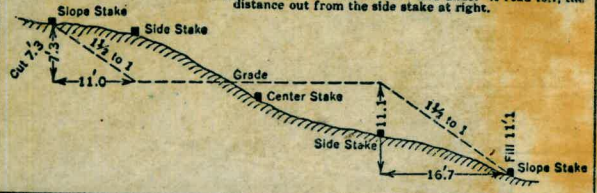
W
617

DISTANCES FROM SIDE STAKES FOR CROSS-SECTIONING

Roadway of any Width. Side Slopes 1½ to 1.

In the figure below: opposite 7 under "Cut or Fill" and under .3 read 11.0, the distance out from the side stake at left. Also, opposite 11 under "Cut or Fill" and under .1 read 16.7, the distance out from the side stake at right.



Cut or Fill	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	Cut or Fill
	Distance out from Side or Shoulder Stake										
0	0.0	0.2	0.3	0.5	0.6	0.8	0.9	1.1	1.2	1.4	0
1	1.5	1.7	1.8	2.0	2.1	2.3	2 4	2.6	2.7	2.9	1
2	3.0	3.2	3.3	3.5	3.6	3.8	3.9	4.1	4.2	4.4	2
3	4.5	4.7	4.8	5.0	5.1	5.3	5.4	5.6	5.7	5.9	3
4	6.0	6.2	6.3	6.5	6.6	6.8	6.9	7.1	7.2	7.4	4
5	7.5	7.7	7.8	8.0	8.1	8.3	8.4	8.6	8.7	8.9	5
6	9.0	9.2	9.3	9.5	9.6	9.8	9.9	10.1	10.2	10.4	6
7	10.5	10.7	10.8	11.0	11.1	11.3	11.4	11.6	11.7	11.9	7
8	12.0	12.2	12.3	12.5	12.6	12.8	12.9	13.1	13.2	13.4	8
9	13.5	13.7	13.8	14.0	14.1	14.3	14.4	14.6	14.7	14.9	9
10	15.0	15.2	15.3	15.5	15.6	15.8	15.9	16.1	16.2	16.4	10
11	16.5	16.7	16.8	17.0	17.1	17.3	17.4	17.6	17.7	17.9	11
12	18.0	18.2	18.3	18.5	18.6	18.8	18.9	19.1	19.2	19.4	12
13	19.5	19.7	19·8	20.0	20.1	20.3	20.4	20.6	20.7	20.9	13
14	21.0	21.2	21.3	21.5	21.6	21.8	21.9	22.1	22.2	22.4	14
15	22.5	22.7	22.8	23.0	23.1	23.3	23.4	23.6	23.7	23.9	15
16	24.0	24.2	24.3	24.5	24.6	24.8	24.9	25.1	25.2	25.4	16
17	25.5	25.7	25.8	26.0	26.1	26.3	26.4	26.6	26.7	26.9	17
18	27.0	27.2	27.3	27.5	27.6	27.8	27.9	28.1	28.2	28.4	18
19	28.5	28.7	28.8	29.0	29.1	29.3	29.4	29.6	29.7	29.9	19
20	30.0	30.2	30.3	30.5	30.6	30.8	30.9	31.1	31.2	31.4	20
21	31.5	31.7	31.8	32.0	32.1	32.3	32.4	32.6	32.7	32.9	21
22	33.0	33.2	33.3	33.5	33.6	33.8	33.9	34.1	34.2	34.4	22
23	34.5	34.7	34.8	35.0	35.1	35.3	35.4	35.6	35.7	35.9	23
24	36.0	36.2	36.3	36.5	36.6	36.8	36.9	37.1	37.2	37.4	24
25	37.5	37.7	37.8	38.0	38.1	38.3	38.4	38.6	38.7	38.9	25
26	39.0	39.2	39.3	39.5	39.6	39.8	39.9	40.1	40.2	40.4	26
27	40.5	40.7	40.8	41.0	41.1	41.3	41.4	41.6	41.7	41.9	27
28	42.0	42.2	42.3	42.5	42.6	42.8	42.9	43.1	43.2	43.4	28
29	43.5	43.7	43.8	44.0	44.1	44.3	44.4	44.6	44.7	44.9	29
30	45.0	45.2	45.3	45.5	45.6	45.8	45.9	46.1	46.2	46.4	30
31	46.5	46.7	46.8	47.0	47.1	47.3	47.4	47.6	47.7	47.9	31
32	48.0	48.2	48.3	48.5	48.6	48.8	48.9	49.1	49.2	49.4	32
33	49.5	49.7	49.8	50.0	50.1	50.3	50.4	50.6	50.7	50.9	33
34	51.0	51.2	51.3	51.5	51.6	51.8	51.9	52.1	52.2	52.4	34
35	52.5	52.7	52.8	53.0	53.1	53.3	53.4	53.6	53.7	53.9	35
36	54.0	54.2	54.3	54.5	54.6	54.8	54.9	55.1	55.2	55.4	36
37	55.5	55.7	55.8	56.0	56.1	56.3	56.4	56.6	56.7	56.9	37
38	57.0	57.2	57.3	57.5	57.6	57.8	57.9	58.1	58.2	58.4	38
39	58.5	58.7	58.8	59.0	59.1	59.3	59.4	59.6	59 7	59.9	39
40	60.0	60.2	60.3	60.5	60.6	60.8	60.9	61.1	61.2	61.4	40

KEUFFEL & ESSER CO., N. Y.

JJ-9V
238
38.33

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JAN 13 1965

The paper in this book **No. F370A**
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10.892-3. km, cc, ys. cM.

SECTIONING
to 1.
d 11.0, the distance out
under .1 read 16.7, the
t right.

Fill 1:1
Slope Stake

.8	.9	Cut Fill
1.2	1.4	0
2.7	2.9	1
4.2	4.4	2
5.7	5.9	3
7.2	7.4	4
8.7	8.9	5
10.2	10.4	6
11.7	11.9	7
13.2	13.4	8
14.7	14.9	9
16.2	16.4	10
17.7	17.9	11
19.2	19.4	12
20.7	20.9	13
22.2	22.4	14
23.7	23.9	15
25.2	25.4	16
26.7	26.9	17
28.2	28.4	18
29.7	29.9	19
31.2	31.4	20
32.7	32.9	21
34.2	34.4	22
35.7	35.9	23
37.2	37.4	24
38.7	38.9	25
40.2	40.4	26
41.7	41.9	27
43.2	43.4	28
44.7	44.9	29
46.2	46.4	30
47.7	47.9	31
49.2	49.4	32
50.7	50.9	33

55.95
238
38.33

= 622.13 T.B.M. = 596.48
C-2

BENCH LEVELS

West Slope

No.	of Axis Elev.	BM	South of Axis Elev.
A1	649.55	A9	464.28
A1	618.32	A10	514.88
A18	591.43	A11	558.57
A19	559.78	A12	592.43
A20	504.10	A13	629.~~34~~ 33
A21	469.19	A14	656.~~14~~ 13
A22	471.83	A15	680.35

East Slope

North of Axis BM	Elev.	South of Axis BM	Elev
A30	700.28	A23	523.8
A31	663.09	A24	552.1
A32	626.07	A25	588.2
A33	594.72	A26	602.3
A34	553.59	A27	641.1
A35	517.28	A28	707.8
A36	500.92	A29	753.6

g Ramona Highway

h of Axis Elev	BM	South of Axis Elev.
479.50	A1	472.62
480.39	A2	462.54
481.39	A3	467.13
482.84	#1	476.89
483.67		

MICRO

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LEVELS - KEYWAY ON EAST SLOPE

A-34 B.M	4.19	557.77			553.58
T.P.				1.15	556.62
	11.86	568.48			
			0.48		568.00
			3.48		565.00
			8.48		560.0
			10.48		558.0
			12.48		556.0
T.P.				13.01	555.47
	1.32	556.79			
			4.79		552.0
			6.79		550.0
			8.79		548.00
			10.79		546.00
			12.79		544.00
TP				13.00	543.79

JAN 5

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9.4	North
9.7	"
10.2	"
10.4	"
10.6	"
11.0	North
11.2	"
11.4	
11.6	
11.8	

LEVELS- KEYWAY ON EAST SLOPE.

