1738

ENGINEERS'

LEVEL BOOK

No. 4 OF

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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F. B. 1738

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Traverse Line for Topography and Location of Prop. Road from 54th & F.L. Cajon to Montezuma Road.

(Levels P-12)

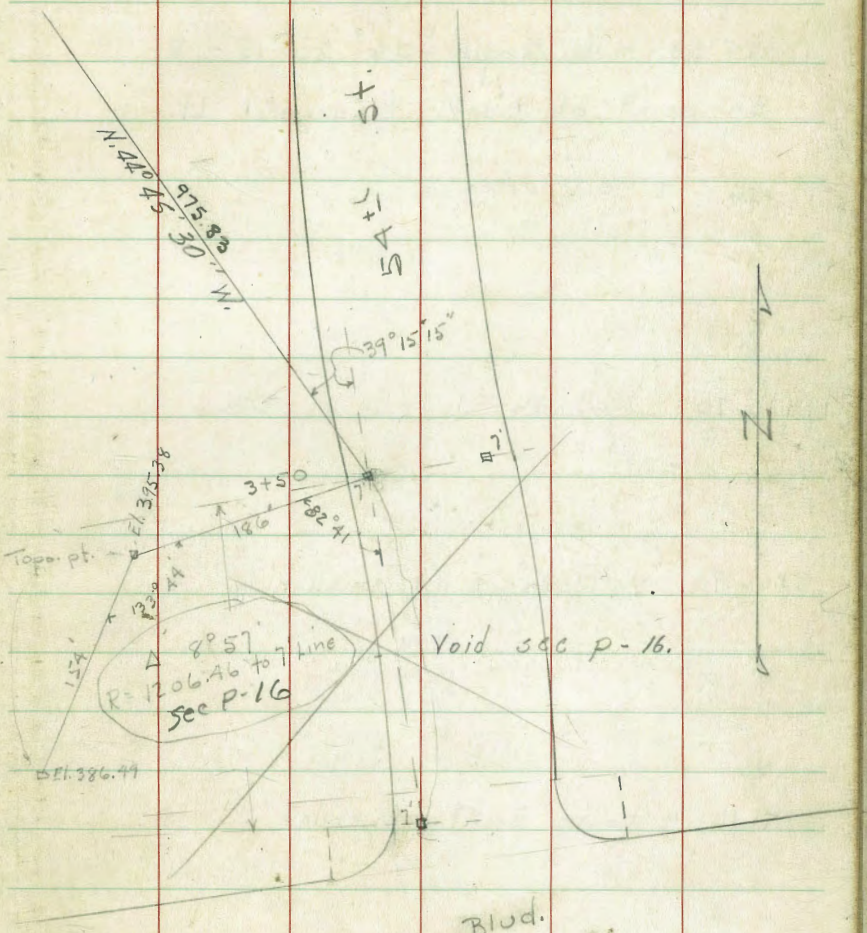
Begin on ext.? Hub - call 3+50 Turned 39° 15' 15" Lt. from long chord produced

9-27-46

Osborne Hendricks
Hardin Beck
Worrell Greer

Indexed E.S.K.

1



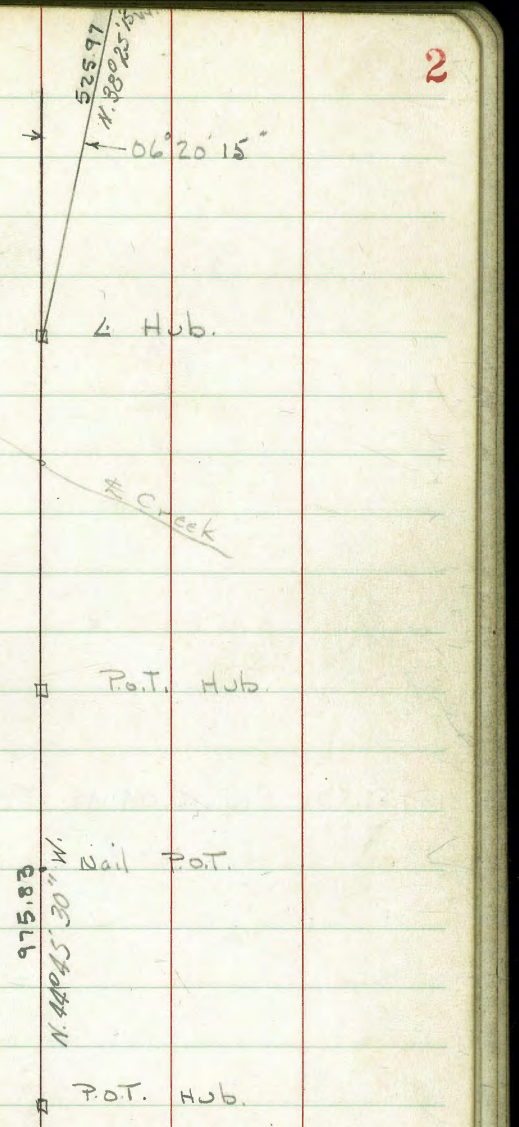
13+25.83 - Hub. Angle 06° 20' 15" Rt.
on point of Ridge. ℄ Creek = 61' Lt.

12+16 = ℄ side creek

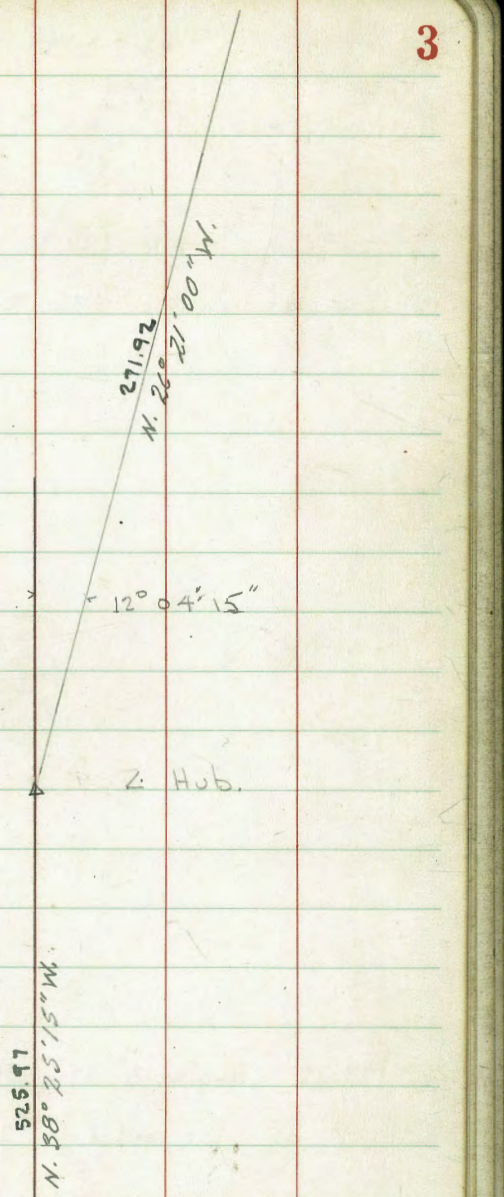
11+16.70 = Hub on Sly. side of Draw -

8+66.70 = Nail on ℄ of small ridge

5+91.70 = Hub. on point of ridge



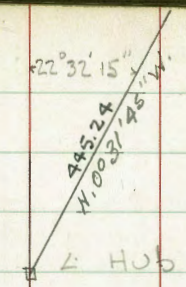
18+51.80 - Ang. 12° 04' 15" Rt. - 19' Lt. = ℄ Creek

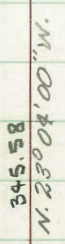


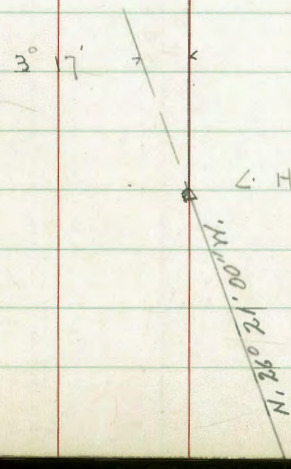
Thru Heavy brush

24+69.30 = Angle 22° 32' 15" Rt.

Bottom of Valley - 35' Rt. = ℄ Creek







21+23.72 = Angle 3° 17' Rt.

Point of flat ridge - 34' Ht. = ℄ Creek

Brush

36+00 = nail

32+20 = ℄ Creek

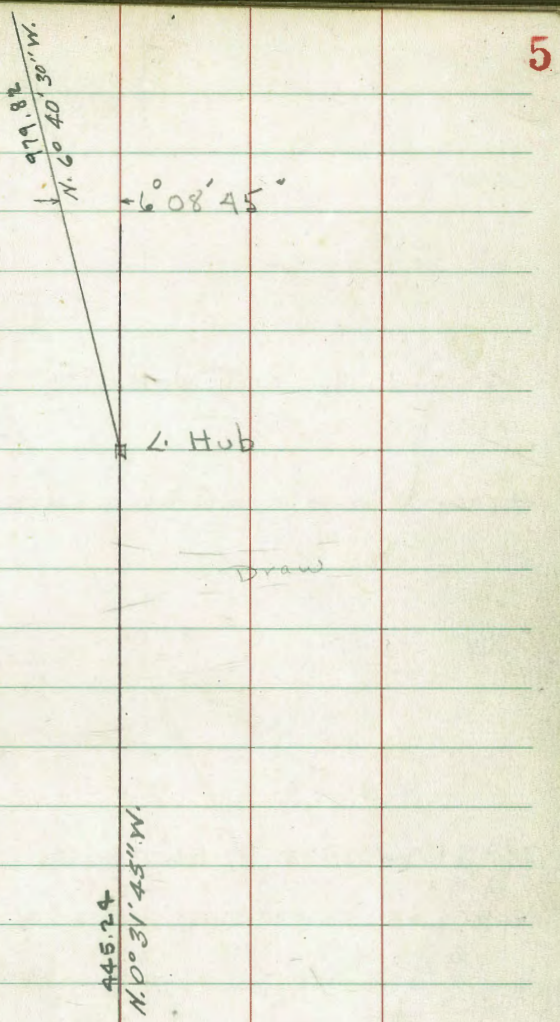
32+03.90 = 290' slope - nail

29+14.54 - Hng. 6° 08' 45" lt. - top of narrow ridge - 42' Lt. = ℄ Creek

28+70 = Mouth of Deep draw

Brush

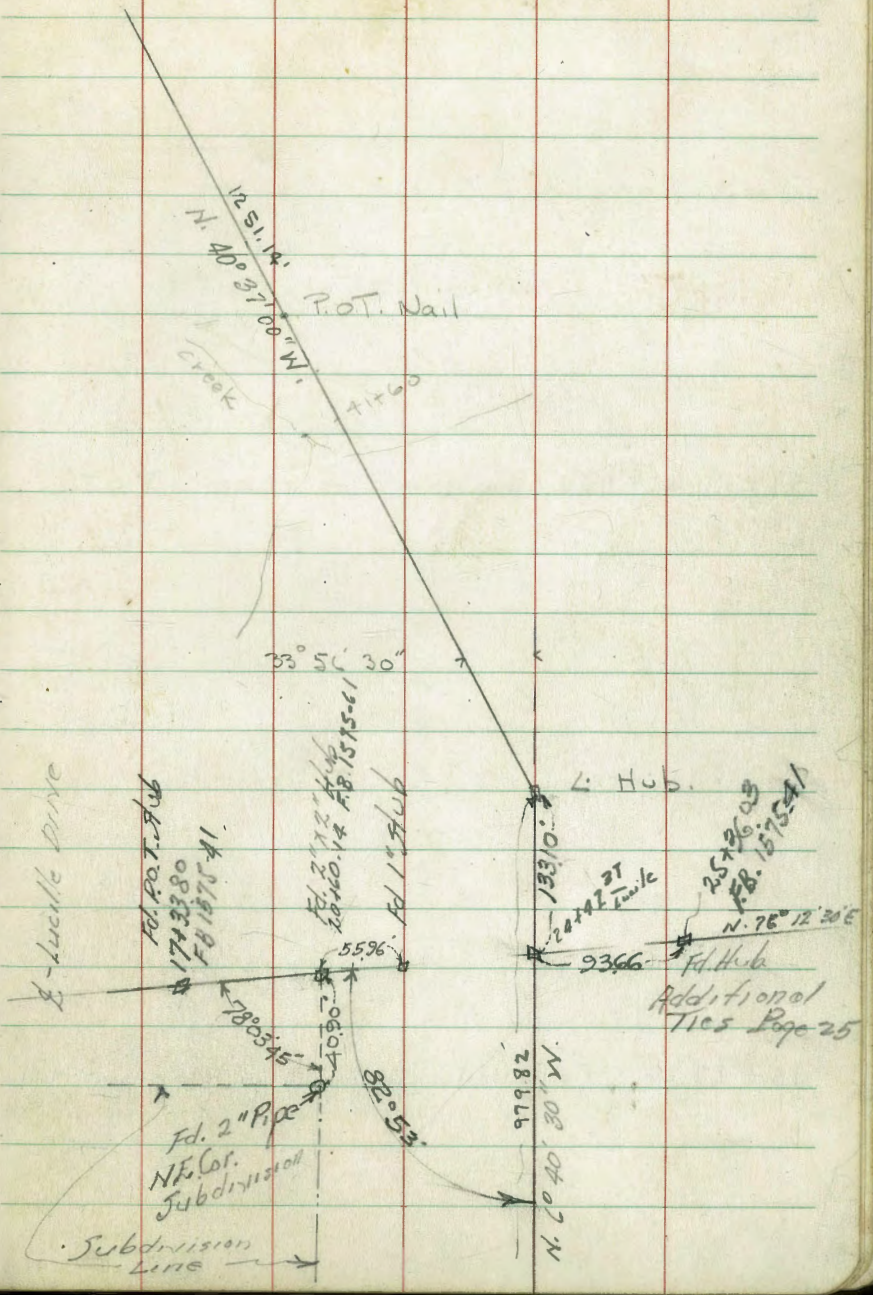
26+59.30 = Nail. Dist. only



42+10.77 = P.O.T. Nail

41+60 - 12' Lt. = int. of 2 creeks

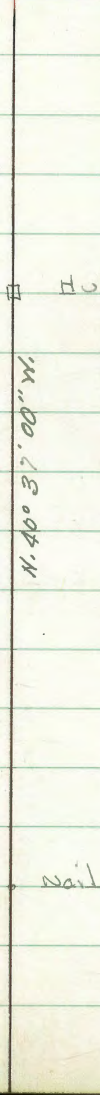
38+94.36 = Ang. 33° 56' 30" Lt. = Hub in clear spot on Pt. of Ridge - 100' up from bottom



Deep canyon

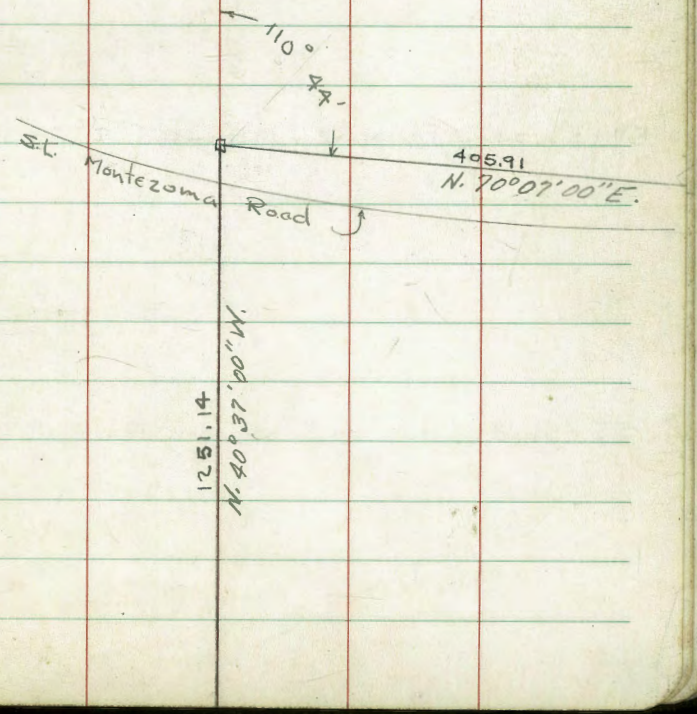
47+19.61 = Hub on Point of ridge P.O.T.

