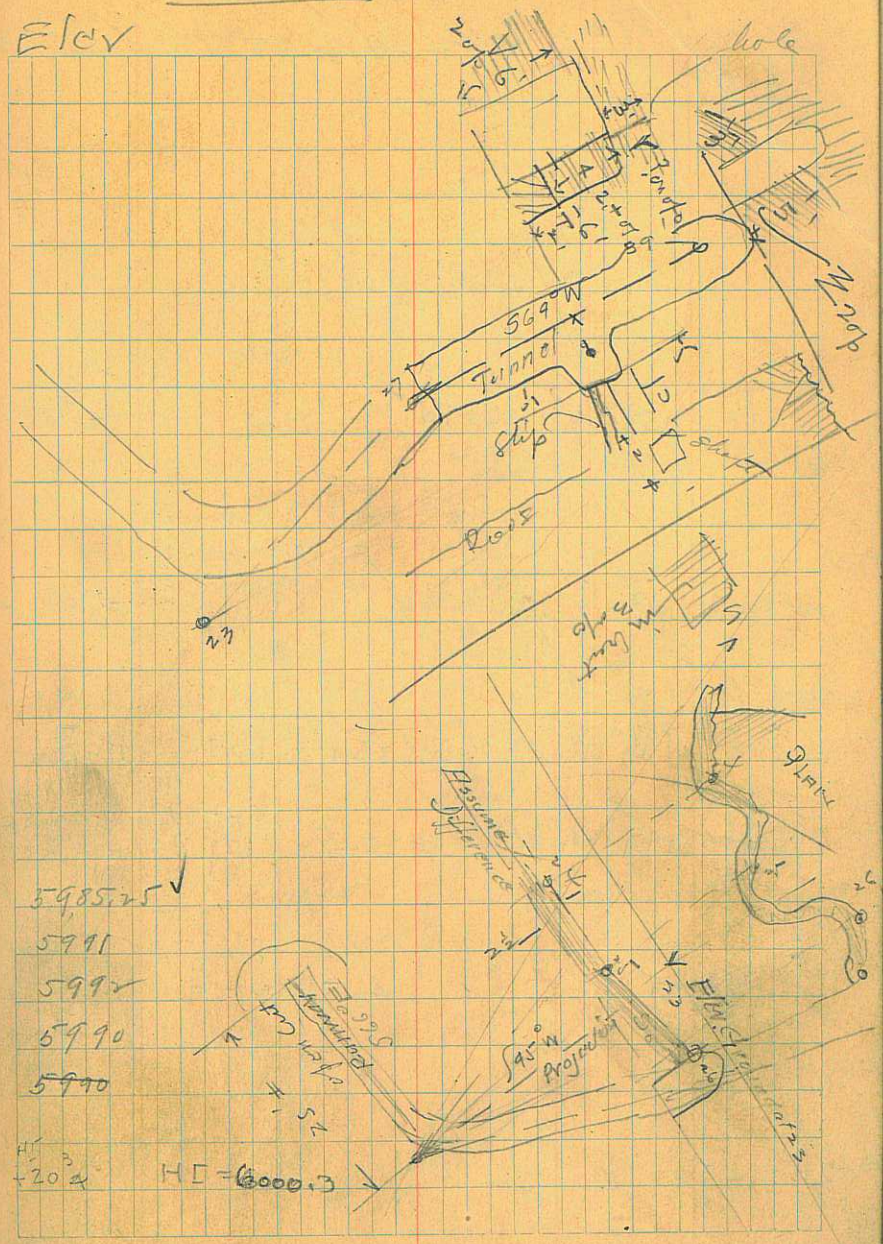

For 100'
S 40° E
N 20° W

PT	Az	Bear	Hor	Slope	V.ANG
(23 see over)					
23	220°32'	N 40°32'E	167.80	169.0	-6°49'
1/4 cor ⊼	set about 2' above ground in mound stone.				
1/4 25/36	177°54	N 2°06'W	99.20 Tp 31 S-24 E	99.35	℄ ⊼ to Top Mon +3°05
22	E=5990	S 37°12'E			-11°25
21 ⊼					
21	293°28	S 66°32'E	102'	102	+0°31'
V cor 3			103.65	120.75	-30°52'
1 ⊼				120.75	
V cor 3		S 89°55'E	77.8	79.1	+10°21'
WC #1 - Hornet					



Pt.	Az	Bear	Hor.	Slope	VANG	Elev





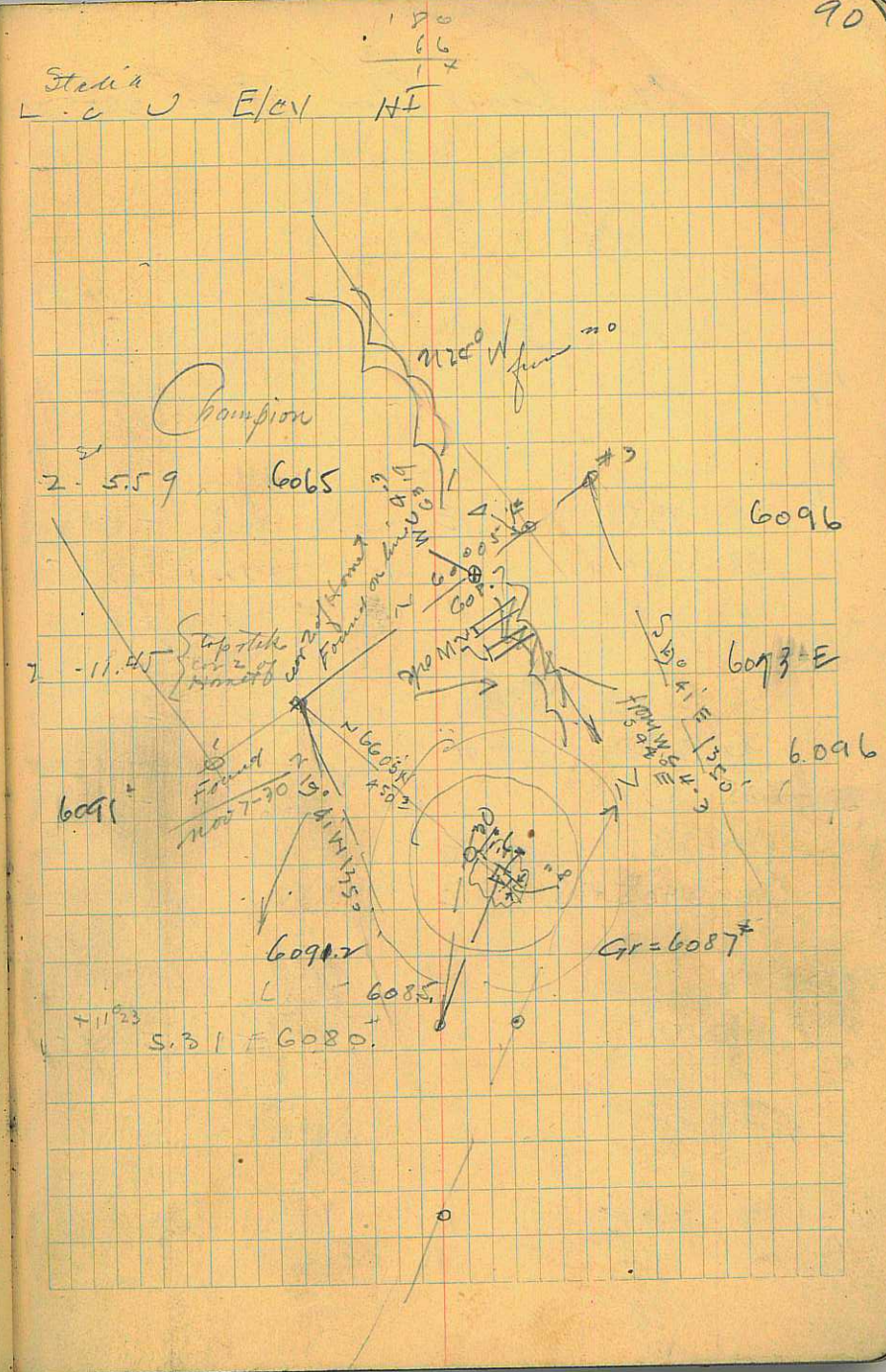
27 B

		Vert D				
27	58°52'	15.05	33.63	℄ ⊼ to Top Nail in Grade Tun 36.85	-24°07	5985.25 ✓
26	57°14	9.2	34.4	℄ ⊼ to Top V Led 35.6	-14°56'	5991
25	41°06	8.3	46	27.4	-17°39 ℄ ⊼ to Top V Led	5992
24	7°10	10.2	37½	37 ℄ ⊼ to Top V Ledge	-16°02	5990
Dis Steele		N 58°35' W	29			~~5990~~

