

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.

MICROFILMED 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 $30.6 + (20 - 16) \div 2$ or 2 ft. added to 30.6 = 32.6. For slopes of 1 on 1½ see inside of back cover.

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Pipe line location from Murray
Dam to El Capitan Pipe Line.

Pipe line location notes, Murray Dam
"A" Line.

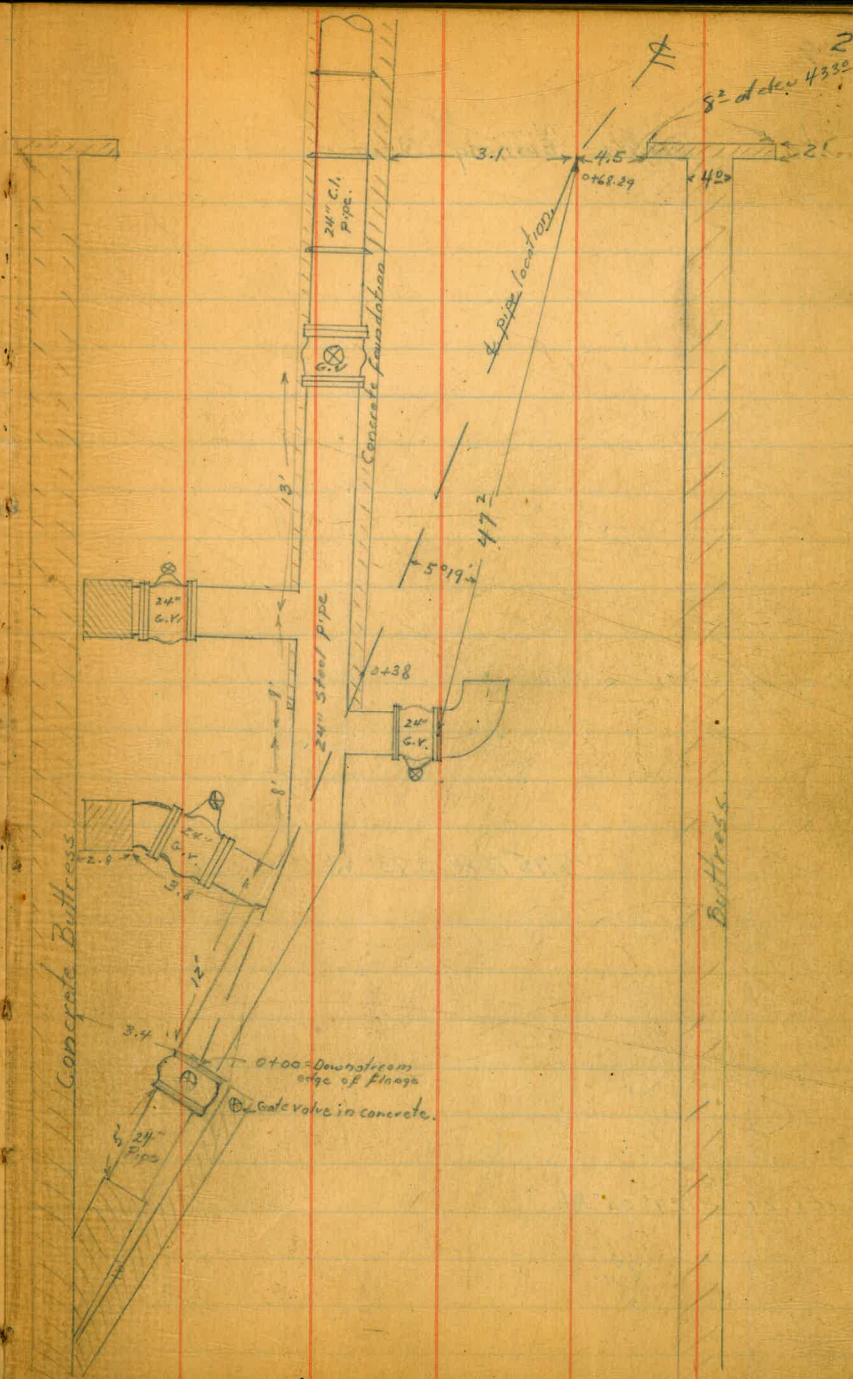
Sta. Deflect. Bearing Mag.

$5.46^{\circ}10'W$ $5.40^{\circ}10'W$

Note - Bearings calculated back from
College Reservoir Pipe Line Survey intersection on
Page 9.

0+00 = Downstream edge of flange of 24" Gate Valve

Feb. 8 1937
Soper
Isbell
Rammen.



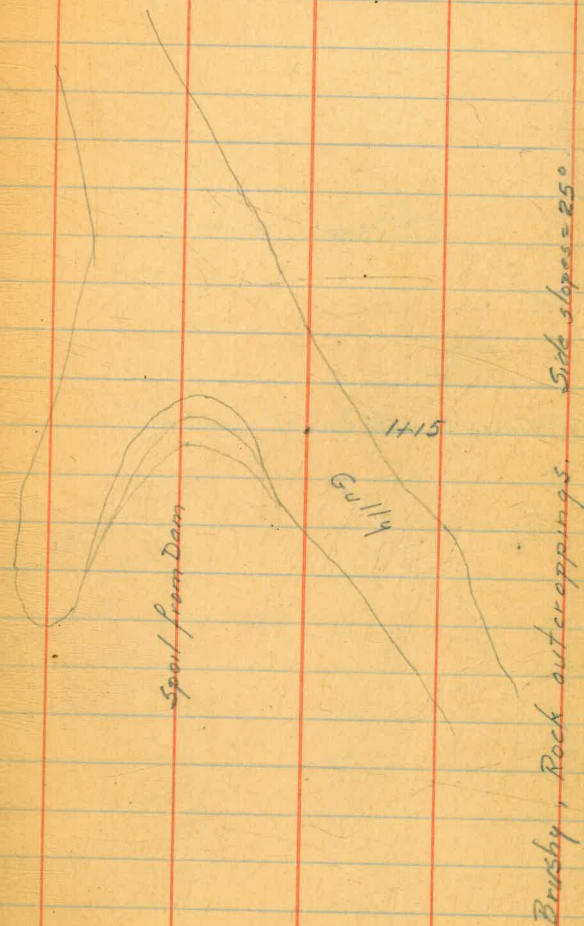
Sta Deflect. Bearing Mag.

S.75°12'N 573°W

0+68.29

29°02' Rt.

29°02'
29°02'



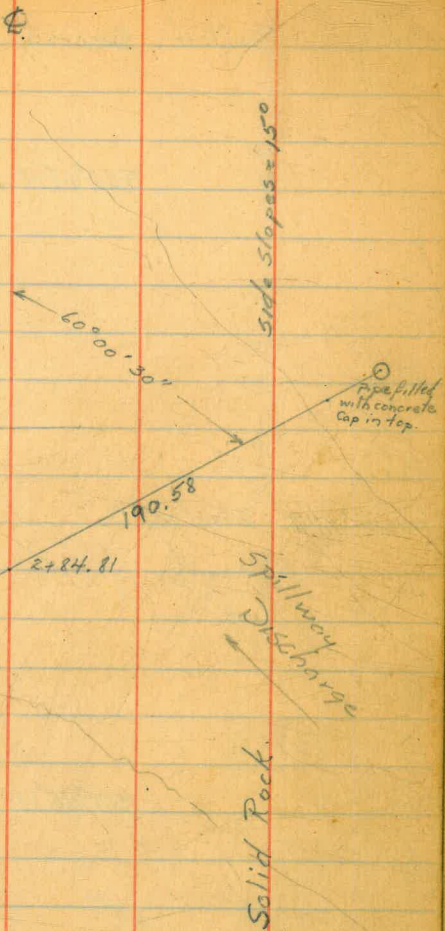
Sta Deflect. Bearing Mag

5.75° 12' N 5.73° W

2+84.81 P.O.T. (Intersection with line of monuments)

concrete Monument.

line parallel to old Dam



Sta. Deflect. Bearing Mag.

566°48'N 365°W

6+42.09 5°00'22 1/2" Lt.

10°00'45"
5°00'30"

See p. 56

571°48'N 369°30'W

3+25.22 3°23'30" Lt.

3°24'

6°47'
3°23'30"

575°12'N

Spillway
Discharge

Brushy - Rocky. Side slopes = 25°

Side slopes = 15°

Sta Deflect. Bearing Mag.