45+27.26 = P.O.T. Nail on break in slope of Hill



10-3-46

51+45.50 = Hub on Top of cut on S. side of Montezuma Road Angle 110° 44' Rt.



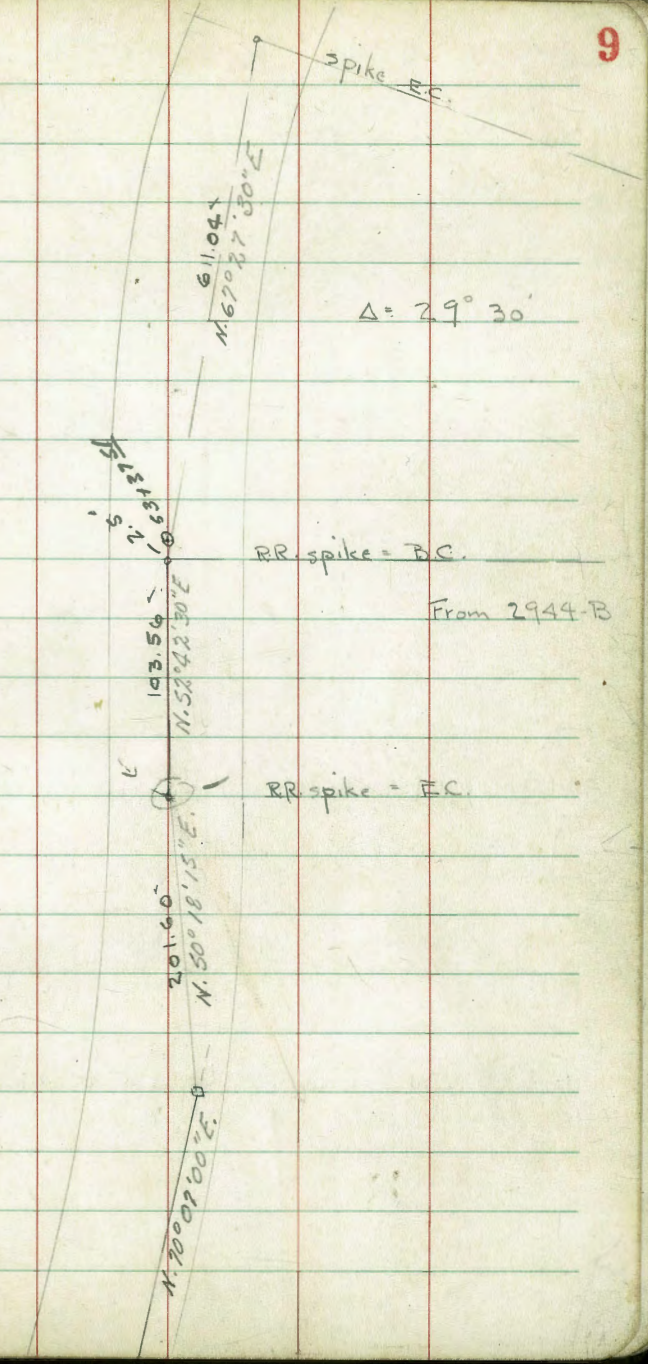
64+67.61 to E.C.

Dist. Computed for Long Chord.

59+56.57 - Fd. spike in pave Ang. 14° 45' Rt. to RR spike on E.C.

59+53.01 - Fd. spike in pave - Ang. 2° 24' 15" Rt.

55+51.41 - Hub on S. shoulder Rd. Angle 19° 48' 45" Lt.

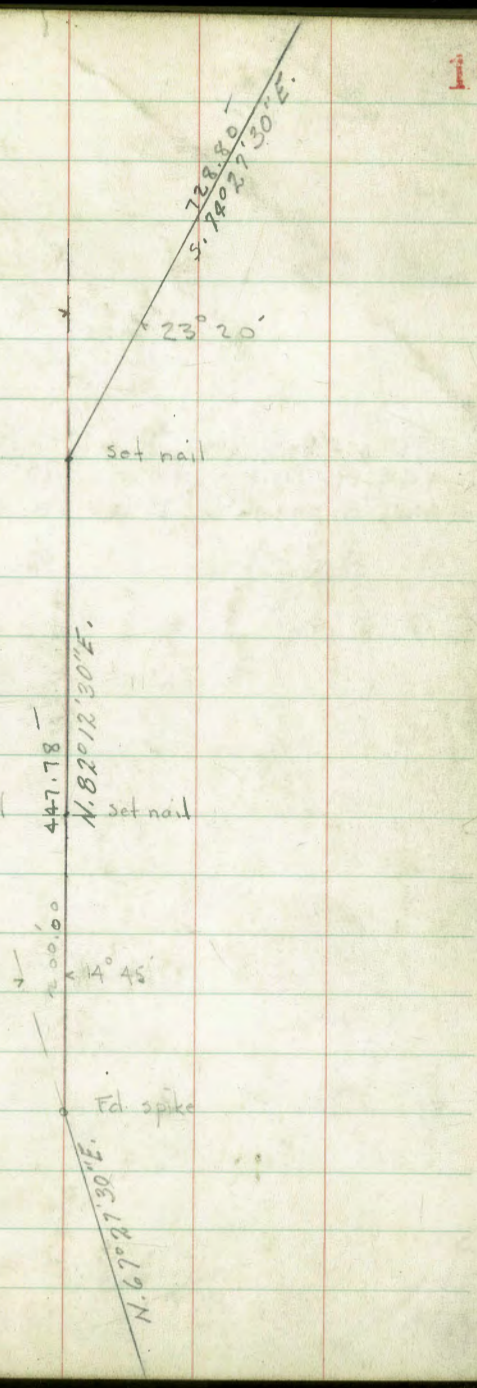


10-4-46

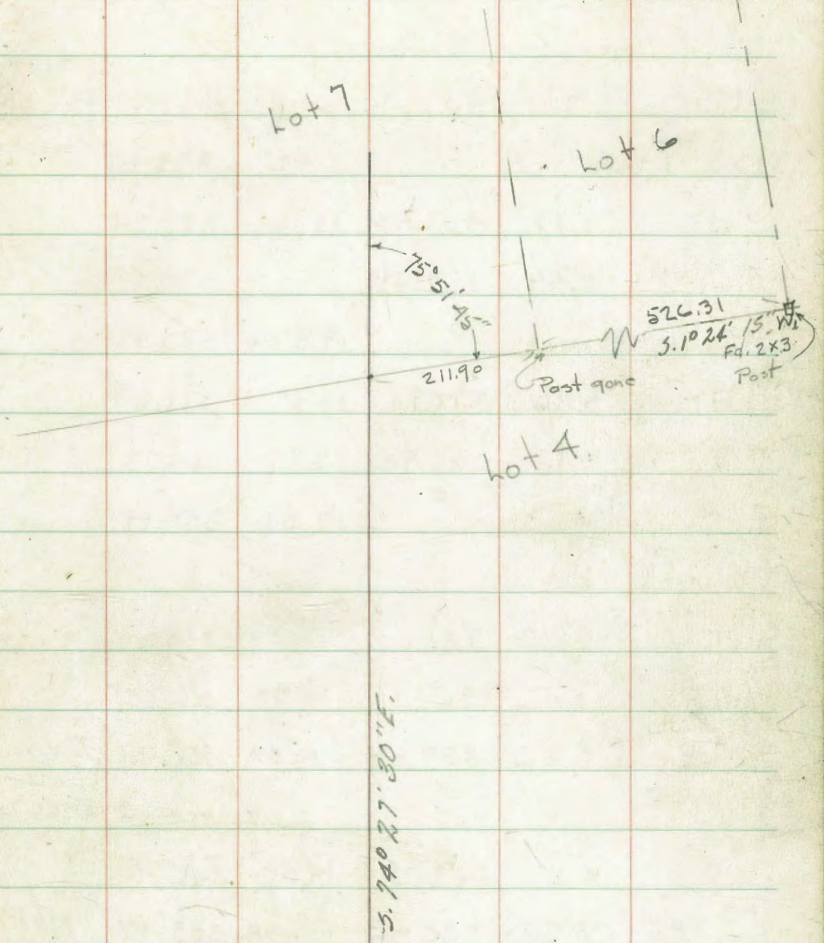
69+15.39 = P.I. Ang. 23° 20' Rt.

66+67.61 = B.C. Ang. 14°45'

64+67.61 = E.C. Ang. 14° 45' Rt.



76+44.19 - Nail in pave 75° 51' 45" Rt
Set on Dist. shown in 1498-50 + 5403-L



Levels on ℄ for Traverse points.

Location: Traverse P-1-11

B.M.	3.92	407.69		403.77	S.E. B.P. 54± + Elev
3+50 = ℄ Hub.			8.42	399.27	
	1.13	400.40	11.16	389.24	
	0.49	389.73			
5+91.70 = Hub.			9.50	380.23	
#3 T.P.	0.36	378.90	11.19	378.54	
#4 T.P.	0.17	366.90	12.17	366.73	
#5 T.P.			12.01	354.89	stake
					5+91.70
	0.83	381.06		380.23	
#6 T.P.	0.42	367.11	14.37	366.69	
#7 T.P.	0.26	357.00	10.37	356.74	on Top 8+56 3/4 Valve
			2.95	354.05	Ground 8+66.70
#8 T.P.	0.81	343.25	14.56	342.44	
#9 T.P.	3.78	336.95	10.08	333.17	on Hub 11+16.70
13+25.8 Hub			6.45	330.50	
#10 T.P.	2.24	325.38	13.81	323.14	on Rock
#11 T.P.	3.26	314.78	13.86	311.52	
#12 T.P.	2.00	310.94	5.84	308.94	on Hub 18+51.80

Cont. P-13

Levels Cont. from P-12

310.94

21+23.72 on Hub			8.93	302.01	
#13 T.P.	0.34	298.22	13.06	297.88	on Rock
#14 T.P.	2.84	290.12	10.87	287.35	on Hub 24+69.30
on Rim Sewer MH.			11.50	278.69	
#15 T.P.	2.69	279.94	12.94	277.25	
29+14.54 on Hub			1.04	278.90	
#16 T.P.	2.04	269.04	12.94	267.00	on Peg
#17 T.P.	2.24	258.85	12.43	256.61	on Peg.
#18 T.P.	13.00	259.23	12.62	246.23	" "
#19 T.P.	7.49	264.87	1.85	257.38	
38+94.36 on Hub			0.98	264.39	
#20 T.P.	0.45	252.26	13.06	251.81	
#21 T.P.	9.39	248.83	12.82	239.44	on Peg.
#22 T.P.	12.89	260.51	1.21	247.62	" Rock
#23 T.P.	8.81	268.79	0.53	259.98	
#24 T.P.	12.80	278.48	3.11	265.68	
#25 T.P.	4.49	282.12	0.85	277.63	on Peg.
47+19.61-P.O.T. Hub			2.97	279.15	Hub
#26 T.P.			9.36	272.76	on Hub 51+45.50

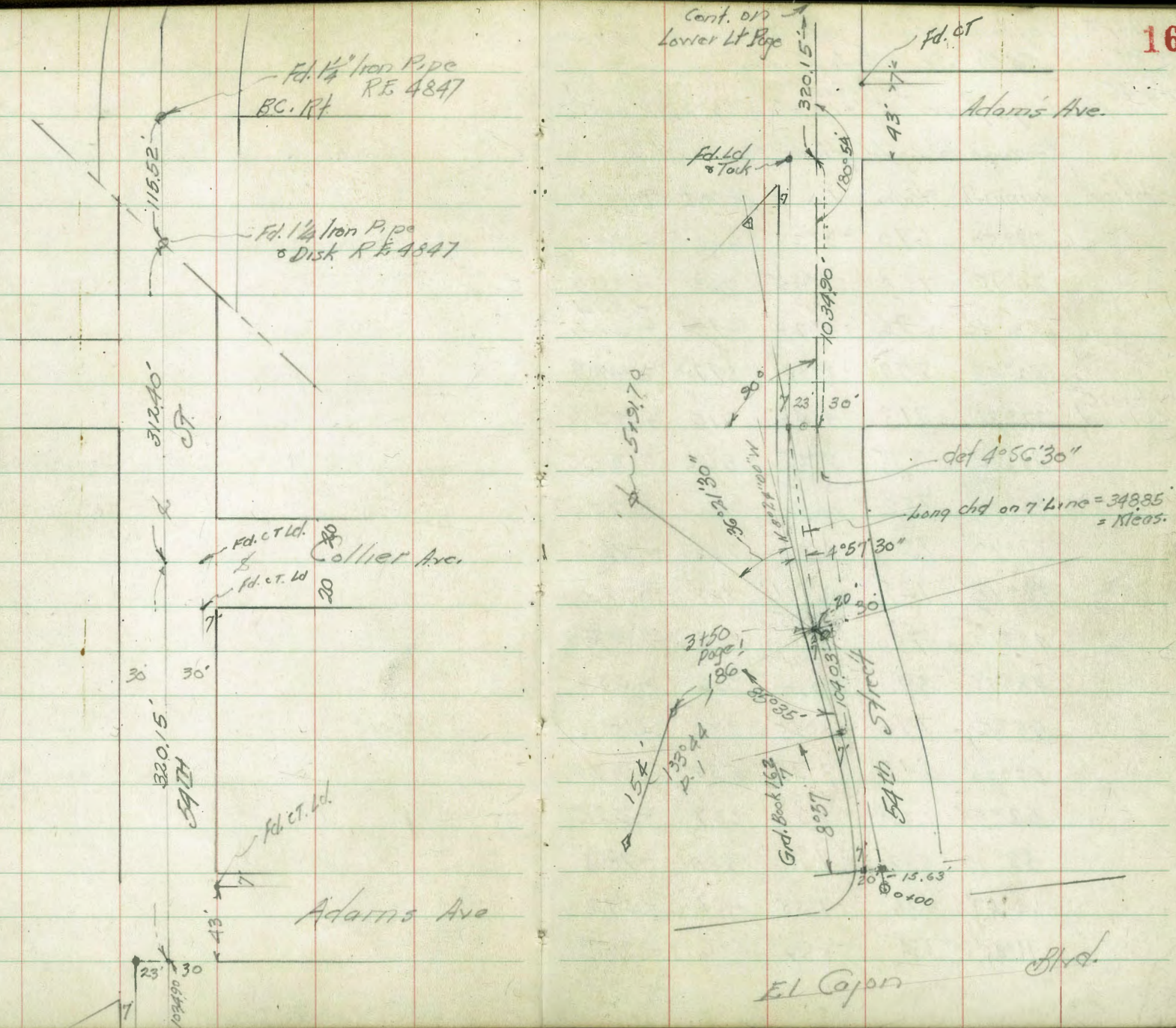
Check Levels - B.M.s
Pages 12-14

	3.11	406.88		403.77	B.M. S.E. B.P. 54th & El Cajon
3+50	7 Hub		7.60	399.28	.01
T.P. #1-B	1.68	396.26	12.30	394.58	
T.P. #2-B	1.59	385.12	12.73	383.53	
5+91.70 = Hub.			4.89	380.23	✓
T.P. #3-B	0.63	372.89	12.86	372.26	
T.P. #4-B	1.86	361.79	12.96	359.93	
Chk Top 3/4 Hyd			5.02	356.77	0.03 High 8+50
T.P.-5-B	0.53	349.26	13.06	348.73	
T.P. #6-B	0.32	338.35	11.23	338.03	
11+16.7 Nail			5.17	333.18	.01 High
13+25.83 on Hub			7.83	330.52	.02 "
T.P. #7-B	1.44	326.78	13.01	325.34	on Peg.
T.P. 8-B	1.64	315.82	12.60	314.18	on "
T.P.-9-B	1.79	310.78	6.83	308.99	on Hub 18+51.80
Chk. 21+23.72 Hub			8.72	302.06	0.05 High
T.P. #10-B	0.94	298.70	13.02	297.76	
T.P. #11-B	2.77	290.17	11.30	287.40	on Hub. 24+69.30
Chk. Rim Sewer MH			11.43	278.74	
T.P. #12-B	2.67	280.46	12.38	277.79	