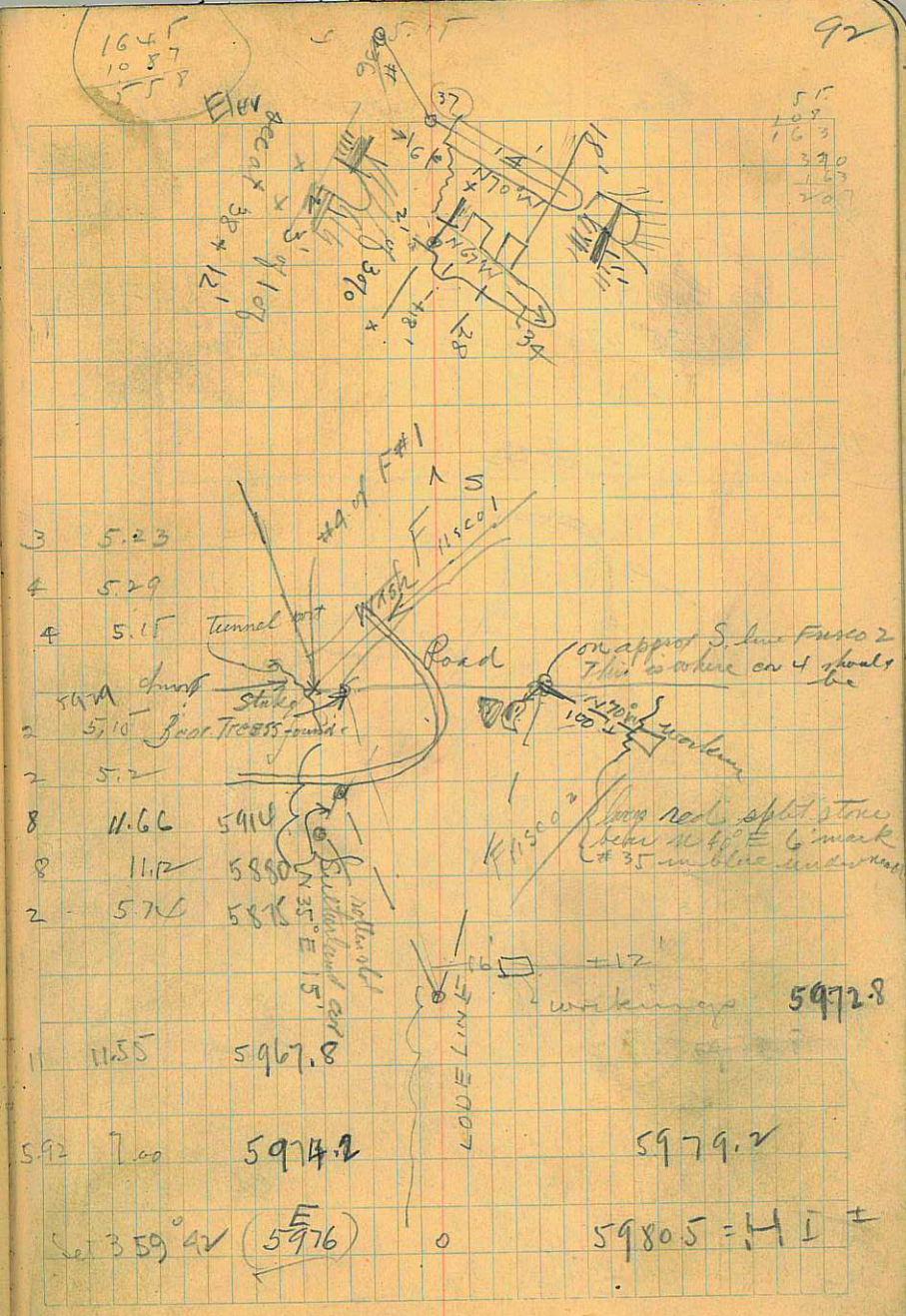
23 A

HI +20.3 HI = 6000.3

	Az	Bear	Hor	Slope	V. ANG
WC4-3-	153°31	N26°29'W			-4°18
30		S80°W B	105' Slope a to Steele cor		
31	113°26	N66°34'W	ca. 1½ dia bear S55°E 2' / ca. 1' dia bear N30°E 13'		-1°08
30	146°08	N33°52'W	134'±	134'	+2°41
29	147°34	MM. #254		℄ x to 2' below top MM 254 127.8	+2°20
28	151°15		415	+11°23 +23.4	



Pt.	Az	Bear Hor	Slope		V. Ang
11					
37					
39	199°58	N 19°58 E	220	5956	+6°44
38	148 49		121	5932.5	+13°55
37	138 39	N 41°21 W	107	5932.5	+15°16
				5976 = HI	
36					
36	21°34	S 21°34 W	310		-7°25
~~36~~	~~21°55~~	~~S 21°55 W~~			~~-7°15'~~
35	19°08		359' mud stone		-7°51
34	335°17	S 24°43' E	288		-16°13'
cor 4 Frisco	340°54	S 19°06 E	349		-15°12
33					
33	0°			Taped 55.8	-0°14'
32					
32	0°			Taped 108.7	+0°06'
11					

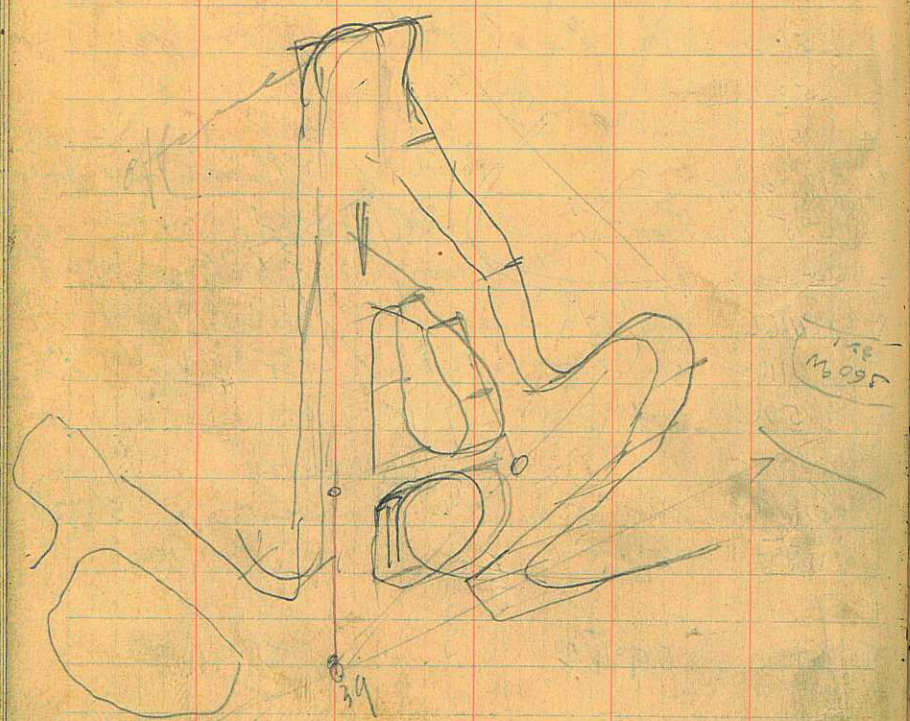


Pt	Az	Bear	Hor Dist	Slope	VANG
Nov 8					
	211°17'	N31°nE (cmp)			-3°19'
	235°38'	to sec cor			
	172°18				-18'

