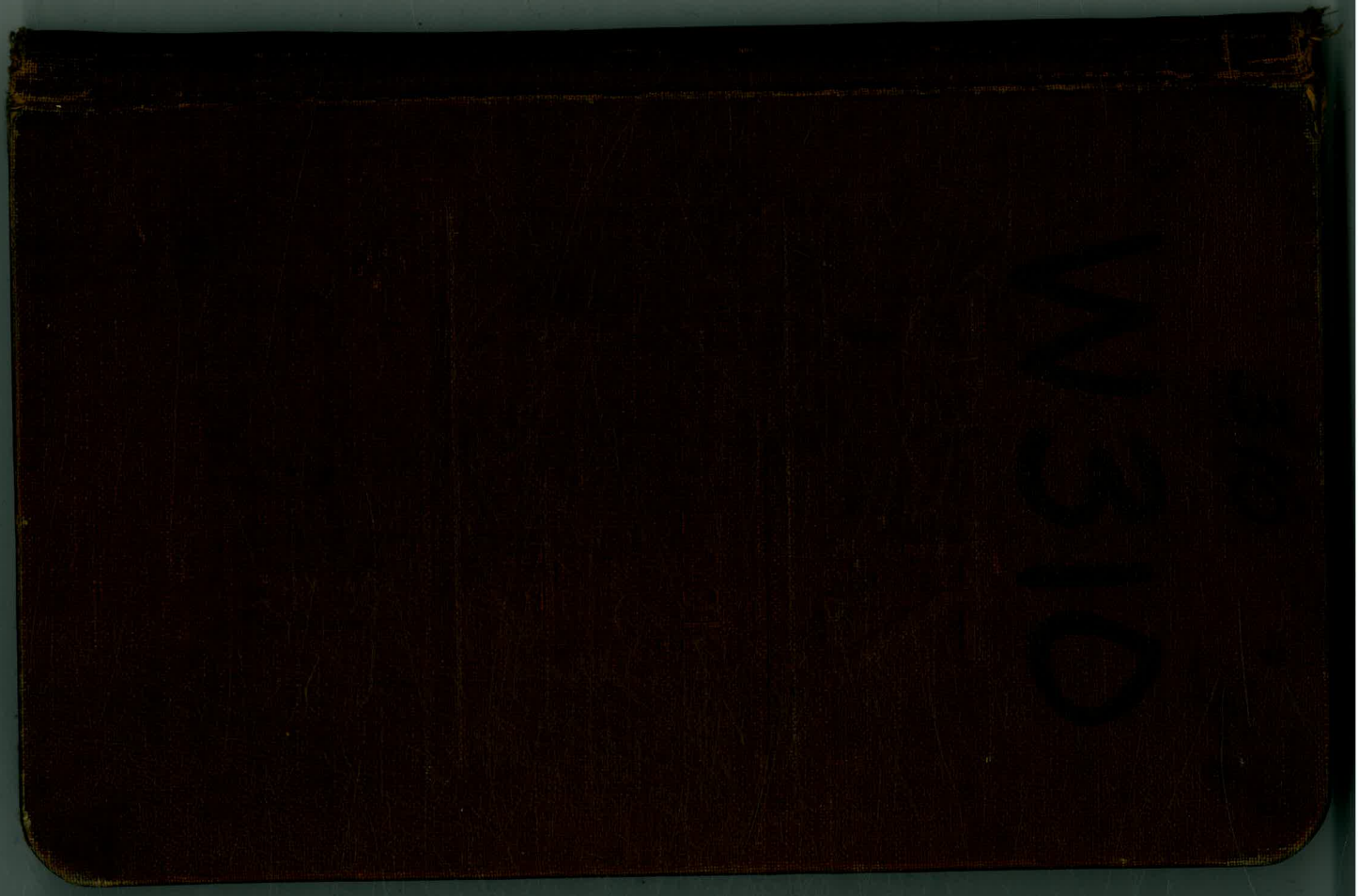

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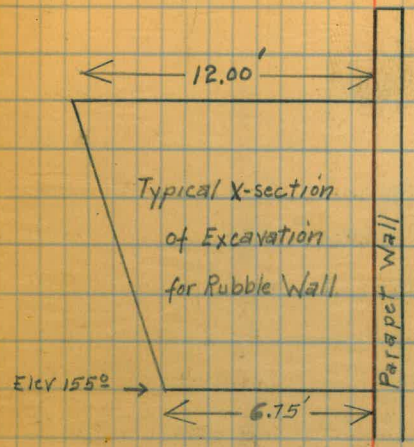
Xsections for Excavation along Parapet Wall

4/7/30
Bonham
Dewing
Moore

Sta	+	℄	−	Elev.	
	9.58	168.20		158.62	T.P.
			1.77	166.43	B.M. Bolt on S. Pilaster
0+00					
+03.7					
+30	Angle Pt.				
+31.5 ℄	Diagonal Line = 0+30 Parapet Wall				



1

Excavation	
Sq. Ft.	Cu ft
0	
	152.63
82.50	
	215.39
81.56	
	122.34
81.56	
	122.34

Sta	+	℄	−	Elev.
		168.20		
0+33 ℄		0+30 Parapet Wall		
0+30 ○				
+51.5 ℄	Angle Pt.	= 0+50 Parapet Wall		
+52.25 ℄	On diagonal	= 0+50	"	"
+53 ℄ =	=	0+50	"	"
0+50				
+75	=	0+75	"	"
1+00				
+25				
+50				
+75				
2+00				
2+25				
+50				

		Excavation	
		Sq.ft.	Cu.ft.
16.5 / 4.5 / 12	16.3 / 4.4 / 0	81.56	
			1718.28
16.3 / 5.2 / 12	16.8 / 4.5	78.28	
			58.71
16.3 / 5.2 / 12	16.8 / 4.5	78.28	
			58.53
16.7 / 9 / 12	16.8 / 4.5	77.81	
			1916.00
16.2 / 6 / 12	16.3 / 4.7	75.47	
			1875.00
16.2 / 5.5 / 12	16.3 / 5	74.53	
			1904.25
16.2 / 5.3 / 12	16.3 / 4.5	77.81	
			1939.38
16.3 / 5.2 / 12	16.3 / 4.7	77.34	
			1957.00
16.4 / 5.1 / 12	16.3 / 4.4	79.22	
			1986.38
16.3 / 5.0 / 12	16.3 / 4.4	79.69	
			1974.63
16.3 / 5.0 / 12	16.3 / 4.7	78.28	
			1992.13
4.8 / 16.3 / 12	16.3 / 4.3	81.09	
			2015.50

	+	⊼	−	Elev.
2+75		168.20		
3+00				
+25				
+50				
+75				
4+00				
+25				
+50				
+75				
5+00				
+25				
+32.5				

Sta for 12 out

Face	Excavation Sq ft.	Excavation Cu yd.
$163\frac{3}{12}$ 49 $163\frac{8}{12}$ 44	80.15	
		1997.88
$163\frac{3}{12}$ $5\frac{0}{12}$ $163\frac{8}{12}$ 44	79.68	
		2009.63
$163\frac{5}{12}$ 47 $163\frac{8}{12}$ 44	81.09	
		2027.25
$163\frac{3}{12}$ 49 $164\frac{2}{12}$ 42	81.09	
		2021.50
$163\frac{3}{12}$ $5\frac{0}{12}$ $164\frac{2}{12}$ 42	80.63	
		2021.50
$163\frac{2}{12}$ $5\frac{0}{12}$ $164\frac{1}{12}$ 41	81.09	
		$2016\frac{50}{75}$
$163\frac{2}{12}$ $5\frac{0}{12}$ $163\frac{9}{12}$ 43	80.15	
		1997.88
$163\frac{2}{12}$ $5\frac{0}{12}$ $163\frac{8}{12}$ 44	79.68	
		1997.88
$163\frac{2}{12}$ $5\frac{0}{12}$ $163\frac{9}{12}$ 43	80.15	
		1992.88
$163\frac{0}{12}$ $5\frac{2}{12}$ $164\frac{0}{12}$ 42	79.68	
		1986.25
$163\frac{4}{12}$ 48 $163\frac{5}{12}$ 47	79.22	
		59239
$163\frac{2}{12}$ $5\frac{0}{12}$ $163\frac{6}{12}$ 46	78.75	
		565.31