5.66° 28' N 565° W

8+56.63 P.O.T (Intersection with section line)

1/4 Corner
B

65° 35'

195.37

Section line
7.81° N

P.O.T.

Brushy - Rocky

E

old
Road

10'

6

Sta Deflect. Bearing Mag

5.51°58'N 5 49°30'W

8+85.28 14°50' Lt.

29°40'
14°50'

5.66°48'N

7



Low brush, rock outcroppings. Side slopes = 20°

Feb. 9 1937
Soper
Lobell
Remmen

Sta. Deflect. Bearing Mag.

5.63°13'W 5 21°W

11+53.03 11°15'20" RT.

22°30'40"
11°15'20"

Gully - 11+40

Scattered brush. Exposed rock ledge. Rock is hard and shattered, probably same type
of rock extends from Murray Dam to here. Side slopes = 20°

Sta. Deflect. Bearing Mag.

N. 86°30' W N 89° W

15+61.11 30°16'45" Rt.

LO 33' 30"
30°16' 30"

S. 63°30' W

9

62+09.67
P.O.T.

Galena N. 20° 52' E

Reservoir

15+61.11 L = 63+65.67 P.O.T. 'B' Line.

'B' Line Survey

66+25.34
P.O.T.

30°16'45"

42°19'

Low brush, scattered rock outcroppings. Side slopes = 5°



Sta. Deflect. Bearing Mag

N. 86° 30' W N 89° W

16+50.00 P.O.T.

10

Deep Gully - 18+95

Low brush - Rock outcroppings. Side slopes from 5° to 10°

Sta Deflect. Bearing Mag.

N.74°36'W N76°30'W

25+78.51 11°54' Rt.

29°48'
11°54' 15"

N.86°30'W

Low brush, no rock on surface, side slopes: 5°

Sta Deflect. Bearing Mag.

37+00.00 P.O.T.

N. 74° 36' W N 76° 30' W

Small Gully 30+85

Low brush, Subsurface rock exposed in gully's. Side slopes - 5°

Sta. Deflect. Bearing Mag.

N. 72° 36' W N 76° 30' W

Low brush, rock outcroppings indicate a strata of hard rock, just below ground surface.

Sta. Deflect. Bearing Mag.

£

N. 74° 36' W N 76° 30' W

Small Gully 42+85

Solid rock ledge exposed in gully.

Sta. Deflect. Bearing Mag

£

N74°36'W N76°30'W

48+68.57 P.O.T.

old road 47+70

Low brush, cobblestones on surface. Side slopes: 5°

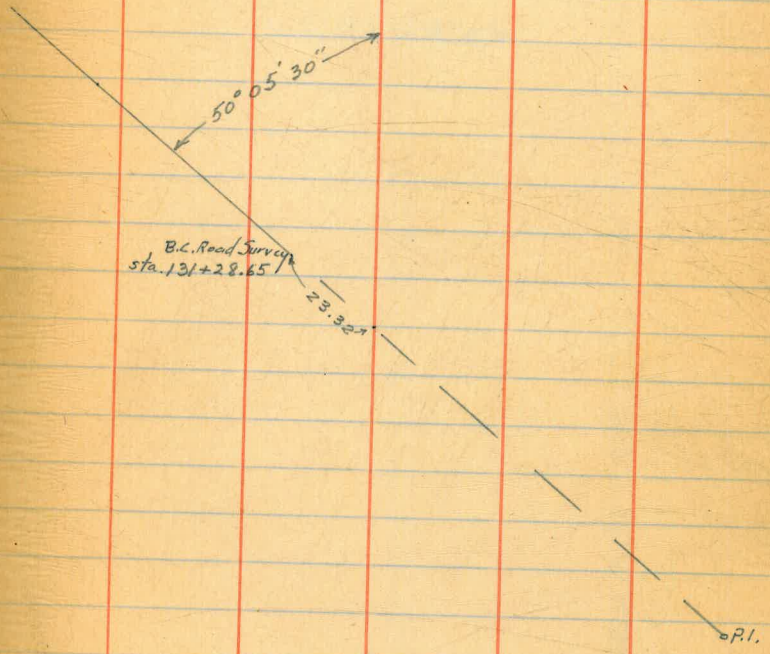
Sta. Deflect. Bearing Mag.

Feb. 11, 1937
Converse
Coper
1666/
Remmers

⊕

N. 74° 36' W N 76° 30' W

49+88.79 P.O.T. (Intersection with Road Survey)



Sta. Deflect Bearing Mag

N. 74° 36' W N 76° 30' W

Gully 51+10

Low brush, cobblestones. Side slopes = 5:1

Sta. Deflect. Bearing Mag.

N. 74° 30' W N 76° 30' W

low brush, outcroppings of rock, surface boulders. Side slopes = 5°

Sta. Deflect. Bearing Mag.

N. 10° 10' W N 12° 30' W

62 + 12.36 64° 26' 10" RT

128° 53' 20"
64° 26'

N 74° 36' W

Low brush, boulders and bedrock outcroppings. Side slopes 5°

±

Sta. Deflect. Bearing Mag.

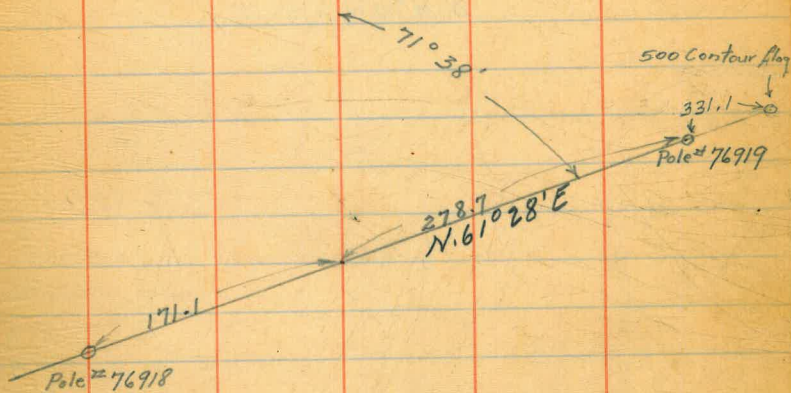
N 12° 30' W

64+87.02 P.O.T. (Intersection with power pole line)

N 10° 10' W

20

£



High brush, surface boulders

Sta Deflect. Bearing Mag.

N 10° 10' W N 12° 30' W

21

£

~~old road~~

~~65+15~~

High brush. Cobble stones. Side slopes = 5°

Sta. Deflect. Bearing Mag.

N. 10° 10' W N 12° 30' W

69+00.00 P.O.T.

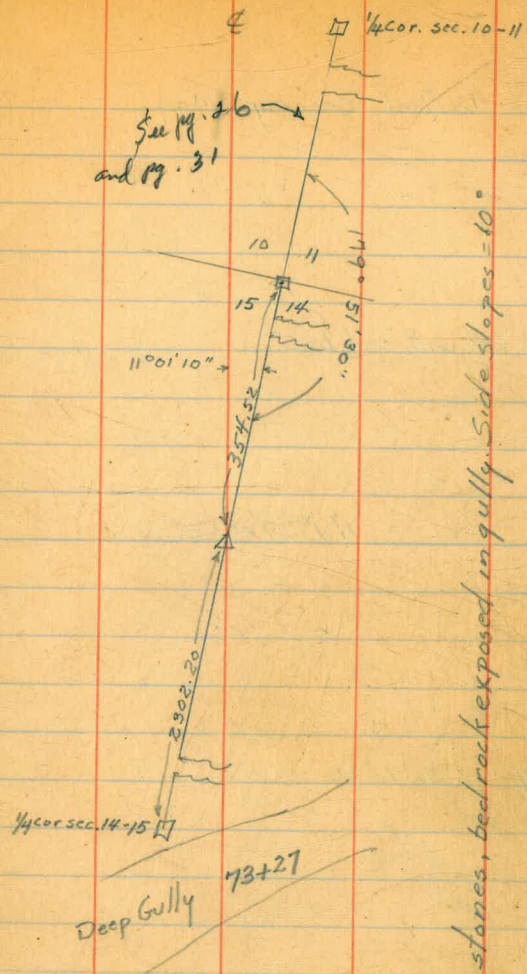
Low brush, cobblestones. Side slopes = 50

Sta. Deflect Bearing Mag.