TP	073	544.52			543.79		
			2.52		542.00	12.0	North
			5.52		539.00	12.3	"
			8.52		536.00	13.6	"
			12.52		532.00	13.0	"
T.P.	0.56	532.18		12.90	531.62		
			5.18		527.00	13.5	North
			7.18		525.00	13.7	"
			12.18		520.0	15.1	
T.P.	0.78	520.21		12.75	519.43		
			5.21		515.0	15.6	North
			9.21		511.0	16.0	"
T.P.	0.89	508.17		12.93	507.28		
T.P.	12.84	520.76		0.25	507.92		
			5.76		515.00	104.4	SOUTH
			0.76		520.00	100.6	"
T.P.				0.25	520.51		

LEVELS - KEYWAY ON EAST SLOPE JAN 5, 1942

DICKINSON
Polock
LAING
King
COLE

T.P.	12.50	53301			520.51			
			8.01		525.0	96.8	SOUTH	
			3.01		530.0	93.0	"	
T.P.	12.57	54504		0.54	532.47			
			10.04		535.0	89.2	SOUTH	
			0.04		545.0	81.6	"	
T.P.	11.96	55671		0.29	544.75			
			6.71		550.0	77.8	SOUTH	
			1.71		555.0	74.0	"	
T.P.	12.73	56895		0.49	556.22			
			8.95		560.0	70.2	SOUTH	
			3.95		565.0	66.4	"	
T.P.	6.74	57521		0.48	568.47			
			5.21		570.0	62.6	SOUTH	
			0.21		575.0	58.8	"	
T.P.				12.63	562.58			
	2.12	56470		11.13	553.57	553.58 = Elev. BM # A.34		

Levels - Keyway - West Slope

1/6/41
Fair - Cool

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Jackson
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Laing
Cole

(4)

Sta.	+	H.I.	-	I.S.	Elev.				
A-11 B.M					558.56				
	9.57	568.13							
①				3.13	565.0		66^{3}	South of Axis	
②				8.13	560.0		70^{1}	"	" "
③				13.13	555.0		74^{0}	"	" "
T.P.			0.01		568.12				
	10.74	578.86							
				8.86	570.0		62^{5}	"	" "
				3.86	575.0		58^{7}	"	" "
T.P.			1.18		577.68				
	12.75	590.43							
				10.43	580.0	7.4'N -	55^{0}	"	" "
				5.43	585.0	6.9'N. -	51^{1}	"	" "
				0.43	590.0		47^{3}	"	" "
				12.43	578.0	7^{6}'N of Axis			
T.P			0.04		590.39				

Levels - Keyway - West Slope

Sta	+	H.I.	-	1.5	Elev.
T.P.					590.39
	10.76	601.15			
				6.15	595.0
				1.15	600.0
T.P			9.56		591.59
	7.55	599.14			
C-2 T.B.M.			2.59		596.55

1/6/41
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Jackson
Polok
Laing
Cole

43.5' South of Axis
39.7' " " "

JAN. 6, 1942

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Jackson
Polak
Laing
Cole

Profile of Axis-50'S.-E Slope

Sta	+	H.I.	-	I.S.	Elev.	
A-34 B.M.					553.58	
	7.59	561.17				
10+30				2.2	559.0	50'S. of Axis
10+20				5.5	555.7	" " " - break
T.P.			12.97		548.20	
	13.00	561.20				
11+50				28	554.4	Axis
11+25				8.5	552.7	"
11+00				10.6	550.6	"
T.P.			12.93		548.27	
	0.64	548.91				
10+75				2.2	546.7	"
10+50				5.1	543.8	
10+41				5.0	543.9	" - break
10+25				9.7	539.2	"
T.P.			12.99		535.92	

Profile of Axis - 50' South

Sta	+	H.I	-	I.S.	Elev	
T.P.					535.92	
	4.55	540.47				
10+00				11.1	529.4	Axis
T.P			12.54		527.93	
	1.02	528.95				
9+90				4.6	524.3	50' south of axis
T.P.	0.26	516.44	12.77		516.18	
9+75				3.2	513.2	
9+60				6.2	510.2	
9+63				4.7	511.7	50' SOUTH OF AXIS
T.P.	0.08	503.65	12.87		503.57	
9+45				7.2	496.4	
9+50				2.5	501.2	50 SOUTH OF AXIS
9+14				7.9	495.8	50' SOUTH OF AXIS
T.P.			12.83		490.82	
	1.79	492.61				

Profile of Axis @ 50' South

1/6/42
Fair - Warm

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Cole

Sta	+	H.I.	-	I.S	Elev.	
		492.61				
9+00				4.8	487.8	50' S. of Axis
9+00				2.7	489.9	Axis
9+14				1.1	491.5	Axis - Cut = 11.5 - Valve Chamber Pipe Trench
T.P.			2.41		490.20	
	9.91	500.11				
					498.19	
T.B.M.			1.88		498.23	
				Error =	+0.04	

Levels for East Keyway

Sta	+	H.I.	-	I.S	Elev.	
T.B.M.					498.19	
	4.60	502.79				
①				2.79	500.0	17.1' N. of Axis
②				7.79	495.0	17.6' " " "
③				12.79	490.0	18.1' " " "
④				5.8	497.0	17.4' " " "
T.B.M.			4.60		498.19	

1/7/42
Fair - Warm

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Jackson
Polak
Laing
King
Cole

Temporary Bench Levels

South of Axis - W. Side

B.M.				680.35	
	1.65	682.00			
T.B.M.1			8.48	673.52	Painted ⊙ on rock outcrop @ 3+09 - approx 30' South of Axis.
	0.47	673.99			
T.B.M.2			10.85	663.14	Painted ⊙ on rock outcrop @ 3+29 - approx. 24' South of Axis
	2.40	665.54			
A-14 B.M.			9.40	656.14	El. of Bench Mark = 656.13
	1.00	657.13			
T.B.M.3			5.71	651.42	Top of steel pin on ℄ Block #1 - Sta 3+46 - approx 27' S. of Axis
	2.41	653.83			
T.B.M.4			11.59	642.24	Painted ⊙ on rock outcrop @ 3+80± - approx 98' South of Axis.
	0.09	642.33			
A-13 B.M.			13.00	629.33	El. of B.M. = 629.33
	0.86	630.19			
T.B.M.5			8.76	621.43	Painted ⊙ on rock out-crop @ 4+29± - approx. 94' South of Axis
	0.53	621.96			

1/7/41
Fair-Warm

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King
Cole

Temporary Bench Levels
South of Axis - W. side

Sta	+	H.I.	-	I.S.	Elev.	
		621.96				
T.B.M.6			12.86		609.10	Painted ⊙ on rock outcrop @
	0.44	609.54				4+41± - approx 90' South of Axis
T.P.			12.63		596.91	
	0.69	597.60				
B.M.			5.17		592.43	Elevation of B.M. = 592.43

1/7/41 Jackson
Fair - Warm Laing

Temporary Bench Levels
South of Axis - E. side

B.M.				523.86	
	0.27	524.13			
T.B.M.			12.40	511.73	
	1.00	512.73			
T.B.M.			11.07	501.66	
	0.48	502.14			
T.B.M			12.74	489.40	
	0.18	489.58			
T.P			11.27	478.31	
	1.28	479.59			
A-1 B.M.			6.96	472.63	El. of B.M. = 472.63
A-1 B.M.				472.63	Painted white □. South end of
	6.95	479.58			Culvert headwall - along Ramona Rd.
T.B.M.			4.35	475.23	
	4.24	479.47			
A-1 B.M.			6.84	472.63	

Profile of Axis & 50' S. of Axis
Levels for West Keyway

11/8/42
Fair - Cool

Dickinson
Jackson
Polak
Laing
King
Cole

Sta.	+	H.I.	-	I.S.	Elev.	
A-11 B.M.					558.56	
	3.05	561.61				
①				11.61	550.0	11.2' N - 77.7' South of Axis
②				6.61	555.0	74.0' " " "
③				1.61	560.0	70.1' " " "
④				9.61	552.0	11.0' N. of Axis
		Profile				
5+40				11.9	549.7	Axis
5+05				9.7	551.9	"
5+35				12.0	549.6	50' South of Axis
4+75				4.5	557.1	" " " "
T.P.			1.00		560.61	
	12.95	573.56				
4+78				14.3	559.3	Axis
4+66				12.9	560.7	"
4+60				6.6	567.0	"
4+49				3.0	570.6	"

1/8/42
Fair - Cool

Jackson
Polak
Laing
King
Cole

Profile of Axis & 50' S of Axis
and Levels for W. Keyway

Sta.	+	H.I.	-	I.S.	Elev.	
		573.56				
5				3.56	570.0	92' N of Axis
6				8.56	565.0	97' " " "
7				0.56	573.0	81' " " "
T.P			0.75		572.81	
	12.86	585.67				