Cont. P. 15

Check Levels Cont. from P-14

	280.46			
chk 29+14.54 = Hub		1.52	278.94	
TP #13-B	1.85	269.95	12.36	268.10	
TP #14-B	11.48	271.06	10.37	259.58	on Rock
Chk Hub			6.65	264.41	on Hub 38+94.36
TP #15B	12.72	281.15	2.63	268.43	
47+19.61 = Hub			2.00	279.15 ✓	
51+45.50 = Hub			8.41	272.74	
				272.76 = P-13	
				0.02 Error.	
In Trail on Stick-Peg	in circle of Rocks		0.03	281.12	W. Side Canyon


Fd. 1¼" Iron Pipe RE 4847
BC. Rt.
115.52'
Fd. 1¼ Iron Pipe & Disk RE 4847
312.40'
Fd. CT Ld.
Collier Ave.
Fd. CT. Ld
30
20
7'
30'
30'
320.15'
54th
Fd. CT. Ld.
Adams Ave
43'
23'
30
1034.90
Cont. on Lower Lt Page
Fd. CT
320.15'
Adams Ave.
43'
Fd. Ld & Tack
180°54'
1034.90'
90°
23'
30'
5+91.70
36°21'30"
N 8°24'00" W
def 4°56'30"
Long chd on 7' Line = 348.85 = Meas.
4°57'30"
20'
30'
3+50 page 1
186
85°35'
104.03'
154'
133°44 P. 1
Grd. Book 162/7
8°57'
54th Street
20'
15.63'
0+00
El Cajon Blvd.

Walker T
Becker
Greer
11-2-46

Supplementary Stadia Topography

54th St. Extension

Readings from Station 47+19.6' Elev.=27.16 HI=5.0

Readings to Left from Forward Tan.

Station	Azimuth	Stadia	V Δ	Horiz. D.	Diff Elev	True Elev
	23°50'	670	-3°21'	668	-39.1	240.1
	26°15'	763	-2°36'	763	-35.3	243.9
	26°40'	696'	6.0 -4°20'	694	-54.4 ~~-53.8~~	224.8 ~~225.4~~
	30°43'	897'	-2°39'	897	-44.9	234.3
Conc. Culvert	27°31'	713	-4°46'	710	-55.0	224.2
	33°52'	875'	-5°25'	862	-82.5	196.7
	30°40'	752	-5°20' 10.0		-75.4	203.8
	37°10'	750	-6°	738	-78.8	200.4
	39°10'	725'	-6°11'	712	-78.0	201.2
	48°10'	730	-4°05' 8.0	723	-55.5	223.7
	48°35'	570	-6°11' 10.0	566	-65.8	213.4
	55°50'	770	+0°25'	770	-5.6	273.6
	52°20'	543	-7°25'	534	-69.4	209.8
	52°55'	648	-4°38' 7.0	637	-53.5	225.7
	52°30'	533'	-7°36'	520	-70.3	208.9
	60°47'	436'	-7°50'	427	-59.2	220.0
	71°45'	354'	-8°52'	346	-54.3	224.9

Elev. 279.2

Station	Az.	Stadia	V Δ	Hor. D.	Diff. Elev	True Elev
	59°05'	408	-10°10'	395	-70.9	208.3
	64°30'	310	-12°37'	295	-66.3	212.9
	73°50'	283'	-13°51'	267	-66.2	213.0
	94°45'	220'	-17°20'	200	-63.0	216.2
	60°05'	257'	-15°41'	237	-71.0	208.2
℄ ditch	55°	265'	-15°15'	255	-67.2	212.0
	104°20'	312'	-10°54'	301	-58.0	221.2
	45°38'	335'	-11°40'	322	-67.0	212.2
	115°50'	333'	-8°23'	327	-48.2	231.0
	121°35'	276'	-12°20'	264	-58.0	221.2
	129°50'	193	-17°40 9.0	176	-60.2	219.0
	~~143°35~~	295	11.0			
	90°20'	487'	+6°17'	481. ~~432~~	53.0 ~~+58.1~~	332.2 ~~337.3~~
	137°20'	367'	-6°44'	360	-42.8	236.4
	90°	565'	+8°55	548	+87.0	366.2
	143°10'	335'	-8°50'	328	-51.0	228.2
	140°0	260'	-13°05'	246	-58.0	221.2
	93°10'	617	+10°18' 8.0	595	111.0 ~~+105.0~~	390.2 ~~384.2~~
	96°27'	598'	+9°58'	577	+102.0	381.2
	102°05'	585'	+9°44'	568	+97.6	376.8

Station	Az.	Stadia	V Δ	Horiz D.	Diff. Elev	True Elev.
Head of Ridge	104°50'	585'	+9°36'	~~569~~ 561	+ 97.0	376.2 ✓
Hd of Draw	105°20'	595'	+9°33'	~~579~~ 576	+ 98.0	377.2 ✓
	107°20'	605'	+9°15'	589	+ 96.5	375.7 ✓
	127°15'	405'	-4°05'	403	- 28.5	250.7 ✓
	111°0'	765'	+8°05'	~~750~~ 740	+ 107.0	386.2 ✓
	114°45'	795'	+7°55'	~~780~~ 778	+ 108.0	387.2 ✓
Draw	128°30'	450'	-2°38'	450	- 20.8	258.4 ✓
Rim	118°45'	860'	+7°54'	~~844~~ 840	+ 117.5	396.7 ✓
	122°20'	790'	+7°53'	775	+ 107.5	386.7 ✓
	125°20'	774'	+8°15' 9.0	758	+ 107.0	386.2 ✓
Draw	125°20'	485'	-1°13'	485	- 10.7	268.5 ✓
	117°50'	786	+7°12' 11.0	~~774~~ 770	+ 92.0	371.2 ✓
Draw	119°25'	737	+5°31' 7.0	730	+ 69.2	348.4 ✓
Draw	119°35'	706	+5°00' 11.0	701	+ 55.8	334.0 ✓
"	121°45'	543	+0°52' 8.0	543	+ 5.5	284.7 ✓
"	118°50'	660	+4°20' 13.0	656	+ 41.9	321.1 ✓
"	120°20'	590	+1°28'	590	+ 14.8	294.0 ✓
	116°40'	674	+5°07' 14.0	669	+ 51.3	330.5 ✓
	117°0'	700'	+5°48'	698	+ 70.8	350.0 ✓
	115°40'	737	+7°10' 6.0	726	+ 90.5	369.7 ✓
	114°23'	770'	+7°50'	757	+ 104.0	383.2 ✓

station	Az	Stadia	V/A	H.D.	V.D.	Elev.	
	124°25'	615'	+3°17'	612	+34.8	314.0	✓
	109°20'	674'	+9°05' 11.0	657 ~~681~~	+ 100.0	379.2	✓
	108°38'	693'	+9°03'	627	+ 99.5	378.7	✓
	128°05'	586'	+3°25' 7.0	584	+ 33.0	312.2	✓
	107°45'	590'	+8°54'	575	+ 90.5	369.7	✓
	181°25'	537'	+2°45'	537	+ 24.8	304.0	✓
	110°45'	536'	+6°50'	528	+ 63.5	342.7	✓
	130°30'	513'	+1°25'	513	+ 12.8	292.0	✓
	113°55'	485'	+4°25'	483	+ 37.2	316.4	✓
	133°55'	627'	+2°16'	525	+ 21.0	300.2	✓
Drow	108°15'	464'	+4°09	461	+ 33.8	313.0	✓
	137°33'	545'	+2°50'	544	+ 36.2	315.4	✓
	104°15'	467'	+5°21' 7.0	462	+ 41.2	320.4	?
	135°55'	608'	+5°24'	600	+ 57.0	336.2	✓
	134°45'	683'	+7°20'	672 ~~667~~	+ 87.2	366.4	✓
	99°38'	463'	+4°06' 6.0	462	+ 32.2	311.4	✓
	132°17'	774'	+8°05' 11.0	759	+102.0	381.2	✓
	96°30'	465'	+3°35'	462	+ 29.2	308.4	?
	129°27'	730'	+8°04'	715	+ 102.0	381.2	✓
	88°27'	461'	+4°35'	459	+ 37.0	316.2	✓

Station	Az.	Stadia	V Δ	H. D	D. El.	Elev
	123°42'	775'	+7°47'	~~761~~ 755	+ 104.0	383.2 ✓
	83°36'	500'	+4°19'	496	+ 37.8	317.0 ✓
	81°15'	515'	+4°05'	512	+ 36.8	316.0 ✓
Ridge Rim	80°35'	595'	+7°23'	586	+ 76.0	355.2 ✓
Draw	120°40'	773'	+6°21'	765	+ 86.0	365.2 ✓
	74°20'	574	+5°27' 11.0	568	+ 48.0	327.2 ✓
	~~121°05'~~	~~727~~	~~+5°25'~~	~~720~~	~~+ 68.3~~	~~347.5~~ ✓
	69°35'	585	+3°15' 10.0	582	+ 28.0	307.2 ✓
	62°50'	563	-0°36'	563	- 6.3	272.9 ✓
	121°15'	706	+6°05' 10.0	~~699~~ 695	+ 70.0	349.2 ✓
	58°45'	557'	-2°15' 11	556	- 27.8	251.4 ✓
	55°00'	553	-5°30'	549	- 53.0	226.2 ✓
	122°10'	677'	+5°36'	670	+ 66.8	346.0 ✓
	53°05'	526'	-7°55'	516	- 73.0	206.2 ✓
	125°10'	670	+5°20'	663	+ 62.2	341.4 ✓
	127°33'	615'	+4°12'	610	+ 45.0	324.2 ✓
Side Hill ditch	96°.	395'	-1°40'	395	- 11.4	267.8 ✓
	128°30'	525'	+1°30'	525	+ 13.8	293.0 ✓
	92°30	384'	-1°26'	384	- 9.7	269.5 ✓
	131°48'	496'	+1°08'	496	+ 9.6	288.8 ✓

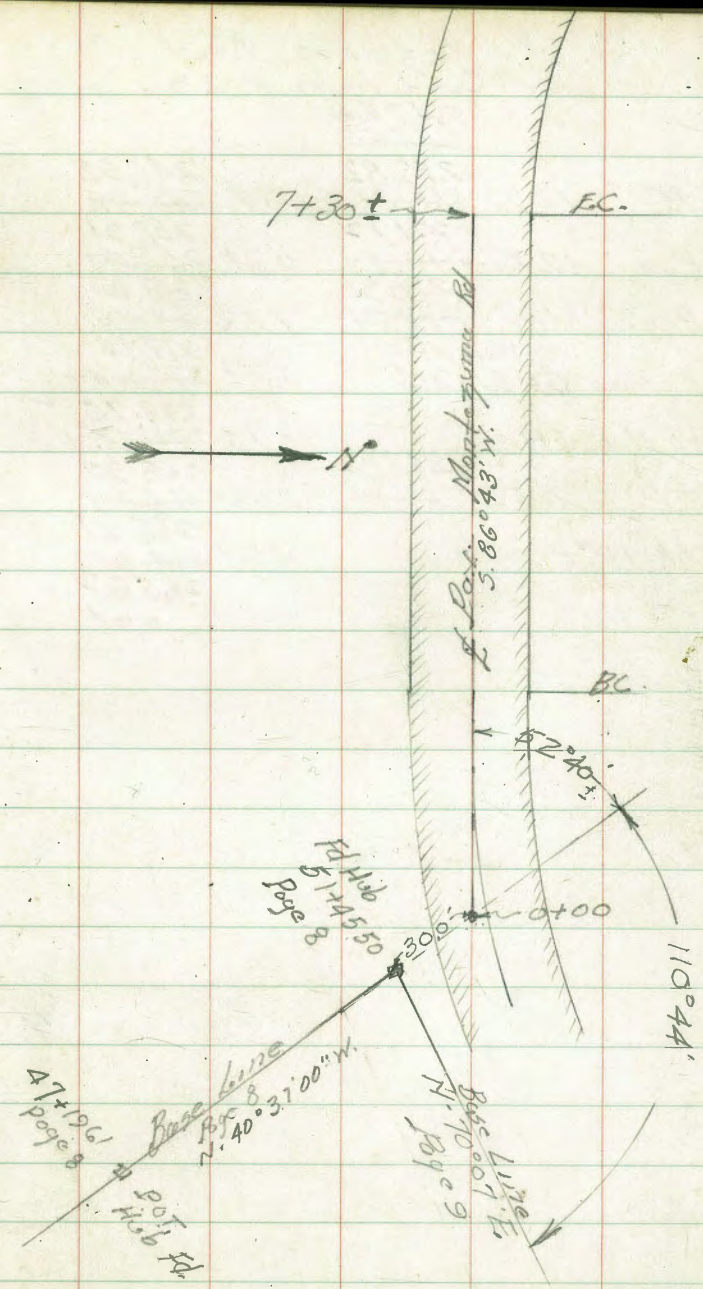
Station	Az.	Stadia	V.A.	H.D.	V.D.	Elev.	
	96°20'	343'	-8°12'	335	- 47.2	232.0	✓
	136°10'	475'	-1°15'	475	- 10.5	268.7	✓
	146°20'	487'	-2°56'	485	- 33.2	246.0	✓
drain	115°26	363'	-5°22'	360	- 34.0	245.2	✓
	150°45'	523'	-2°13 10.0	523	- 25.3	253.9	✓
	154°0'	590'	0°	590	= 0.0	279.2	✓
	118°20'	437'	+0°35	437	+ 4.5	283.7	✓
	157°50'	535'	-4°13'	~~537~~ 537	- 39.3	239.9	✓
	114°43'	470'	+3°29'	463	+ 28.7	307.9	✓
	154°15'	446'	-6°08'	440	- 47.8	231.4	✓
	146°20'	456'	-4°48'	452	- 38.2	241.0	✓
	113°0	600'	+6°21' 12.0	~~587~~ 593	+ 59.3	338.5	✓?
	139°45'	427'	-5°22'	422	- 40.0	239.2	✓
	134°50'	420'	-4°37'	417	- 34.0	245.2	✓

Walker
Hendricks
Becker
Greer
11-25-46

℄ Levels Existing Paving on Montezuma Road

	5.49 ~~4.49~~	278.25 ~~277.25~~		272.76	BM.
T.P.	0.91	266.53 ~~265.53~~	12.63	265.62 ~~264.62~~	
0+00			6.06	60.47	9' Lt of Painted ℄ stripe
1+00			10.82	55.71	
T.P. #1	1.20	255.21 ~~254.21~~	12.52	254.01 ~~253.01~~	3.5' Lt of stripe
2+00			3.62	51.59	1' Lt of stripe
3+00			8.17	47.04	
T.P. 4+00	4.43	247.20 ~~246.20~~	12.44	242.77 ~~241.77~~	
3+57.4					
44.6' Rt on Hd. Wall			10.98	36.22	
" " " Flow 24"		Culvert	4.7 15.68	231.52	
5+00			8.88	38.32	
Hub ⊙	Last Hub West of 51+45.5		9.44	237.76 ~~236.76~~	238.0
TP	1.82	236.91 ~~235.91~~	12.11	235.09 ~~234.09~~	
6+00			3.37	33.54	
7+00			7.95	28.96	
+30			9.36	27.55	
+50			10.17	26.74	
TP.	11.62	247.66 ~~246.66~~	0.87	236.04 ~~235.04~~	