25 30 36 31 24E 25E

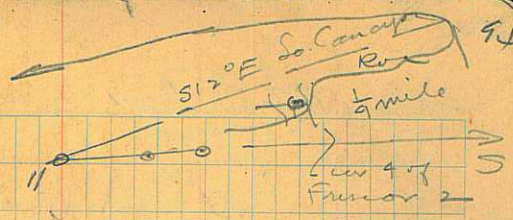
11

Set 359°42



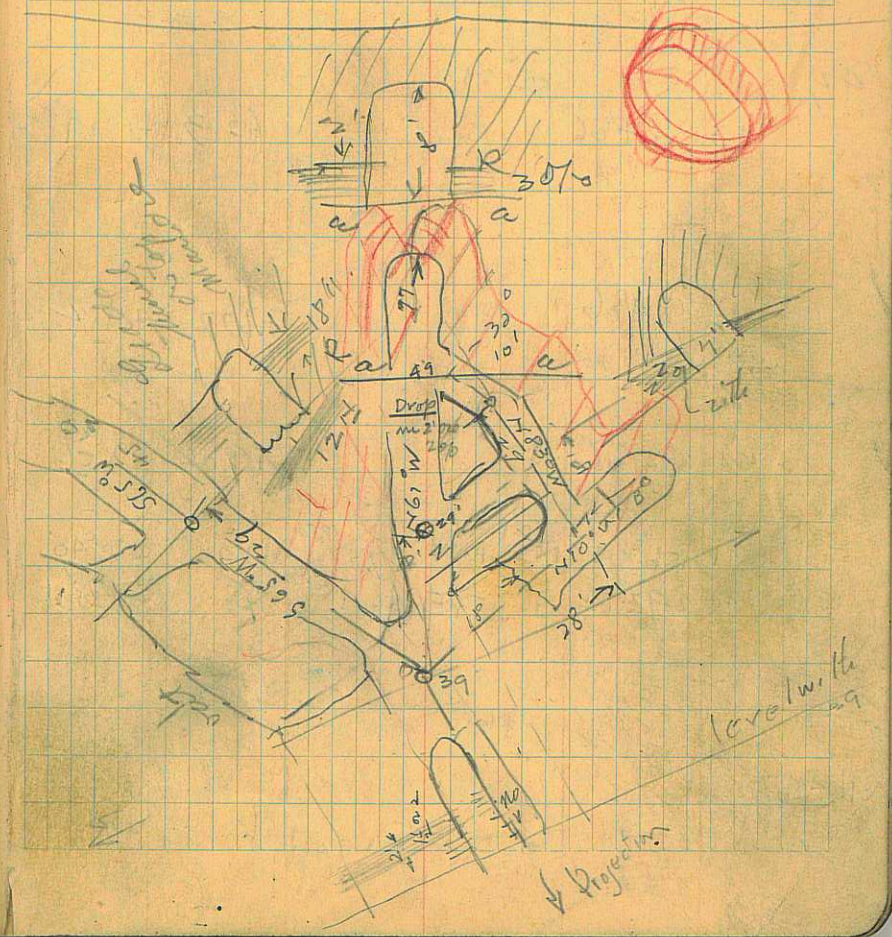
39

Stadia

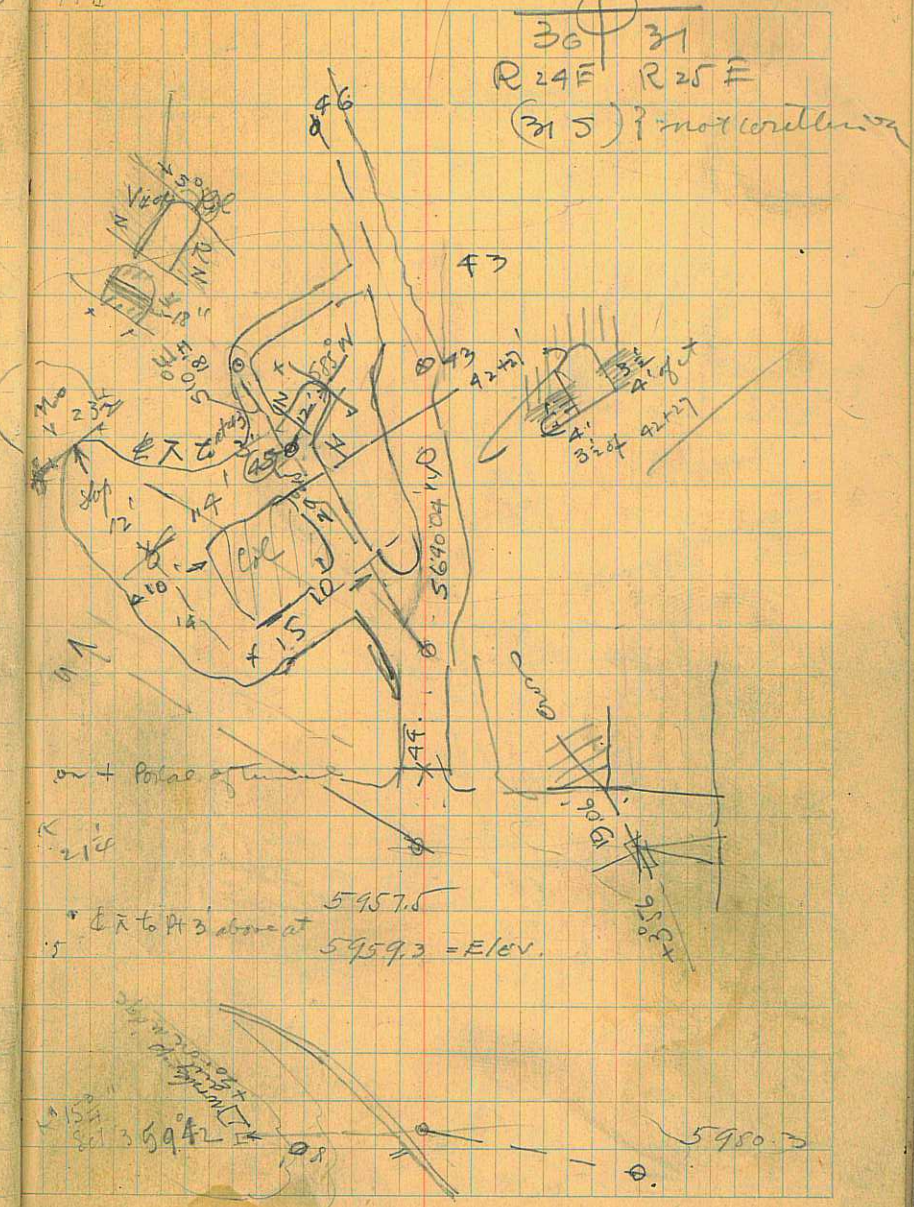


to Top 1/4 cor bet. 30-25

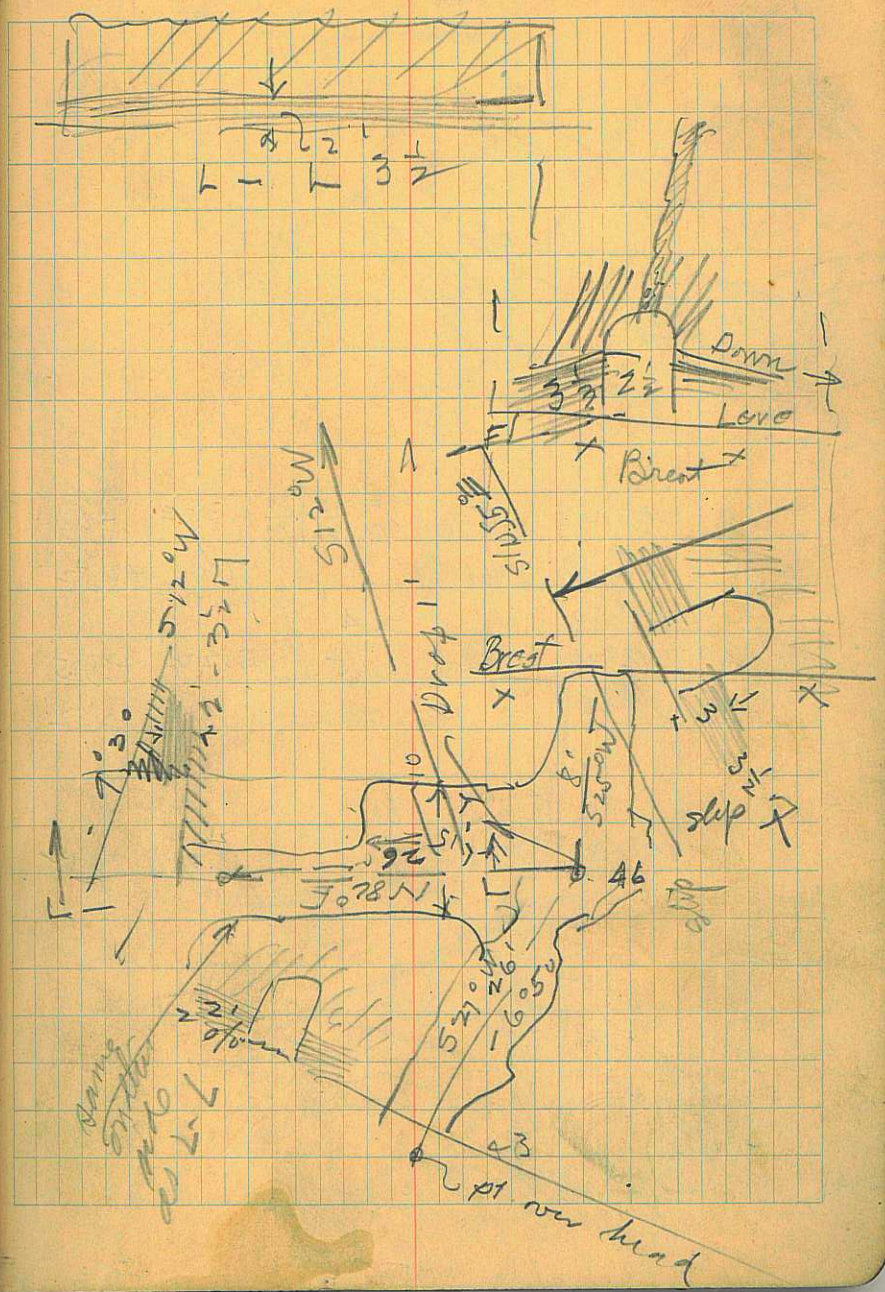
2 5.12 on V ledge



Pt.	AZ	Bear	Hor (V.Dist)	Slope	V ANG	H I
45	29°45			27'	-5	
	29°45			22'	-5°	
	29°45			20'	+13'	
42		H I 23½				
43	64°06			62.3	-1°19	
42	64°06			27.77	-1°14	