5+32.5 = 5+32.5

Sta	+	⊼	−	Elev	
$5+39^{7}$ ¢		168.20			
$5+48^{4}$ ¢					
$5+57^{1}$ ¢					
$5+65^{8}$ ¢					
$5+75^{0}$ ¢					
			1.66	166.54	B.M. on bolt on North Pilaster
T.P.			9.22	158.98	
	0.76	159.74			
			6.89	152.85	B.M. on rock east end Spillway 152.84

Sta for 12 out		Face	Excavation Sq. ft.	Cu. ft.
$5+38^{8}$	163^{2} / 5^{0} / 12	163^{5} / 4^{7}	78.28	
				672.90
$5+45^{8}$	163^{2} / 5^{0} / 12	163^{1} / 5^{1}	76.41	
				656.59
$5+53^{2}$	162^{9} / 5^{3} / 12	163^{0} / 5^{2}	74.53	
				638.18
$5+60^{2}$	162^{6} / 5^{6} / 12	162^{8} / 5^{4}	72.18	
				657.57
5+68	162^{6} / 5^{6} / 12	162^{5} / 5^{7}	70.77	
	Total			45,806.23 / 58

Note from Sta $5+32^{5}$ to end, face of dam on about 34^{0}± ft radius curve to left
L.C. = 45^{8} ±

Computed. W.M.B.
Checked. B.F.M.

Total cu. ft. = 45,690.58 = 1691.54 cu. yds.

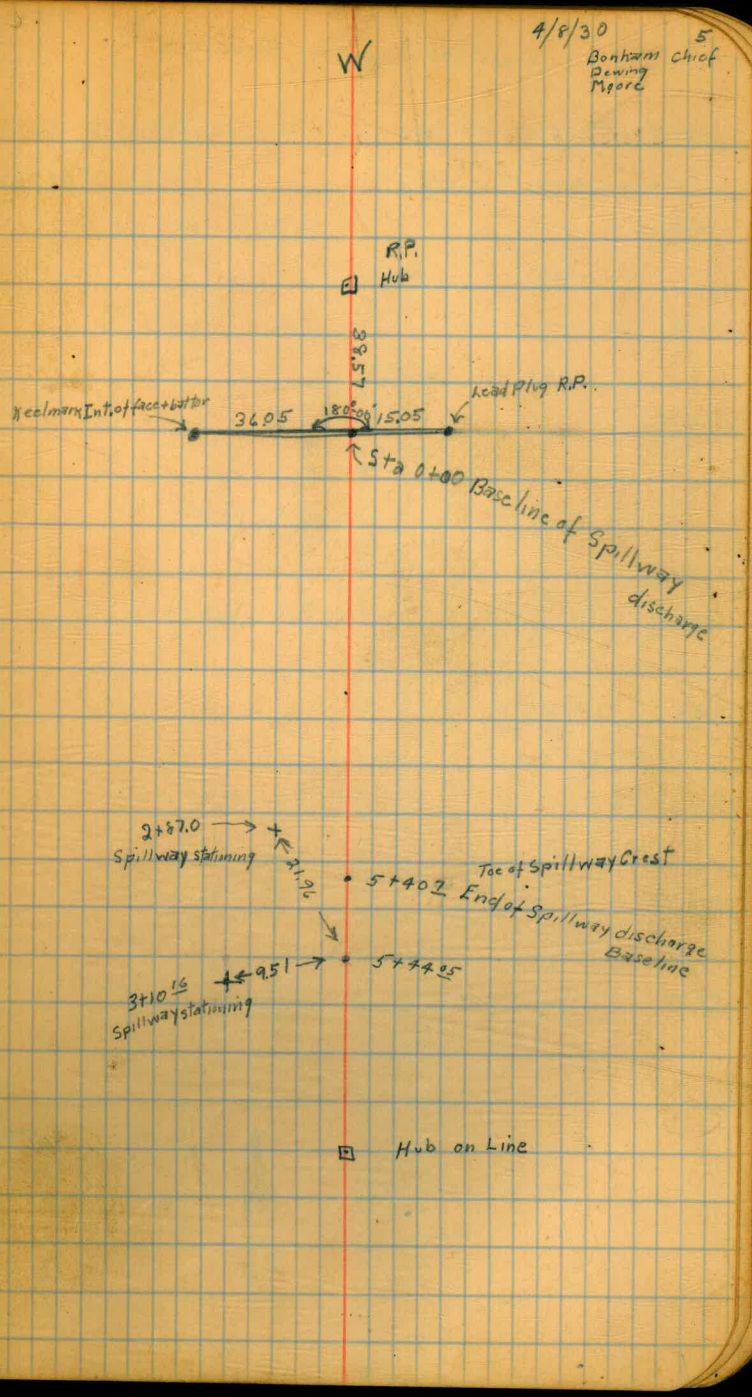
Total Cu. yds. to Parapet Wall
{See page 20. 1696.54 cu. yds
{Total old rubble Wall 279.82 " "
Total Excavation 1416.72 cu. yds.

5−26−30 W.M.

5+75	70.77 sq. ft.		10.48 cu. yds.
5+79	70.77 sq. ft.		
			1427.20
Extra Old Rubble Wall			3.01
			1424.19

Sketch showing Base line for X sections of Spillway

4/8/30 5
Bonham chief
Dewing
Moore



X sections of spillway Discharge

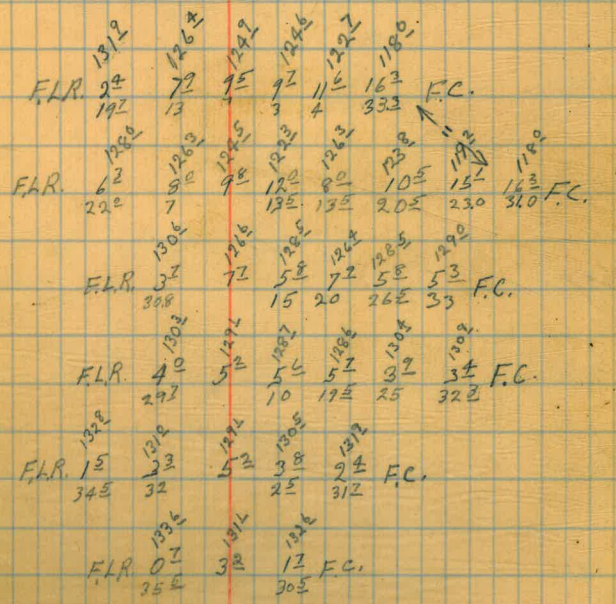
4/8/30
Bonham
Dewing
Moore

Sta	+	Π	−	Elev.	
	3.35	156.19		152.84	B.M. East end spillway
T.P.			12.54	143.65	
	1.58	145.23			
T.P.			11.86	133.37	
	0.96	134.33			west T.P. set at end of spillway
			5.58	128.75	
0+00		on split of angle			
0+10.3		at right angles			
0+25					
0+50					
0+75					
1+00					
1+				0.96	133 37
	8.14	142.01			

E

6

F.L.R. = Face ledge rock F.C. = Face Concrete



Sta	+	℄	−	Elev
		142.01		
1+25				
1+38	o			
1+50				
1+65				
1+75				
1+85				
2+00				
2+10				
2+19				
2+31		Slush bottom on right side		
2+50				
2+75				

F.L.R. = Face ledge rock ℄ F.C. = Face Concrete

F.L.R. 132+ 8.6 36.5 | 134.5 7.5 29 | 133.9 8.1 | 132.1 9.6 4 | 132.4 9.6 20 | 133.2 8.3 30 F.C.

F.L.R. 135.2 6.3 36.5 | 135.4 6.3 25 | 133.6 8.4 15 | 134.8 7.2 9 | 134.7 7.3 | 134.7 7.3 10 | 133.2 8.7 21 | 134.8 7.2 29 F.C.

F.L.R. 134.2 5.2 37 | 134.3 7.2 | 133.4 8.4 12 | 134.5 7.5 29 F.C.

F.L.R. 137.5 4.5 38.5 | 135.9 6.1 21 | 133.5 8.5 | 133.6 8.4 17 | 135.3 6.7 29.0 F.C.

F.L.R. 136.8 5.2 38.5 | 133.8 8.2 13 | 134.3 7.7 | 133.6 8.4 2.5 | 133.8 8.2 15 | 135.9 6.1 28.5 F.C.