Profile

4+50				6.3	579.4	50' South of Axis
4+40				+0.9	586.6	" " " "
T.P			1.44		584.23	
	12.90	597.13				
C-2					596.49	
T.B.M			0.64		596.47	

Error = -0.01

Levels for ℄ Outlet-Trench
& Fillet Line - E. Keyway

Sta	+	H.I.	-	I.S.	Elev
T.B.M.					489.40
	2.60	492.00			
①				7.2	484.8
②				4.4	487.6
③				4.6	487.4
		Fillet Line			
①				4.0	488.0
T.B.M.			2.60		489.40

1/8/40
Fair-Cool

Dickinson
Jackson
Polak
Laing
King
Cole

℄ of outlet-trench
" " " "
" " " "

18.3' North of Axis

(℄ Valve 491)

℄ Profile of Adit Tunnel

1/9/42
Fair - Cool

Dickinson
Jackson
Polak
Laing
King
Cole

Sta.	+	H.I.	-	I.S.	Elev.	
T.B.M.					498.19	
	1.57	499.76				
0+00				12.8	487.0	F=2.5
0+18				10.8	489.0	F=0.5
0+35				4.5	495.2	C=5.7
0+53				1.2	498.5	C=9.9
0+72				2.7	497.1	C=7.6
0+79				0.9	498.9	C=9.4
0+99				6.4	493.4	C=3.9
T.P.			10.74		489.02	
	0.64	489.64				
1+13				0.14	489.5	Daylight on ℄ of Adit
1+18				6.5	483.1	
1+35				6.7	482.9	
1+62				1.4	488.2	
1+74				2.7	486.9	
1+88				9.8	479.8	E. edge of Ramona Road

Plotted 1/10/42

1/9/42
Fair - Warm

Dickinson
Jackson
Polak
Laing
King
Cole

℄ Profile of Adit Tunnel

Sta.	+	H.I.	-	I.S.	Elev.
		489.64			
T.P.			9.95		479.69
	3.49	483.18			
					430.97
T.B.M.			12.22		430.96
				Error =	0.01

1/9/42
Fair - Warm

Dickinson
Jackson
Dolak
Laing
King
Cole

Levels for W. Keyway

Sta.	+	H.I.	-	I.S	Elev		
A-11 B.M					558.56		
	2.93	561.49					
①				11.49	550.0	77.7'	South of Axis
②				6.49	555.0	74.0	" " "
③				1.49	560.0	70.1	" " "
A-11 B.M.			2.93		558.56		

1/9/41
Fair - Cool

Dickinson
Jackson
Polak
Laing
King
Cole

℄ Profile of Adit (℄ Valve 510)

Sta.	+	H.I.	-	I.S.	Elev.
T.B.M.					489.40
	1.45	490.85			
0+00				3.9	487.0
0+17				2.2	488.7
0+50				1.1	489.8
0+70				1.35	489.5
0+82				2.9	489.5
1+35				11.7	479.2
T.B.M.			1.45		489.40

Axis ℄ Sta. 9+145

Plotted 1/10/42

Daylight on ℄ of Adit

Fillet Line - E. Keyway

1/10/42
Fair - Warm

Dickinson
Jackson
Polak
Laing
Cole

Sta	+	H.I.	-	1.5	Elev.	
T.B.M.					475.23	
	13.05	488.28				
				3.28	485.0	18.6' N. of Axis
				13.28	475.0	19.6' " " "
T.B.M.			13.05		475.23	

1/10/42 Jackson
Fair-Warm Laing
King

Levels on W. Keyway

Sta	+	H.I.	-	I.S.	Elev.	
A-11 B.M.					558.56	
	2.28	560.84				
①				10.84	550.0	11.2' N-77.7' South of Axis
T.P.			12.61		548.23	
	1.82	550.05				
②				5.05	545.0	11.7' "-81.5' " " "
③				10.05	540.0	12.2' "-85.4' " " "
T.P.			12.93		537.12	
	2.22	539.34				
④				6.34	533.0	12.9' North of Axis
T.B.M.			3.20		536.14	
	3.80	539.94				
T.B.M.			12.69		527.25	
	0.39	527.64				
A-10 B.M.			12.76		514.88	El. of B.M. = 514.88
				Error = 0.00		

1/12/41
Fair - Cool

Dickinson
Jackson
Polak
Laing
King
Cole

Elevations for Valve Chamber & E. Keyway

Sta.	+	H.I.	-	I.S.	Elev.
T.B.M.					489.40
	2.56	491.96			
①				3.2	488.8
②				0.0	492.0
T.P			12.16		479.80
	2.44	482.24			
③				8.7	473.5
④				8.0	474.2
T.B.M.			6.99		475.25

S.E. cor. of Valve Chamber
N.E. " " " "
S.W. " " " "
N.W. " " " "

El = 475.23 - Error = +0.02

1/12/41
Fair - Warm

Dickinson
Jackson
Polak
Laing
King
Cole

Fillet Line - E. Keyway

Sta	+	H.I.	-	I.S.	Elev.	
A-21 B.M.					469.19	
	5.04	474.24				
①				8.24	466.0	21.0' North of Axis
A-21 B.M.			5.04		469.19	
B.M.					483.61	
	0.10	483.71				
①				3.71	480.0	19.1' " " "
B.M.			0.10		483.61	

E. Side of Trench
Grades for Outlet Trench

1/14/42
Fair-Warm

Dickinson
Jackson

Sta	+	H.I.	-	1.5	Elev.	
T.B.M.					489.40	
	1.44	490.84				
①				5.3	485.5	C=6° N. Edge of Valve Chamber
②				5.0	485.8	C=6¾
③				5.3	485.5	C=6°
④				7.7	483.1	C=3½
⑤				4.9	485.9	C=6¼
⑥				8.5	482.3	C=2½ ✓
⑦				5.9	484.9	C=5¼
T.B.M.			1.44		489.40	

Levels on W. Keyway

1/14/42
Fair-Warm

Jackson
Polak
Laing
King
Cole

Sta	+	H.I.	−	I.S.	Elev.	
A-11 B.M.					558.56	
	9.23	567.79				
①				2.79	565.0	9.7' North of Axis
②				7.79	560.0	10.2' " " "
③				12.79	555.0	10.7' " " "
T.B.M.			4.37		563.42	
	0.80	564.22				
T.P.			12.12		552.10	
	10.06	562.16				
④				12.16	550.0	11.2' " " "
A-11 B.M.					558.54	El of B.M. = 558.56

Level on E. Keyway

1/14/42
Fair - Warm

Dickinson
Jackson
Polak
Laing
King
Cole

Sta	+	H.I.	-	I.S.	Elev.	
T.B.M.					511.52	
	12.04	523.56				
①				3.56	520.0	15.1' North of Axis
②				8.56	515.0	15.6' " " "
T.B.M.			12.04		511.52	
	1.18	512.70				
				2.70	510.0	16.1' " " "
				7.70	505.0	16.6' " " "
				12.70	500.0	17.1' " " "
T.B.M.			1.18		511.52	
T.B.M					483.61	
	7.55	491.16				
①				1.16	490.0	18.1' " " "
				6.0	485.2	C=5.1 on E. side of Outlet trench
T.B.M			7.55		483.61	

1/15/42
Fair - Warm

Dickinson
Jackson
Polak
Laing
King
Cole

Levels on W. Keyway

Sta.	+	H.I.	−	I.S.	Elev.	
T.B.M.					563.42	
	0.32	563.74				
				8.74	555.0	74' South of Axis
				5.74	558.0	71.7' " " "
				1.74	562.0	68.6' " " "
T.P.			12.21		551.53	
	0.35	551.88				
				1.88	550.0	77.7' " " " 11.2' N. of Axis
				6.88	545.0	81.5' " " " 11.7' " " "
				11.88	540.0	85.3' " " " 12.2' North
T.P.			12.63		539.25	
	0.98	540.23				
				6.23	534.0	12.8' North of Axis
				4.23	536.0	88.4' South " "
T.P.			10.34		529.89	
	3.28	533.17				
T.B.M.				5.92	527.25	El of B.M. = 527.25