Cont. P-24

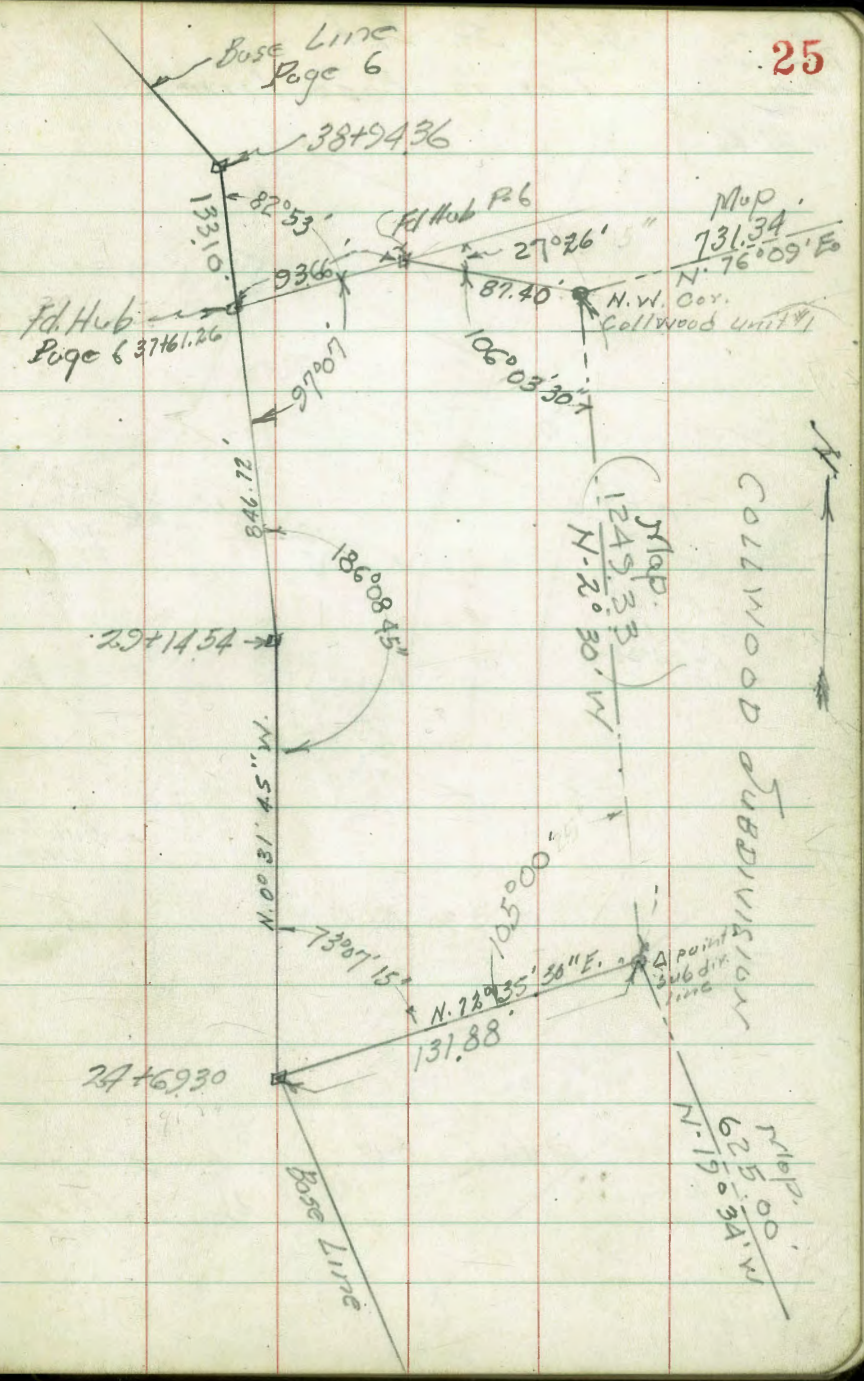


Montezuma Road

Cont. from P-23

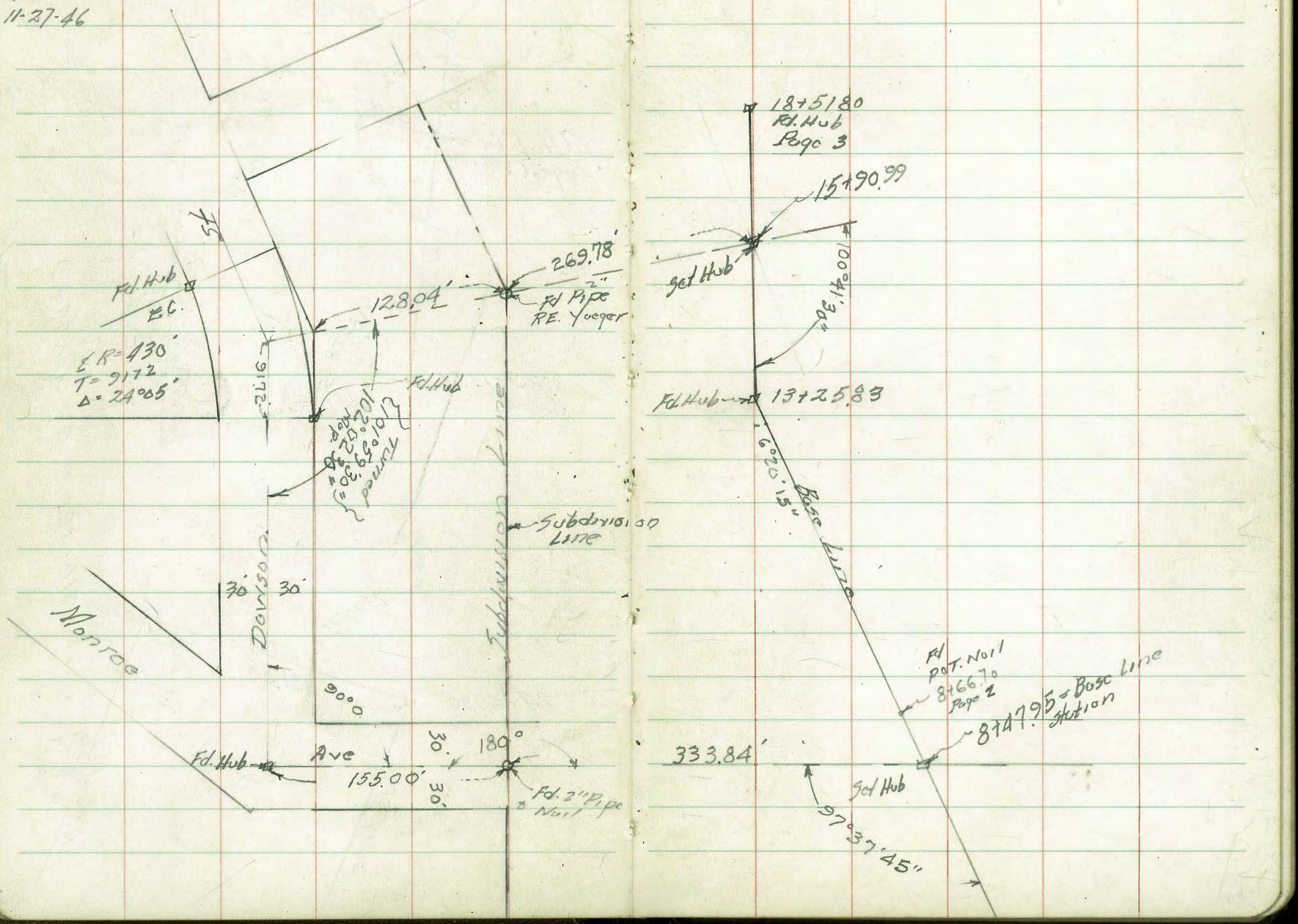
		24766		
		~~247.66~~		
		259.82		246.92
T.P.	12.90	~~258.82~~	0.74	~~245.92~~
		271.12		258.91
T.P.	12.21	~~270.12~~	0.91	~~257.91~~
		280.91		269.84
T.P.	11.07	~~279.91~~	1.28	~~268.84~~
		West of		277.14
Mo.6	⊙ 51+45.5		3.77	~~276.14~~ ✓
				272.76
chk Mo.6	51+45.5		8.15	~~272.76~~
		26882		268.30
T.P.	0.52	~~267.82~~	12.61	~~267.30~~
				265.61
chk TP#1 P-23			3.21	~~264.61~~
				265.62
				0.01

54th St. Extension
Base Line Ties to Collwood-
- Subdivision



Walker
Hendricks
Becker
Greer
11-27-46

54th St. Ext.
Ties to Base Line



Station	Align.	Deflection Lt	Rt.	Cal. Bearing	Mag. Bearing
4+00		8° 27 56			
			Δc - 35°50' (17°55)		
3+50		7° 01 61 ✓	Lc - 625.41 ✓		
			Rc - 1000' Lt.		
3+00		5° 35 67 ✓	Cc - 615.27'		
			def 1' 1.719		
+85	P.O.C.	5° 09.88	def 50' 1° 25 944		
2+50		4° 09 72 ✓			
2+00		2° 43 78 ✓			
1+50		1° 17 84 ✓			
1+50 45 20					
		0° 00'			
1+04 72 P.S.C	P.S.C	1° 00'			
1+00	0° 54 71	0° 54'	Δs - 3° 00' 30'	a - 5.471	
0+75	0° 30 72	0° 30'	Ls - 104.72	x - 104.69	
0+50	0° 13 60	0° 13' ✓	Ts - 485.63	y - 1.83	
0+25	0° 03 62	0° 03' ✓	Cs - 104.71		
L - 0+00 00 P.S.	P.S	0° 00'	K - 0° 06.83875'		
			N. 4° 30' W.		

8+68 44 Ahd / 8+69 48 F.C. B.K			
5+0		12° 49.92'	
4+50		11° 23.98'	
	Δ - 46° 50' Lt.		
	R - 1000'		
	T - 433.08		3+09.93
	L - 817.40		
+20		10° 32.42'	
4+0		9° 58.04'	
+70		9° 06.47'	
+45		8° 23.50'	
+25		7° 49.12'	
3+0		7° 06.15'	
+85	P.O.C.	6° 40.36'	
+50		5° 40.20'	
2+0		4° 14.26'	
+50		2° 48.31'	
1+0		1° 22.37'	
0+52 08 B.C			
			0+00

see page 16 for tie too P. line.

Station	Align.	Deflection Lt.	Deflection Rt.	Cal. Bearing	Mag. Bearing
9+00		3° 46'	Δ_s - 8°00'		X - 278.71
+75		3° 19'	L_s - 279.25		Y - 12.98
+50		2° 49'	T_s - 574.02		
+25		2° 17'	a - 2.052		
8+00		1° 43'	C_s - 279.01		
~~2+82.79~~	~~P.T.S~~	1° 06'	k - 0° 02.038		
+50		0° 26'	def.l - 1.719		
7+30	P.C.S	0° 00' / 17° 55'			
		51			
7+00		17° 03			
6+50		15° 37			
6+00		14° 11			
5+50		12° 45			
5+00	P.O.C.	11° 19			
4+50		9° 53			

4+37.51 P.O.T

8+68.44		
8+69.48	P.C.	23° 25'
+50		22° 51.53'
8+0		21° 25.58'
+50		19° 59.64'
9+0		18° 33.70'
+50		17° 07.75'
6+0		15° 41.81'
+75		14° 58.84'
+55		14° 24.96'
+40		13° 58.67'
5+25		13° 32.89'

Station	Align.	Deflection Lt.	Deflection Rt.	Cal. Bearing	Mag. Bearing.
+75	Δ_s - 7°09'		1° 10'		
+50	L_s - 299.50		0°-55'		
+25	T_s - 496.17'		0°-41'		
13+00	C_s - 299.29		0° 29' ✓		
+75	Q - 1.594		0° 19'		
+50	K - 0° 0.7898		0° 12' ✓		
+25			0° 06'		
12+0.05	P.S.		0° 02' ✓		
+75			0° 00 16		
11+65 09 P.S	P.S	0°00'	0°00'		
				N. 51° 20' W.	
+09 38	P.T.	5° 20'			
10+00		5° 08'	5° 08'		
+75		4° 51'	4° 51		
+50		4° 32'	4° 32		
9+25		4° 10'	4° 10'		

1555.91
296.65

Station	Align.	Deflection Lt.	Deflection Rt.	Cal. Bearing	Mag. Bearing
18+38.09	P.C.S		8° 55'		
30.91			54.54		
18+00			8° 00.46		
			(8° 55')		
+50	Δc - 17° 50'		6° 48.81		
	Rc - 1200' Rt.				
17+00	Lc - 373.50'		5° 37.19		
	def. 1' - 1.432'				
+50	def. 50' - 1° 11.62'		4° 25.37		
	L. Chord 371.99				
16+00			3° 13.95		
+50			2° 02.33		
15+00			0° - 50.71		
35.41					
			00° 00'		
14+64.59	P.S.C.		2° 23		
19.59					
+50	[illegible]		2° 10'		
+25	[illegible]		1° - 48'		
14+00	[illegible]	[illegible]	1° - 28'		

Δ - 32° 08' Rt.

Station	Align	Deflection Lt.	Deflection Rt	Cal Bearing	Mag. Bearing
	2184.46			N. 19 12' W.	
+37 59 (12.59)	P.T.		4° 46'		
+25			4° 27 02		
21+00	Δ_s - 7°09'		4° 11 00		
+75	L_s - 299.50'		3° 52 98		
+50	T_s - 496.17'		3° 32 96		
+25	C_s - 299.29'		3° 10 94		
20+00	a - 1.594		2° 46 92		
+75	K - 0° 00 79'		2° 20 90		
+50			1° 52 88		
+25			1° 22 86		
19+00			0° 50 84		
+75			0° 16 82		
+50					
18+38 09 P.C.S (11.91)	P.C.S		0° 00' / 8° 55		

def 1' - 1.432
def 25 - 0° - 35 81

N. 19°12

2184.46

Station	Align	Deflection Lt.	Deflection Rt	cal Bearing	Mag. Bearing
	Rt. leg of Wyec.				
+50	Δ_c - 46°51'		6° 07 99		
	Rc - 600'				
47 -	Lc - 490.61'		3° 44 75'		
	def.1' - 2.865'				
	def.50' - 2° 23 24				
+50			1° 21 51		
	28.45				
			0° 00'		
+21 55	P.S.C.		4° 46'		
46 +00			4° 07 09		
+75	Δ_s - 14°18'		3° 24 63		
+50	L_s - 299.50'		2° 46 17		
+25	T_s - 589.08'		2° 11 71		
45 +00	C_s - 298.67		1° 47 25		
+75	a - 3.188'		1° 14 79		
+50	K - 0° 04 46'		0° 52 33		
+25			0° 33 87		
44 +00			0° 19 41		
+75			0° 08 95'		
+50			0° 2 49		
	27.95				
43 +22 05	P.S.		0° 00'		

Δ - 71° 54' Rt.