44	64 06			19.06	+3°56	
40						
41	156°44	comp N23 16W	137.7 1850	139	-7°40'	
40	292°04	S67°57E	33.4 18.0	38	-28°21	
41						

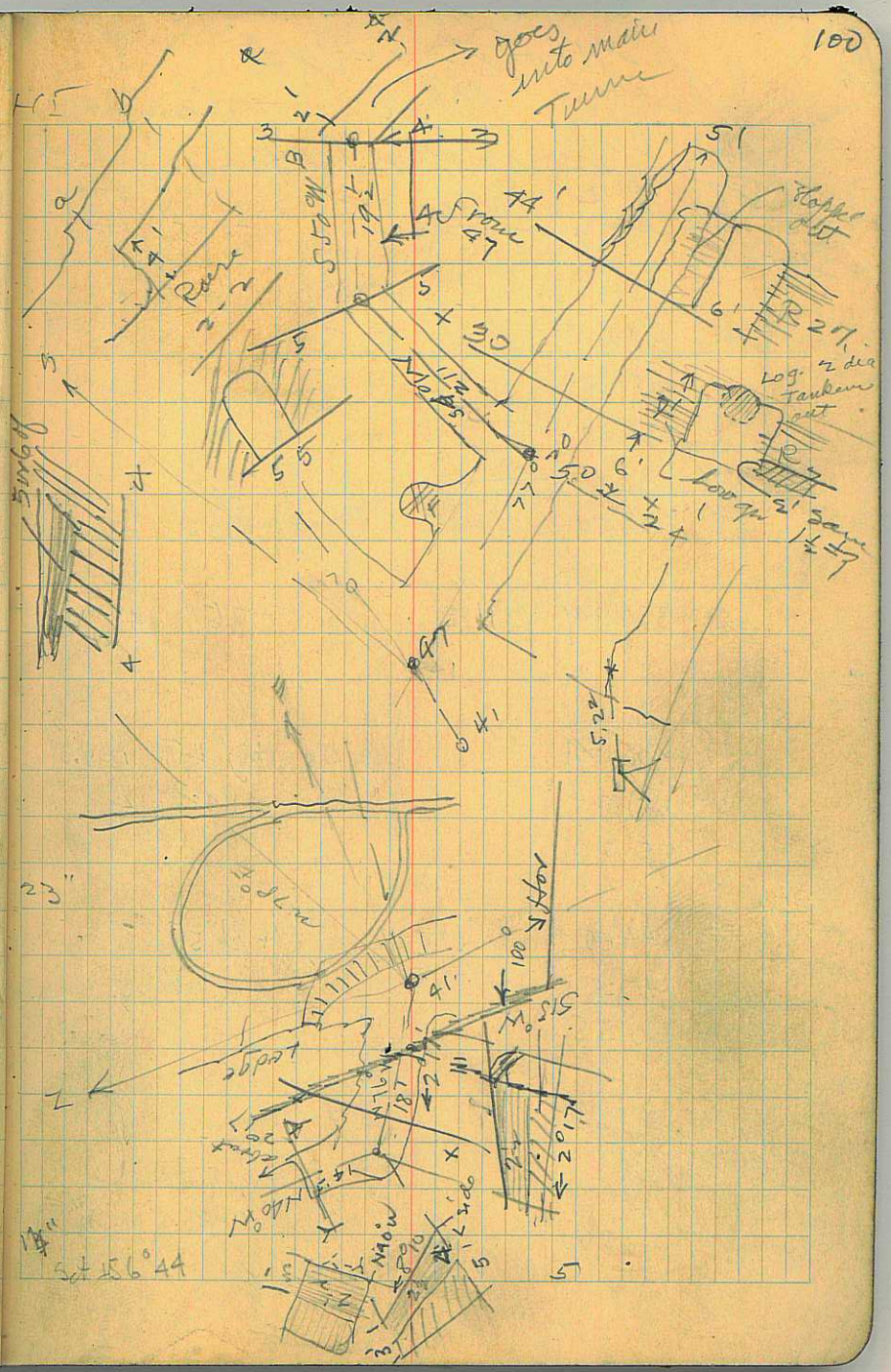


forenoon
Nov 8 - 20



Nov 8 - 30

PT	AZ	Bow or Elev	Hor	Slope	
	237°49	to sec cor	24E 25 30 / 36 31	25E	¢ to Gat -6°47
51	77°20	5961.7		70'	+2°52
50	77°20		24'		
49	77°20	Ref-point		5.22'	+29°15
~~48~~	77°20				+2°52'
47	9°09	5958.2		13.0	+3°12
41		5957.5			