1/15/42
Fair - Warm

Jackson
Polak
Laing
King
Cole

Levels for Spillway

Sta	+	H.I.	-	I.S.	Elev.	
A-10 B.M.					514.88	
	0.68	515.56				
T.B.M.			12.69		502.87	
	1.24	504.11				
T.B.M.			12.19		491.92	
①				13.19	490.0	123.3' S of Axis - W. Edge of Spillway
	0.35	492.27				
T.P.				11.88	480.39	
	0.03	480.42				
T.B.M.				7.73	472.69	
	0.81	473.50				
A-9 B.M.				9.22	464.28	El of B.M. = 464.29

1/16/42
Fair - Cool

Levels for E. Keyway

Sta.	+	H.I.	−	I.S.	Elev.	
T.B.M.					483.61	
	9.23	492.84				
①				2.84	490.0	18.1' North of Axis
②				7.84	485.0	18.6' " " "
③				12.84	480.0	19.1' " " "
T.P			12.99		479.85	
	0.79	480.64				
④				5.64	475.0	19.6' " " "
⑤				4.64	476.0	19.5' " " "
					475.25	
T.B.M.			5.40		475.24	

Error = - 0.01

1/15/42
Fair - Warm

Jackson
Polak
Laing
King
Cole

Elevations on E. Keyway

Sta.	+	H.I.	-	I.S.	Elev.	
T.B.M.					489.40	
	9.15	498.55				
①				3.55	495.0	119.6' South of Axis (32.3)
②				8.55	490.0	123.3' " " " (28.6)
				12.55	486.0	126.4' " " " (25.5)
T.B.M.			9.15		489.40	

T.B.M.					483.61	
	7.90	491.51				
①				8.0	483.5	C = 3.5 E. side of Outlet Trench
②				7.1	484.4	C = 4.4 " " " " "
③				6.8	484.7	C = 4.7 " " " " "
T.B.M.			7.90		483.61	

Levels on W Keyway

1/17/42 Jackson
Fair - Cool Polak
Cole

Sta	+	H.I.	-	I.S	Elev	
T.B.M.					527.25	
	12.58	539.83				
①				4.83	535.0	89.2' South of Axis
T.B.M.			0.05		539.78	
	0.43	540.21				
T.B.M.			12.96		527.25	El of T.B.M. = 527.25

LEVELS ON EAST SLOPE

JAN 21st

Dickinson
Polack
LAING
KING
COLE

Temp B.M.	8.49	483.72			475.23	
T.P.	9.34	490.48		2.58	481.14	
			2.48		488.00	18.3 North
			4.48		486.0	18.5 "
			7.48		483.0	18.8 "
T.P.	0.66	478.86		12.28	478.20	
			2.86		476.0	19.5 North
T.B.M.				3.63	475.23	Elev = 475.23

LEVELS ON WEST SLOPE

JAN. 21

DICKINSON
POLACK

T. B.M	0.10	563.52			563.42	
T.P.	0.08	550.92		12.68	550.84	
			2.92		548.0	11.4 North
			5.92		545.0	11.7 "
			10.92		540.0	12.2
T.P.				12.64	538.28	
	0.31	538.59				

LEVELS ON WEST SLOPE JAN 21

DICKINSON
POLACK
LAING

		538.59				
			3.59	535.0	12.7 North	
			8.59	530.0	13.2 "	
T.P.	5.03	531.15		12.47	526.12	
T.BM				3.91	527.24	ELEV.= 527.25

Slope Stakes for Excavation of Outlet trench South of Valve Chamber

1/22/42 Cool - Cloudy

Dickinson
Jackson
Polak
Laing
King
Cole

Sta.	+	H.I.	-	I.S.	Elev	Cut	Fill	Out
T.B.M.					489.40			
	7.81	497.21						
174'S.	Toe Line	9+24.5						
of Axis		14.1		4.4		12.8		3.2
188'S.		10.0		7.2		10.0		2.5
208'S.				5.2		12.0		3.0
222'S				7.6		9.6		2.4
233'S				5.6		11.6		2.9
T.B.M			7.81		489.40			
	0.23	489.63						
176'S.	Toe Line	9+04.5		9.6		Grade		
205'S.				9.6		Grade		
233'S.				8.4		1.2		0.3
T.B.M.			0.23		489.40			

Sub-Grade 480.0 East Side of Trench

Sub-Grade = 480.0 West Side of Trench

(Sta. 9+70 - 7+80)
Profile of 50' S. of Axis (East side

1/22/42
Cool - Cloudy

Jackson
Polak
Laing
King
Cole

Sta	+	Hi.	-	1.5	Elev
T.B.M					511.52
	3.86	515.38			
9+70				1.8	513.6
9+61				6.0	509.4
9+52				12.8	502.6
T.P.			12.75		502.63
	1.34	503.97			
9+50				4.2	499.8
9+42				7.5	496.5
T.P			12.48		491.49
	1.26	492.75			
9+38				3.8	489.0
9+24				12.6	480.2
T.P			12.65		480.10
	0.04	480.14			
8+89				4.6	475.5

1/22/42
Cool - Cloudy

Jackson
Polak
Laing
King
Cole

Profile of 50'S of Axis East Side

Sta.	+	H.I.	-	I.S.	Elev.
		480.14			
T.P			12.96		467.18
	4.62	471.80			
8+62				7.6	464.2
8+45				10.6	461.2
7+93				10.8	461.0
7+80				1.7	470.1

Profile of 100'S of Axis East Side

7+75				3.0	468.8
7+98				11.0	460.8
8+60				11.7	460.1
8+72				5.6	466.2
T.P.			0.20		471.60
	12.38	483.98			
9+04				10.9	473.1

Profile of 100'S of Axis East Side

1/22/42
Warm - Cloudy

Jackson
Polok
Laing
King
Cole

Sta.	+	H.I.	-	I.S.	Elev
		483.98			
9+13				5.1	478.9
9+34				1.4	482.6
T.P.			0.39		483.59
	10.24	493.83			
T.P.			0.89		492.94
	12.82	505.76			
9+49				7.1	498.7
T.P.			0.25		505.51
	13.01	518.52			
9+64				7.0	511.5
9+79				2.3	516.2
T.B.M			6.98		511.54

El of T.B.M = 511.52

1/23/42
Cool - Cloudy

Jackson
Polak
Laing
King
Cole

Elevations for Fillet Line

Sta.	+	H.I.	-	I.S.	Elev.
T.B.M.					475.23
	1.35	476.58			
7+85				7.6	469.0
8+60				5.6	471.0

20.7' North of Axis
20.0 " " "

LEVELS FOR FILLET - West Slope

1-26-42

DICKINSON
KING
COLE

BM	11.43	514.30			502.87
TP.	4.22	510.67		7.85	506.45
BM			782		502.85

16.1 North
El: 502.87

Levels on W. Keyway

1/28/42
Cool - Cloudy

Dickinson
Jackson
Polak
Laing
King
Cole

Sta.	+	H.I.	-	I.S.	Elev	
T.B.M.					542.08	
	2.83	544.91				
①				4.91	540.0	85.3' S. of Axis
②				9.91	535.0	89.1' " " "
T.P.			12.77		532.14	
	0.38	532.52				
③				2.52	530.0	92.9' " " "
④				7.52	525.0	96.7' " " "
⑤				12.52	520.0	100.5' " " "
T.P			12.76		519.76	
	0.05	519.81				
				7.81	512.0	107.4' " " "
T.P.			13.02		506.79	
	0.98	507.77				
				11.77	496.0	118.8' " " "
T.B.M			4.92		502.84	El of T.B.M. = 502.87

2/2/42
Cool-Cloudy

Dickinson
Jackson
Polak
Laing
King
Cole

Levels on E. Keyway

Sta.	+	H.I.	−	I.S.	Elev.	
B.M.					464.23	
	3.57	467.86				
T.P.			2.09		465.77	
	10.97	476.74				
①				11.74	465.0	21.2' North of Axis
②				8.74	468.0	20.8' " " "
T.B.M.			1.49		475.25	

Levels on West Abutement

2/5/42 Fair - Warm

Sta.	+	H.I.	-	I.S.	Elev.	
T.B.M.					563.42	
	0.09	563.51				
①				3.51	560.0	70.1' South of Axis
②				8.51	555.0	74.0' " " "
T.P.			12.72		550.79	
	1.08	551.87				
③				1.87	550.0	77.7' " " "
④				6.87	545.0	81.5' " " "
⑤				11.87	540.0	85.3' " " "
T.P.			13.07		538.80	
	2.96	541.76				
⑥				6.76	535.0	89.2'
⑦				11.76	530.0	93.0'
T.P.			12.99		528.77	
	3.06	531.83				
⑧				5.83	526.0	96.0'
⑨				6.83	525.0	96.7'