Station	Align	Deflection Lt.	Deflection Rt.	Cal. Bearing	Mag. Bearing
				N. 52° 42' E.	
+12 16	P.C.S		0° 00'		
			23° 25 30		
			34 83		
51 +00			22° 50 67		
+50			20° 27 43		
50 +00			18° 04 19		
+50			15° 40 25		
49 +00			13° 17 21		
+50			10° 54 47		
48 +00			8° 31. 23		

+37 31	P.I. 12.31	7°-10'
+25	Δ_S - 10°45'	7°-01 73
53+00	L_S - 225.15	6°-31 64
+75	T_S - ~~550.12~~ 552.96	5°-56 38
+50	C_S - 224.80'	5°-15 98
+25	a' - 4.241	4°-30 33
52+00	K - 0°02.723	3°-39 54
+75		2°-43 58
+50		1°-42 40
+25		0°-36 09
51+12 16	P.C.S 12.85	0°00'
		23°25 50

def. 1' - 2.865
" 25' - 1°11 62

Station	Align	Deflection Lt.	Rt.	Cal. Bearing	Mag. Bearing
		Lt. leg of wycc.			
+50		4° 59 40		Δ_c - 53° 05'	
				R_c - 750' Lt.	
46+00		3° 05 37		L_c - 694.86'	
				def 1' 2.292	
				def 50' 10 54.592"	
+50		1° 10 28			
	30.88				
+19 12	P.S.C.	0° 00' / 3° 30			
45+00		3° 02 29			
+75		2° 28 24		Δ_s - 10° 30'	
+50		1° 58 49		L_s - 274.89'	
+25		1° 31 24		T_s - 706.42'	
44+00		1° 07 89		C_s - 274.48'	
+75		0° 47 84		a - 2.779	
+50		0° 31 29		K - 0° 00 80'	
+25		0° 18 23			
43+00		0° 08 69			
+75		0° 02 64			
+50	5.22	0° 00 03			
42+44 23	P.S.	0° 00'			

N. 19° 12' W.

Δ - 74° 05' Lt.

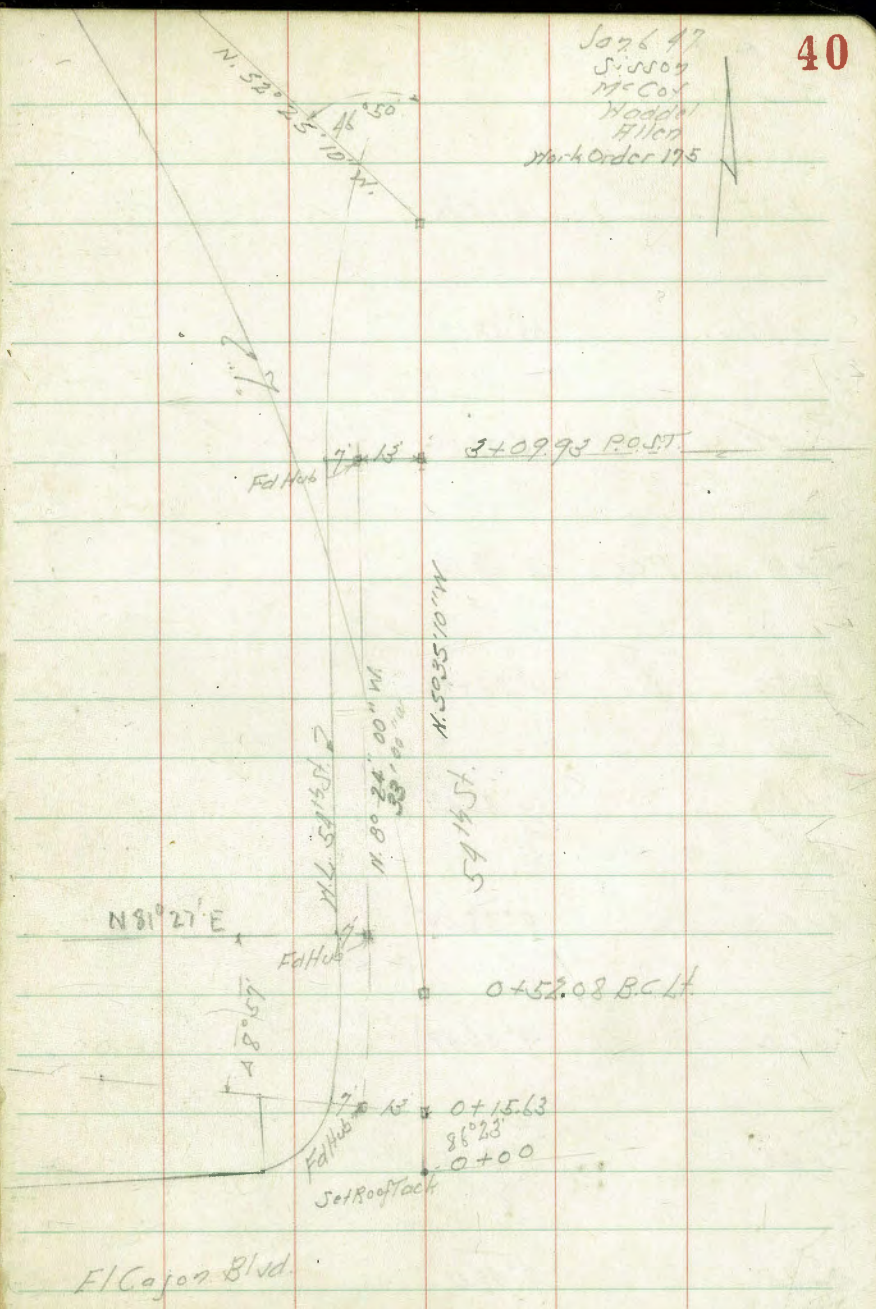
Station	Align.	Deflection Lt.	Deflection Rt.	Cal. Bearing	Mag. Bearing
+50		24° 05 $\frac{86}{}$			
51+00		22° 11 $\frac{27}{}$			
+50		20° 16 $\frac{68}{}$			
50+00		18° 22 $\frac{09}{}$			
+50		16° 27 $\frac{50}{}$			
49+00		14° 32 $\frac{91}{}$			
+50		12° 38 $\frac{32}{}$			
48+00		10° 43 $\frac{73}{}$			
+50		8° 49 $\frac{14}{}$			
47+00		6° 54 $\frac{55}{}$			

S. 86° 43' W.

+88 87	P.T.	7° 00'	
+75		6° 47 42	Δ_s + 10° 30'
+50		6° 25 19	L_s + 274.89
+25		5° 59 48	T_s - 706.47
54 +00		5° 29 56	C_s - 274.48
+75		4° 56 54	a - 2.779
+50		4° 20 02	K - 0° 01 53
+25		3° 40 00	
53 +00		2° 56 48	
+75		2° 09 46	
+50		1° 18 94	
+25		0° 24 92	
		0° 00'	
+13 98	P.C.S	26° 32 50	
	11.02'		
		def. 1'	2.292
52 +00		def. 25'	0° 57.296
		26° 00 45	

Alignment Proposed Through Way
West of 54th St. El Cajon Blvd. to Montezuma Road.

L Line			
3+0		7° 06.15'	
+85	P.O.C.	6° 40.36'	
+50		5° 40.20'	
			Δ 46° 50'
2+0		4° 14.26'	R 1000'
			T 433.08
+50		2° 48.31'	L 817.40
			D 1.719
1+0		1° 22.37'	
0+52.08	B.C. Lt.		
			N. 5° 35' 10" W
0+00			



2° L.T.C.

+55		14°24.46'
+40		13°58.67'
+25		13°32.89'
5+10	P.O.C.	12°49.92'
+50		11°23.98'
+20		10°32.42'
4+10		9°58.04'
+70		9°06.47'
+45		8°33.50'
3+25		7°49.12'

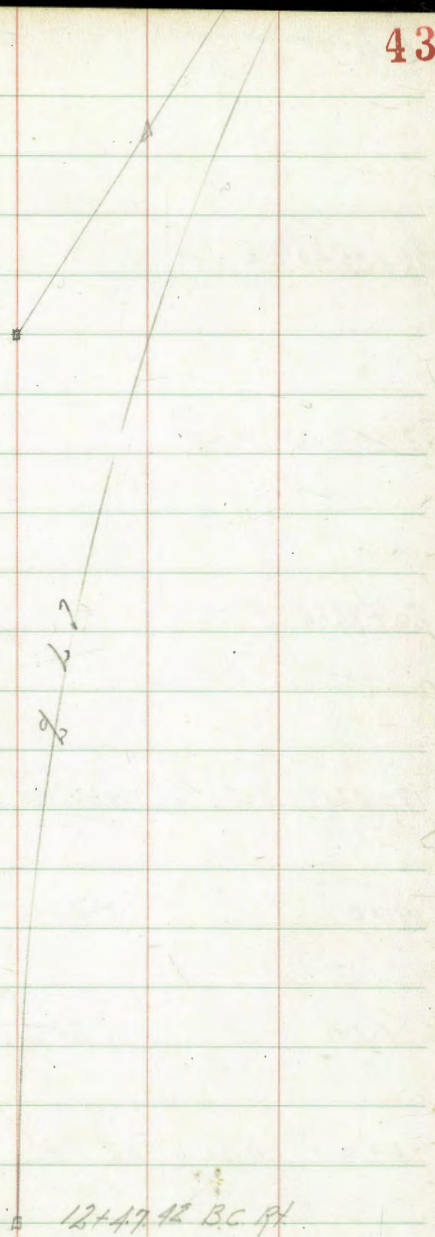
2" Line

11+65.09	P.O.T.		N. 52° 25' 10" W.
8+68.44 AHD = 8+69.48 BK	E.C.	25°25'	
+50		22°51.53'	
8+0		21°25.58'	
+50		19°59.64'	
7+0		18°33.70'	
+50		17°07.75'	
6+0		15°41.81'	
5+75		14°58.84'	

2" Line

17+0		10°48.27'	
+50		9°36.65'	
16+0		8°25.03'	
+50		7°13.41'	
			Δ 38°13'20"
15+0		6°01.79'	D 12°00'
			T 357.96
+50		4°50.17'	L 695.75
			D 1.4324
14+0		3°38.55'	
+50	P.O.C.	2°26.93'	
13+0		1°15.31'	
12+47.42	B.C. Pt.		

378.98



L Line

Jan. 14-46
Sisson
Maddel
Allen

26+62.59	P.O.T			
23+09.55	P.O.T.			
			N. 19° 12' W.	
20+84.64	P.O.T			
19+43.17	E.C.	16° 36.58'		
19+0		15° 34.75'		
+50		14° 23.13'		
18+0	P.O.C.	13° 11.51'		
17+50		11° 59.89		

19+43.17 E.C.

2" Line

N. 19°12' W.

46+40.00 P.O.T.

42+50.00 P.O.T.

39+36.96 P.O.T.

37+299.00 P.O.T.

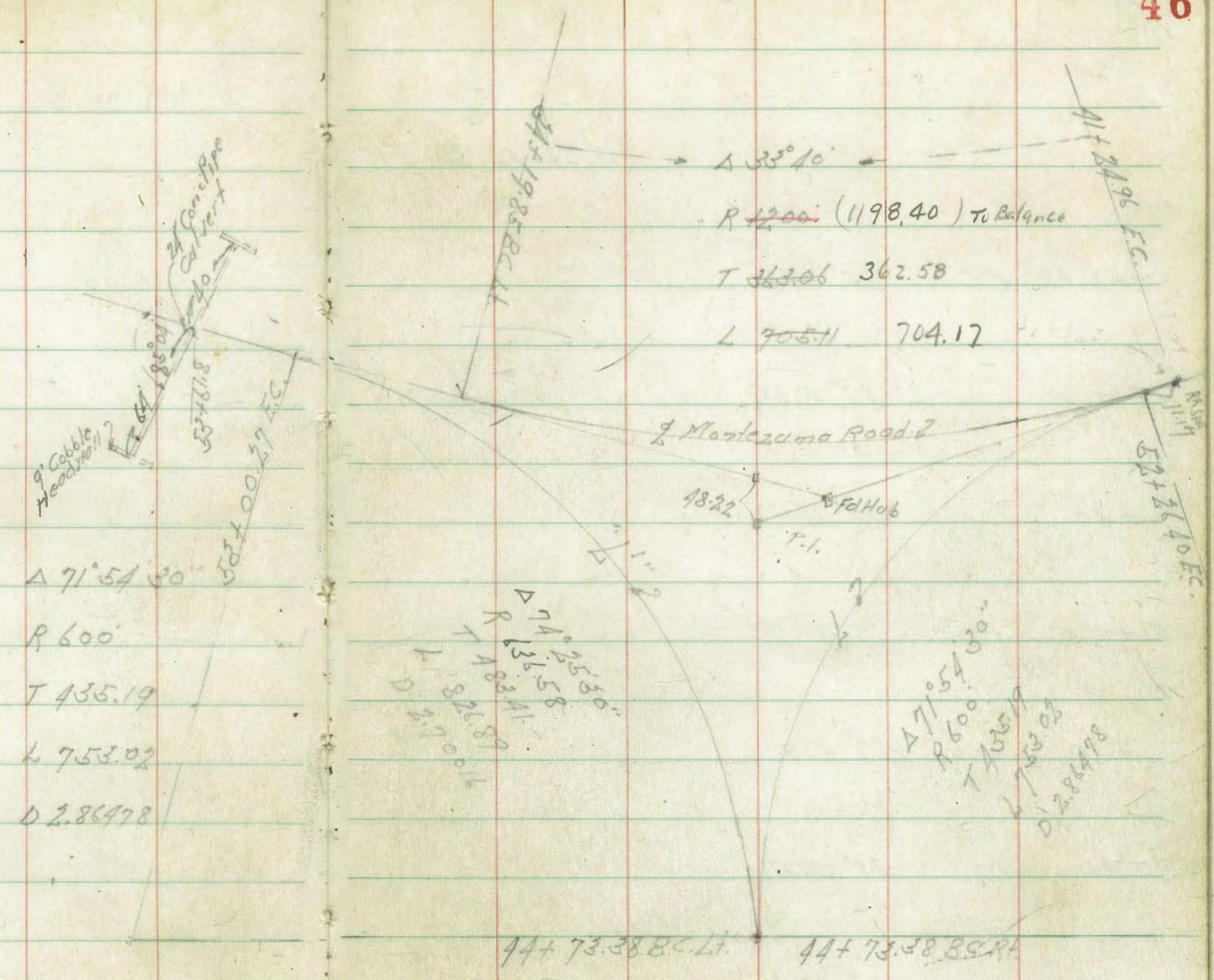
36+29.35 P.O.T.

32+78.12 P.O.T.

"L" Line

48+0		15° 35.71'	
+50		13° 12.47'	
47+0		10° 49.23'	
+70	P.O.C.	9° 23.29'	
+25		8° 26'	Δ 71° 54' 30"
			R 600'
46+00	P.O.C.	6° 02.75'	T 435.19
			L 753.02
+50		3° 39.51'	D 2.86478
+25		2° 27.89'	
45+0		1° 16.27'	
44+73.38	B.C. Rt.		

25 30.21



"L" Line

N. 52° 42' 30" E.

+26.10	F.C.	35° 57.25'
52+0		34° 41.63'
+50		32° 18.89'
51+0	P.O.C.	29° 55.15'
+50		27° 31.91'
50+0		25° 08.67'
+50		22° 45.43'
49+0	P.O.C.	20° 22.19'
48+50		17° 58.95'

Alignment L' Line

Sketch Page 46 Levels #1237-18

+50		21° 26.95'	
+25		20° 19.44'	
49+0		19° 11.94'	
+75		18° 04.43'	
+50		16° 56.93'	
+25		15° 49.43'	
48+0		14° 41.92'	
+75		13° 34.42'	Δ 74° 25' 30"
+50		12° 26.91'	R 636.58
+25		11° 19.41'	T 483.41
47+0	P.O.C.	10° 11.91'	L 826.89
+65	P.O.C.	8° 37.40'	D 2.700
+25		6° 49.39'	
46+0	P.O.C.	5° 41.89'	
+75		4° 34.39'	
+50		3° 26.88'	
+25		2° 19.38'	
45+0		1° 11.87'	
44+73.38	B.C. L'		

"4"

53+00.27	E.C.	37° 12.25'
+75		36° 04.49'
+50		34° 57'
+25		33° 49.48'
52+0		32° 42'
+75		31° 34.48'
+50		30° 27'
+25		29° 19.47'
51+0		28° 12'
+75		27° 04.47'
+50		25° 56.96'
+25		24° 49.46'
50+0		23° 41.95'
49+75		22° 34.45'

Cross Section "L" Line
Proposed Through Way West of 54th St.
El Cajon Blvd. to Montezuma Road

Indexed
O.S.K.