Nov 8 - 1930

Survey of Blue Bell Claim
Ont, Vanadium Corp -

PT	AZ	Bcor	Hor		Slope
56b	318°31'	S41°29'E		-5°35'	165.6
56a			152		
	253°48		58.5		
	253°48		198.4±	200	-7°10
	253°48		must be 43 43		1
cor	73°48				
cor	73°48	S73°48'W N73°48E		-52' -19°30	95.2 56
56	352°49'	S7°11'E		-26'	4 11.25
55	235°39		122.50	+9°45	124.3
54	159°24			+1°42	4 11.0
	55°39				
53	244°03'	N64°03'E	Slake 724.44	+26°55	2 11.367.72
52	247°57	N67°57'E	Slake 712	+25°10'	3. 11.334.50
MM 254	53°55				
SE cor sec 25	0°				
	11.31°14				

¼ bet 25 30-24E 25E

10

258.5 43 95.2 52.7 155.2 60 95.2 600 449 151 725 662 1387 200 757 1243 700 38 663

Vert Dist 449.4 16 4478 600 4478 152.2

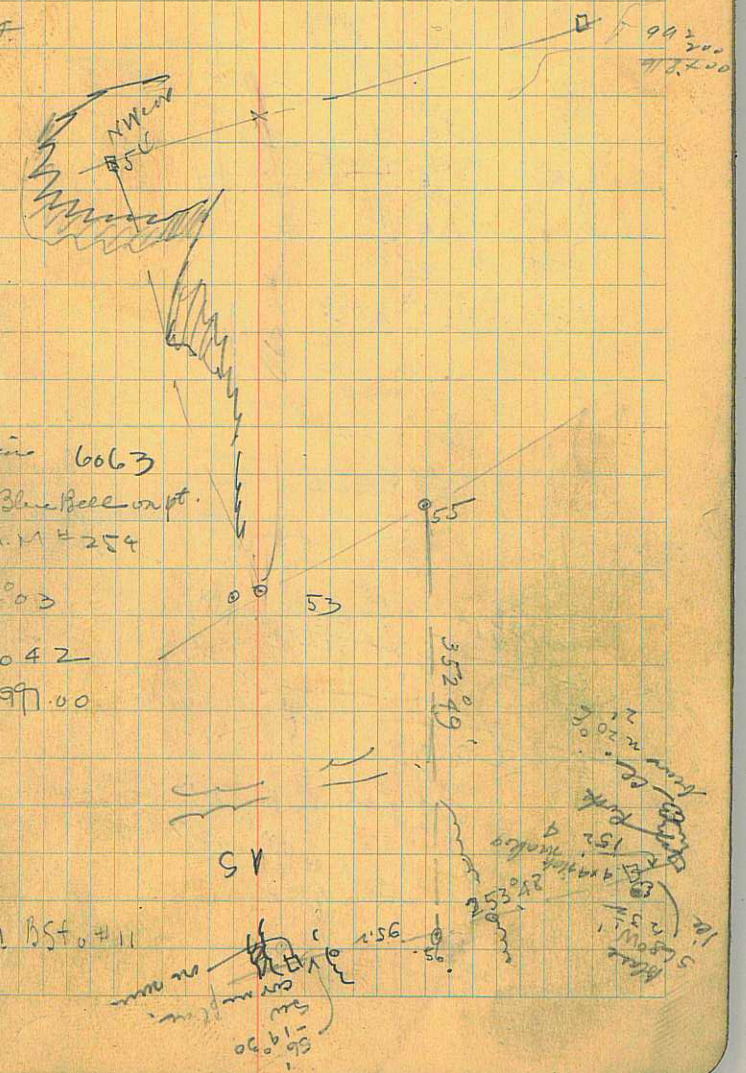
943 16 1618 4315 5270 8

set 35944 (nov 9 1930)