F.L.R. 135.5 6.5 39.5 | 134.4 7.6 15 | 135.5 6.5 7 | 134.7 7.3 | 134.8 8.0 5 | 136.3 5.7 28.5 F.C.

F.L.R. 137.5 4.5 41 | 136.2 5.8 33 | 136.0 6.0 20.5 | 136.9 5.1 | 136.4 5.6 6 | 138.1 3.9 13 | 138.3 3.7 21 | 137.4 4.9 34.5 | 137.2 4.8 27.5 F.C.

F.L.R. 136.8 3.2 45.5 | 136.2 5.8 35 | 136.0 6.0 26 | 135.7 6.3 13 | 135.4 6.6 | 137.2 4.8 13 | 137.3 4.7 27 F.C.

F.L.R. 139.4 2.3 47.5 | 136.0 6.0 42.5 | 134.3 7.2 31 | 135.2 6.8 17 | 137.5 4.5 7 | 137.7 4.3 | 139.2 2.8 13 | 138.0 4.0 19 | 137.8 4.2 27 F.C.

F.L.R. 141.5 0.5 52 | 135.4 6.6 41 | 134.7 7.3 33 | 135.0 7.0 17 | 136.6 5.4 | 137.4 4.2 23 T.C.S. = Toe Concrete Spillway

F.L.R. 138.5 3.5 46.5 | 135.8 6.2 31 | 135.8 6.2 20.5 | 135.8 6.2 8 | 136.9 5.2 | 137.7 4.3 20 T.C.S.

F.L.R. 139.7 2.2 50 | 137.4 4.6 46 | 137.9 5.0 40 | 135.8 6.4 34 | 135.2 6.8 26 | 136.2 5.8 12 | 138.7 3.3 | 138.4 3.6 18 T.C.S.

Sta	+	H.I.	−	Elev
		142.01		
3+00				
3+25				
3+50				
T.P.			0.26	141.75
	12.75	154.50		
3+66				
3+75				
3+75				
3+97				
3+97				
4+13				
4+13				
4+25				
4+25				

3+75: T.L.R. 173.5/55
3+75: T.L.R. 173.5/55 F.L.R. 157.0/49 165.0/47
3+97: 226.0/97.0 216.5/84.0 189.9/73
3+97: 226.0/97.0 216.5/84 189.9/93
4+13: 227.2/97
4+25: 225.0/95

3+00: F.L.R. 138.0/4.0/49.5 137.2/4.8/31 139.8/3.0/16 139.5/2.7 139.5/2.5/16 T.C.S.
3+25: F.L.R. 140.2/1.8/51 138.6/3.4/39 139.0/3.0/31 140.1/1.9/27.5 140.1/1.8 140.6/1.4/14.2 T.C.S.
3+50: F.L.R. 145.2/+3.2/49.0 143.0/+1.0/40 141.1/0.9/25 140.8/1.2 141.0/1.0/12.5 T.C.S.
3+66: F.L.R. 153.3/1.2/49.2 144.0/10.5/21.5 141.5/13.0 141.7/12.8/11.2 T.C.S.
3+75: 157.0/49 154.5/42 153.8/37 149.1/5.4/22 143.4/11.1/19.5 143.4/11.1/16 141.9/12.6 141.8/12.7/10.2 T.C.S.
3+75: 162.5/83 154.5/42 153.8/37 149.1/5.4/22 143.4/11.1/19.5 143.4/11.1/16 141.9/12.6 141.8/12.7/10.2 T.C.S.
3+97: 163.2/40 124.6/36 155.2/32 143.9/10.6/13.5 144.5/10.0/7.5 143.4/11.1 142.7/11.8/8.5 T.C.S.
3+97: 163.4/97 160.8/37 155.1/32 157.4/26 156.4/25 156.2/19 151.1/16 143.9/10.6/13.5 144.5/10.0/7.5 143.4/11.1 142.7/11.8/8.5 T.C.S.
4+13: 219.2/87 196.2/68 180.0/61 171.1/58.5 157.0/36 153.6/26 154.6/17 147.9/6.6/24.5 144.2/10.2/14.5 143.9/10.6 143.3/11.2/7.5 T.C.S.
4+13: 226.6/96 222.3/70 199.2/70 178.9/60 172.1/58.5 157.2/36 147.9/6.6/24.5 145.8/8.7/18.5 144.2/10.2/14.5 143.9/10.6 143.3/11.2/7.5 T.C.S.
4+25: 224.0/75 211.5/80 195.5/70 168.3/50 156.8/41 153.3/30 149.9/4.6/26 144.2/10.3/13 143.8/10.7 143.9/10.6/6.5 T.C.S.
4+25: 213.0/60 195.5/70 178.5/50 156.8/41 153.3/30 149.9/1.5/26 144.3/10.3/13 143.8/10.7 143.9/10.6/6.5 T.C.S.

Sta	+	$\bar{\wedge}$	−	Elev.	
		154.50			
4+50					
4+75					
5+00			Top L.R.	$\frac{157^{4}}{21}$	
5+15			Top L R.	$\frac{157^{9}}{11^{5}}$	
5+25			"	$\frac{158^{4}}{13^{5}}$	
5+35					
$5+46^{2}$ $5+44^{5}$ T.P.			1.46	153.04	
	6.68	159.72			
			6.87	152.85	152.84

℄

$\frac{210^{0}}{85}$ $\frac{198^{0}}{70}$ $\frac{179^{5}}{50}$ $\frac{158^{3}}{40}$ $\frac{153^{9}\ 0^{6}}{33^{5}}$ $144^{7}\ 9^{8}$ $\frac{144^{9}\ 9^{6}}{5^{5}}$ T.C.S.

$\frac{187^{1}}{59}$ $\frac{181^{6}}{51}$ $\frac{173^{3}}{43}$ Top Ledge Rock $\frac{155^{2}}{29}$ F.L.R. $\frac{149^{9}\ 4^{6}}{28}$ $145^{5}\ 9^{0}$ $\frac{145^{7}\ 8^{8}}{3^{5}}$ T.C.S.

$\frac{182^{0}}{62}$ $\frac{181^{0}}{52}$ $\frac{172^{6}}{40}$ $\frac{165^{6}}{37}$ $\frac{152^{9}\ 1^{6}}{11^{5}}$ $\frac{147^{1}\ 7^{4}}{8}$ $147^{2}\ 7^{2}$ $\frac{147^{5}\ 7^{0}}{2^{5}}$ T.C.S.

$\frac{182^{0}}{62}$ $\frac{181^{0}}{52}$ $\frac{181^{1}}{40}$ $\frac{164^{2}}{25}$ T.L.R. $\frac{157^{9}}{11^{5}}$ F.L.R. $\frac{149^{9}\ 4^{6}}{11^{5}}$ $147^{2}\ 6^{6}$ $\frac{148^{1}\ 6^{4}}{1^{5}}$ T.C.S.

$\frac{182^{0}}{62}$ $\frac{181^{0}}{52}$ $\frac{181^{1}}{40}$ $\frac{188^{1}}{25}$ $\frac{158^{4}}{15^{5}}$ F.L.R. $\frac{150^{4}\ 4^{1}}{13^{5}}$ $148^{4}\ 6^{1}$ $\frac{148^{5}\ 6^{0}}{1}$ T.C.S. Isolated boulder 31 yds

$\frac{183.5}{50}$ $\frac{180^{6}}{38}$ $\frac{119^{1}}{23}$ T.L.R. $\frac{159^{0}}{18}$ F.L.R. $\frac{152^{7}\ 1^{8}}{15}$ $\frac{150^{0}\ 4^{5}}{11}$ $148^{8}\ 5^{7}$ ← Toe C.S.