Alignment Page 40-49

1+50 30' Lt of ℄: Woven Wire Fence

Note:- From Sta. 0+0 to 18+0 Regular Sections

18+50 to End Rt+Lt. + above ℄ - below ℄

1+0

0+52.08 B.C. Lt. 45.3 Lt of ℄: Woven Wire Fence

0+06.3 = N.L. of El Cajon Blvd Paving Taken on Diag

0-03.4 = N Cb Line of El Cajon Blvd Taken on Diag

BM 3.69 407.46 405.77 S.F.B.P. El Cajon & 54th St.

Jan. 22-47
Jisson
McCoy
Waddel
Allen
Green

50

Lt: W ℄ Rt: E

401.3	402.1	402.4	402.1	402.2	401.4	402.1	401.4	402.2	402.7
6.2	5.4	5.1	5.4	5.3	6.1	5.4	6.1	5.3	4.8
50	30	13	10		1	24	39	42	50
402.1	402.3	402.9	402.1	402.2	402.4	402.2	403.4		
5.4	5.2	4.6	5.4	5.3	5.1	5.3	4.1		
50	41	7	5		20	35	48 = Wire Fence		
402.3	402.6	402.9	402.3	402.5	402.9	402.88	405.07		
5.2	4.9	4.6	5.2	5.0	4.6	4.58	2.39		
50	30	10	9		20	39 = Wly AC Paving	50 on AC Pav.		
401.0	401.9	402.25	401.75	402.68	403.81	404.23	404.77	405.37	
6.5	5.6	5.21	5.71	4.78	3.65	3.23	2.69	2.09	
50	30	14 = Cb	14 = Gutter		20	37.9 = Gutter	37.9 = Cb	50 = Wly Conc Walk	
400.00	399.41	401.41	400.80	401.83	402.64	403.67	404.29	403.92	405.53
7.46	8.05	6.05	6.66	5.63	4.82	3.79	3.17	2.54	1.93
66 = Cb	65 = Gutter	33.6 = Cb BC	33.6 = Gutter	14		20	38	58 = Gutter	58 = Cb BC

407.46

3+70					
3+25					
3+20	26 Lt of ℄ : ℄ 30" Palm Tree				
TP	0.67	397.17	10.96	396.50	
2+85					
2+50					
+30	For Profile		6.2	01.3	
2+0	20 Lt of ℄ : Woven Wire Fence				

407.46

Lt. ℄ Rt.

3+70: 378.7 18.5/75 · 374.6 22.6/50 · 374.1 23.1/35 · 374.5 22.7/13 · 380.5 16.7 · 398.4 +1.2/30 · 398.7 +1.5/40 · 398.2 +1.0/50

3+25: 393.4 3.8/60 · 392.6 4.6/50 · 391.0 6.2/33 · 392.3 4.9/8 · 394.3 2.9 · 399.1 +1.9/13 · 399.4 +2.2/27 · 399.0 +1.8/32 · 399.2 +2.0/50

397.17

2+85: 400.1 7.4/50 · 400.4 7.1/25 · 400.9 6.6 · 401.4 6.1/6 · 400.4 7.1/10 · 400.2 7.3/19 · 399.4 8.1/21 · 400.0 7.5/40 · 399.8 7.7/50

2+50: 400.8 6.7/50 · 401.8 5.7/25 · 402.6 4.9 · 401.1 6.4/4 · 400.8 6.7/12 · 399.9 7.6/15 · 401.0 6.5/34 · 400.1 7.4/50

2+0: 401.3 6.2/50 · 402.1 5.4/20 · 402.6 4.9/7 · 401.6 5.9/4 · 401.5 6.0 · 401.4 6.1/5 · 400.7 6.8/7 · 401.2 6.3/30 · 400.7 6.8/44 · 401.7 5.8/50

407.46

	Lt.			Rt	
5+25	373.2	387.3	385.9	392.5	394.3	396.7
	24.0 / 75	14.9 / 50	11.3 / 30	4.7 / 20	2.9 / 33	0.5 / 50
5+0	365.7	373.4	382.7	388.7	395.6	396.6	397.2
	21.5 / 100	23.8 / 75	14.5 / 50	7.5 / 25	1.6	0.6 / 25	0.0 / 50
4+50	364.2	365.9	378.2	388.4	395.9	396.6	397.4	398.0
	22.0 / 110	21.3 / 90	19.0 / 60	8.8 / 25	1.3 / 6	0.6	+0.2 / 25	+0.8 / 50
4+20	366.4	367.0	375.9	384.2	391.4	397.0	398.3
	30.8 / 100	30.2 / 80	21.3 / 50	13.0 / 22	5.8	0.2 / 18	+1.1 / 50
4+0	370.2	368.5	359.7	368.2	386.1	391.0	397.8	398.2
	27.0 / 90	28.7 / 76	27.5 / 55	19.0 / 25	11.1	6.2 / 33	+0.6 / 38	+1.0 / 50

399.17

399.17

2" Line

6+50					
6+25					
6+0					
5+75					
TP	2.55	387.41	12.31	384.86	on peg 5+45 ℄
5+55					
		397.17			

	Lt.			℄		Rt.		
6+50	353.3 34.1 100	356.3 31.1 75	360.4 27.0 50	367.3 20.1 25	375.3 12.1	384.4 3.0 25	388.7 +1.3 40: Toe New Fill	394.9 +7.5 53: Top Fill	395.4 +8.0 70
6+25	355.0 32.4 100	357.0 30.4 75	360.4 27.0 50	367.2 20.2 25	374.9 12.5	385.2 2.2 25	391.9 +4.5 50	395.9 +8.5 61	396.3 +8.9 70
6+0	362.1 25.3 85	363.4 24.0 64	352.9 24.5 37	374.0 13.4	383.4 4.0 25	388.4 +1.0 50	396.2 +8.8 70	
5+75	369.0 18.4 80	373.1 14.3 50	371.8 15.6 25	371.4 16.0 3	373.0 14.4	380.0 7.4 20	390.1 +2.7 45	396.6 +9.2 70	
				387.41				
5+55	373.1 24.1 75	379.4 17.8 43	380.7 16.5 25	380.1 17.1	381.4 15.8 25	389.4 7.8 43	393.8 3.4 60	
				397.17				

	Lt.			℄			Rt.	
8+50	341.6	350.4	357.6	344.4	371.0	376.3	382.3	384.3
	4.58	5.70	2.98	2.30	16.4	11.1	5.1	3.1
	100	75	50	25		25	50	75
8+0	346.1	353.0	359.3	367.5	375.2	380.2	384.5	389.1
	4.13	3.41	2.81	1.99	12.2	7.2	4.9	+1.7
	100	75	50	25		25	50	75
7+75	346.4	352.8	359.1	367.4	376.7	382.1	388.1	393.9
	4.10	3.46	2.83	2.02	10.7	5.3	+0.7	+6.5
	100	75	50	25		25	50	75
7+50	346.6	351.4	358.3	366.3	374.4	380.7	386.2	393.9
	4.08	3.60	2.91	2.11	13.4	6.7	1.2	+6.5
	100	75	50	25		30	50=Top Nom Fill	70=Top Nom Fill
7+0	350.2	352.4	359.3	365.0	372.0	382.2	394.7	395.1
	3.72	3.50	2.81	2.24	15.4	5.2	+7.3	+7.7
	100	75	50	25		30=Top Nom Fill	55=Top Nom Fill	75

387.41

387.41

						Lt			℄			Rt	
10+0						333.9 18.0 100 = Fly Mass	337.7 14.2 75	340.3 11.6 50	343.6 8.3 25	347.2 4.7	350.1 1.8 20	346.4 5.5 50	342.6 9.3 80
TP	0.11	351.88	12.12	351.77						351.88			
9+70						335.2 28.7 100	340.0 23.9 75	343.6 20.3 50	348.1 15.8 25	355.8 8.1	360.1 3.8 25	360.0 3.9 46	356.0 7.9 70
TP	0.50	363.89	12.99	363.39						363.89			
9+45						338.1 38.3 100	343.0 33.4 75	347.4 29.0 50	353.2 23.2 25	361.0 15.4	364.4 12.0 12	378.0 8.4 50	365.6 10.8 75
9+0						340.5 35.9 100	346.4 30.0 75	353.3 23.1 50	360.4 16.0 25	366.8 9.6	373.4 3.0 25	376.9 +0.5 50	376.4 0.0 75
TP	1.15	376.38	12.18	375.23						376.38			
8+68.44 = 8+69.48	= FC					341.7 45.7 100	348.2 39.2 75	355.9 31.5 50	363.7 23.7 25	371.8 15.6	377.0 10.4 25	381.6 5.8 50	382.3 5.1 75
		387.41								387.41			

2" Line

						Lt.				℄			Rt.			
11+77	For Profile		14.5		= Bottom Wash	327.4	329.7	328.9	328.6	326.6	327.8	325.5	325.4	326.5	330.6	337.3
11+65					14.6 91 = Bottom Wash	12.4 87	10.1 75	10.9 50	11.2 36	13.2 25	12.0	14.3 5	14.4 18	13.3 44	9.2 50	2.5 75
														335.8 +4.0 100		
11+35						325.3 14.5 90	325.4 14.4 82 = Bottom Wash	331.2 8.6 73	330.9 8.9 50	330.0 9.8 25	329.8 10.0	330.3 9.5 25	330.6 9.2 50	330.6 9.2 75	328.3 11.5 91 = Bottom Wash to East	
11+0						326.7 13.1 100 = Bottom Wash	331.3 8.5 90	332.4 7.4 75	332.6 7.2 50	331.4 8.4 25	330.8 9.0	331.6 8.2 25	331.9 7.9 50	332.6 7.2 75	332.8 7.0 100	
BM # 68			1.80	338.04	Page 14 338.03	329.9 9.9 100 = Bottom Wash	332.0 7.8 90	333.3 6.5 75	334.8 5.0 50	335.3 4.5 25	334.3 5.5	333.6 6.2 25	333.7 6.1 50	333.3 6.5 75	333.9 5.9 100	
10+60											339.84					
TP	0.83	339.84	12.87	339.01												
10+35						332.1 19.8 100 = Bottom Wash	334.9 17.0 85	336.8 15.1 50	338.8 13.1 25	340.0 11.9	338.4 13.5 25	336.7 15.2 50	335.5 16.4 75	334.8 17.1 100		
		351.88									351.88					

						Lt.				℄			Rt.			
TP	3.54	333.94	9.44	330.40		323.8	318.8	322.8	324.7	327.4	332.2	337.4	341.7	347.8		
13+0						16.0 / 90	21.0 / 75 = Bottom Wash	17.3 / 65	15.1 / 50	12.4 / 25	7.6	2.4 / 25	+1.9 / 50	+8.0 / 75		
						314.8	322.8	319.4	324.8	329.2	332.8	338.1	346.3	352.5		
12+75						15.0 / 85	17.0 / 70	20.4 / 61 = Bottom Wash	15.0 / 50	10.6 / 25	7.0	1.7 / 25	+6.5 / 50	+12.7 / 75		
						325.8	324.2	321.0	324.9	329.7	333.32	339.6	348.2	354.7		
12+47.42	B.C. Rt.					14.0 / 85	15.6 / 66	18.8 / 53 = Bottom Wash	14.9 / 46	10.1 / 25	6.52 on Hub	0.2 / 25	+8.4 / 50	+14.9 / 75		
						326.6	325.2	321.4	324.5	326.4	332.4	334.2	336.3	338.6	341.5	345.8	347.7
12+10						13.2 / 77	14.6 / 61	18.4 / 54 = Set of 2 Washers	15.3 / 46	13.4 / 25	7.4	5.6 / 8	3.5 / 14	1.2 / 32 = Hy Road	+1.7 / 40	+6.0 / 60	+7.9 / 75
					325.1	328.2	327.4	326.1	324.0	324.7	330.0	335.2	339.2	342.6	346.8	
11+83					14.7 / 85 = Bottom Wash	11.6 / 75	12.4 / 50	13.7 / 28	15.8 / 24	15.1 / 6 = Bottom Wash	9.8	4.6 / 25	0.6 / 46	+2.7 / 65	+4.0 / 85	
		339.84									339.84					

						Lt.		Rt.	
TP	7.55	328.92	12.37	321.67	on P.C.? 46 Rt of 12 15+50				
						328.6			
15+00						312.4	314.7	314.4	312.4	314.8	317.5	322.6	328.4
						15.3 7.5	21.5 44	19.0 36	19.5 42	21.5 12	19.1	16.4 27	11.3 50	5.5 7.5
							44-Bottom Marsh							5.6
						321.1	313.1	315.6	315.3	313.8	314.7	318.5	342.2	325.8
14+75						12.8 8.0	20.8 50	18.3 48	18.6 25	20.1 12	19.2	15.4 28	11.7 50	8.1 7.5
							50-Bottom Marsh							
							322.3	313.1	316.1	315.7	316.9	320.5	325.5	331.9
14+50							11.6 8.0	20.8 56	17.8 50	18.2 42	17.0	13.4 30	8.4 50	2.0 7.5
								56-Bottom Marsh						
						319.1	318.1	316.7	317.8	318.9	321.2	326.2	333.4	342.3
14+00						14.8 8.5	15.8 7.0	17.2 56	14.1 50	16.0 25	12.7	7.7 25	0.6 50	+ 8.4 7.5
								56-Bottom Marsh			2 Road			
						320.6	317.9	320.7	321.7	323.8	327.2	330.4	339.3	351.4
13+50						13.3 9.0	16.0 80	12.2 7.0	12.2 50	10.1 25	6.7	2.5 25	+5.4 50	+17.5 7.5
							80-Bottom Marsh							
		333.94								333.94				

2" Line

Jan. 31-46
Sisson
McCoy
Waddel
Allen

							Lt.		℄			Rt		
					308.5	306.4	304.5	304.8	306.7	307.4	311.8	315.8	321.8	329.7
+50					20.4 90	22.5 73	24.5 67	24.1 63	22.2 50	21.5 25	17.1	13.1 25	7.1 50	+0.8 75
							312.5	308.6	307.5	307.6	307.6	309.3	316.9	322.7
17+0							16.4 75	20.3 45	21.4 37	21.3 25	21.3	19.6 25	12.0 50	6.2 75
						318.7	309.9	309.9	308.3	309.5	309.6	311.6	316.5	322.9
+50						10.2 75	19.0 62	19.0 50	20.6 42 = Bottom Wash	19.4 34	19.3	17.3 25	12.4 50	6.0 75
							320.0	311.1	309.8	310.9	312.0	314.0	316.6	319.9	324.1
16+0							8.9 80	17.8 55	19.1 50 = Bottom Wash	18.0 43	16.9 25	14.9	12.3 25	9.0 50	4.8 75
						320.7	315.1	311.2	314.2	311.2	312.2	315.1	318.3	321.5	326.4
15+50						8.2 85	13.8 59	17.7 58 = Bottom Wash	14.7 45	17.7 35	16.7 25	13.8	10.6 25	7.4 50	2.5 75