75+70.59 Int. with sec. line.

N. 10° 10' N 12° 30' W

74+71.57 P.O.T.



Low brush, cobble stones, bed rock exposed in gully. Side slopes = 10°

Sta. Deflect. Bearing Mag.

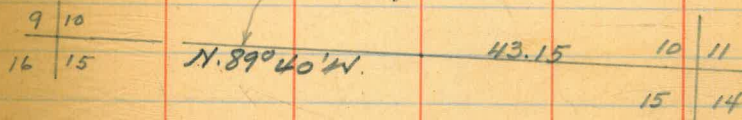
79+28.39 Int. with sect. line.

N. 1° 27' W N 3° 30' W

77+59.74 8° 42' 40" Rt.

17° 25' 20"
8° 42' 30"

N. 10° 10' W



Low brush, cobblestones. Side slopes = 10°

Sta. Deflect. Bearing Mag.

N. 15° 59' E N 14° E

81+91.29 17° 25' 45" Rt.

34° 51' 30"
17° 25' 40"

N. 1° 27' W

Low brush Side slopes = 10°

Sta Deflect. Bearing Mag.

N. 15° 59' E N. 14° E

84+01.94 Int. with sect. line.

84+00.00 P.O.T.

1/4 cor. sec 10-11
Mound of rock

14° 58' →

N. 10° 06' E

465.60

10
15
11
14

Low brush, no rock on surface. Side slopes = 5:1

Sta. Deflect. Bearing Mag

N.15°59'E N14°E

Gully 90+65

Low brush, scattered boulders, side slopes = 5°

Sta. Deflect. Bearing Mag.

⊥

Small Gully 95+40

N. 6° 05' E N 4° E

93+73.81 9° 53' 45" Lt.

19° 47' 30"
9° 54'

N. 15° 59' E.

old road 92+50

low brush, scattered boulders. Side slopes - 5°

Feb. 13 1937
Converse
Soper
Isbell
Remmen

Cloudy - Raining.

29

Sta. Deflect. Bearing Mag.

⊕

N. 11° 46' E N 9° 30' E

99+15.98. 5° 41' 15" R.H.

11° 22' 30"
5° 41' 15"

N. 6° 05' E

Low brush, bed rock outcroppings. Side slopes 15°

Sta Deflect. Bearing Mag.

€

N.42°51'W N45°W

101+40.70 54°³⁷⁻³⁰₅₇₋₃₀ Lt.

109°15'
54°57'30"
54-37-30
50°38'

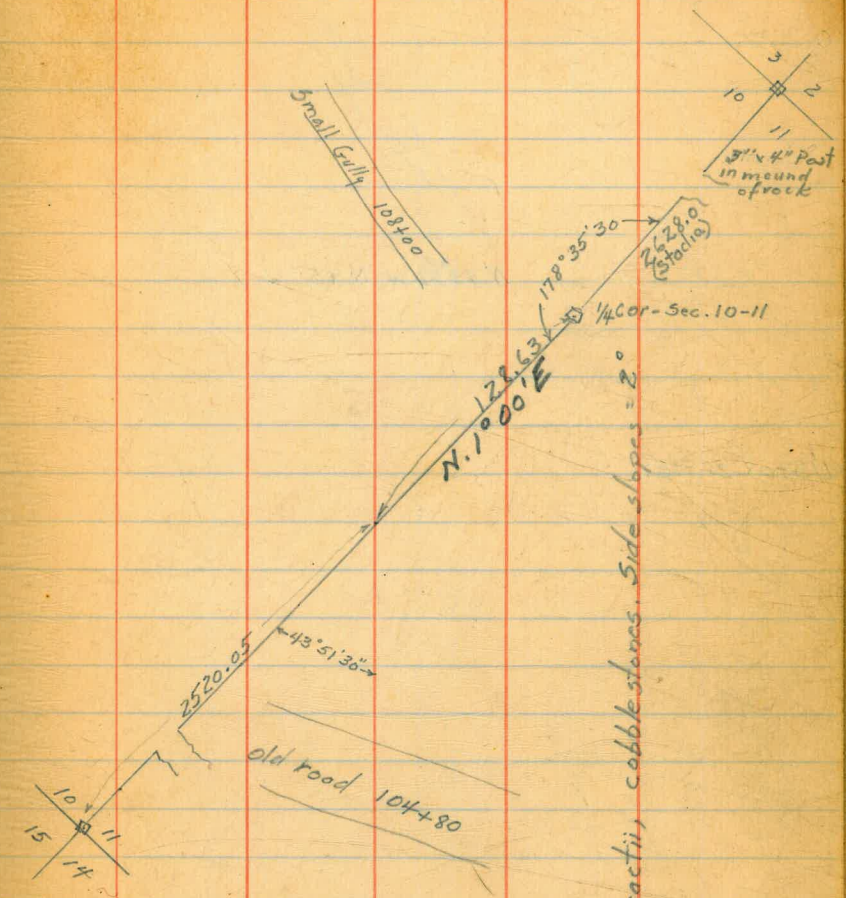
N.11°46'E

Low brush, rock outcroppings. Side slopes = 15°

Sta. Deflect. Bearing Mag.

N. 42° 52' W 10870

106+32.93 Int. with section line.



Low brush, cactii, cobbles stones. Side slopes = 2°



Sta. Deflect. Bearing Mag

N. 42° 52' W N 45° W

113+08.28 P.O.T.

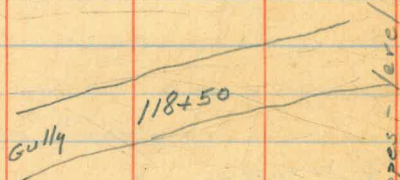
Old road
113+75

Low brush cobblestones side slopes 2°

Sta. Deflect. Bearing Mag

N. 42° 52' W N 45° W

£



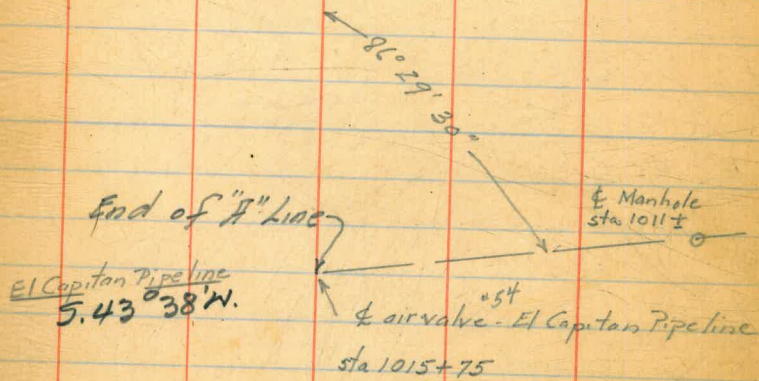
low brush, cobblestones, Side slopes - 1:1

Sta. Deflect Bearing Mag.

128+46.92 $86^{\circ}29'30''$ Rt.

N. $47^{\circ}52'$ W.

34



⊕

Alternate location for pipe line
from Murray Dam to El Capitan
Pipe Line. "B" Line.

Feb. 15 1937
Converse
Soper
Isbell
Remmen

36

Sta. Deflect. Bearing Mag.

N. 62° 48' N 65° W

62+12.86 11° 47' 40" RT

11° 47' 50"
23° 33' 20"

N. 74° 36' N 76° 30' W

Contd. From Page 19.

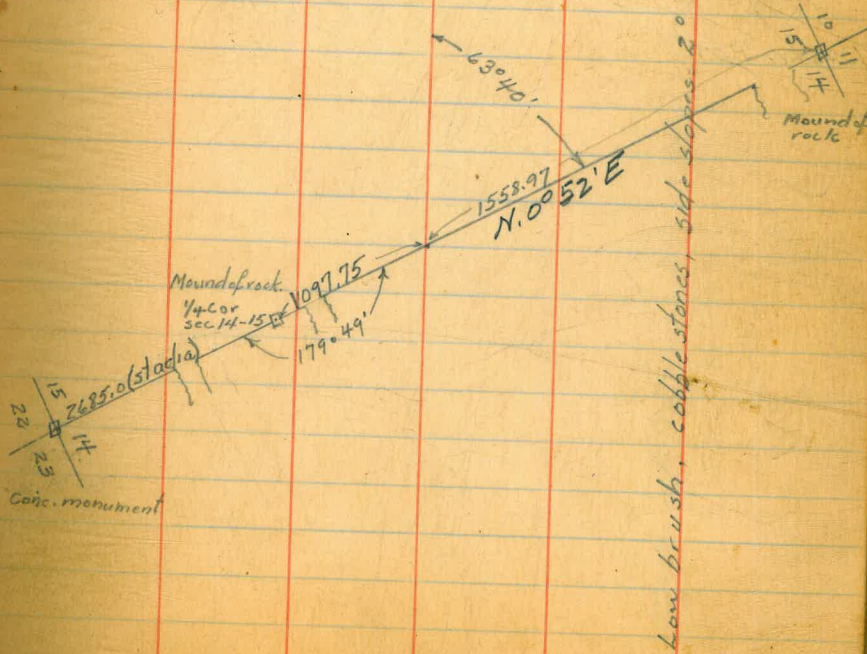
Backsight on
25+78.51

Sta. Deflect Bearing Mag.