set new cor

to cor #4

slake



to Lode line 6063

new cor of Blue Bell on pt.
U.S. M.M. #254

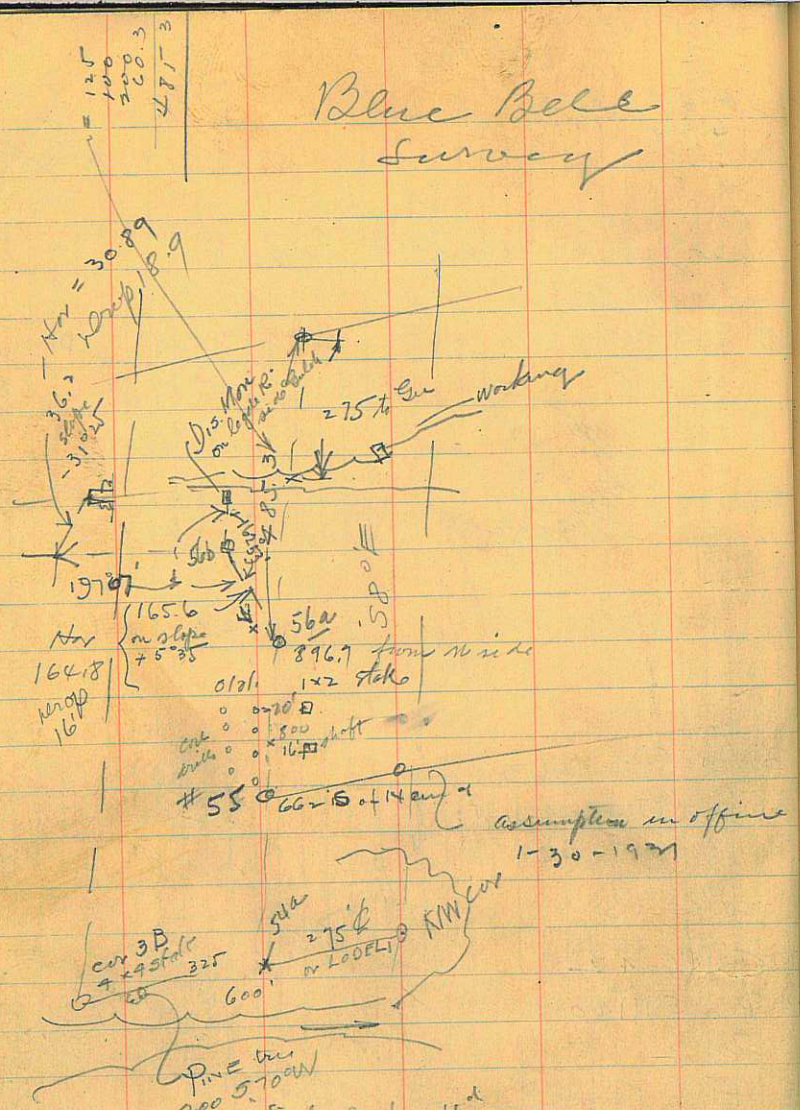
set 64°03

6042

5997.00

set 211°17 BSt 0 #11

Blue Bell Survey



35960
19707
16253
5960

125
100
60.3
200
485.3
896.7
1382.0

896.7

850
46.7
896.7

1382
662
920

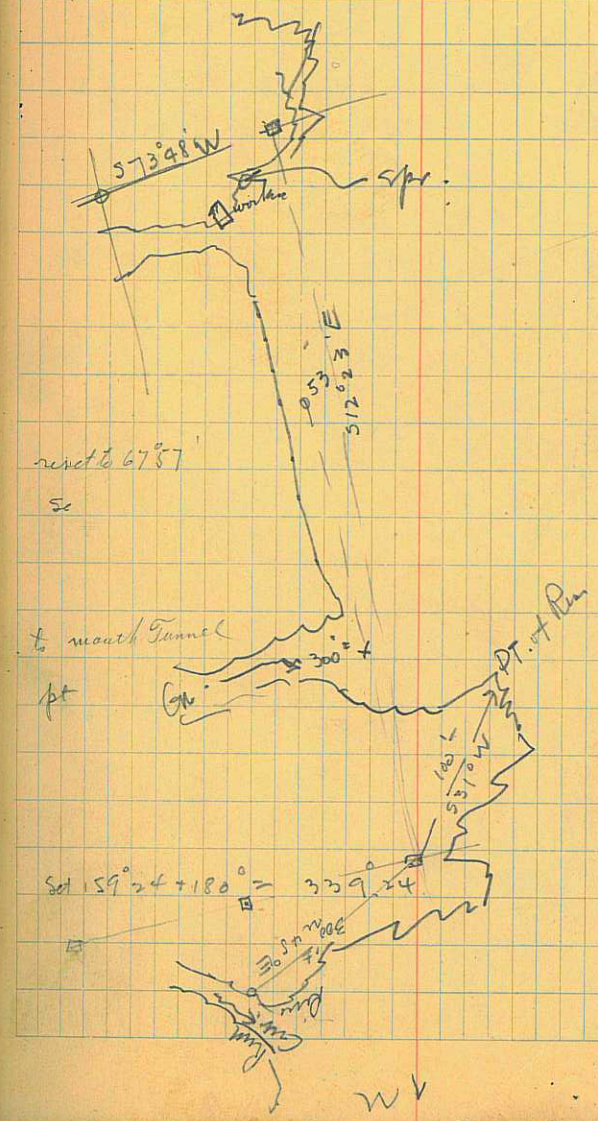
Pt.	Az	Bear	Hor	Slope	Stadia
	¼ LN 67°56'30"				
52					
cor 1 of BB	347°37'	S12°23'E	on leage		
52	341°50'	S18°10'E		-4°32'4.	11.5
54a	253°51	N73°51'E	275 Top.	-2°	275
NE cor #3 B. Bell	253°51	"	600 Top.	+0°30'	
	46°52	U.S.M.M. #254			
53	339°24'			-1°06'5	11.9
54					