$\frac{182^{8}}{37}$ F.L.R. $149^{6}\ 4^{9}$

$\frac{166.0}{16.0}$ 153.5

Ledge rock $20 \times 12\frac{1}{2} \times \frac{12+00}{2}$ = 55.5 cu yds

" " $10 \times 10 \times 25$ = 92.6 " "

" " $26 \times \frac{10}{2} \times \frac{12}{2}$ = 28.9 " "

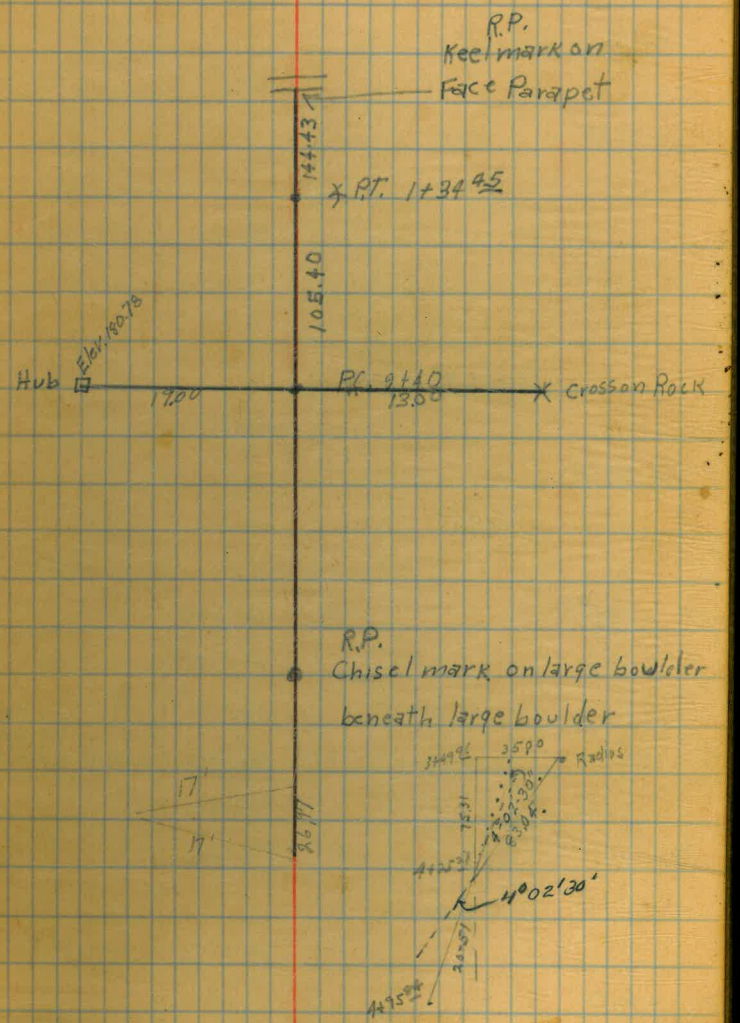
" " $8 \times 7 \times 15$ = 31.1 " "

208.1

4/9/30

Rd Survey "A" Line

R. Points for ℄ Pt 1+34.60 ℄ Curve Pt. 2+40



Alignment for road South of Pm Line A

Bonham
Dewing
Moore
4/19/30

Sta	Distance	Bearing	Defl.	Mag B.	Curve Data
R.P. for line					
			41-35 R		
6+55.20	End				Hob
	159.36				
			6°-28' R		
+ P.T. 4+95.84					
	70.57				
			20°-53' R		
+ P.T. 4+25.27					
	75.31				
P.T. 3+49.96			90°-00'		
3+28			72°-00'		
3+06			54°-00'		Δ = 216°-00' R = 35.00 LA. 109.96 Cord for 2.00 = 21.63 Defl 18°-00'
2+84			36°-00'		
2+62			18°-00'		
P.C. 2+40.00			Curve to left		
	105.40				
			4°-21'-39"	S 12-30 W	
P.I. 1+34.45					
	134.60				
0+00				S 16-30 W	

11.

P.T.

Radius point referenced out approx. 20'-40'

P.C. Approx. 20'-16'

Parapet wall

0+00 = 4+71.70 Parker. Survey downstream face parapet wall

℄ Elevations "A" Line

4/19/30
Derwing Moore

Sta	+	H	−	Rod	Elev.	
	11.94	170.56			158.62	
1+00				0 2/3	170 4/3	
T.P.			0.77		169.79	opp. Sta 1+10
	12.10	181.89				
1+25				10 2/3	171 7/3	
1+50				8 7/3	174 2/3	
1+75				11 8/3	170 1/3	
2+00				10 4/3	171 5/3	
+25				7 8/3	174 1/3	
+40				6 0/3	175 9/3	
T.P.			0.17		181.72	15' left Sta 2+40 "A" line
	11.38	193.10				
2+42				8 2/3	184 9/3	
T.P.			1.10		192.00	left Sta 2+40 High Bowlder
	12.86	204.86				
2+64				7 1/3	197 2/3	
3+06					212.0	
3+28					221 2/3	
3+49 7/6					222 1/3	
3+71 9/6 T.P.			1.09		203.77	on hub Elev 204.87 on Rock by 3+75
	10.85	214.62				
			4.78		209.84	Old T.P. in slide Established 209.88
3+99 5/6				8 2/3	205 1/3	
4+25				5 2/3	208 1/3	

Sta	+	Π	−	Rod	Elev.	
		214.62				
4+50				4 2/5	210 4/5	
4+75				1 2/5	212 7/5	
T.P.			3.14		211.48	Pipe sticking out of bank on left side Sta 4+75
	7.19	218.67				
5+00				3 8/5	214 9/5	
5+25				3 2/5	215 5/5	
5+50				5 0/5	217 7/5	
5+75				7 3/5	211 5/5	
5+85				8 1/5	210 6/5	
6+00				9 3/5	209 4/5	
+25				11 8/5	206 9/5	
+50				14 1/5	204 6/5	
			7.19		211.48	
	1.81	213.29				
			12.76		200.53	
	0.22	200.75				
			13.05		187.70	
	0.26	187.96				
			12.35		175.61	
	0.35	175.96				
			12.06		163.90	
	3.91	167.81				
			9.23		158.58	158.62 B.M.
				4/10/30		

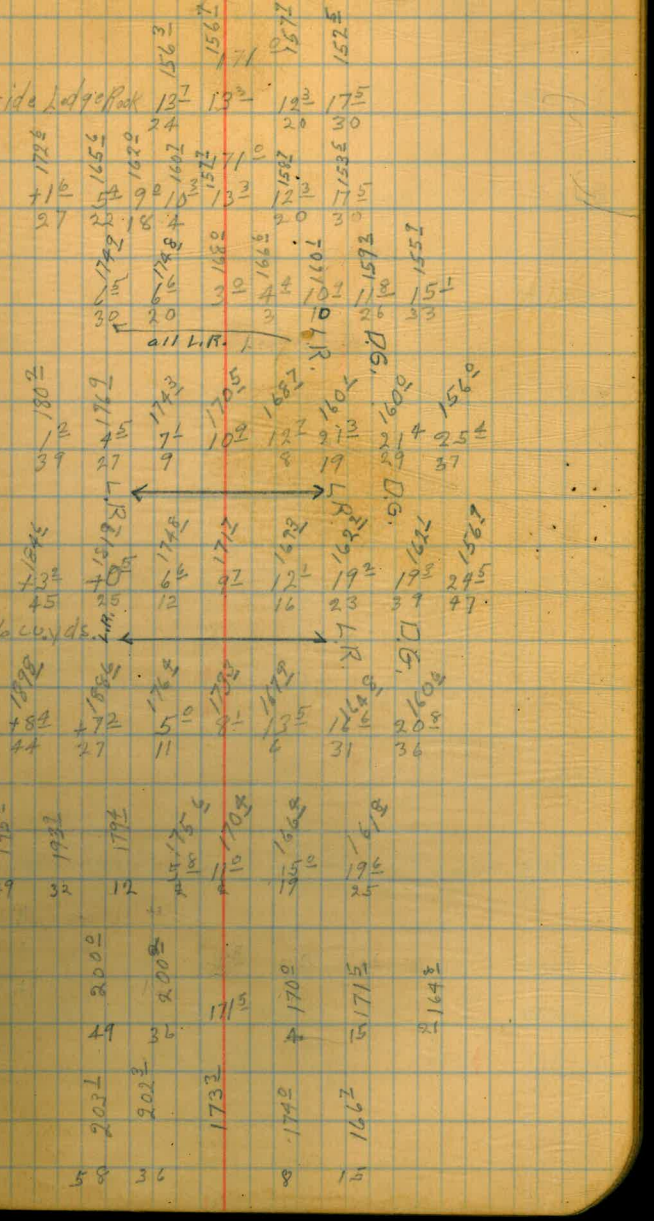
Prelim. X sections for "A" line Rd South of Dam