N. 62° 48' N. N 65° W

65+28.05 P.O.T.

65+02.10 Int. with section line



Sta Deflect. Bearing Mag.

N65°W

73+00.00 P.O.T.

Low brush, cobblestones, side slopes - level.

sta. Deflect. Bearing Mag.

N 65° W

86+00.00 P.O.T.

Heavy brush - 86+25

Sta. Deflect. Bearing Mag.

N65°W

89+00.00 P.O.T.

Heavy brush, cobblestones, side slopes - level

Sta. Deflect. Bearing Mag

N 65° W

91+31.16 P.O.T.

41
Deep gully 92+30

Heavy brush, cobble stones, side slopes - level.

Sta. Deflect Bearing Mag.

N. 49° 42' W N. 51° 30' W

97+37.41 13° 06' RT.

130° 06'
26° 12'

N. 62° 48' W

End of Heavy brush 97+50

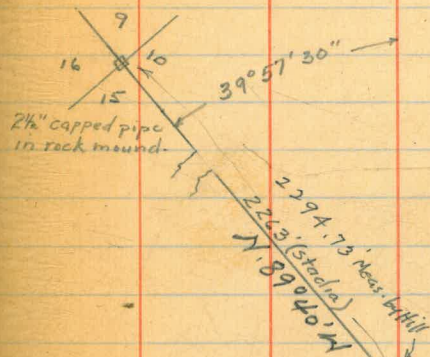
Heavy brush, cobbles, side slopes - level

Sta. Deflect. Bearing Mag.

100+00.00 P.O.T.

98+89.39 Int. with sect. line

N. 49° 42' W



3016.50

Low brush, cobblestones, side slopes 2°



Sta. Deflect. Bearing Mag.

101+13.65 P.O.T.

44
low brush, cobblestones, side slopes 5°

Sta. Deflect. Bearing Mag.

103+41.79 P.O.T

Low brush, side slopes, 20

Sta. Defled. Bearing Klog.

£

Bottom of deep canyon 107+20

Low brush, cobblestones, side slopes 2°

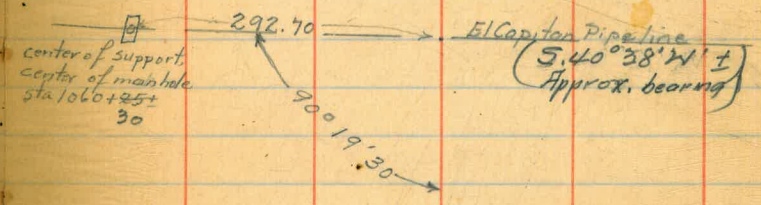
Heavy brush, cobblestones, side slopes 20

110+67.79 P.O.T

48
Low brush, cobblestones side slopes level

115+06.76 Center of 36" Pipeline. End of B" Line.

N. 49° 42' W



Stadia traverse of 500 elev. contour (U.S.G.S.)
 north-easterly from pipe line location to determine
 length of possible tunnel to connect with
 Murray Reservoir from north.

March 10 1937

Converse

Soper

Isbell

Remmen

51

Sta.	Deflect.	Stadia Dist.	Ver. Angle	Cor. Dist.	Mag
#4 119+11					
#3 114+21	26°05'30" Rt.	490.0	—		N 34° E
#2 107+30	16°23' Lt.	691.0	—		N 8° E
#1 102+55	79°49'30" Lt.	475.0	—		N 24° E
					(Point on 500 contour U.S.G.S. Datum)
					5.76° E
101+40.70	94°22'30" Rt.	108.0	9°58'	104.8	
	Backsight on sta 99+15.98				N 11°46' E

Sta	Deflect	Dist.	Mag.
⁰¹ 137+80			
⁰⁸ 126+85	5°35'30" Rt.	1095.0	N 52°30' E
⁰⁷ 123+24	17°39' Rt.	361.0	N 47° E
⁰⁶ 122+17	18°03' Rt.	107.0	N 29°30' E
⁰⁵ 121+39	28°30' Rt.	78.0	N 11°30' E
⁰⁴ 119+11	51°00'30" Lt.	228.0	N 17° W
			N 34° E

	Deflect	Stadia Dist.	Ver. Angle	Diff Elev.	Elev	Rad.	
#12C	13°20' H	235.0	-4°16'	-17	483	4.6	Bottom of canyon
#12B	42°40' LT	85.0	-4°30'	-15	485.0	12.6	Bottom of canyon
#12A	130°00' LT	170.0	-12°08'	-35	465.0	4.6	Bottom of canyon
#12					500.0		
#11	1°20' LT	255.0					
							(Notes 500 contours)
	28°17' R	215.0					
#10A	82°10' LT	195.0	-22°40'	-13	427.0	8.8	Bottom of canyon
#10					500.0		
#9	33°03'30" H	330.0					

N 85° E

N 52° 30' E

	Deflect	Stadia Dist.	Vert. Angle	Mag.	Diff. Elev.	Elev.	Rad.	
			0° 22' 30" RT					(Angle to Section line)
#19D								
#19C	154° 10' LT	415.0	-7° 12'		-52	521.0	4.0	Water Surface and water edges of Lake Murray.
#19B	168° 50' LT	530.0	-5° 02'		-46	527.0	4.0	
#19A	171° 30' LT	665.0	-3° 44'		-42	530.0	4.0	
	176° 50' LT	840.0	-2° 36'		-38	535.0	4.0	
#19	(H.I. 40)							
	201+08 Section Corner.				+1	573.0		11/12 T. 16 S. R. 2 W. 14/13 Section Corner.
	38° 17' RT	1320.0	+0° 08'	S 1° E			7.2	
#18C								
#18B	47° 00' RT	360.0	-4° 00'		-34	538.0	14.2	
#18A	66° 40' RT	310.0	-4° 08'		-31	541.0	14.2	
	99° 00' RT	320.0	-4° 38'		-26	546.0	5.2	
#18	(H.I. 52)							
	187+88				-76	572.0		S. 1/4 Cor. Lot 68 Rancho Ex. Mission
#17	(H.I. 49)							
	(Cor. 1699.0)							
	20° 24' 30" LT	1700.0	-2° 30'	S 39° E			6.9	
	170+91					648.0		

Murray Pipeline revision (2" line)

8+68⁵⁸ E.C.

$\Delta = 15^{\circ}33'14''$		
R = 1000'	+68 ⁵⁸	7046.5
S.T. = 136.54	+50	7014.5
L = 271.40	8+00	5048.6
B.C. = 5+97 ¹⁸	+50	4022.6
E.C. = 8+68 ⁵⁸	7+00	2056.7
def. 1 = 1.719	+50	1030.7
def 50 = 1°25.944	6+00 -	0°01.8

5+97¹⁸ B.C.

3+25²² L 3°23'30"lt

Cont'd from page 5

11/12/41

Soper
Brooks
Hedgson

56

±

4x4 in
mound of rock
1/4 cor.

6+20¹⁹ P.O.C.
301.49
33°14'

conc. mon. marked
S.W. of S.W. crest
of La Mesa Dam.

11/13/41

57

Saper
Brinks
Hedgeron

12+10⁹² E.C.