159°24
180°
339°24

695

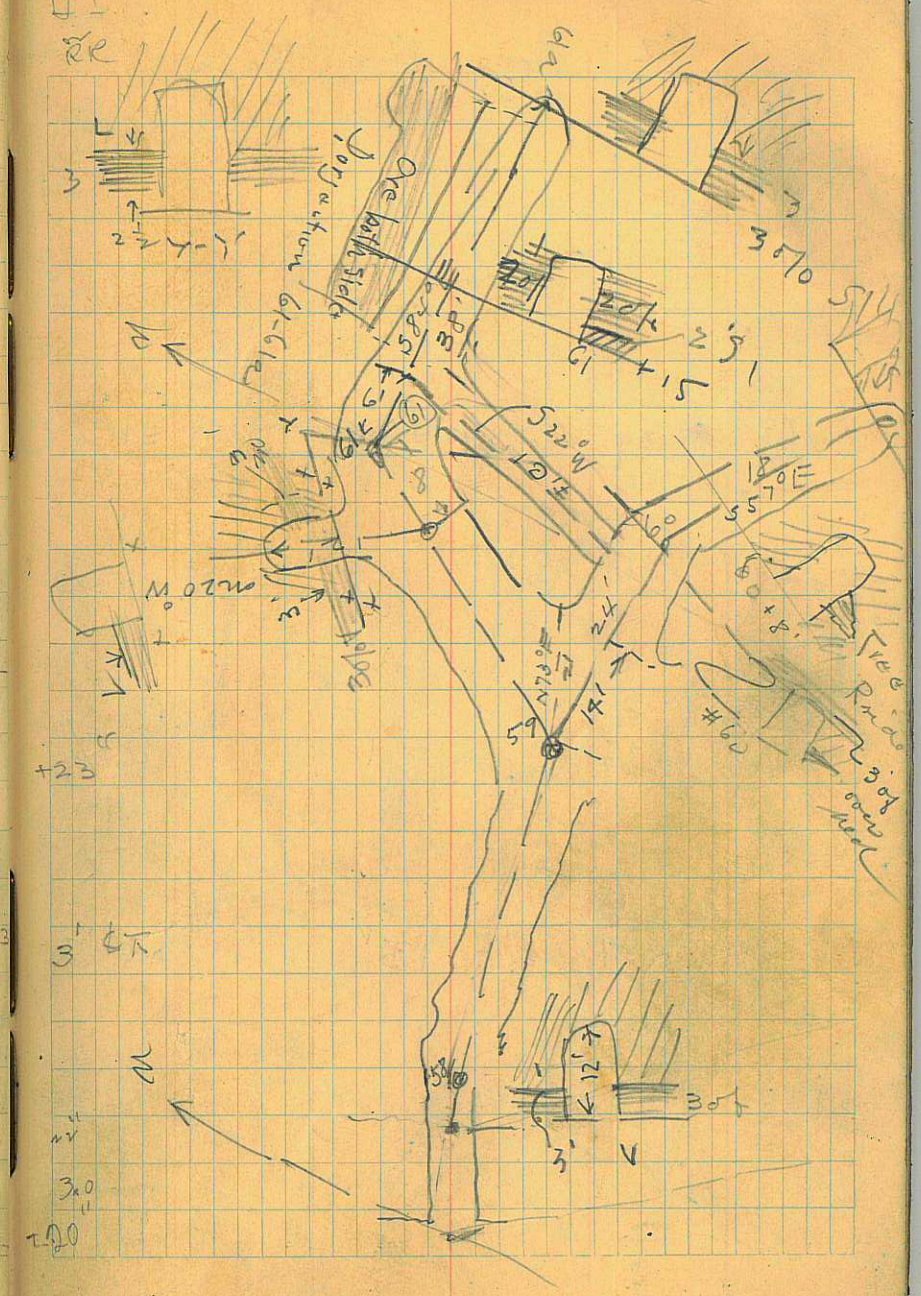
Blue Bell study

Nov 9-1930

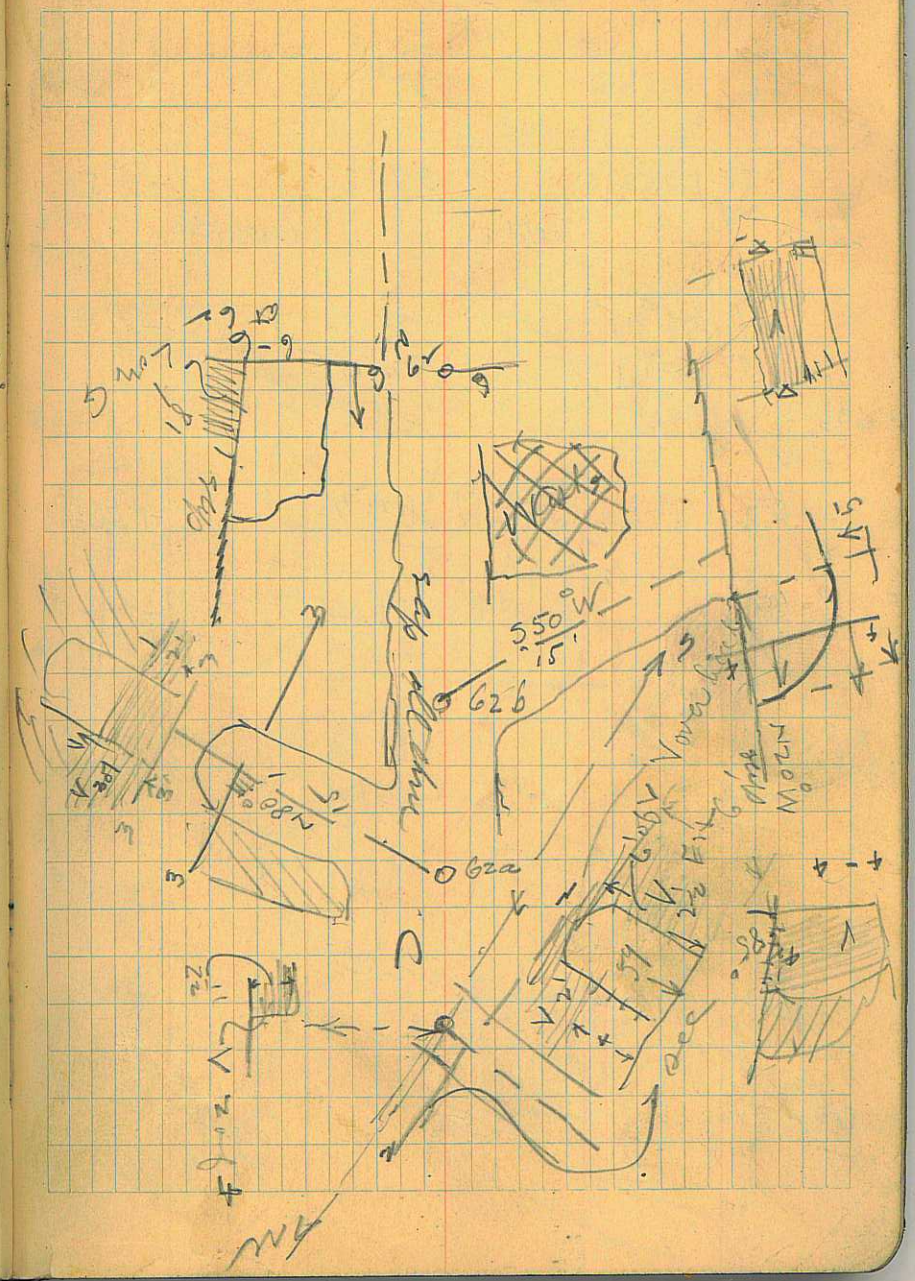


Nov-9-30 Blue Bell Under Ground

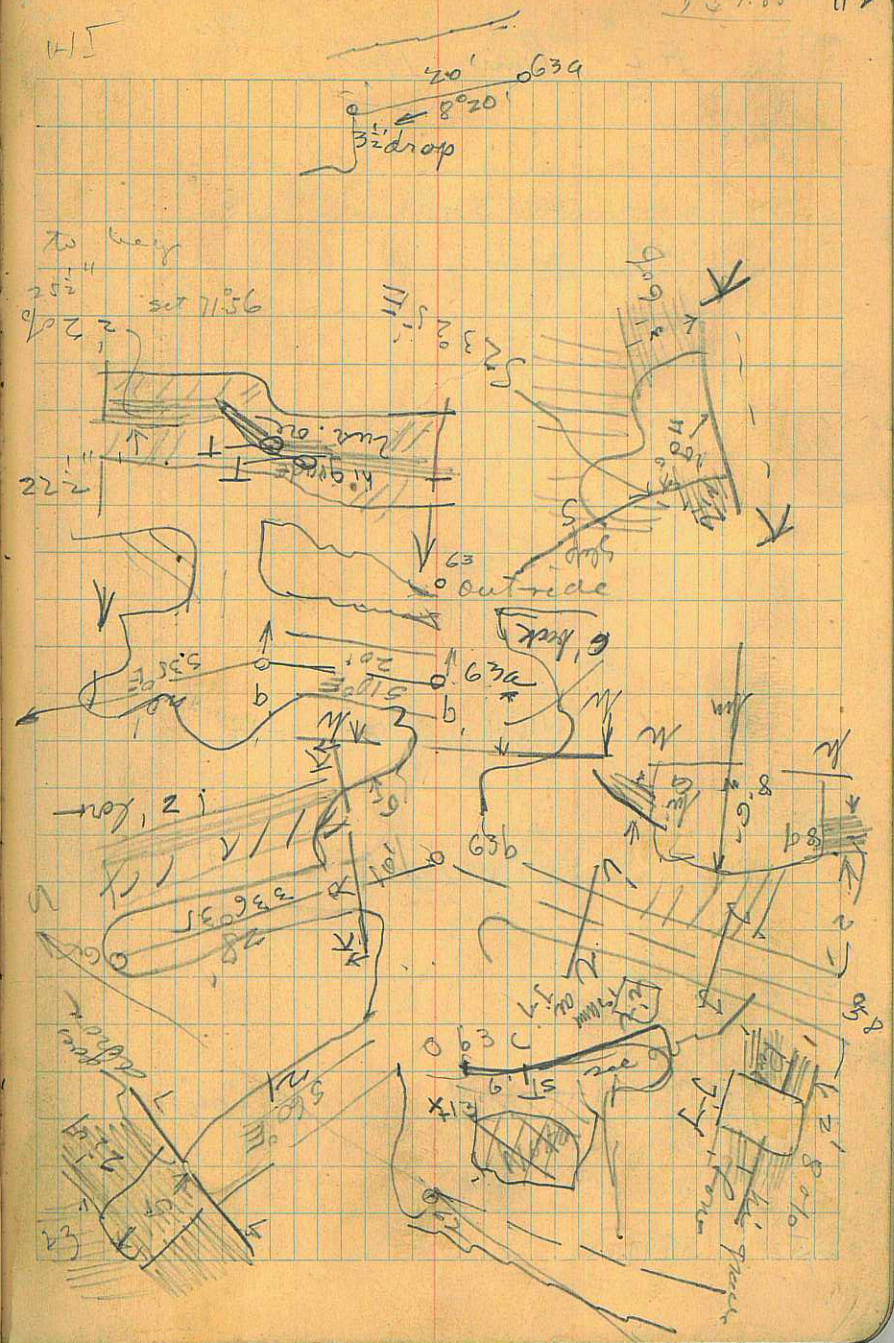
PT.	AZ	Bear or Elev	Hor	Slope or HI	VAN
62	336°29	6003.2	44.0		+2°46
61	242°	6002.8	28'		+3°33
		~~6002.8~~			
60	271°27	6004	24'		+7°15
59				6006.0	
59					
59	266°40	6001.1	38.8		+1°66
58	266°40	5998.3	8.15		-1°22
57				6003.4	
57	259°10	5998.6 N79°10'E	33.3	-0°9'	
52		5997		6001.7	



PT	Az	Bear Elev.	Hor	Slope	V Ang
6r	336°39	6003.25	44.9		+2°45'
62b	336°39	6004.7	31'		+6°40
62a	336°39	6004.7	13'		+16°05
59		6001.1			


NW
Stop
Stop
Stop

Pt.	AZ	Bcn or Elev	Hor	Slope or HI	V	ANS	HI
	¼ cor	68°02					
52			5997.15				
	52	151°52		59.85			-3°50
63			6001.15		6006.30		
	64	336°35		28			-6°40
	58?	162°19'		52.45			
63b				5			
	63	71°56	6001.15 S71°56'W	64.35			-1°52
	63a		6002.75	51.60			-0°30'
	63b			34.2			
	63c		6003.50	24			+0°25'
62			6003.25		6008.15		

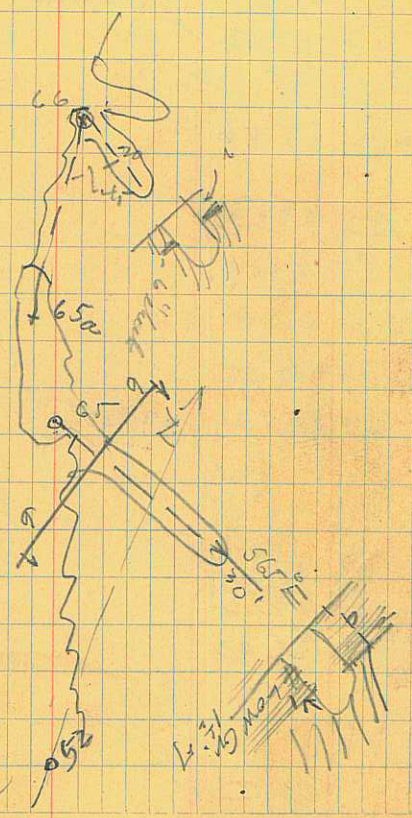


PT.	172 or Elev	Bear	Hor	Slope	Stadia
66		N10°W	80'±	-1/2°±	
65a					
65a		N30°W	19		
65	6004.7				
65	164°27	N15°33'W		+3°04'	4 5.41
52	5997.00				

along face of V ledge out crop

HI # 52 ± 2' +3° S26°E

(Blue Bell new name Sunset)