328.92

328.92

Regular → POC

18+10 — 18+00 — 17+90 — 17+80 — 17+70 — 17+60 — 17+50 — 17+40 — 17+30 — 17+20 — 17+10 — 17+00 — 16+90 — 16+80 — 16+70 — 16+60 — 16+50 — 16+40 — 16+30 — 16+20 — 16+10 — 16+00 — 15+90 — 15+80 — 15+70 — 15+60 — 15+50 — 15+40 — 15+30 — 15+20 — 15+10 — 15+00 — 14+90 — 14+80 — 14+70 — 14+60 — 14+50 — 14+40 — 14+30 — 14+20 — 14+10 — 14+00 — 13+90 — 13+80 — 13+70 — 13+60 — 13+50 — 13+40 — 13+30 — 13+20 — 13+10 — 13+00 — 12+90 — 12+80 — 12+70 — 12+60 — 12+50 — 12+40 — 12+30 — 12+20 — 12+10 — 12+00 — 11+90 — 11+80 — 11+70 — 11+60 — 11+50 — 11+40 — 11+30 — 11+20 — 11+10 — 11+00 — 10+90 — 10+80 — 10+70 — 10+60 — 10+50 — 10+40 — 10+30 — 10+20 — 10+10 — 10+00 — 9+90 — 9+80 — 9+70 — 9+60 — 9+50 — 9+40 — 9+30 — 9+20 — 9+10 — 9+00 — 8+90 — 8+80 — 8+70 — 8+60 — 8+50 — 8+40 — 8+30 — 8+20 — 8+10 — 8+00 — 7+90 — 7+80 — 7+70 — 7+60 — 7+50 — 7+40 — 7+30 — 7+20 — 7+10 — 7+00 — 6+90 — 6+80 — 6+70 — 6+60 — 6+50 — 6+40 — 6+30 — 6+20 — 6+10 — 6+00 — 5+90 — 5+80 — 5+70 — 5+60 — 5+50 — 5+40 — 5+30 — 5+20 — 5+10 — 5+00 — 4+90 — 4+80 — 4+70 — 4+60 — 4+50 — 4+40 — 4+30 — 4+20 — 4+10 — 4+00 — 3+90 — 3+80 — 3+70 — 3+60 — 3+50 — 3+40 — 3+30 — 3+20 — 3+10 — 3+00 — 2+90 — 2+80 — 2+70 — 2+60 — 2+50 — 2+40 — 2+30 — 2+20 — 2+10 — 2+00 — 1+90 — 1+80 — 1+70 — 1+60 — 1+50 — 1+40 — 1+30 — 1+20 — 1+10 — 1+00 — 0+90 — 0+80 — 0+70 — 0+60 — 0+50 — 0+40 — 0+30 — 0+20 — 0+10 — 0+00

TP 1.87 3/18/11 1268 3/16/11

5286 3/14/11 18+10 POC

5328.92

+50 — Rt + Lt + Above ℄ − Below ℄

+70

19+15

+42.17 E.C.

305.9

304.8

302.2

303.3 301.0 300.7 303.0 301.3 299.6

303.2 303.2 302.7 299.3 298.7

305.2 305.2 302.9 301.3 299.7

307.7 305.8 303.4 301.6 300.4

312.2 310.3 308.4 304.2 310.63

319.6 319.2 317.1 316.7 320.2

327.0

336.4 328.4 330.3 331.1 331.3

340.6 340.3 337.7 337.4 342.0

5328.92 3/18/11

69

BM			10.48	302.02	on Hub 21+23.72 P 302.01 Page 13
TP	7.05	312.50	12.66	305.45	
+50					
21+10					
+85					
+50					
20+0					01.7 -11.5 110 / 98.7 -14.5 81
		318.11			

	Lt.				℄		Rt.		
	92.4 -13.0 113	94.1 -11.3 110	94.4 -11.0 70	95.4 -10.0 44	97.8 -7.6 25	305.4 12.7	21.3 +15.9 35	38.3 +32.9 65	54.4 +49.0 96
	97.7 -14.9 108	94.7 -17.9 102 = Bottom Hash	95.7 -16.9 92	99.0 -13.6 53	01.7 -10.9 25	312.6 5.5	25.5 +12.9 27	41.5 +28.9 59	56.8 +44.2 92
	00.5 -15.2 129	94.3 -21.4 81	99.5 -16.2 55	05.5 -10.2 25	315.68 2.43 on Hub		32.7 +17.0 37	52.6 +36.4 73	66.9 +51.2 114
	02.7 -12.8 132	97.4 -18.1 75	00.4 -15.1 51	06.9 -8.6 25	315.5 2.6		30.3 +14.8 34	45.7 +30.2 64	66.5 +51.0 114
	97.6 -15.6 79 = Bottom Hash	300.0 -13.2 69	99.6 -13.6 49	04.2 -9.0 25	313.2 4.9		24.1 +10.9 21	38.5 +25.3 49	57.5 +44.3 97
					318.11				

"L" Lx							Lt.		2		Rt.		
TP	1.12	303.85	11.95	302.73									
+65						91.0 -15.9 112	89.8 -17.1 90	90.4 -16.5 34	93.4 -13.5 33	306.9 7.8	23.7 +16.8 36	41.9 +35.0 68	62.9 +56.0 103
23+25						93.0 -18.9 127	90.1 -21.8 93	93.2 -18.7 51	98.5 -13.4 32	311.9 2.8	29.4 +17.5 32	42.3 +30.4 54	61.1 +49.2 85
+75						93.2 -19.8 130	91.4 -21.6 93	91.4 -21.6 55	00.7 -12.3 26	313.0 1.7	30.3 +17.3 30	39.4 +26.4 44	52.0 +39.0 63	61.0 +48.0 84
										314.68			
TP	2.31	314.68	0.13	312.37									
+50						90.6 -18.8 98 = Bottom Wash	92.6 -16.8 94	91.5 -17.9 45	00.1 -9.3 20	309.4 3.1	23.6 +14.2 26	38.0 +28.6 52	56.0 +46.6 85
22+0						91.6 -11.4 108 = Bottom Wash	93.4 -9.6 102	93.4 -9.6 80	92.3 -10.7 50	93.7 -9.3 25	303.0 9.5	16.4 +13.4 26	28.7 +25.7 48	45.4 +42.4 80
		312.50								312.50			

TP	4.29	282.84	1263	278.55	
26+0					
1+50					
25+0					
TP	0.18	291.18	4285	291.00	
1+50					
24+0					92.6 / -7.4 / 122

305.85

	Lt.		℄		Rt.	
	94.1 / +13.8 / 100	85.6 / +4.7 / 57	81.4 / +0.5 / 25	280.9 / 10.3	81.1 / +0.2 / 40	91.7 / +10.8 / 68	08.6 / +27.7 / 102
	81.2 / -1.2 / 76 Bottom Marsh	84.2 / +1.8 / 73	84.2 / +1.8 / 54	82.8 / +0.4 / 25	282.4 / 8.8	83.4 / +1.0 / 10	90.6 / +9.2 / 34	08.3 / +25.9 / 72	17.8 / +35.4 / 100
	84.2 / -4.1 / 85 Bottom Marsh	84.8 / -1.5 / 8	84.8 / -1.5 / 58	84.8 / -1.5 / 27	286.3 / 4.9	92.2 / +11.4 / 39	02.1 / +22.8 / 60	26.2 / +39.9 / 91
				291.18				
	94.0 / +12.7 / 117	85.3 / -1.0 / 55	86.6 / -4.7 / 27	291.3 / 12.5	05.3 / +14.0 / 34	20.7 / +39.4 / 75	39.8 / +68.5 / 128
	89.7 / -10.8 / 97	87.3 / -12.7 / 52	88.4 / -11.6 / 25	90.9 / -9.1 / 23	300.1 / 3.8	20.6 / +20.6 / 42	39.1 / +39.1 / 74	58.0 / +58.0 / 92

305.85

								Lt			℄		Rt			
+80							02.4		93.6	78.1	274.2	74.7	70.2	73.6	72.7	79.8
							+28.2 95		+19.4 66	+3.9 27	8.6	+0.5 26	-4.0 36 = Bottom Wash	-0.6 42	-1.5 80	+5.6 106
+50						02.7	90.4	74.9	73.0	74.9	275.2	74.2	71.2	74.8	74.8	86.6
						+27.5 94	+15.2 63	-0.3 26	-2.2 23	-0.3 20	7.6	-1.0 10	-4.0 17 = Bottom Wash	-0.4 23	-0.4 54	+11.4 114
+25						300.2	83.5	75.2	73.6	75.5	276.6	71.9	76.0	79.5	91.8	
						+23.6 92	+6.9 48	-1.4 12	-3.0 10	-1.1 8	6.2	-4.7 14 = Bottom Wash	-0.6 21	+2.9 53	+15.2 112	
27+0							98.0		80.9	76.0	274.2	77.6	81.8	98.9		
							+23.8 94		+6.2 40	+1.8 6	8.6 = Bottom Wash	+3.4 15	+7.6 53	+24.5 102		
+68	For Profile		5.4	77.4												
+62.59	P.O.T.		5.05	77.79	on ℄ Hub											
26+50						96.2	83.6	80.2	77.1	278.1	85.2	93.7	11.2			
						+17.5 101	+4.9 46	+1.5 20	-1.6 12	4.1	+2.5 43	+15.0 82	+32.5 116			
		282.84									282.84					

"L" Line

						Lt.		℄		Rt.			
+50					16.8	07.9	88.7	276.7	68.3	66.3	64.3	67.8	
					+40.1	+31.2	+12.0	6.1	-8.4	-10.4	-12.4	-8.9	
					100	77	32		33	58	62	81	
										272.1			
										-4.6			
										111			
+08	For Profile		12.0	70.8									
29+0					08.1	85.8	79.6	267.2	67.5	68.2	65.7	68.8	74.8
					+40.9	+18.6	+12.4	15.6	+0.3	+1.0	-1.5	+1.6	+7.6
					85	41	12		10	40	43	52	105
+75	For Profile		14.9	67.9									
+62					18.6	99.9	81.9	273.2	68.0	70.4	67.3	70.6	75.8
					+45.4	+26.7	+8.7	9.6	-5.2	-2.8	-5.9	-2.6	+2.6
					105	69	35		13	27	33	42	77
												281.6	
												+8.4	
												104	
+40					12.6	90.0	82.0	277.1	71.2	68.4	71.1	71.5	83.5
					+35.5	+12.9	+4.9	5.7	-5.9	-8.7	-6.0	-5.6	+6.4
					111	57	31		25	30	38	63	109
28+0					01.3	82.5	82.0	277.7	73.5	69.4	72.9	75.7	
					+23.6	+11.8	+4.3	5.1	-4.2	-8.3	-4.8	-2.0	
					88	53	28		35	38	50	100	
		282.84						282.84					

Bottom Wash

Bottom Wash

Bottom Wash

Bottom Wash

						Lt.		℄		Rt.	Fcb-1442 30+50	
TP	12.47	307.46	0.19	294.99								
+25						317.2 +27.1 118	307.2 +17.1 64	300.2 +10.1 31	290.1 5.1	284.3 -5.8 28	278.2 -11.9 55	267.9 -22.2 97
31+0						330.9 +41.5 122	305.9 +16.5 58	300.9 +11.5 37	289.4 5.8	282.1 -7.3 32	276.2 -13.2 62	270.2 -19.2 89	267.7 -21.7 99
+75						130.6 +41.4 97	318.9 +29.7 63	304.7 +15.5 40	289.2 6.0	283.1 -6.1 22	277.5 -11.6 46	264.7 -24.5 90	273.1 -16.1 129
+50						33.6 +48.2 104	15.6 +30.2 66	98.7 +13.3 30	385.4 9.8	77.6 -7.8 22	73.1 -12.3 49	64.1 -21.3 72	65.2 -20.2 118
TP	12.68	295.18	0.34	282.50					295.18				
30+0						12.9 +40.3 82	03.5 +25.9 52	89.4 +11.8 27	277.6 5.2	72.0 -5.6 23	67.0 -10.6 44	64.8 -12.8 82	63.8 -13.8 85
		282.84							282.84		67.4 -10.2 117		Bottom Wash

							Lt.		℄		Rt.		
33+10						348.4 +39.1 110	333.1 +23.8 58	322.4 +13.1 29	309.3 3.6	301.3 -8.0 21	290.6 -18.7 48	280.4 -28.9 83	272.5 -36.8 110
+78.12	P.O.T.		2.47	310.39	07 ℄ Hub								
+60						346.8 +37.1 102	336.2 +26.5 60	323.8 +14.1 31	309.7 3.2	300.3 -9.4 24	292.9 -16.8 45	284.3 -25.4 79	279.4 -30.3 97
32+25						341.3 +34.1 90	333.2 +26.0 55	320.2 +12.0 26	307.2 5.7	299.6 -7.6 22	290.8 -16.4 52	284.4 -22.8 77	278.9 -28.3 95
									312.86				
TP	6.20	312.86	0.80	306.66									
+82						334.6 +29.9 93	328.1 +23.4 68	318.8 +13.6 35	304.7 2.8	294.5 -10.2 26	285.5 -19.2 61	276.9 -27.8 87	
31+50						325.6 +28.8 92	320.6 +23.8 77	313.3 +16.5 53	306.0 +9.2 25	296.8 10.7	289.4 -7.4 24	279.1 -17.7 61	271.3 -25.5 101
		307.46							307.46				

"Z" Line

		Lt.		℄		Rt.		
+35		360.4 +48.1 103	340.6 +28.3 57	327.9 +15.6 28	312.3 0.6	301.9 -10.4 18	292.4 -19.9 33	282.9 -29.4 47	267.4 -44.9 76
35+0		364.5 +54.2 118	343.6 +33.3 68	326.1 +15.8 29	310.3 2.6	297.4 -12.9 19	275.3 -35.0 56	265.4 -44.9 79	
+50	349.2 +41.6 95	338.9 +31.3 69	333.8 +26.2 57	319.9 +12.3 23	307.6 5.3	298.4 -9.2 19	281.1 -20.5 39	269.9 -37.7 71	263.1 -44.5 91
34+0	343.7 +37.2 91	339.7 +33.2 78	330.7 +24.2 53	319.8 +13.3 25	306.5 6.4	295.2 -11.3 22	277.9 -28.6 61	265.5 -41.0 101	
33+55		344.3 +46.2 100	328.2 +30.1 61	313.9 +15.8 32	298.1 14.8	290.0 -8.1 23	279.3 -18.8 60	263.0 -35.1 120	

312.86

312.86

						Lt		Rt	
TP	0.16	289.15	12.53	288.99					
						321.0	306.7	285.7	274.7	252.4
+50						+25.2 100	+21.2 72	+10.9 29	5.7	-10.1 23	-21.1 48	-43.4 94
					37+29.90 07Z Hub			301.52				
TP	0.45	301.52	12.14	301.07		338.0	329.8	319.2	305.8	294.6	283.3	255.3
37+0						+32.2 100	+23.4 61	+13.4 33	7.4	-11.2 22	-22.5 43	-50.5 104
						351.5	335.8	325.0	309.1	296.0	284.2	267.1
+50						+41.8 110	+26.1 61	+15.3 33	3.5	-13.7 26	-25.5 45	-43.6 88
+29.35	P.O.T.		1.65		07Z Hub							
						353.3	339.3	328.6	312.7	297.6	278.9	265.9
36+0						+40.6 98	+26.6 58	+16.9 25	0.5	-15.1 26	-33.8 59	-46.8 85
								313.21				
TP	1.83	313.21	1.48	311.38		357.6	340.9	325.6	310.4	299.0	281.0	260.6
35+60						+47.2 98	+30.5 57	+15.3 28	2.5	-11.4 21	-29.4 47	-49.8 100
		312.86						312.86				