Levels on West Abutement

2/5/42
Fair-Warm

Sta.	+	H.I.	-	I.S.	Elev.	
		531.83				
10				10.83	521.0	99.8' South of Axis
T.P.			12.66		519.17	
	1.40	520.57				
11				5.57	515.0	104.3 " " "
12				10.57	510.0	108.1 " " "
13				0.57	520.0	100.5' " " "
T.P.			12.10		508.47	
	0.94	509.41				
14				1.41	508.0	109.7' " " "
15				6.41	503.0	113.5' " " "
16				9.41	500.0	115.7' " " "
17				12.41	497.0	118.0' " " "
T.P.			12.56		496.85	
	0.43	497.28				
18				3.28	494.0	

2/5/42
Fair - Warm

Sta.	+	H.I.	-	I.S	Elev	
		497.28				
T.P.			12.37		484.91	
	0.57	485.48				
(19)				10.48	475.0	19.6' North of Axis
(20)				5.48	480.0	19.1 " " "
(21)				0.48	485.0	15.6' " " "
T.B.M.			1.87		483.61	483.61
	1.87	485.48				
T.P.			1.68		483.80	
	12.92	496.72				
(22)				4.7	492.0	17.9' " " "
T.P.			0.92		495.80	
	12.54	508.34				
(23)				6.3	502.0	16.9' " " "
(24)				2.34	506.0	16.5' " " "
T.P.			0.21		508.13	

Levels on West Abutement 2/5/42 Fair-Warm

Sta.	+	H.I.	-	I.S.	Elev.	
T.P.					508.13	
	12.72	520.85				
(25)				10.85	510.0	16.1' North of Axis
(26)				5.85	515.0	15.6' " " "
(27)				0.85	520.0	15.1' " " "
T.P.			1.17		519.68	
	11.84	531.52				
(28)				6.52	525.0	13.7' " " "
(29)				1.52	530.0	13.2' " " "
T.P.			1.31		530.21	
	13.02	543.23				
				10.23	533.0	12.9' " " "
				5.23	538.0	12.4' " " "
T.B.M.			1.17		542.06	542.08

Levels on East Abutement

2/5/42
Fair-Warm

Dickinson
Jackson
Polak
Laing
King
Cole

Sta.	+	H.I.	-	I.S.	Elev.	
T.B.M.					511.73	
	3.89	515.62				
1				0.62	515.0	104.3' South of Axis
2				5.62	510.0	108.1' " " "
3				10.62	505.0	112.0' " " "
T.P.			12.25		503.37	
	1.16	504.53				
4				4.53	500.0	115.7' " " "
5				9.53	495.0	119.6' " " "
T.P.			13.00		491.53	
	0.76	492.29				
6				2.29	490.0	123.3' " " "
7				7.29	485.0	127.1' " " "
8				12.29	480.0	131.0' " " "
T.B.M.			8.78		483.51	

STADIA SURVEY - LOCATING WATER TANK & PIPE LINES

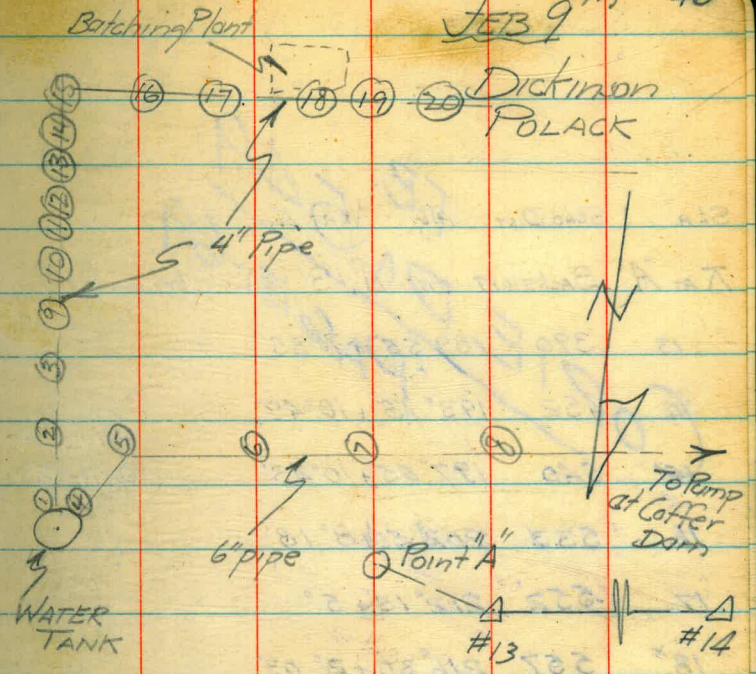
FEB 9th

Sta.	Stad. Dist.	Az	Vert ∡
⊼ Δ #13	Backsight #14 Δ		
Point "A"	340	212°11'	+9°35'
⊼ at "A"	Backsighting Δ #13		∡'s Clockwise
1.	317	153°48'	+21°04'
2.	308	136°27'	+21°29'
3.	285	149°31'	+19°48'
4.	313	152°38'	+21°14'
5.	272	137°10'	+21°02'
6.	176	144°47'	+17°15'
7.	94	160°15'	+10°02'
8.	85	248°15'	-17°30'
9.	282	154°15'	+18°04'
10.	293	166°25'	+12°40'
11.	300	174°	+9°10'
12.	342	184°08'	+8°

Outlet Pipes — Outlet at Water Tower

Inlet Pipes — Inlet at Water Tower

COPIED FROM PAGE 69



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Sta.	Stad. Dist	Az	Vert ∡	
⊼ at "A"	Backsight	on ∡ 13	∡'s Clockwise	
13.	390	189°5[illegible]	+7°35'	
14.	452	193°18'	+10°49'	
15.	540	197°05'	+10°43'	Angle Pt. in Outlet Pipe
16.	533	202°50'	+8°18'	
17.	552	212°15'	+5°	
18.x	557	216°30'	+2°03'	
19.	565	228°30'	-4°25'	
20	580	231°05'	-5°54	

2/14/42 Jackson
Fair-Warm Polk
Cole

Levels on West Keyway

Sta	+	H.I.	-	I.S.	Elev.	
T.B.M.					502.8	
	9.07	511.94				
①				1.94	510.0	108.1' South of Axis
②				6.94	505.0	112.0' " " "
③				11.94	500.0	115.7' " " "
T.P.			13.05		498.89	
	0.39	499.28				
④				4.28	495.0	119.6'
⑤				9.28	490.0	123.3'
T.P.			12.39		486.89	
	1.63	488.52				
				12.0	476.5	6+23 Edge of Spillway
				10.7	477.8	6+23 N. Edge of Guide Wall
⑥				3.52	485.0	127.1' South of Axis
⑦				8.52	480.0	131.0' " " "

Levels on West Keyway

2/14/42
Fair - Warm

Sta	+	H.I.	-	I.S.	Elev.	
		488.52				
				3.52	485.0	18.6' North of Axis
				0.00	488.5	18.2' " " "
T.B.M.			487		483.65	483.63
T.B.M.					475.23	
	11.14	486.37				
①				1.37	485.0	127.1' South of Axis
②				6.37	480.0	131.0' " " "
T.B.M.			11.14		475.23	"

3/2/42
Fair - Warm

Jackson
Polak
King
Cole

Leves for Fillet Stakes

Sta.	+	H.I.	-	I.S.	Elev.	
T.B.M.					461.84	
	3.62	465.46				
①				9.5	456.0	22.0' North of Axis
②				10.5	455.0	22.1' " " "
③				16.5	449.0	22.7' " " "
T.B.M.			3.62		461.84	

3/5/42 Jackson
Fair-Warm Cole

Check Levels on Fillet & South Face Lines - E. Slope

Sta.	+	H.I.	-	I.S.	Elev.	
A-31 B.M.					663.16	
	3.21	666.37				
①				7.4	659.0	Top of Dam
T.P.			13.06		653.31	
	0.11	653.42				
②				3.4	650.0	22' North & 14' South of Axis
③				8.4	645.0	22' " " 14.0' " " "
T.P.			13.07		640.35	
	0.47	640.82				
④				0.8	640.0	27' " " 14.6' " " "
⑤				5.8	635.0	29' " " 16.5' " " "
⑥				10.8	630.0	32 " " 18.9' " " "
T.P.			12.72		628.10	
	0.38	628.48				