4/11/30
Bonham
Dewing
Moore

Sta	+	At	−	Elev
				169.79 T.P.
Hand Level →		171.0±		
0+75				
0+75				
	11.56	181.35		
0+88				
1+00				
1+25				
1+50				
1+75				
2+00				
2+25				

Left ℄ Right

14



Sta	+	Π	−	Elev
2+40				
2+62				
2+87				
3+06				
3+28				
3+49 96				
3+71 90				
4+00				
4+25				
4+50				
4+50		10' out on right = Top ledge rock		
4+75				

Left ℄ Right

Elevs Radius Pt. 198.0

198.2 35 | 199.5 12 | 175.2 | 197.7 9 | 168.3 20

60 yds boulders: 198.2 35 | 187.2 16 | 184.2 | 181.8 12 | 183.1 30 | 176.4 43

35 yd boulder taken care in new X section: 198.0 35 | 199.3 23 | 197.2 | 199.5 50

198.0 35 | 212.2 | 222.4 13 | 225.2 33 | 232.2 33 | 242.7 60

198.0 35 | 221.2 | 254.8 40 | 293.2 105

198.0 35 | 206.2 13 | 222.1 | 272.0 60

198.0 35 | 203.2 | 218.5 5 | 246.2 60

189.2 39 | 194.2 21 | 208.2 5 | 208.7 | 208.7 5 | 213.7 8 | 233.2 28 | 241.7 44

180.7 58 | 193.2 42 | 210.5 7 | 210.1 | 210.4 6 | 208.0 10 | 273.3 11 | 260.2 16

180.7 58 | 193.2 42 | 210.5 7 | 210.1 | 210.4 6 | 233.5 10 | 247.8 29 | 42' on 60° slope

177.5 52 | 212.2 3 | 212.7 | 212.7 12 | H-ch ℄ | 249.1 21

Sta	+	Δ	−	Elev.
4+80				
5+00				
5+25				
5+50				
5+75				
6+00				
6+25				
6+50				

Left & Right

	$190\frac{3}{24}$	$203\frac{7}{20}$	$213\frac{2}{4}$	$213\frac{2}{-}$	$214\frac{2}{12}$	
Top L.R. →	$211\frac{7}{15}$	$216\frac{2}{8}$	$214\frac{9}{-}$	$215\frac{7}{10}$	$219\frac{1}{14}$	
	$204\frac{4}{16}$	$214\frac{1}{11}$	$215\frac{5}{-}$	$215\frac{7}{5}$	$221\frac{0}{11}$	
	$204\frac{0}{16}$	$214\frac{0}{5}$	$213\frac{7}{-}$	$214\frac{0}{8}$	$215\frac{7}{11}$	$226\frac{4}{12}$ $232\frac{5}{20}$
	$204\frac{5}{20}$	$212\frac{5}{8}$	$211\frac{5}{-}$	$211\frac{6}{4}$	$214\frac{0}{8}$	$220\frac{4}{10}$ $224\frac{3}{17}$
	$202\frac{2}{20}$	$210\frac{7}{7}$	$209\frac{1}{-}$	$209\frac{2}{5}$	$215\frac{2}{9}$	$220\frac{4}{16}$
	$199\frac{2}{20}$	$207\frac{3}{9}$	$206\frac{2}{-}$	$207\frac{8}{4}$	$213\frac{2}{7}$	$219\frac{3}{17}$
	$197\frac{4}{19}$	$205\frac{4}{8}$	$204\frac{4}{-}$	$205\frac{0}{5}$	$212\frac{7}{10}$	$217\frac{0}{20}$

Elev. of old Rubble Masonry along Parapet of Dam

4/15/30
Bonham
Dewing
Moore

Sta	+	Π	−	Rod	Elev.
	0.75	167.18			166.43
0+00					
+25					
+30					
+50					
+75					
1+00					
+25					
+50					
+75					
2+00					
+25					
+50					

	Old Rubble Masonry Wall.	
	Sq. ft.	Cu. yds.
	15.40.	
Not Platted or Computed		17.95 ~~35.91~~
	16.92.	
		12.27.
	16.20.	
		14.05.
	14.15.	
		12.56.
	13.00.	
		11.90.
	12.68.	
		12.32.
	13.95.	
		12.73.
	13.55.	
		11.50.
	11.29.	
		10.60.
	11.59.	
		11.54 ~~11.98~~
	13.33 ~~14.33~~	
		127.42

Sta	+	Π	−	Rod	Elev.
		167.18			
2+75					
3+00					
+25					
+50					
+75					
4+00					
+25					
+50					
+75					
5+00					
5+25					
5+325					

Old Rubble Masonry Wall

							sq ft.	Cu. Yds.
155.0	6.0	161.2		6.0	161.2		12.71	~~19.10~~
2.2	1.2			0			~~+3.96~~	12.06
								11.30
								~~12.43~~
155.2	6.2	161.0		6.2	161.0		11.70	
2.4	1.8			0			+2.90	
								11.15
								~~11.72~~
155.2	6.3	160.9		6.3	160.9		12.39	
2.4	1.8			0				
								11.74.
155.0	6.3	160.9		6.3	160.7		12.98	
2.4	2.0			0				
								10.83.
155.2	5.9	161.3		5.9	161.3		10.40.	
1.7	1.5			0				
								9.98.
155.0	6.0	161.2		6.0	161.2		11.16.	
2.2	1.4			0				
								10.35
								~~10.37~~.
155.0	5.8	161.2		5.8	161.2		11.20	
2.0	1.5			0				
								10.79.
155.0	6.0	161.2		6.0	161.2		12.09	
2.2	1.7			0				
								11.57.
155.0	5.9	161.3		5.9	161.3		12.92.	
2.2	1.2			0				
								11.62. 111.41
155.0	6.1	161.1		6.1	161.1		12.20.	
2.2	1.5			0				
								10.54.
155.1	161.1				161.6		10.56.	
1.7	1.5			0				
								3.47.
155.0	162.8				162.8		1443.	
2.0	1.2			0				
								5.12.
								130.54

Sta	+	Π	−	Elev
		167.18		
5+39.7 ℄				
5+48.1 ℄				
5+57.1 ℄				
5+65.8 ℄				
5+75.0 ℄				
5+83.0 ℄				

Old Rubble Masonry Wall

			Sq FT	Cu. Yds
155.0	162.5	162.5		
37	30	0	24.00	
				7.54
155.0	161.8	161.8		
37	30	0	22.78	
				6.01
155.0	161.5	161.5		
20	20	0	14.52	
				4.41
155.0	161.5	161.5		
20	11	0	12.87	
				3.92
155.0	162.0	162.0		
11	12	0	10.15	
				21.88
		Total =		279.82
			10.15	3.01
				282.83

Computed E.H.D.
checked. M.M.B.

X sections "A" Line Rd South of Dam
Final Location

4/15/30
Bonham
Dewing
Moore

Sta	+	⊼	-	Grade	Elev.
	1.89	168.32			166.43
				167^{00}	
0+86 (Level)				167^{00}	
			0.34		167.98
	12.16	180.14			
0+88				167^{00}	
1+00 (12^L, 8%)				167.96	
+25 (10^L)				169.96	
			1.04		179.10
	5.45	184.55			
+50 (12^L)				171.96	
+75 (10^L)				173.96	
2+00 (8^L)				175.96	

Left ℄ Right

167^0/28 167^0/8 | 167^0 | 159^5/10 158^7/20.5 F 8^3/5 1½ to 1

Ledge Rock to →

174^2/30 174^5/20.2 1½ to 1 C 5^7/0 172^2/13^2 | 166^0 | 166^8/3^5 159^5/10 | 158^2/20.5 155^9/33

1½ to 1 180^2/39 176^9/27 C 6^2/5 174^3/17^5 174^5/12 | 170^4 | 165^2/8^5 165^8/8 160^6/19 160^0/27

164^5/45 181^9/25 C 5^2/0 175^2/15.1 | 171^8 | 170^0/13^5 Grade 169^3/16 162^2/23 162^1/39

Isolated boulder 12.5 x 6.0 x 5.5 = 15.3 cu yds

159^8/44 1½ to 1 C 15^7/7 187^7/31^5 181^1/23^5 175^3/10 | 172^5 | 172^0/2^5 Gr 168^0/5 165^8/17^2 F 6^3/12 164^8/31 1½ to 1