$\Delta = 7^{\circ}00' \text{ RT}$

$R = 1000'$

$ST = 61.6$

$L = 122.17 \quad \checkmark$

$BC = 10+88.75 \quad +10.92 \quad 3^{\circ}30'$

$P.C. = 12+10.92 \quad 12+00 \quad 3^{\circ}11.2'$

$\text{def. } 1' = 1.719 \quad +50 \quad 1^{\circ}45.2'$

$\text{def. } 50' = 1^{\circ}25.944 \quad 11+00 \quad 0^{\circ}19.3'$

Note: P.I. of this curve is angle point, sta. 11+53.00
of previous location.

10+88⁷⁵ B.C.

11/14/41

58

Soper
Birks
Hedgerson18+16th E.C.

$$A = 30^{\circ}17'27''$$

$$R = 1000$$

$$S.T. = 270.60$$

$$L = 528.54$$

$$B.C. = 12+87.50$$

$$E.C. = 18+16.04$$

$$\text{def. } 1' = 1.719$$

$$\text{def. } 50' = 1^{\circ}25.944$$

$$+16.04 \quad 15^{\circ}08.5$$

$$18+00 \quad 14^{\circ}40.9$$

$$+50 \quad 13^{\circ}4.9$$

$$17+00 \quad 11^{\circ}49.0$$

$$+50 \quad 10^{\circ}22.1 \text{ P.O.C.}$$

$$16+00 \quad 8^{\circ}57.1$$

$$+50 \quad 7^{\circ}31.2 \text{ P.O.C.}$$

$$15+00 \quad 6^{\circ}05.3$$

$$+50 \quad 4^{\circ}39.3$$

$$14+00 \quad 3^{\circ}13.4$$

$$+50 \quad 1^{\circ}47.4$$

$$13+00 \quad 0^{\circ}21.5$$

Note: P.I. of this curve is angle point sta. 15+61.4
of previous location.

12+87⁵⁰ B.C.

11/17/41

59

Soper
Brooks
Hodgeson

26+44.31 EC

$$\Delta = 90^{\circ} 18' 27''$$

$$R = 1000'$$

$$S.T. = 81.34'$$

$$+44.31' \quad 4^{\circ} 39.0'$$

$$L = 162.31'$$

$$26+00 \quad 3^{\circ} 22.8'$$

$$B.C. = 244.82^{\circ}$$

$$+50' \quad 1^{\circ} 56.9'$$

$$E.C. = 26+44.31'$$

$$25+00 \quad 0^{\circ} 30.9'$$

$$\text{def. } \angle = 1.719$$

$$\text{def. } \angle = 1^{\circ} 25'. 744$$

Note: P.I. of this curve is angle point, sta. 25+78.51 of previous location, but with different def. angle.

24+82.00 BC

Revision - "L" line page 65, this book

37 + 15³⁷ P.O.T.

11/18/41

Super

Brooks

Hedgson

60

$A = 11^{\circ} 54' L$

$R = 1500'$

$S.T. = 156.33$

$L = 311.54$

$BC = 46+97^{\circ} 07'$

$EC = 50+08^{\circ} 6'$

$def. 1 = 1.14L$

$def. 50 = 0^{\circ} 57' 300$

$+08^{\circ} 6' \quad 5^{\circ} 57'$

$50+00 \quad 5^{\circ} 47.1$

$+50 \quad 4^{\circ} 49.8$

$49+00 \quad 3^{\circ} 52.5$

$+50 \quad 2^{\circ} 55.2$

$48+00 \quad 1^{\circ} 57.9$

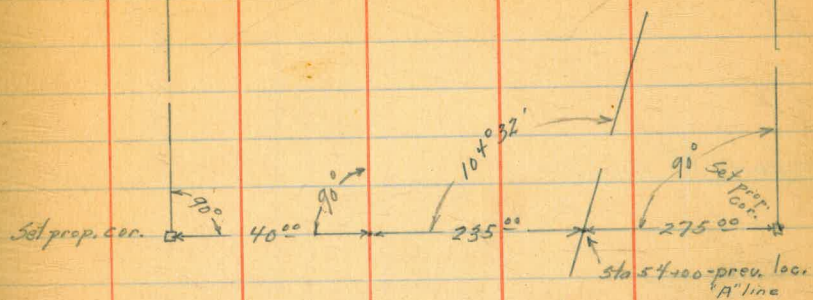
$+50 \quad 1^{\circ} 00.6$

$47+00 \quad 0^{\circ} 03.3$

$46+97^{\circ} 07' BC.$

53+43⁹⁰ P.O.T.

50+08⁶¹ E.C.



11/19/41

63

Soper
Brooks
Hodgeson

Q

4000

63+45⁸⁵ P.O.T.

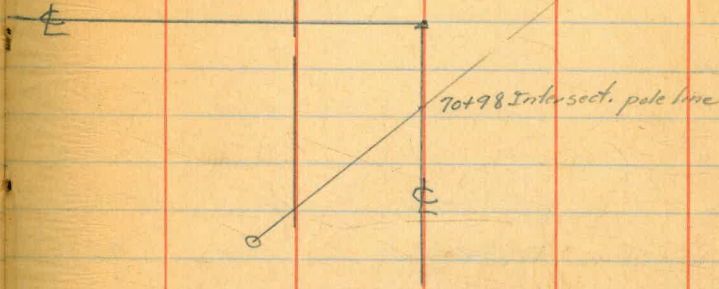
59+30⁴⁰ P.O.T.

Property line

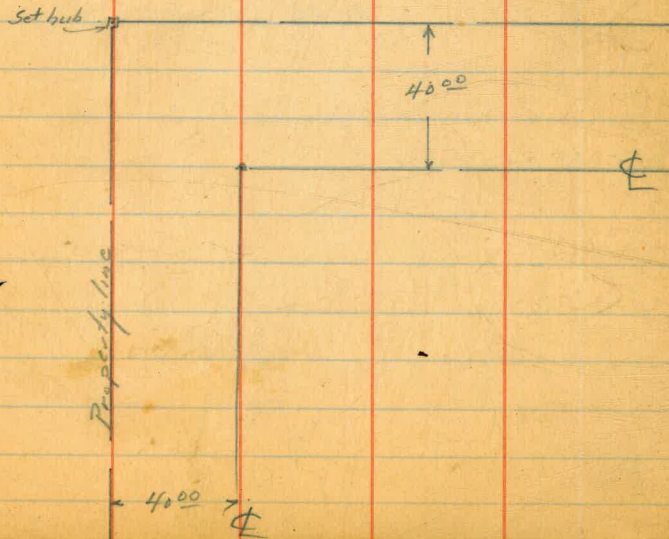
4000

e

71433 90° L. 90°00' Lt



66+53 90° L. 90°00' Rt



Revision, N.W. from Sta 23+53⁶⁴ (L²/line)

Mag. (Declination not set off)
 N 87° W

27+70.34 E.C.

	+70 ³⁴	7°57.5
	+50	7°34.2
$\Delta = 15^\circ 55' Pt$	27+00	6°36.9
$R = 1500'$	+50	5°39.6
$T = 209.70$	26+00 P.O.C.	4°42.3
$L = 416.70$	+50	3°45.0
$BC = 23+5364$	25+00	2°47.7
$E.C. 27+7034$	+50	1°50.4
$def 1 = 1.146$	24+00	0°53.1
$def 50 = 0^\circ 57.30$		

23+53⁶⁴ B.C.

41+00 P.O.Y.

37+19⁸ P.O.Y.

11/27/41

Soper
Hedgson
Davis.