Check Levels (Cont.) 3/5/42

Fair-Warm

Sta.	+	H.I.	-	I.S.	Elev.	
		628.48				
				3.48	625.00	
				6.48	620.00	
T.P.	1.50	617.07	12.91		615.57	
				2.07	615.00	
				7.07	610.00	
				12.07	605.00	
T. BM			5.37		611.70	Top Rock - South of keyway
	1.05	612.75				
T.P.	2.65	603.75	11.65		601.10	
A-33 BM.			8.98		594.77	Marked Elev. = 594.72

March 7
Dickinson
King

LEVELS FOR PAINTING DOWNSTR. SLOPE

T. BM	10.48	522.08			511.60	
			2.08		520.0	100.6 · Downstream
			7.08		515.0	104.4 " "
			11.08		511.0	107.4 " "
T.P.	1.13	510.42		12.79	509.29	
			5.42		505.0	112.0 " "
			10.42		500.0	115.8 " "
T.P.	0.60	498.54		12.48	497.94	
			3.54		495.0	119.6 " "
			8.54		490.0	123.4 " "
T.P.	0.52	486.40		12.66	485.88	
			1.40		485.0	127.2
			4.40		482.0	129.4
			6.40		480.0	131.0
			11.40		475.0	134.8
T. BM				11.33	475.07	

MAR. 7

DICKINSON
KING

T.BM	2.90	477.97			475.07	
B.M.				2.71	475.26	Marked El. 475.23
						B.M. So. of Keyway on Highway

Levels for Edge of Spillway

0.28		462.12			461.84	
				6.0	456.1	6.0
				7.6	454.5	7.6
				8.7	453.4	8.7
				7.9	454.2	
	10.23	470.83	1.52		460.60	
	7.73	478.21	0.35		470.48	
			2.98		475.23	= 475.23 Marked Rock

Levels For Filled Stakes

T.B.M.	0.44	462.28			461.84	
T.P.	2.94	451.97	13.05		449.23	
				2.0	450.0	22.7 Al. of Axis
				4.0	448.0	22.9 " "
				5.0	447.0	23.0 " "
				6.0	446.0	23.1 " "
				3.0	449.0	22.8 " "
T.P.	11.31	463.03	0.25		451.72	
T.B.M.			1.18		461.85	Check on T.B.M. Above

Elevations for Fillet Line

3-14-42

Rogers
Polak
Cole

T.B.M.	11.83	556.25			544.42	Distance	
				12.25	544.0	11.8'	N. of Axis
				11.25	545.0	11.7	" "
				10.25	546.0	11.6	" "
				8.25	548.0	11.4	" "
				6.25	550.0	11.2	
				5.2	551.0	11.1	" "
				4.2	552.0	11.0	" "
				2.2	554.0	10.8	" "
T.P.	11.80	567.19	0.86		555.39		
				11.2	556.0	10.6	" "
				9.2	558.0	10.4	" "
				10.2	557.0	10.5	
				7.2	560.0	10.2	" "
				5.2	562.0	10.2	" "
				4.2	563.0	9.9	

Elevations for Fillet Line (Cont.) 3-14-42

		567.19				Distance	
				2.2	565.0	9.7	N. of Axis
				0.2	567.0	9.5	" "
T.P.	11.58	577.47	1.30		565.89		
				7.5	570.0	9.2	" "
				4.5	573.0	8.1	" "
T.P.	5.76	582.26	0.97		576.50		
T.B.M.			1.12		581.14	Marked 581.14	

Rogers.
Polak.
Cole
Roberts

Elevations for Fillet Line 3-20-42

T.B.M.	1.39	463.23			461.84	Marked Rock
				6.2	457.0	22' N. of Axis
T.P.	1.57	452.60	12.20		451.03	
				3.6	449.0	22.8 " "
				8.3	444.3	Elev. in bottom of cut
T.P.	11.52	460.17	3.95		448.65	
T.P.	4.93	463.23	1.87		458.30	
T.B.M.			1.39		461.84	461.84 as above

Elevations For Forms Blk. 2 3-24-42

T.B.M.	8.11	571.59			563.47	
T.P.	11.67	582.69	0.51		571.02	
	11.13	593.40	0.42		582.27	
				4.90	588.50	6.59' from Axis to fillet (bottom)
				2.76	590.64	4'-7⅜" to top of Fillet 2.97' from Axis to top of Fillet
T.B.M.	9.43	602.68	0.15		593.25	
				7.68	595.00	6.03 from Axis to fillet (bottom)
				6.2	596.5	Grout hole Elevation
T.P.			5.05		597.63	
	5.39	626.82			621.43	
T.B.M.			7.24		619.58	
T.B.M.					619.58	
	2.27	621.85				
T.P.			13.02		608.83	0.15
	0.78	609.61				

Revised

		609.61			3-24-42	
T.B.M			11.97	597.64	MARKED - 597.63	
T.B.M			10.95	598.66		

Elevations for Forms Blk 2

3-24-42

TBM.	1.41	599.05			597.64	
Sta 4+21				10.45	588.60	601' from Axis to fillet (bottom) F 6.90 to fillet
4+08				1.05		558' from Axis to bott fillet. F 6.0 to fillet
"				1.05		1.76 from Axis to top of fillet F 12.75 to top fillet
T.P.			1.41		597.64	= 597.64 Above
TBM.	11.75	610.41			598.66	
3+96				4.91	605.50	516 from Axis to bot. of fillet F 7.00 to fillet
"				4.53	605.88	154' from Axis to top of fillet. F 13.37 to top fillet
				5.41	605.00	Elev. on Rock at random
				0.41	610.0	" " "
T.P.	12.42	622.04	0.79		609.62	
T.P.			0.28		621.76	
TBM.	~~12.89~~	~~638.47~~	2.46		619.58	= 619.58 Marked Rock

VOID

Rogers
Cole
Polak
King
Roberts

Elevations for Fillet Line 3-25-42

T.B.M.	0.87	462.71			461.84	
				7.7	455.0	21.2' N of Axis
			12			
T.P.	0.27	450.85	12.13		450.58	
				5.8	445.0	23.2 Rt. of Axis
				8.8	442.0	23.5 " "
				5.8	440.0	23.2 " "
				6.8	444.0	23.3 " "
T.P.	11.63	461.80	0.68		450.17	
				1.8	460.0	21.7 " "
T.P.	12.49	472.32	1.97		459.83	
				7.3	465.0	
				2.3	470.0	
T.P.	12.89	483.69	1.52		470.80	
				8.7	475.0	
				3.7	480.0	

Fillet Line Cont'd. 8-25-42.

		483.69				
T.P.	11.48	493.98	1.19		482.50	
				9.0	485.0	
				4.0	490.0	
T.P.	12.11	502.57	3.52		490.46	
	10.92	511.77	1.72		500.85	
T.B.M.			0.17		511.60	= 511.60 Marked Rock

Elevations for Spillway 3-25-42

T.B.M.	0.77	462.61			461.84	
	3.57	453.83	12.35		450.26	
				1.9	451.9	1.1' S. of Spillway Lip
				4.4	449.4	3.0 " " "
T.P.	11.30	463.62	1.51		452.32	
T.B.M.			1.78		461.84	= 461.84 Marked Rock

Rogers
Cole
Polak
King
Roberts

Elevations for Forms Blk 1 3-25-42

T.B.M.	1.53	651.08			649.55	Marked Rock
	~~0.74~~	~~639.15~~	12.67		638.41	
T.P.	0.18	638.59				
				12.28	626.31	F 3.69 to top of Pour
				8.69	630.0	Top of Lift
			~~10.74~~		~~627.85~~	
	6.43	635.42	9.60		628.97	
				12.60	622.82	
				12.36	623.06	
T.P.	—	—	4.60		630.82	~~3-26-42~~ Marked Rock.
TBM. Blk #1	10.62	632.05			621.43	3-26-42
3+71				5.80	626.25	F 3.75 to of Lift
"				9.03	623.02	F 3.98 to bottom of fillet
"				9.23	622.82	F. 9.37 to top of "
3+56				2.17	629.88	F 5.37 to bottom "
"				2.40	629.65	F. 10.79 to top "
3+71				9.2	622.8	Elev. to bottom of Copper Waterstop

Top fillet
Bott. "