1½-1 195^4/49 C 19^0/1.0 193^0/31^5 193^0/32 179^2/11 175^4/1 | 172^4 Gr | 170^2/1 163^4/21.2 F 8^8/0 161^8/25

1½-1 200^0/49 C 23^0/5 199^0/42^5 199^0/36 | 172^2 | 171^2/6 171^2/15^2 F 4^8/0 164^8/21

Sta	+	⊼	−	Grade	Elev.
		184.55			
2+25				177.96	
		182.1			
2+40				179.16	
2+62				180.92	
2+84				182.68	
3+06				184.44	
3+28				186.20	
3+49.96				187.96	

Left & Right

4/16/30

4/19/30
Bonham
Dewing
Moore

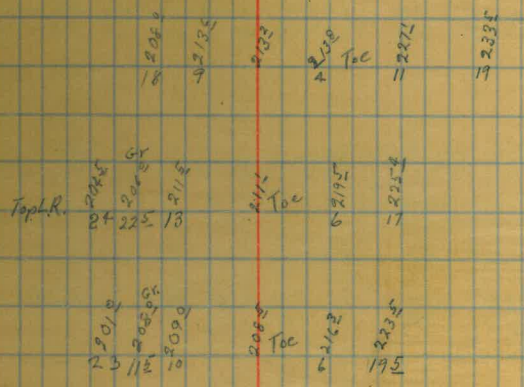
Sta	+	π	−	Grade	Elev
	2.35	213.83			T.P. on Pipe 211.48
3+75		75' 5± on Rd VA = +2?-53		189.96	
4+00				218 / 191.96	
4+25.71 K.P.T.			49.3 @ 33-30	40° of Back tan. / 194.02	
4+46				18.2 / 195.64	
4+46				195.64	
4+75				197.96	
4+95.84		90° to back tang.		208 / 199.63	
5+25				201.96	

Left ℄ Right

1½-1	201.2 / 24.5	203.2 / 16	205.2 / 3	213.2	222.0 / 5	239.4 / 31	C49.4	267.0 / 55	290.8 / 96	296.7 / 109		
1½-1	196.0 / 33	C8.0	200.0 / 20	197.3 / 24	208.3 / 7	210.0	231.8 / 20 F.L.R.	246.4 / 42	C54.4	256.3 / 49	269.0 / 54	292.9 / 86.0
Gr	192.5 / 23.5	198.8 / 10	209.3 / 4	208.8	217.8 / 15 F.L.R.	240.8 / 41 L	C46.7	256.3 / 54	272.0 / 62	296.5 / 86		
	195.2 / 22	210.4 / 5	210.3	213.2 / 5	241.5 / 41	248.5 / 42	261.0 / 49	271.2 / 57				
	195.5 / 22	210.5 / 5	210.2	210.3 / 5	230.8 / 18.5	236.4 / 22	239.5 / 24.5	255.2 / 35				
	202.5 L.R. / 201.4	212.2 / 4	213.2	213.1 / 11	258.5 / 34	256.2 / 41.5	274.8 / 59.5					
	204.3 / 23	213.8 / 15 Top L.R.	214.2	215.5 / 9	219.4 / 14	245.1 / 20	251.9 / 28					
	203.0 / 22	L.R.	214.4 / 12	215.1	215.4 / 5.5	Toe	243.1 / 23	250.3 / 34.5				

Sta	+	π	-	Grade	Elev.
	8.06	219.54			211.48
5+50				203.96	
5+75				205.96	
6+00				207.96	

4



X section Spillway D[illegible]

4/16/30
Banham
Dewing
Moore

130.1=4.6

Note Elev. of base and line 50' out determined by levels (P. 30-32 incl.)
Intermediate points by hand level

Sta	+	⊼	− (to right)	Grade	Elev.	Base
0+00				120.0		117.7 — 119.1/18, 117.7/19, 117.8/23, 117.6/25, 116.7/26, 116.8/27.5, 119.9/29, 122.1/32, 122.4/36, 123.5/40, 125.1/40.5, 125.7/42, 128.3/42, 129.2/47, 129.6/50, 166.3/72, 229.4/133, 236.2/162
0+13						114.3 — 115.2/14.5, 116.6/25, 118.8/35, 123.0/35, 127.7/42, 128.7/41, 130.4/50, 141.9/60, 158.0/72, 168.6/82, 175.0/90, 200.1/114, 223.1/135, 230.6/167
0+25				112.5'		110.2 — 113.5/29, 121.2/32, 128.4/50, 140.1/63, 161.3/82, 169.3/94, 191.2/114, 217.6/135, 225.5/176
0+38						103.6 — 103.6/10, 108.2/13, 109.7/31, 127.9/50, 157.2/50, 170.5/94, 193.5/116, 209.9/135, 219.8/175
0+50				98.2	0+75 / 0+73	93.2 — 93.2/13, 101.9/15, 104.1/19, 108.6/33, 127.7/43, 129.7/50, 140.3/65, 195.6/117, 214.6/174
0+68					"	87.0 — 87.8/17, 101.4/22, 116.0/38, 117.8/50, 135.9/65, 192.6/120, 199.1/143, 202.8/160, 206.1/174
0+73			87.9/58	95.9/28	100.9/12, 100.9/6	84.2 — 86.1/19, 104.8/34, 116.2/50, 191.5/122, 203.8/176
0+75			87.9/58	95.9/28	95.0/12	82.9 — 87.9/21, 101.01/30, 106.1/50, 127.3/68, 142.9/90, 177.0/111, 216.0/179

Sta	+	Δ	−	Grade	Elev	Base											
0+82					89.1 60. 95.7 26 91.5 12	84.1	95.5 25	97.7 32	103.0 50	122.2 67	133.2 81	155.2 100	170.2 110	186.2 135	200.2 162	207.1 174	
1+00				78.0	92.2 60 99.2 22	87.5 12	88.0	96.3 29	98.1 50	111.1 66	122.2 75	126.1 81	152.2 105	175.2 133	184.1 162		
1+13					77.1 67 80.2 21	80.2 12	79.5	82.5 23	96.2 50	117.2 70	127.1 81	128.3 86	139.5 106	151.2 115	154.1 128		
1+25				71.6	63.2 69 68.2 19	74.3 12	76.1 14	77.2	89.1 42	96.3 45	99.1 50	127.2 80	124.2 86	128.0 96			
1+50				66.7	55.2 65 64.3 37	66.3 14	71.2	72.3 20	98.1 50	123.1 114							
1+63					49.1 61.3 38	60.2 16	62.1	62.5 20	76.3 42	79.5 50	119.3 104						
1+75				58.0	42.5 70 57.5 39	57.1 18	58.1			66.5 29	72.0 50	115.1 94					
1+85.85					44.1 50 56.1 37	63.5	63.2 26				67.2 50	85.3 93					

Sta	+	π	−	Grade	Elev.	Base
2+00				47.0	31.9 (52) 37.2 (32) 49.3 (10)	45.7 53.3 (24) 55.3 (43) 65.8 (50)
2+25				40.0	31.2 (57) 40.6 (10)	38.6 38.7 (44) 41.0 (50)
2+41				20.0 (59)	30.4 (2)	37.1 34.9 (50)
2+50				24.0	13.5 (55)	22.2 15.0 (10) 18.4 (26) 26.4 (40) 16.6 (50)
2+62.40						8.3 12.6 (22) 9.2 (50)
2+75				18		1.1 7.5 (45) 0.5 (50)
3+00				−15.0		−7.6 −6.2 (40) −14.4 (50)
3+25						−22.5 −21.4 (26) −21.7 (50)

Isolated Boulder
32×15×27 = 480 cu. yds

Sta	+	℄	−	Elev.
3+50				
3+58				
3+75				
4+00.				