66

$\Delta = 18^{\circ}32' L4$	$+19^{\circ}$	$9^{\circ}16.0$
$R = 1500$	54	$8^{\circ}53.2$
$S.T. = 244.74$	450	$7^{\circ}55.9$
$L = 485.20$	53	$6^{\circ}58.6$
$BC = 49+3470$	450	$6^{\circ}01.3$
$EC = 54+1990$	52	$5^{\circ}04.0$
$der.1 = 1.146$	+50	$4^{\circ}06.7$
$der.50 = 0^{\circ}57.30$	51	$3^{\circ}09.4$
	450	$2^{\circ}12.1$
	50	$1^{\circ}14.8$
	49+50	$0^{\circ}17.5$

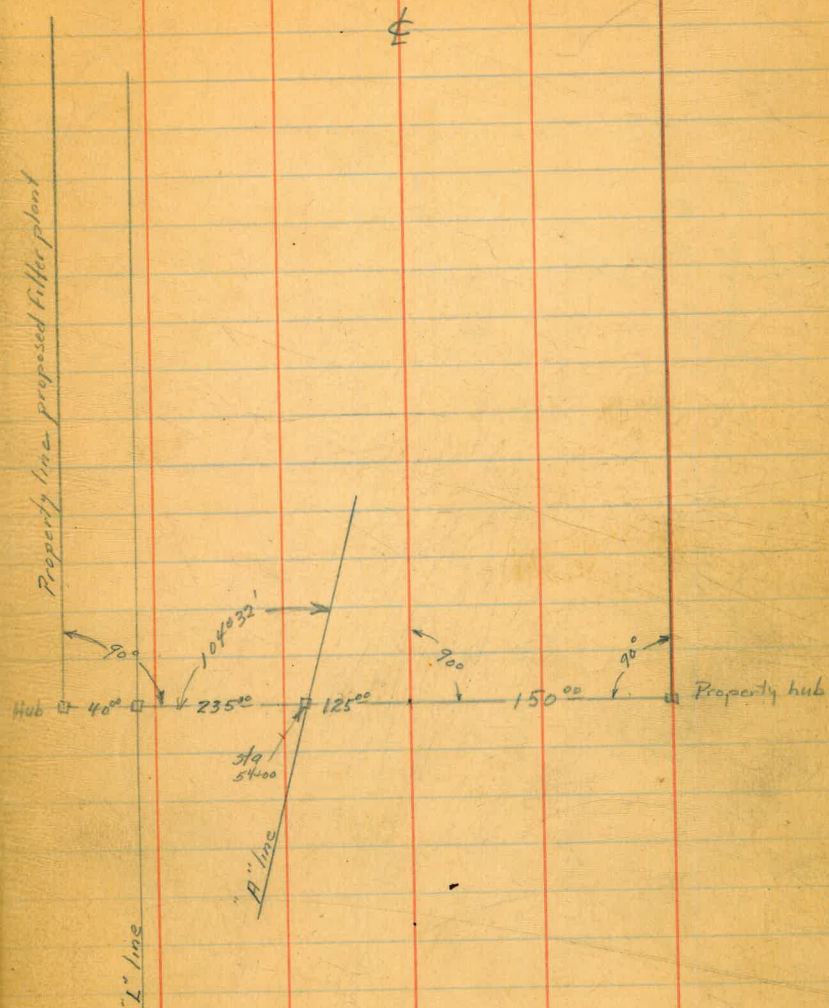
49+34.70 BC.

47458⁴⁷ P.O.Y.

58+00 P.O.T.

54+23.50 P.O.T.

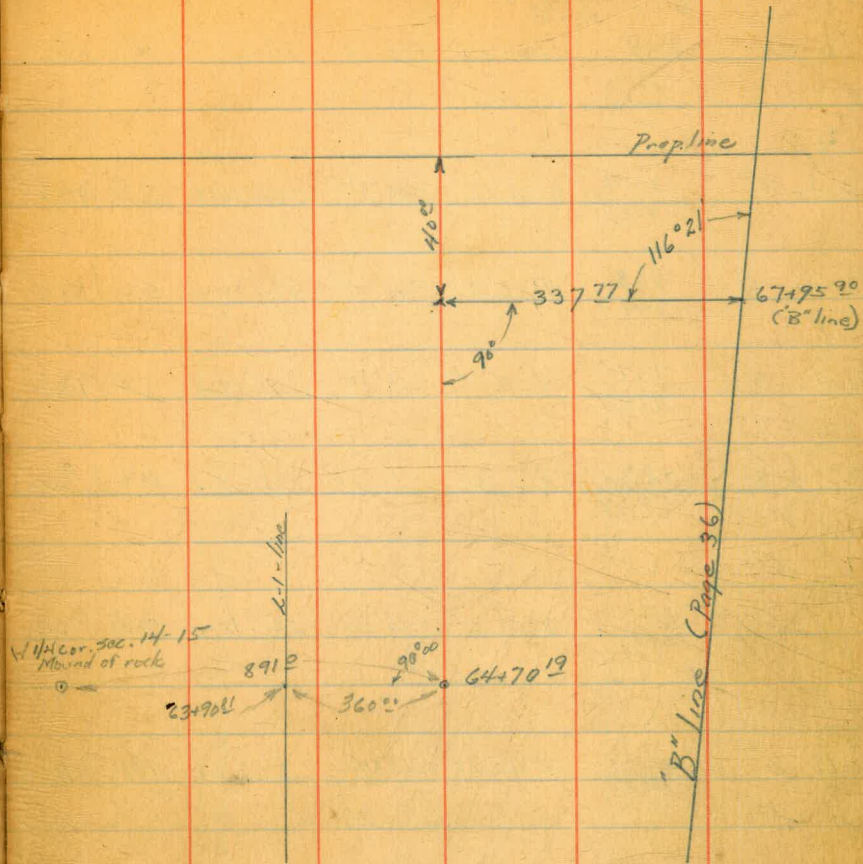
54+19.90 E.C.



67133.50 Focal Pt.

64450 P.O.P.

67



Stadia Survey, S.W. from filter plant location
down Alvarado Canyon to El Capitan Pk.
"P-1-Line"

12/5/41
H. H.
Super
Brooks
Davis

Point	Dist.	Hor. L.	Ver. L.	Mag	H.I.	Red.	Eleu.
2 to 7	1037 (1092)	4°38' Lt	-16°57'	S62°30'W	5.0	13.0	226.7 sl. dist 1073
*2 to 6	828 (866)	4°38' Lt	-12°08'	S62°30'W	5.0	13.0	253.1
*2 to 5	737 (786)	4°38' Lt	-14°30'	S62°30'W	5.0	10.0	247.70
*2 to 4	552 (591)	4°38' Lt	-14°56'	S62°30'W	5.0	5.0	293.90
*2 to 3	416 (448)	4°38' Lt	-15°30'	S62°30'W	5.0	10.0	319.70
0 to 2	455 (455)	7°40' Lt	-1°54'	S67°W	4.9	4.9	431.3
*0 to 1	162 (163)	7°40' Lt	-4°30'	S67°W	4.9	4.9	433.7
* K at Sta 67+33 ⁵⁰ (point "0") backsight on 67+50							446.4

Hor. Dis. 6310.
Pipet. " 6310±

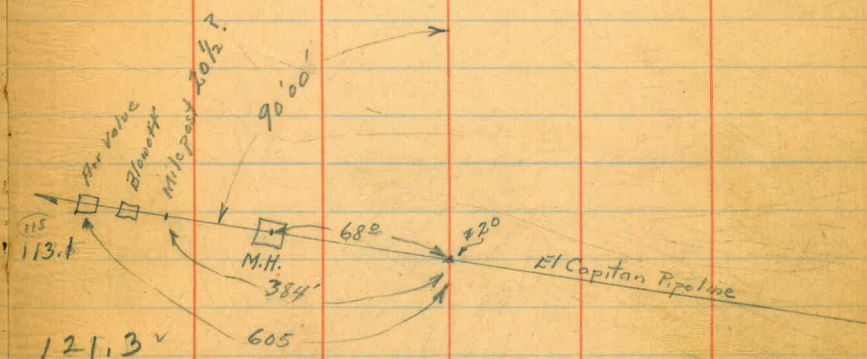
575°W
(declin. not set off)