Elevations for Form. Blk #1 (Cont'd) 3-26-42

		632.05				
T.P.	6.44	637.49	1.09		630.96	
				2.40	635.09	Elev. marked on Rock.
3+51				5.82	631.58	F 6.42 to bottom of Fillet
"				5.67	631.58	F 11.66 to top " "
Grout Hole # 1-37.5				4.4	633.0	Elev. Grout hole Sta 3+58.5
T.P.	12.75	649.82	0.33		637.07	
T.B.M.			0.27		649.55	= 649.55 Marked Rock

Elev. of Grout Hole #

T.B.M.	0.92	462.76			461.84	Marked Rock
Grout Hole # 11-23.2				4.8	458.0	
T.B.M.			0.92		461.84	Check on BM. above

Elevations at Contraction Joint 3+21 3-26-42

T.B.M.	7.54	658.96			651.42	Marked Rock
3+21				6.59	652.37	Elev 7' S. Axis
"				7.64	651.32	" "
				7.96	651.0	" for Paint Line
				3.99	654.97	" 14' S. Axis
Grout Hole #1-12.5				11.33	649.6	" Grout Hole Sta 3+33.5
Grout Hole #0-43				2.8	657.2	" " " " 3+14
T.P.	5.60	663.42	114		657.82	
T.B.M.			0.27	"	663.15	= 663.14

Elevations for Forms Blk # 2

TBM.	0.78	599.44			598.66	Marked Rock		
4+21				9.08	590.36	F 12.06 to Top of Fillet	2.38 N. Axis	
"				10.88	588.56	F 6.94 to Bott. of Fillet	5.66 N. Axis	
4+11				0.51	598.93	F 4.76 to Top "	5.32 N. Axis	
"				1.90	597.54	F. 13.80 to Bottom "	2.04 N "	
4+21				8.6 ~~4.02~~	590.8 ~~595.42~~	Elev. to bottom of Copper Waterstop		
T.B.M.	11.36	610.02	0.78		598.66	Above B.M.		
				5.02	605.0	Contour Paint Line (610 Elev)		
				7.02	603.00	F 7.0 to Top of Lift	32.15 S. of Axis	
				+0.22	610.24	F 4.76 to 615 Elev.	28.35 S. of Axis	
4+01				6.72	603.30	F 5.80 to Bottom of Fillet	4.98 N. Axis	
				8.03	601.99	F 14.03 to Top " "	1.70 N. "	
T.B.M.			11.36		598.66	As above		

Elevations for Forms Blk #3 — 3-27-42

Rogers
Polak
Cole
King
Roberts
Foster

	+	H I			
T.B.M.					563.42
4+71	6.71	570.13		11.3	558.8
4+71				10.17	559.96
"				11.36	558.77
"				5.65	564.48
4+61				6.07	564.06
				8.85	561.28
				5.13	565.0
T.P. Grout Hole #3-37			1.04		569.09
				5.0	565.1
T.P.	12.45	581.54			569.09
				11.54	570.0
4+51				12.56	568.98
"				10.06	571.48
4+41				4.84	576.70
"				5.49	576.05
				11.54	570.00

Elev. to Bottom of Copper stop
F 4.34 to Bott of Fillet 9.75' N. Axis
F 13.96 " Top " 5.23 N. "
Downstream Intersection 66.75' S. Axis
F 6.34' to Bottom of Fillet 9.14 N. Axis
F 17.55 to Top " 4.62 N. "
Contour Paint Line on keyway

Elev. Grout Hole

Above TP

Paint Line
F 15.95 to Top of Fillet 4.01 N. Axis
F 5.02 to Bott. " 8.53 N. Axis
F 5.90 to " " 3.40 " "
F 14.98 to Top " 7.92 " "
D.S. intersection 62.55 S. Axis

Elevations for Forms Blk #3 (Cont'd) 3-27-42

		581.54				
TP	0.67	570.24	11.97		569.57	
				2.91	567.33	F 7.67' to Elev. 575.0 58.75 S. of Axis
T.B.M.			6.81		563.43	= 563.42 Marked Rock

Rogers
Cole
Polak
King
Roberts
Foster.

Elev. for Form. Blk 4.

March 30-42

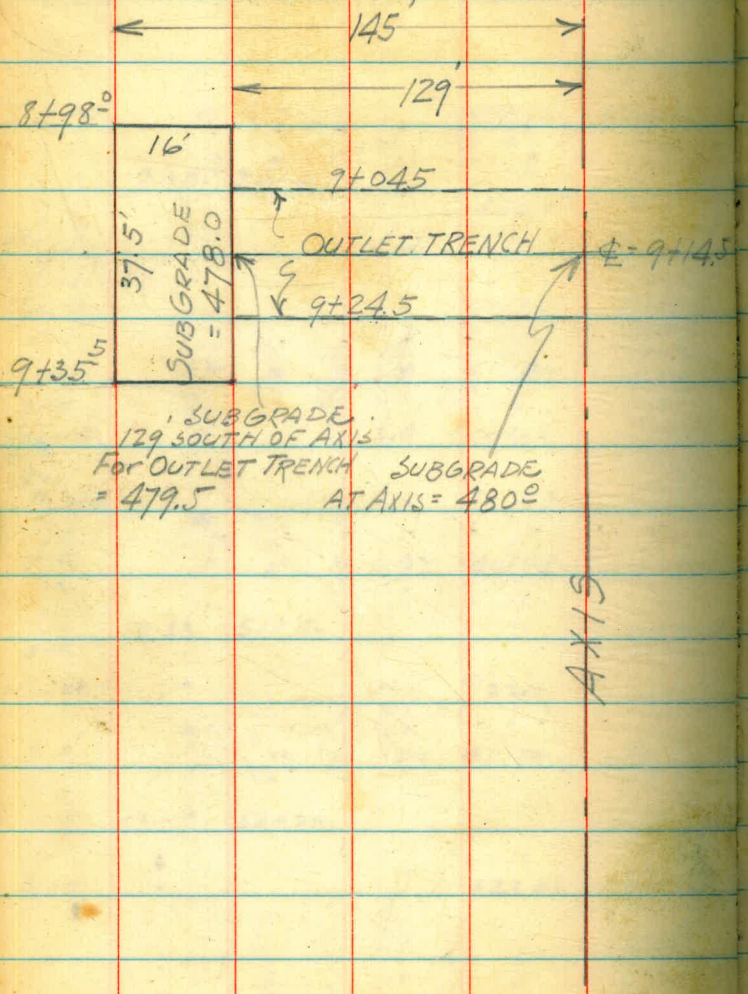
			Grade	Grade Rod		
	12.62	~~63.20~~			619.58	Marked Rock
			640.44	8.24		
T.B.M.	11.53	523.13			511.60	
	9.64	532.19	0.58		522.55	
5+21				4.6	527.6	Elev. of Bottom of Copper Water stop.
"				4.57	527.62	F 19.31 to top of Fillet 7.81' N. "
	11.69	542.97	0.91		531.28	
5+21				10.76	532.21	F 6.29 to Bottom of Fillet 12.33' N. "
				6.24	536.73	Intersection Downstream 87.84' S. "
				6.70	536.27	F 7.23 to Bott. Fillet 11.78' N. "
				9.71	533.26	F 19.17 to top " 5.26' N. "
T.P.	12.48	555.34	0.11		542.86	Painted Point on Rock
	9.60	564.46	0.48		554.86	
T.B.M.			0.99		563.47	= 563.42 Painted Rock

Check Levels from Previous Page March 30-52

T.B.M.	0.90	564.32		563.42	
T.P.	1.47	553.24	12.55	551.77	
T.P.	0.58	543.40	10.42	542.82	Painted Rock.
	1.67	532.05	13.02	530.38	
	0.62	521.40	11.27	520.78	
T.B.M.	0.93	512.48	9.85	511.55	= 511.60 Described P.72
	0.22	504.09	8.61	503.87	
	12.38	504.71	11.76	492.33	
T.B.M.			1.89	502.82	= 502.87

T.B.M				498.16	= 498.19
	3.29	501.45			
				480.0	
Axis			5.6	C=15.8	
First South			3.8	C=17.6	
2nd South			2.8	C=18.6	
3rd South			5.4	C=16.2	
4th South			1.6	C=19.8	
T.P.			0.32	501.13	
	12.33	513.46			
5th South			11.1	C/22.4	
T.P.			1.67	511.79	
	12.49	524.28			
B.M				523.83	523.86

DETAIL OF VALVE CHAMBER



129
16
60
105
35
70.16

37.5
21
16.5

9+24.5
8+98
16.5

T.B.M. 489.40 El.