Base

-25 1/2 — -31 1/50

-29 1/2 — -37 6/50

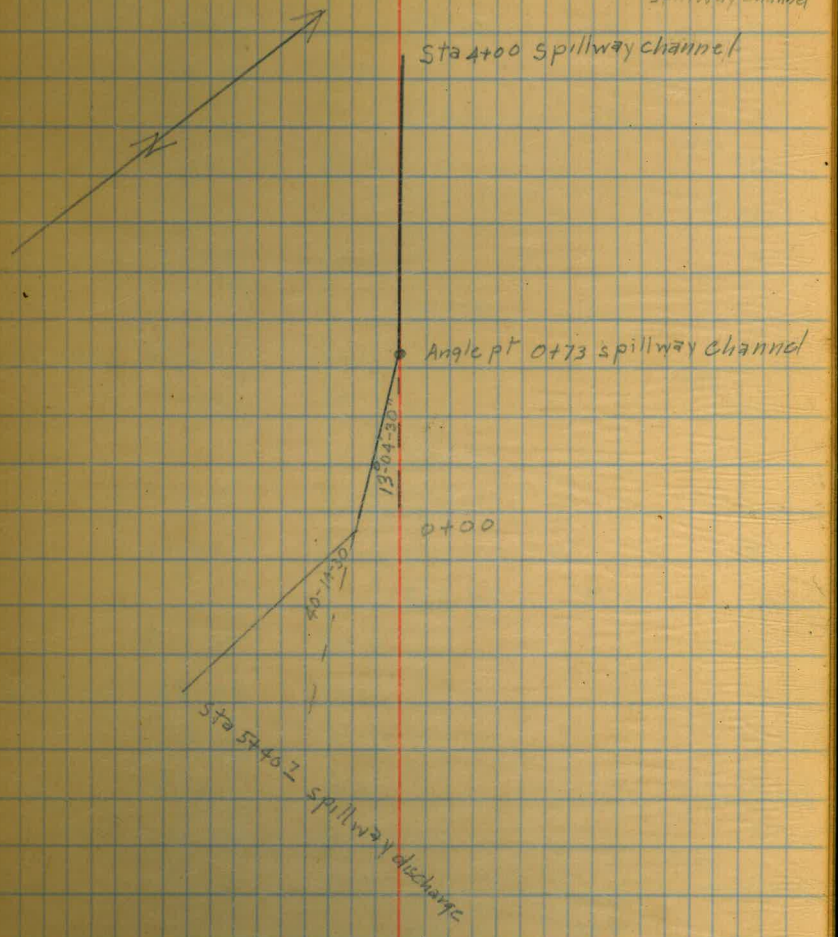
Isolated boulder 5'x10'x16' = 29 5/9 cu yds

-38 3/4 — -46 1/50

-38 1/2 — -45 2/3 — -47 3/50

4/23/30

Angles between baseline Spillway discharge & spillway channel



Levels to determine Elev. of Base line + 50' out Stationing of Spill way Channel

Dewing
Moore
4/16/30
4/23/30

	+	⊼	-	Elev.	
	1.55	121.29		119.74	old sta 2+41 Old T.P.
T.P.			12.81	108.48	
	1.22	109.70			
1+00 50' out			11.6	98.1	
+25 50' out			10.6	99.1	
T.P.			12.66	97.04	Estab 97.02
	0.21	97.25			
			12.46	84.79	Estab. 84.78
1+00 Base			9.3	88.0	
	2.01	86.80			
1+25 Base			10.7	76.1	
T.P.			12.19	74.61	
	0.73	75.34			
1+50 Base			3.4	71.9	
			2.87	72.47	Est 72.45
1+85.86 50' out			7.6	67.7	
1+85.85 Base			11.7	63.6	
T.P.			12.03	63.31	20' right 1+90
Sta 2+00 50' out			9.5	65.8	
	2.29	65.60			
T.P.			12.81	52.79	1+95 5' left Bridge
	0.62	53.41			
2+00 Base			8.1	45.3	
T P			12.78	40.63	2+25 5' left

	+	⊼	−	Elev	
	2.55	43.18		40.63	
2+25 Base			4 6	38 6	
			7.05	36.13	20' left of sta 4+60 Estab. 36.16
K+91 (37)			6 1	37 1	
2+25 out 48'			2 2	41 0	
TP.			12.92	30.26	
	0.22	30.48			
2+50 Base			8 3	22 2	
			12.28	18.20	20 right Sta 2+60
	0.45	18.65			
2+50 Base			2 3	16 4	
			5.02	13.63	Estab. 13.66
TP.			12.72	5.93	25' right Sta 2+75
	1.30	7.23			
Base 2+62½			3 2	3 3	
Base 2+75			6 1	1 1	
			12.06	−4.83	15' left 2+95
	1.98	−2.85			
Base 3+00			4 2	−7 6	
			12.50	−15.35	10' Right 3+20

	+	π	−	Elev	
				-15.35	
	0.98	-14.37			
3+25 Base			8 L	-22 5	
2+50 Base			10 7	-25 1	
T.P.			12.99	-27.36	Sta 3+56 ℄
	0.53	-26.83			
3+58 20 Base			2 3	-29 1	
3+75 Base			11 5	-38 3	
4+00 Base			6 2	-33 7	
3+58 20 about			10 8	-37 6	
T.P.			4.30	-31.13	

About Sta 4+50 50' right Baseline / tip of large boulder

Stadia Shots to left of Base Line
Spillway Channel

63.6
4.6
68.2

4/25/30
Bonham
Dowing
Moore

Sta	Dist.	On Rod	Hor A.	Vert A	H.I. = 68^{2}	Diff. Elev	Elev.	Hor Cor.	Dist.	
⊼ $1+85^{85}$ sighting at 0+73										
1+00	91	6^{5}		+17°-30′	12′ out	+19.6	87.8			
1+00	96	3^{5}		+18°-00′	22′ out	+24.7	92.9			
1+00	108	4^{5}		+16°-00′	66′ out	+24.1	92.3			
1+25		5^{0} Level		—	69′ out	—	63^{2}			
+25	75	4^{4}		+3°-39′	19′ out	+0.4	68.6			
+25	65	1^{3}		+6°-30′	12′ out	+6.0	74.2			
+50		2^{0} Level		—	14′ out	—	66^{2}			
+50		3^{3} "		—	37′ out	—	64^{9}			
+50		12^{3} "		—	65′ out	—	55^{9}			
+75		13^{8} "		—	18′ out	—	54^{4}			
+75		10^{3} "			39 out		57^{2}			
+75	76	11^{4}		-10°-48′	70 out	-25.4	42.8			
$1+85^{85}$	42	5^{2}	90°	-18°-33′	Read Stadia	-17.6	50.6		37	
$+85^{85}$	58	3^{3}	90°	-22°-10′	" "	-23.6	44.6		50	
2+00	88	6^{4}		-21°-51′	82 out	-36.8	31.4			
2+00	50	6^{7}		-36°-18′	32′ out	-30.5	37.7			
+25	83	5^{1}		-24°-49′	57 out	-37.0	31.2			
+50	110	6^{5}	137°-00′	-30°-45′	55	-54.7	13.5		81	To be plotted for distance out
+75	133	5^{7}	159°-25′	25°-32′	70	-57.5	10.7		108	" " " " " "
+75	125	4^{6}		31°-31′	27 out	-60.4	7.8			
3+00	155	11^{0}		23°-56′	76 out	-68.5	-0.3			

April Estimate New Wall

4+50	157+
4+25	157½
4+00	157
3+75	157⅝

3+50	158 6/8
3+25	158 4/8
3+00	160 5/8
2+75	160 2/8
2+50	159 3/8
2+25	158 5/8
2+00	158 7/8
1+75	159 2/8
1+50	157 3/8
1+25	158 7/8
1+00	158 1/8

0+75

0+50

0+30

0+15

0+00

159.5

159.0

159.5

159.0

159.5

Grade Stake for Road during Construction

Sta.	+	X	-	Grade	Elev.
	12.52	178.95			166.43
0+75				167.0	
1+00 (10 L)				167.96	
+25 (9 R)	C 1.8		C 0.1	169.96	
	12.80	179.23			166.43
+50 (7 L)			Gr.	171.96	
+75 (5 L)				173.96	
	6.00	180.05	5.18		174.05
+75 (6 L)				173.96	
2+00				175.96	
+25 (2 L)				177.96	
+46				179.16	
		204.9			
2+62 (2 R)				180.92	
2+84				182.7	

C 3.0 / 7

C 1.8 / 5 — C 0.1

C 0.5 / 5 — Gr / 1

Gr / 2

Gr on toe

Fo 8 on Ground

Fl 6 on Ground

S.S. / 15

S.S. / 9

X-section of Spillway Channel Aug. Estimate

Sta.	+	Hi	−	Elev
B.M.	10.03	129.44		119.41
0+00				
0+00				
T.P.	0.0	116.43	13.01	116.43
	3.71	113.73	6.41	110.02
0+25				
B.M.	10.80	100.60		89.80
0+50				
	0.70	89.30	12.00	88.60
0+75				
1+00				
	0.35	81.40	8.25	81.05
1+25				
1+50				

Base Line
↑
∠106.45'

Leckey
Bonham
8/22/30

40

125.1 · 125.3 · 123.7 · 121.1 · 125.1 · 126.6 · 129.0 · 132.7 ·
4.3 · 4.1 · 5.7 · 5.0 · 4.3 · 2.8 · 0.4 · +3.0
0.0 · 17.0 · 25.0 · 32.0 · 36.0 · 42.0 · 49.0 · 54.0

125.1 · 123.9 · 122.9 · 126.0 · 135.2 ·
4.3 · 5.5 · 6.5 · 3.4 · +5.8
0.0 · 18.0 · 22.0 · 50.0 · 65.0
3/4:1 slope ∠ up.