Point	Dist	Hor. L	Ver. L	Mag.	H.I.	Red.	
13 to 14	¹⁴⁰ 741 (440)	0°31' RT	-1°26'	S 69°30' W	5.0	5.0	137.9 ✓
10 to 13	⁸⁶⁹ 866 (864)	7°16' LT	-0°10'	S 69° W	4.8	4.8	148.9 ✓
*10 to 12	⁷ 360 (261)	7°16' LT	-2°34'	S 69° W	4.8	9.8	134.8 ✓
*10 to 11	280 (281)	7°16' LT	-2°43'	S 69° W	4.8	5.8	137.1
7 to 10	¹⁵⁹⁵ (1598)	13°50' RT	-2°42'	S 76° W	4.8	5.0	151.4 ✓
*7 to 9	1355 (1362)	13°50' RT	-4°08'	S 76° W	4.8	6.2	127.9
*7 to 8	205 (231)	13°50' RT	-19°46'	S 76° W	4.8	6.8	159.4

slope dist 217.8

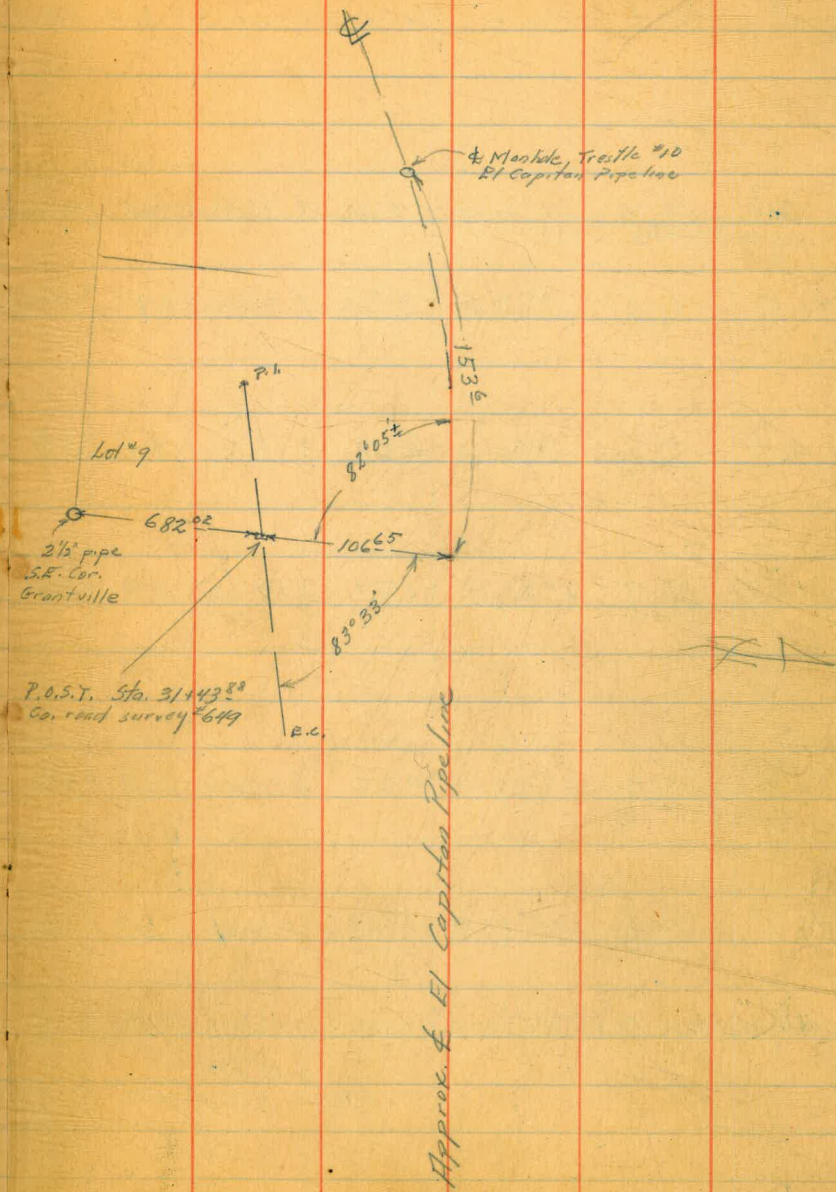
226.7

Point	Dist	Hor. L	Ver. L	Mag	M.I.	Red.
* 19 to 20 *	327 326 (326)	35°04'RT	-1°27'	N63°30'W	5.1	5.1
* 18 to 19 *	710 410	2°34'RT	-1°42'	S81°30'W	4.7	4.7
* 17 to 18 *	397 397 (397)	7°02'LT	-0°38'	S79°W	4.7	4.7
* 14 to 17 *	764 764 (764)	16°25'RT	+0°18'	S86°W	4.8	8.8
* 14 to 16	335 (335)	16°25'RT	-0°31'	S86°W	4.8	4.8
* 14 to 15	167 (167)	16°25'RT	-3°39'	S86°W	4.8	9.8



137.9

Property ties - El Capitan Pipeline - to East
line of Grantville and to
County Road Survey # 649.
Previous ties on drawing, File
No. 927-D-15, Partition A



to Markula, Tract #10
El Capitan Pipeline

Stadia Survey, S.W. from filter plant site, on ridge
between 'B' line and 'P-1' line, to El Capitan Pipeline

P-2-Line

Point Dist. Hor. L. Ver. L. Mag. H.I. Rod Elev.

*4 to *6 1074 (1080) 19°20'RT -4°28' N 76°W 4.9 4.9 310.30 El Capitan Pipeline

*4 to *5 610 (610) 19°20'RT -21°26' N 76°W 4.9 4.9 184.1 6.62 slope dist 5.04

*3 to *4 148 (147) 0°00' -2°04' S 84°W 4.8 11.8 393.6

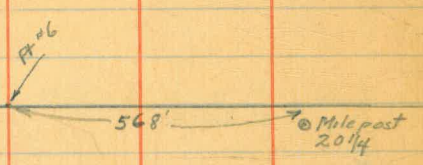
*2 to *3 2837 (2836) 6°47'RT -0°24' S 84°W 4.8 4.8 405.9

*1 to *2 508 (507) 22°25'LT -0°24' S 77°30'W 4.8 4.8 424.8

*0 to 1. 702 (702) 25°22'RT -1°28' N 80°W 4.7 4.7 428.4

transit at Sta. (7+33.5) (point *0) backsight on 64450 446.4
575°W.
(declin. not set off)

1/6/42
Hill
Soper
Halderson
Davis 74



Hor. dis 5263'
Pipe 2.5361±

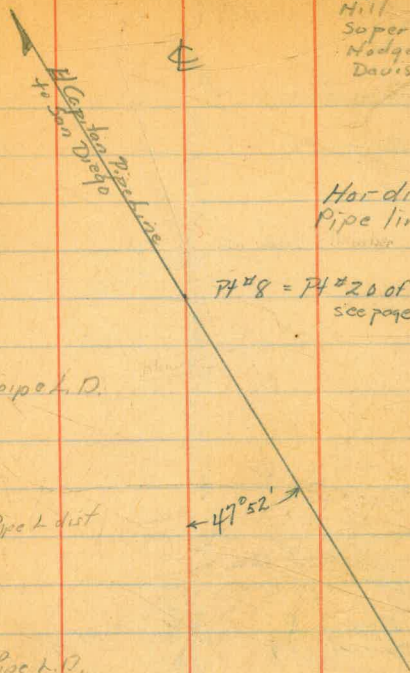
Stadia survey, alternate on P-2-line. Beginning at
Point # 2, P-2-line, down to El Capitan P.L.

P-2-A-Line

Point	Dist	Hor. L.	Ver. L.	Mag	H.I	Rod.	Elev.
*7 to *8	725' (744)	16°58'14"	-9°18'	574°30'W	5.0	5.0	109.1
*6 to *7	363' (371)	0°00'	-8°50'	557°30'W	5.0	5.0	224.7
*5 to *6	965 (978)	2°00'14"	-6°53'	557°30'W	4.8	4.8	279.8
*4 to *5	203 (203)	13°08'14"	-2°33'	559°30'W	4.9	4.9	394.6
*3 to *4	651 (650)	8°07'14"	-0°24'	572°30'W	4.7	4.7	403.6
*2 to *3	2181 (2180)	2°59'14"	-0°26'	580°W	4.8	4.8	408.2
transit at point #2 (P-2 line) back sight on point #1							424.8
							577°30'W