2.67 492.07

① 12.3 S.W. Cor 479.8

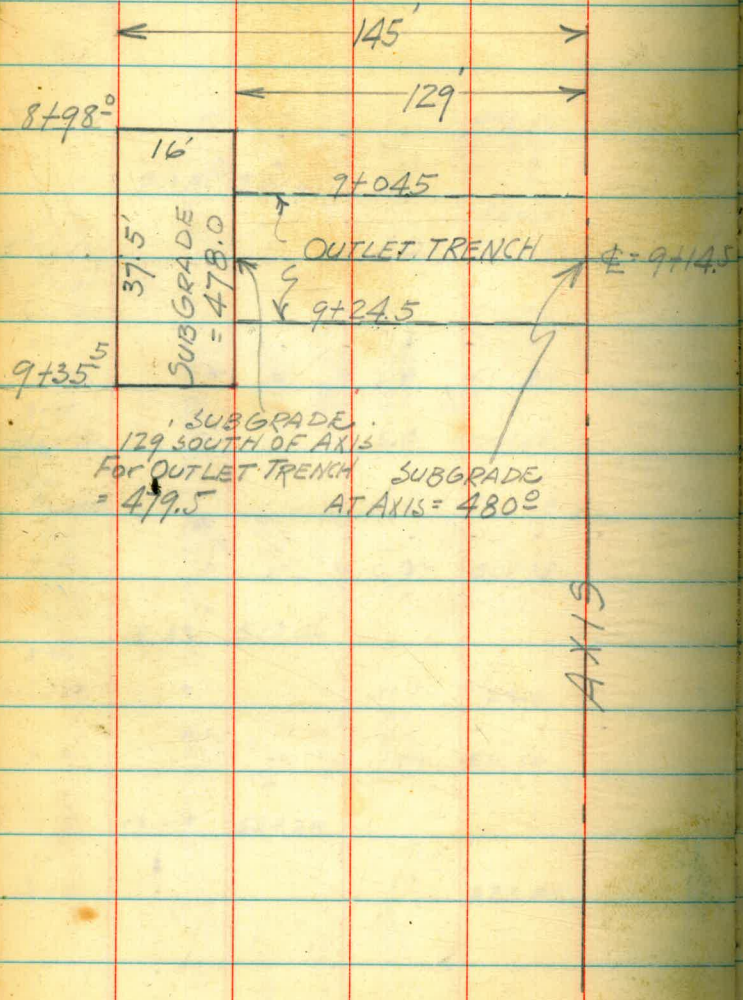
② 8.3 N.W. Cor 483.8

③ 6.7 ℄ Trench 485.4

⑥ 2.7 489.4

9+14.5
8+98
16.5

DETAIL OF VALVE CHAMBER



29
16
60
105
35
70.16

37.5
21
16.5

9+14.5
8+98
16.5

T.B.M. 489.40 El.

2.67 492.07

① 12.3 S.W. Cor 479.8

② 8.3 N.W. Cor 483.8

③ 6.7 ℄ Trench 485.4

④ 2.7 489.4

9+14.5
8+98
16.5

6+ 46.5
11.5
350

T.BM 057 449.92 449.35

Hole # 10.35 5.5 444.4

Hole # 10-11.5 7.8 442.1

7+14.0
46.5
7.5
6+ 11.6
97+60.5
11.6
48.9

7+14.1
11.6
2.6

7+14.0
11.6
2.4

8+07.0
46.5
7+60.5
11.5
720

8+07.0
11.5

On Axis Sta. 7+95.5

On Axis sta 7+72.0

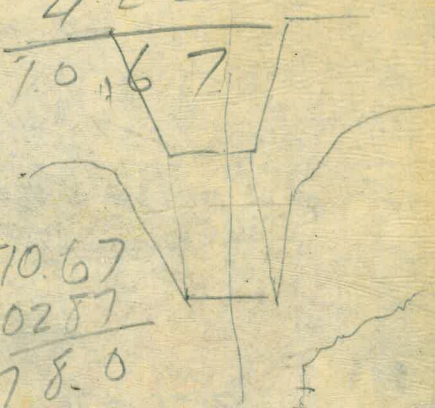
8+07.0
7+95.5
46.5
11.5
350

7+60.5

46.5
11.6
4.9

502.87
11.43
51430
785
506.45
422
510.67

51160
1048
52208
1279
509.29



510.67
0287
78.0

¢ 9
7+37²
103
6+34²

7+07²
103
6+04²

s: 0.75 from 4534

R.P. on Line 50' North

2x2 Hub Sta 9+43.7

971
895
76

508.17
99.5
98.22

Mr. Walsten | No side of Bowey Rd. to Mt. Woodson 1 mi. west of Ramona

Mr. Bachelder | whitehouse

Bernies MKT
Ramona

B.M. 482.84
157.90
94.54
60.36

T.B.M. 483.61

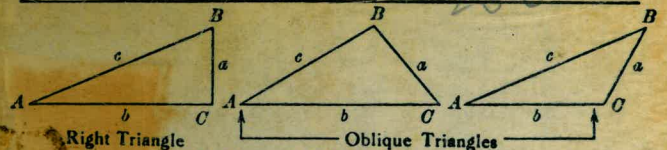
9+70

7+74.70
6.23
1.51.20
440 = 23.7

153.01

9+40.95
14.5
28.5

TRIGONOMETRIC FORMULÆ



Solution of Right Triangles

For Angle A: $\sin = \frac{a}{c}$, $\cos = \frac{b}{c}$, $\tan = \frac{a}{b}$, $\cot = \frac{b}{a}$, $\sec = \frac{c}{b}$, $\operatorname{cosec} = \frac{c}{a}$

Given	Required	
a, b	A, B, c	$\tan A = \frac{a}{b} = \cot B,\ c = \sqrt{a^2+b^2} = a\sqrt{1+\frac{b^2}{a^2}}$
a, c	A, B, b	$\sin A = \frac{a}{c} = \cos B,\ b = \sqrt{(c+a)(c-a)} = c\sqrt{1-\frac{a^2}{c^2}}$
A, a	B, b, c	$B = 90° - A,\ b = a \cot A,\ c = \frac{a}{\sin A}.$
A, b	B, a, c	$B = 90° - A,\ a = b \tan A,\ c = \frac{b}{\cos A}.$
A, c	B, a, b	$B = 90° - A,\ a = c \sin A,\ b = c \cos A,$

Solution of Oblique Triangles

Given	Required	
A, B, a	b, c, C	$b = \frac{a \sin B}{\sin A},\ C = 180° - (A+B),\ c = \frac{a \sin C}{\sin A}$
A, a, b	B, c, C	$\sin B = \frac{b \sin A}{a},\ C = 180° - (A+B),\ c = \frac{a \sin C}{\sin A}$
a, b, C	A, B, c	$A+B = 180° - C,\ \tan \frac{1}{2}(A-B) = \frac{(a-b)\tan\frac{1}{2}(A+B)}{a+b},$ $c = \frac{a \sin C}{\sin A}$
a, b, c	A, B, C	$s = \frac{a+b+c}{2},\ \sin\frac{1}{2}A = \sqrt{\frac{(s-b)(s-c)}{bc}},$ $\sin\frac{1}{2}B = \sqrt{\frac{(s-a)(s-c)}{ac}},\ C = 180° - (A+B)$
a, b, c	Area	$s = \frac{a+b+c}{2},\ \text{area} = \sqrt{s(s-a)(s-b)(s-c)}$
A, b, c	Area	$\text{area} = \frac{b\,c \sin A}{2}$
A, B, C, a	Area	$\text{area} = \frac{a^2 \sin B \sin C}{2 \sin A}$

REDUCTION TO HORIZONTAL

Horizontal distance = Slope distance multiplied by the cosine of the vertical angle. Thus: slope distance = 319.4 ft. Vert. angle = 5° 10′. From Table, Page IX. cos 5° 10′ = .9959. Horizontal distance = 319.4 × .9959 = 318.09 ft.

Horizontal distance also = Slope distance minus slope distance times (1 − cosine of vertical angle). With the same figures as in the preceding example, the following result is obtained. Cosine 5° 10′ = .9959. 1 − .9959 = .0041. 319.4 × .0041 = 1.31. 319.4 − 1.31 = 318.09 ft.

When the rise is known, the horizontal distance is approximately:—the slope distance less the square of the rise divided by twice the slope distance. Thus: rise = 14 ft., slope distance = 302.6 ft. Horizontal distance $= 302.6 - \frac{14 \times 14}{2 \times 302.6} = 302.6 - 0.32 = 302.28$ ft.

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