6002.0±
Sat 67°57 F56 ¼ cor

Hor VAG

Vert Dist

11 36°42'?
52 219°07 ✓ by tunnel
53 218°09 ✓
1/4 cor 199°01 ✓
U O
mm 254 65°46'

Δ2

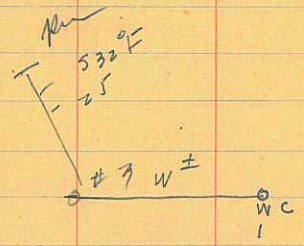
Δ2 332°33 ✓ 800.00
11 27°29'?
V.S
mm 254 49°13 ✓
53 248°21
52 250 23 N70°23E

Δ1 ⊼

Δ1 72°41' 719 Stadia 8°44' 4 11.35 110.50
53 244°03
52 247°57
11 31°03

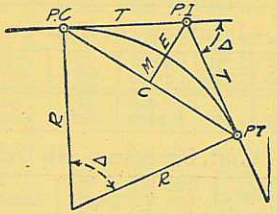
1/4 cor 25
30 F

Set O BS to SE cor 25



TZGEN'S RAILROAD CURVE
AND
REDUCTION TABLES

opyright, 1914, by Eugene Dietzgen Co., New York City



CURVE FORMULAS

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

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

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

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

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

EXPLANATION AND USE OF TABLES

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

angent offsets vary (approximately) directly with uare of the distance. Thus tangent offset for Sta. rve is 2.16 ft. found as follows. From Table III tangent ft.=7.27 ft. Distance=158—Sta. P. C.=54.50, hence $(54.50\div100)^2=2.16$ ft. Also square of any distance vice the radius equals (approximately) the distance from urve. Thus $(54.50)^2\div(2\times688.26)=2.16$ ft.

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

ls.—May be found in similar manner to tangents. Thus above is 91.37. For from Table IV for 1° curve E=960.6 960.6÷8⅓=91.27 and from Table V correction=.10 or Or suppose $\Delta=32°$ and E is measured and found to be is D? From Table IV E=230.9 and÷42=5.5 or D=

359.42
180
179.42

DISTANCES FROM CENTER OF ROADWAY FOR CROSS-SECTIONING.

Roadway 16 feet wide. Side Slopes 1 on 1½.

For Single Track Embankment.

H	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	H
0	8.0	8.2	8.3	8.5	8.6	8.8	8.9	9.1	9.2	9.4	0
1	9.5	9.7	9.8	10.0	10.1	10.3	10.4	10.6	10.7	10.9	1
2	11.0	11.2	11.3	11.5	11.6	11.8	11.9	12.1	12.2	12.4	2
3	12.5	12.7	12.8	13.0	13.1	13.3	13.4	13.6	13.7	13.9	3
4	14.0	14.2	14.3	14.5	14.6	14.8	14.9	15.1	15.2	15.4	4
5	15.5	15.7	15.8	16.0	16.1	16.3	16.4	16.6	16.7	16.9	5
6	17.0	17.2	17.3	17.5	17.6	17.8	17.9	18.1	18.2	18.4	6
7	18.5	18.7	18.8	19.0	19.1	19.3	19.4	19.6	19.7	19.9	7
8	20.0	20.2	20.3	20.5	20.6	20.8	20.9	21.1	21.2	21.4	8
9	21.5	21.7	21.8	22.0	22.1	22.3	22.4	22.6	22.7	22.9	9
10	23.0	23.2	23.3	23.5	23.6	23.8	23.9	24.1	24.2	24.4	10
11	24.5	24.7	24.8	25.0	25.1	25.3	25.4	25.6	25.7	25.9	11
12	26.0	26.2	26.3	26.5	26.6	26.8	26.9	27.1	27.2	27.4	12
13	27.5	27.7	27.8	28.0	28.1	28.3	28.4	28.6	28.7	28.9	13
14	29.0	29.2	29.3	29.5	29.6	29.8	29.9	30.1	30.2	30.4	14
15	30.5	30.7	30.8	31.0	31.1	31.3	31.4	31.6	31.7	31.9	15
16	32.0	32.2	32.3	32.5	32.6	32.8	32.9	33.1	33.2	33.4	16
17	33.5	33.7	33.8	34.0	34.1	34.3	34.4	34.6	34.7	34.9	17
18	35.0	35.2	35.3	35.5	35.6	35.8	35.9	36.1	36.2	36.4	18
19	36.5	36.7	36.8	37.0	37.1	37.3	37.4	37.6	37.7	37.9	19
20	38.0	38.2	38.3	38.5	38.6	38.8	38.9	39.1	39.2	39.4	20
21	39.5	39.7	39.8	40.0	40.1	40.3	40.4	40.6	40.7	40.9	21
22	41.0	41.2	41.3	41.5	41.6	41.8	41.9	42.1	42.2	42.4	22
23	42.5	42.7	42.8	43.0	43.1	43.3	43.4	43.6	43.7	43.9	23
24	44.0	44.2	44.3	44.5	44.6	44.8	44.9	45.1	45.2	45.4	24
25	45.5	45.7	45.8	46.0	46.1	46.3	46.4	46.6	46.7	46.9	25
26	47.0	47.2	47.3	47.5	47.6	47.8	47.9	48.1	48.2	48.4	26
27	48.5	48.7	48.8	49.0	49.1	49.3	49.4	49.6	49.7	49.9	27
28	50.0	50.2	50.3	50.5	50.6	50.8	50.9	51.1	51.2	51.4	28
29	51.5	51.7	51.8	52.0	52.1	52.3	52.4	52.6	52.7	52.9	29
30	53.0	53.2	53.3	53.5	53.6	53.8	53.9	54.1	54.2	54.4	30
31	54.5	54.7	54.8	55.0	55.1	55.3	55.4	55.6	55.7	55.9	31
32	56.0	56.2	56.3	56.5	56.6	56.8	56.9	57.1	57.2	57.4	32
33	57.5	57.7	57.8	58.0	58.1	58.3	58.4	58.6	58.7	58.9	33
34	59.0	59.2	59.3	59.5	59.6	59.8	59.9	60.1	60.2	60.4	34
35	60.5	60.7	60.8	61.0	61.1	61.3	61.4	61.6	61.7	61.9	35
36	62.0	62.2	62.3	62.5	62.6	62.8	62.9	63.1	63.2	63.4	36
37	63.5	63.7	63.8	64.0	64.1	64.3	64.4	64.6	64.7	64.9	37
38	65.0	65.2	65.3	65.5	65.6	65.8	65.9	66.1	66.2	66.4	38
39	66.5	66.7	66.8	67.0	67.1	67.3*	67.4	67.6	67.7	67.9	39
40	68.0	68.2	68.3	68.5	68.6	68.8	68.9	69.1	69.2	69.4	40

Example—If point is 22.6 ft. above grade, how far should it be from center line to be a slope stake point? Ans. from Table 41.9. For same slopes but other widths of roadbed correct above figures by one-half difference in width of roadbed; thus in example above for 20 ft. roadbed distance will be 41.9+(20—16)÷2 or 2 ft. added to 41.9 =43.9. For slopes of 1 on 1 see inside of front cover.

*Made in Germany.