1/1/42
Hill
Saper
Hodgeson
Davis

75



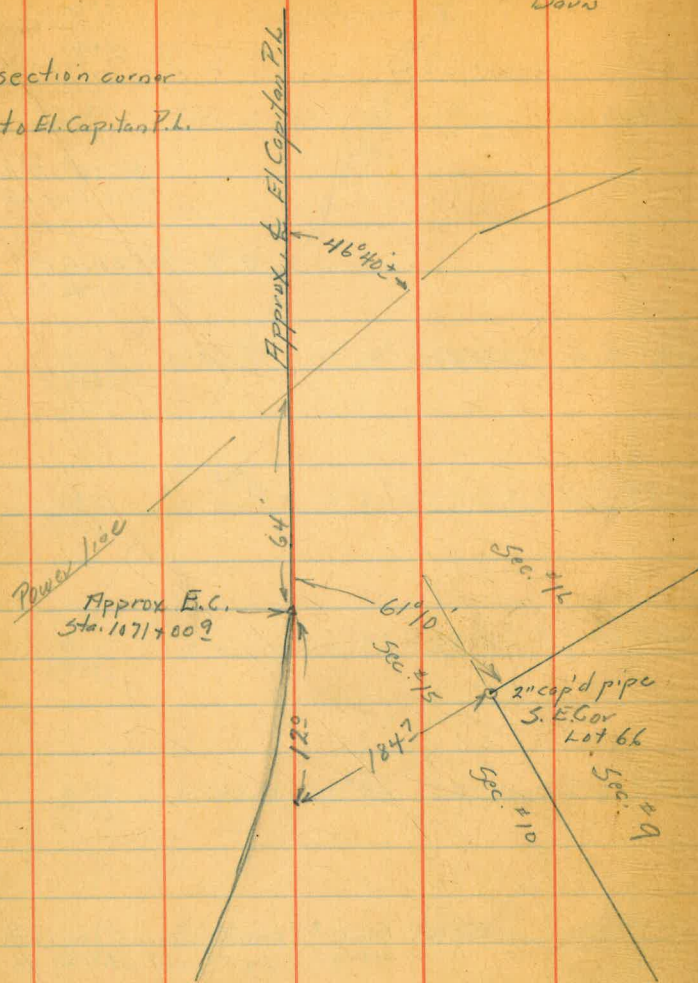
Hor. dist. 6298'
Pipe line 6321' ±

74#8 = P4#20 of P1 line
see page 72

Note: Point #3 could be moved over to be a P.O.T.
between #2 & #4 and still be on level ground.

76-A

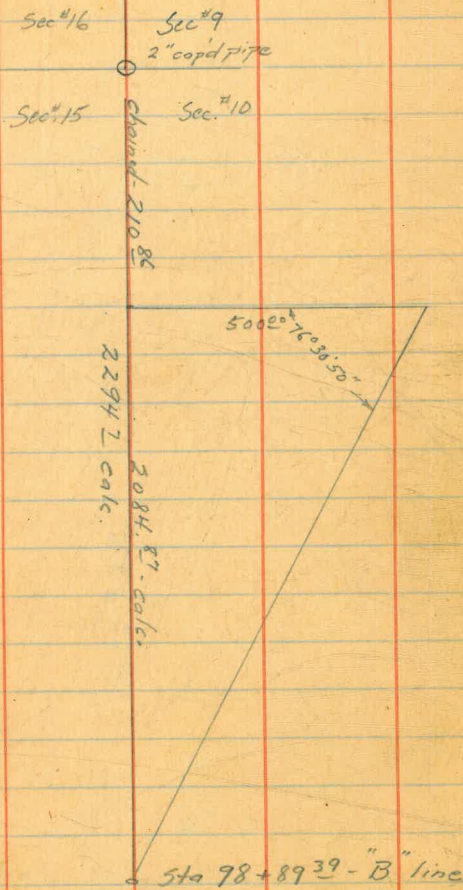
Tie from section corner
9-10-15-16 to El. Capitan Pk.



76-B

1/10/42
Super
Hudgeson
Davis

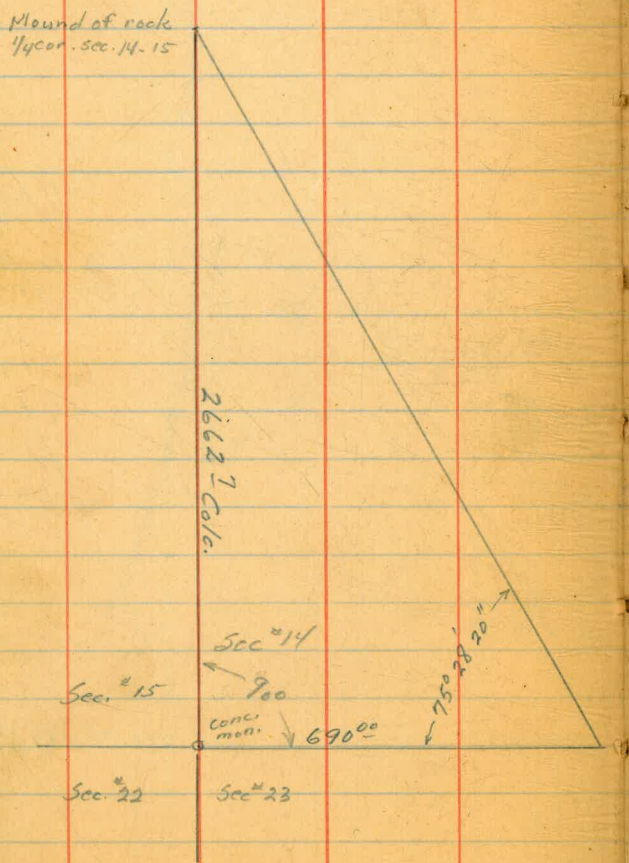
Triangulation for tie from "B" line to section corner
9-10-15-16



1/13/42
Soper
Hodgeson
Davis

77

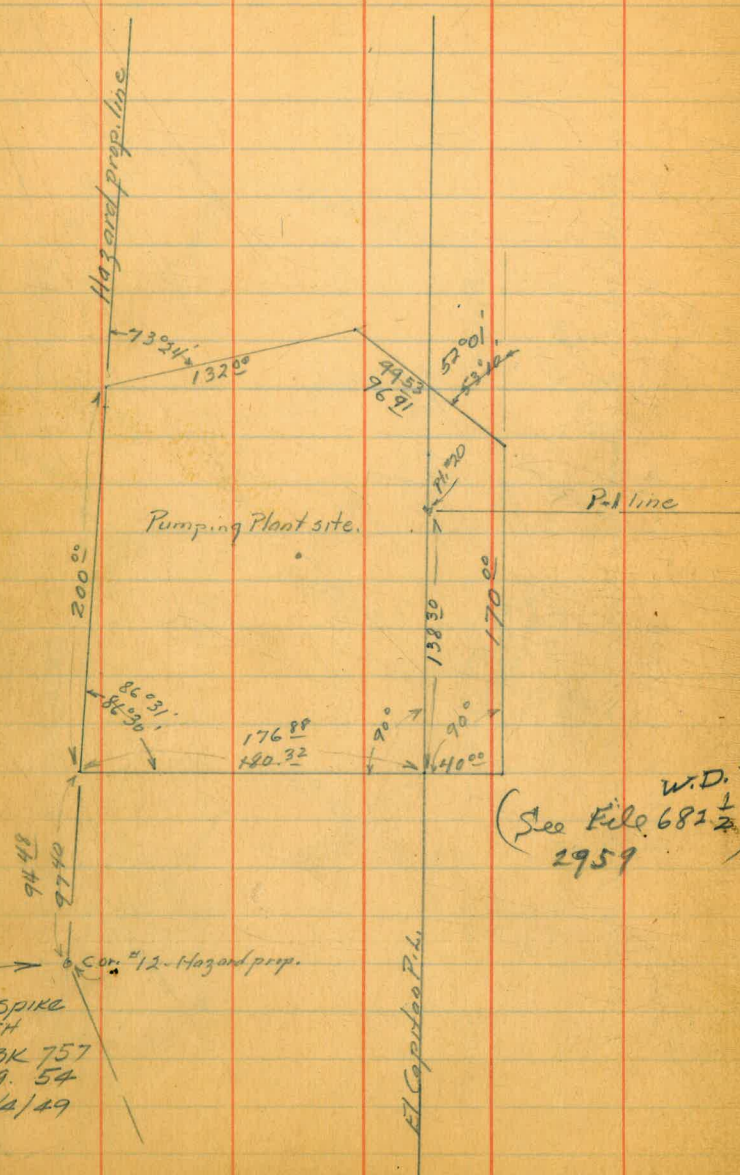
Triangulation for distance from 1/4 corner 14-15
to section corner 14-15-22-23



1/22/42
H. H.
Soper
Hodgeson
Davis

79

Survey of Pumping Plant site - Alvarado Canyon



(See file 682 1/2)
2959 W.D.

FD SPIKE
& LATH
See BK 757
pg. 54
1/2/49

Stadia P¹ line - 6300 ±
 Stadia P² line - 5270 ±
 Stadia P³ line - 6800 ±

58° 130 - 362.11 - 100 ft - 1017.00

70+14² L¹ line = 67+33 = L² line

62+12.36
 54
 8 12.36

63 46 stadia line

337.77

116.021

0.660

112

122

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

Now

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.