						Lt.		℄			Rt.	
+36.96	P.O.T		2.86		on ℄ Hub	300.26	280.11	267.8	260.7	255.8	248.1	237.0
39+0						+39.6 131	+19.4 74	+7.1 32	3.6	-4.9 25	-12.6 72	-21.7 114
						295.0	280.7	268.7	262.6	257.2	251.6	248.3	239.3
+90						+32.8 124	+23.5 84	+11.5 45	+5.4 20	7.1	-5.6 35	-8.9 61	-17.9 119
						288.9	275.6	264.4	264.8	261.5	256.5	252.4	246.7	241.3
+75						+27.4 120	+14.1 79	+2.9 43	+3.3 25	2.8	-5.0 13	-9.1 40	-14.8 71	-20.2 107
									264.26				
TP	0.42	264.26	12.90	263.84		280.1	275.7	273.2	271.1	265.6	259.6	250.8	245.0
+50						+14.5 114	+10.1 92	+7.6 56	+5.5 31	11.1	-6.0 27	-14.8 67	-20.6 100
									276.74				
TP	0.46	276.74	12.87	276.28		294.0	294.5	296.1	292.0	281.6	273.8	262.5	244.0
38+0						+12.5 100	+13.0 85	+14.6 62	+10.5 33	7.6	-7.7 24	-19.0 51	-37.5 102
		289.15							289.15				

L. Line

						Lt.		℄		Rt.	Feb-19-47 +Sec.
TP	2.47	231.71	9.98	229.24	2" Pipe L+T 1' Lt of 40+90						
41+0						262.6 +34.6 141	237.4 +9.4 66	231.7 +3.7 33	228.0 11.2	225.8 -2.2 23	224.7 -3.3 55 Sly Wash open Sewer	226.3 -1.7 100
+50						267.7 +34.2 109	253.6 +20.1 76	241.6 +8.1 41	233.5 5.7	230.8 -2.7 30	229.5 -4.0 68	229.7 -4.0 108
								239.22				
TP	0.27	239.22	12.85	238.95								
40+15						287.6 +48.9 114	265.7 +25.0 63	250.4 +9.7 32	240.7 11.1	235.0 -5.7 27	233.9 -6.8 60	232.3 -8.4 106
+90						292.7 +44.2 99	279.0 +30.5 63	265.1 +16.6 32	248.5 3.3	239.8 -8.7 26	236.9 -11.6 56	234.8 -13.7 110
								251.80				
TP	0.16	251.80	12.62	251.64								
39+50						304.46 +45.2 100	286.0 +26.7 57	274.6 +15.3 26	259.3 5.0	251.8 -7.5 20	245.5 -13.8 43	237.2 -22.1 117
		264.26						264.26				

							Lt.				℄		Rt.	℄ Levels	
43+0							224.8 +2.5 113	222.0 -0.3 94	221.9 -0.4 61	218.9 -3.4 40 ℄ Wash	221.4 -0.9 20	222.3 9.4	223.9 +1.6 27	225.4 +3.1 45	239.9 +17.6 76	251.5 +29.2 103
+50	P.O.T				229.9 +7.6 109	224.7 +2.4 82	221.7 -0.6 45	220.1 -2.2 42	221.3 -1.0 25	220.7 -1.6 15	222.3 0.0 11	222.29 9.42 on Hub	224.3 +2.0 25	224.9 +2.6 54	227.0 +4.7 92	235.7 +13.4 108
42+0							230.9 +7.1 112	226.3 +2.5 61	222.7 -1.1 30	221.8 -2.0 5 ℄ Wash	223.8 7.9	225.3 +1.5 23	225.7 +1.9 72	226.4 +2.6 100	
+50						234.7 +9.9 113	230.2 +5.4 77	226.8 +2.0 35	224.0 -0.8 33	222.0 -2.8 12 ℄ open Sewer	224.5 -0.3 5	224.8 6.9	224.9 +0.1 31	226.3 +1.5 60	227.6 +2.3 100	
+30							241.4 +17.6 118		231.2 +7.4 49	227.3 +3.5 16	223.0 -0.8 14 ℄ Wash	223.8 7.9	225.8 +2.0 32	226.2 +2.4 63	228.3 +4.5 110	
+18	" "		7.8	23.9	207 .5 Wt. Wash											
41+16	For Profile		4.9	26.8	204.9											
		231.71									231.71					

						Lt.		℄		Rt.	
TP	12.44	280.86	0.20	268.42				265.5	277.0	287.8	301.6
45+0						Sec ℄ for Lt. #1737-18		3.1	+11.5 25	+22.3 60	+36.1 102
						220.2	235.5	247.6	260.5	270.7	284.9	294.1
+73.38	B.C. Rt.					-40.4 103	-25.1 65	-13.0 29	7.99 on Hub	+10.1 26	+24.2 73	+33.5 100
								268.62				
TP	12.87	268.62	0.08	255.75		217.2	235.5	246.1	255.7	266.4	275.4	290.2
+50						-38.5 100 - Ely Wash	-20.2 51	-9.6 24	0.1	+10.7 36	+19.7 63	+34.5 102
						220.8	217.8	221.7	227.0	244.2	255.8	266.1	280.9
44+0						-23.6 111	-26.4 69 - Bottom Wash	-22.5 56	-17.2 33	11.6	+11.6 28	+21.9 60	+36.7 103
								255.83				
TP	12.36	255.83	0.20	243.47								
TP	12.42	243.67	0.46	231.25		219.7	220.5	218.0	220.7	222.6	224.6	236.1	250.9	268.7
43+50						-4.9 110	-4.1 74	-6.6 52 - Bottom Wash	-3.9 37	-2.0 8	7.1	+11.5 24	+26.3 57	+44.1 103
		231.71						231.71				

"L" Line					
+25					
TP	2.91	296.13	0.23	293.22	
46+0					
+80					
45+50					
TP	12.78	293.45	0.19	280.67	
45+25					
BM	on Hub 6' Lt 45+75 L'		1.70	279.16	on POT Hub 47+19.61 P 279.15 Page 13
		280.86			

Lt.		℄		Rt.	
	279.0	294.6	303.7	311.7	324.0
	-15.6 38	1.5	+9.1 30	+17.1 62	+29.4 110
		296.13			
	282.1	292.5	300.6	309.0	324.4
	-10.3 25	1.0	+8.2 22	+16.6 52	+32.0 97
	282.0	290.4	300.1	311.3	327.8
	-8.3 19: Approx 22'	3.1	+9.8 28	+21.0 71	+37.3 106
		281.9	291.5	299.7	314.0
		11.6	+9.7 25	+17.9 48	+32.2 99
		293.45			
		275.0	284.2	295.0	308.1
		5.9	+9.2 27	+20.0 58	+33.1 102
		280.86			

						Lt.		Rt.	
TP	6.52	242.26	11.39	235.74	07 POC 4870	230.4	226.4	225.0	227.6	235.7	243.3	255.1	272.3
4870						-5.3 117	-9.2 84	-10.7 41 - Bottom Ditch	-8.1 30	11.4	+7.6 25	+20.0 59	+36.6 104
TP	0.41	247.13	12.63	246.72						247.13			
+50						221.6 -10.7 104 - Ditch	227.4 -21.9 70	238.0 -14.3 48	245.7 -1.6 23	252.4 7.0	258.8 +6.5 25	267.9 +15.6 53	286.0 +33.7 104
TP	0.39	259.35	12.60	258.96						259.35			
TP	0.54	271.56	12.90	271.02									
4710						233.1 -43.0 108	255.5 -20.6 62	267.4 -8.7 31	276.1 7.8		288.2 +4.6 26	289.0 +12.9 76	300.5 +24.4 110
TP	0.59	283.92	12.80	283.33						283.92			
+70	POC						261.2 -27.0 72	275.9 -12.3 32	286.16 7.97 07 Hub		294.0 +5.8 27	298.6 +10.4 78	308.4 +20.2 104
4610							270.6 -22.3 56	282.0 +10.9 27	292.9 32		301.6 +8.7 30	305.6 +12.7 74	318.9 +26.0 116
		296.13								296.13			

50+70					
TP	12.64	267.07	0.04	254.43	
TP	12.30	254.47	0.09	242.17	
+50					
49+70	P.O.C.				
+50					
48+25					
		242.26			

	Lt.		Rt.	
	279.1	260.3	256.8	251.0	244.0	236.1
	+32.9	+3.5	10.3	-5.8	-12.8	-20.7
	50=Top Fill	12=Toe Slope Fill		22	65	110=Bottom Ditch
		267.07				
	275.8	253.4	248.9	242.2	237.5	235.2	234.9	240.2
	+33.6	+11.2	+7.7	0.1	-4.7	-7.0	-7.3	-2.0
	87=Top Fill	43=Toe Fill	28		28	52	79=Ditch	125
261.1	252.1	240.7	232.0	231.34	232.1	233.7	240.9	
+29.6	+20.6	+9.2	+0.5	10.72	+1.2	+2.2	+9.4	
104	72	43	17	Ditch	33	72	111	
241.5	233.2	228.4	227.7	229.7	231.7	237.9	246.4	259.2
+11.8	+3.5	-1.3	-2.0	12.6	+2.0	+8.2	+16.7	+29.5
116	78	47	12=Bottom Ditch		32	44	70	163
235.1	229.4	227.7	226.4	231.9	238.4	251.3	265.8	
+3.2	-2.5	-4.2	-5.5	10.4	+6.5	+19.4	+33.4	
113	70	40	23=Bottom Ditch		24	63	106	
		242.26						

"L" Line

+50				
+27	= Culvert on Rt			
51+0				
+80				
TP	12.99	291.19	0.48	278.20
+50				
TP	11.89	278.68	0.28	266.79
50+25				
		267.07		

Lt.		℄		Rt.			
		283.34	283.9	284.9	253.4	254.6	252.8
		7.85 on Pav	+0.6 13 = Sly Pav	+1.6 24 = Top Fill	-29.9 69	-28.7 87	-30.5 101
		282.5 8.7		51.8 -31.5 68 = 2.11 Cobble Hand Wall		48.3 -35.0 68 = 5 Fly 24" Conc. Pipe Flow Line	
		281.5 9.7 = Sly Pav	282.8 +1.3 8	270.3 -9.2 28	261.0 -20.5 63	54.8 -26.7 77	
					45.4 -36.1 89	42.6 -38.9 102	
	280.6 -1.1 7 = Sly Pav	281.7 9.5 = Top Fill	270.6 -11.1 17	254.8 -26.9 42	244.8 -36.9 77	242.4 -39.3 98	
		291.19					
279.4 +7.5 21 = Sly Paving	280.9 +9.0 14 = Top Fill	271.9 6.8	259.3 -12.6 23 = Toe Fill Slope	248.0 -23.9 64	231.1 -40.8 96		
		278.68					
278.5 +15.8 36 = Sly Paving	279.6 +16.9 29 = Top Fill	262.7 4.4 = Toe Fill Slope	255.3 -7.4 26	245.2 -17.5 68	237.2 -25.5 120 = Bottom Wash		
		267.07					

						Lt.	℄		Rt.		
+42	B.C. Rt.						292.93 3.29 on RR Spike	291.9 -1.0 22 = Sly Pav.	293.1 +0.2 29	277.8 -15.0 49	273.5 -19.4 98
53+0							290.82 5.40	290.2 -0.6 21 = Sly Pav.	291.2 +0.4 28	274.6 -16.2 52	272.9 -17.9 82
+50							288.14 8.08	288.1 0.0 21 = Sly Pav.	289.8 +1.7 30	270.5 -17.6 60	266.9 -21.2 95
BM	8.69	296.28 2	3.66	287.53	on RR Spike 52+37.57 ℄ Montezuma Ro.		296.28 2				
+26.40	E.C.						286.90 4.29	287.2 +0.3 21 = Sly Pav.	288.6 +1.7 29	269.1 -17.8 55	269.6 -21.3 94
52+0							285.53 5.66	287.0 +1.5 28	263.5 -22.0 59	262.7 -22.8 86	
		291.19					291.19				

						Lt.		Σ	Rt.	

DIETZGEN'S RAILROAD CURVE AND REDUCTION TABLES

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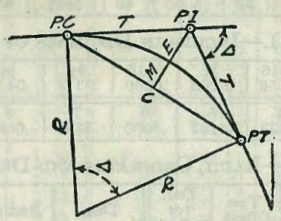

CURVE FORMULAS

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

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

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

External=E=T tan $\frac{\Delta}{4}$ (7)=R ÷ cos. $\frac{\Delta}{2}$—R (8)=R exsec $\frac{\Delta}{2}$ (9)

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

EXPLANATION AND USE OF TABLES

Stations.—Given P. I.=Sta. 161+60.35 to find Sta. of P. C. and P. T. △=62° 10′ D=8° 20′. From Table IV for 1° curve T=3454.1 and ÷8⅓=414.49 ft. From Table V correction=.36 or T=414.85 ft. P. C.=Sta. P.I.—T=157 +45.50. Also from (4) L=746.00 and P. T.=Sta. P. C.+L=164+91.50.

Offsets.—Tangent offsets vary (approximately) directly with D and with square of the distance. Thus tangent offset for Sta. 158 on above curve is 2.16 ft. found as follows. From Table III tangent offset for 100 ft.=7.27 ft. Distance=158—Sta. P. C.=54.50, hence offset=7.27 $(54.50 \div 100)^2$=2.16 ft. Also square of any distance divided by twice the radius equals (approximately) the distance from tangent to curve. Thus $(54.50)^2 \div (2 \times 688.26)$=2.16 ft.

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

Externals.—May be found in similar manner to tangents. Thus E for curve above is 115.37. For from Table IV for 1° curve E=960.6 for 8° 20′=960.6 ÷8⅓=115.27 and from Table V correction=.10 or E=115.37 ft. Or suppose △=32° and E is measured and found to be 42 ft. What is D? From Table IV E=230.9 and ÷42=5.5 or D=5° 30′.

ternal

7.57
0.16
0.75
2.35
3.97
5.60

7.24
8.90
0.57
2.25
3.95
5.66

7.38
9.12
0.87
2.63
.41
5.20

.00
.82
.65
.50
.35
.23

.11
.01
.93
.85
.79
.75

.71
.69
.69
.70
.72
.76

.81
.86
.95
.04
.15
.27

.41
.55
.72
.89
08
29

51
74
99
25
53
82

12
44
77
12
48
86

Table I.—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	1.0000

Table II.—Inches in Decimals of a Foot.

1–16	3–32	⅛	3–16	¼	5–16	⅜	½	⅝	¾	⅞
.0052	.0078	.0104	.0156	.0208	.0260	.0313	.0417	.0521	.0625	.0729

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

Table III.—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	9	637.28	1.965	7.846	2.70
40	3437.87	.364	1.454	0.50	20	614.56	2.037	8.136	2.80
50	3125.36	.400	1.600	0.55	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	10	573.69	2.183	8.716	3.00
20	2455.70	.509	2.036	0.70	30	546.44	2.292	9.150	3.15
30	2292.01	.545	2.181	0.75	11	521.67	2.402	9.585	3.30
40	2148.79	.582	2.327	0.80	30	499.06	2.511	10.02	3.45
50	2022.41	.618	2.472	0.85	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 IV.—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

DIAGRAM
HORIZONTA
DIS
FROM STA

Enter on the horiz
of the stadia readi
stadia constant (us
run vertically upw
line representing t
location of this p
the dotted line
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Distance The re
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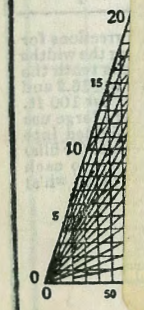

55 + 51.41
51 + 45.50
4 05 91

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 U.S.A.