110.1 · 108.8 · 114.9 · 123.7 ·
3.6 · 4.9 · +1.2 · +10.0
0.0 · 48.0 · 60 · 70.0
3/4:1 slope ∠ up

97.0 · 98.0 · 104.5 ·
3.6 · 2.6 · +3.9
0.0 · 50.0 · 56.0
3/4:1 slope ∠ up.

1:1 slope ∠ 87.3 · 86.2 · 85.6
2.0 · 3.1 · 3.7
0.0 · 6.0 · 49.0
3/4:1 Slope

1:1 slope ∠ 85.3 · 81.3 · 83.1 · 88.2 ·
4.0 · 7.4 · 5.9 · 1.1
0.0 · 8.0 · 43.0 · 50.0
3/4:1 up.

1:1 slope ∠ 76.7 · 76.9 · 90.7 ·
4.7 · 4.5 · +8.3
0.0 · 34.0 · 49.0
3/4:1 slope
Slope 50 VK = 10-97'

1:1 slope ∠ 68.3 · 68.7 ·
13.1 · 12.7
0.0 · 34.0
1:1 up.
1:1 Slope Up

original
X-sections for Contractors Rd
along Guide Wall

5/2/30
Bonham
Dewing
Raining Hard

Sta	+	K	-	Elev
	0.10	162.2		162.1
1+00				
+30				
			5.10	157.1
	·03	156.8		
+65				
+				
+82				
2+00				
2+22				
2+35				
2+68				

1+00: 160.8 / 1.4 — 161.1 / 1.6 / 9 — 159.1 / 3.1 / 14 — 156.8 / 5.4 / 15 — 156.6 / 5.6 / 20

+30: 157.4 / 4.8 — 156.1 / 5.5 / 4 — 152.3 / 9.9 / 11 — 151.6 / 10.6 / 15 — 147.9 / 14.3 / 24 — 143.2 / 18.8 / 26 — 141.5 / 20.7 / 39

+65: 156.8 — 156.4 / 0.4 / 4 — 148.4 / 8.4 / 16 — 149.8 / 7.0 / 22 — 146.8 / 10.0 / 23 — 142.5 / 14.8 / 30 — 142.1 / 14.7 / 38

+82: 155.4 / 1.4 — 154.8 / 2.0 / 4 — 148.0 / 8.8 / 15 — 141.8 / 15.0 / 27 — 141.6 / 15.2 / 37

2+00: 153.9 / 8.9 — 153.2 / 3.6 / 5 — 151.0 / 5.8 / 7 — 151.8 / 5.0 / 13 — 152.2 / 4.6 / 17 — 139.9 / 16.7 / 36

2+22: 151.6 / 5.2 — 150.0 / 6.8 / 13 — 152.0 / 4.8 / 19

2+35: 150.6 / 6.3 — 149.4 / 7.4 / 5 — 146.7 / 10.6 / 9 — 144.1 / 12.7 / 23

2+68: 148.0 / 8.8 — 146.1 / 10.7 / 12 — 141.5 / 15.3 / 19 — 141.1 / 15.7 / 26

Final Xsections for Contractor Road along Guide wall.

Lee Key 8/25/30
Bonham Clear + Warm.

	+	H.I.	−	Elev
B.M.	1.57	172.57		171.00
1+00				
T.P.	0.27	160.62	12.22	160.35
1+30				
1+65				
1+82				
2+00				
2+22				
2+35				

						Deduct Cu yds.	Cu yds
162.5	163.2	164.0	165.1				
10.1	9.4	8.6	7.5	273.25			
0.0	17.0	20.0	30.0				
							129.44
158.8	157.8	154.5	145.1				
1.8	2.8	6.1	15.5	195.25			
0.0	15.0	22.0	34.0				
							114.91
153.0	154.8	143.9					
5.6	5.8	16.7				2.83	
0.0	11.0	28.0				2.72	16.05
153.6	153.2	140.6					
7.0	7.1	20.0					
0.0	13.0	29.0				3.00	
							25.09
151.0	152.1	139.8					
8.7	8.5	20.8					
0.0	15.0	32.0				13.11	27.29
149.6	150.1	145.0					
10.8	10.5	15.6					
0.0	19.0	27.0				7.46	14.20
148.6	149.0						
12.0	11.6				Slope 1½:1 End		
0.0	20.0				Deduct.	29.12	326.98
							29.12
					Total Cu yds.		297.86

Survey for Extra Work East End Spillway

Bonham
Dewing
5/11/30

BM on rock
152.84

A Line	B Line	C Line	D Line
	1098	163.82	
149.5 1+3 0+00	154.2 7 Lof S. 0-10 ½ R	160.5 3 0+00	153.7 10 L 0-10 FL.
150.0 13 0+00 2L FLR	154.7 9 0-10 7R	162.6 1 0+00 2½ L TLR.	158.2 5 0-10 TLR.
153.4 10 0+0 4L T.L.R.	154.4 9 0-10 8		171.6 +7 0-10 12L
154.7 8 0+00 T. Parp. 6L	148 Toe Spill 0-10 7L		
152.8 11 0+10	154.4 9 0+00	Note "B" line is pier line of spillway produced	
152.8 11 0+10 3L FLR.	153.9 9 0+0 2½ L TLR.		
155.0 8 0+10 3½ L TLR.	151.8 12 0+0 2½ L TLR		
155.8 8 0+20 TLR.	151.9 11 0+00 7L TLR.		
158.8 5 0+20 TLR.	154.3 9 0+00 1½ L TLR.		
	158.1 5 0+10		
	162.3 15 0+10 2½ L TLR.		

16382

A Line	B Line	C Line	D Line	
	161.3 25 0+20			
			0.72	163.10
	12.35	175.45		
160.3 15½ TLR 0+30 3L	165.0 10⅝ TLR. 0+20 4½L	169.9 5⅚ TLR. 0+10 7L	168.8 6⅞ 0+00 Top Loose Rock	
176.7 +1⅜ 0+70	164.4 1¼ 0+30	169.8 5⅞ 0+20	177.0 +1⅝ 0+60 13L	
167.9 7½ 0+30 T Loose R.	182.2 +6⅞ 0+70	171.8 3⅞ 0+30	175.7 +0⅜ 0+10 Top Loose Rock	
172.4 3½ 0+60	177.4 +1⅞ 0+60	176.7 +1⅜ Top Loose Rock 0+20 5L	172.8 2⅞ 0+10 DSR	
163.4 19½ 0+40	175.7 Top Large Boulder +0⅜ 0+50 3½L		177.7 +3⅜ 0+10 1L	
165.3 10⅜ F.L.R. 0+40 6L	171.8 3⅞ TLR 0+50 3L		180.2 +4⅞ 0+10 13L	
	169.0 6⅝ TLR 0+50 2R		178.8 +3⅜ 0+20	
	167.2 8⅜ TLR. 0+40 OSR		179.5 +3⅝ 0+30	Face Loose Rock
	170.0 5⅝ TLR. 0+40		181.8 +6⅜ 0+30 1L	Top Loose Rock
	171.6 3⅜ TLR. 0+40 6L		182.8 +7⅜ 0+30 13L	

Note on B line 0+40 tie wall here

C Left 0+40 B line start of loose rock

175.45

A	B	C	D	
	166.7 8⅝ TLR. 0+33	182.4 +6 1 0+50 Top Loose Rock	182.8 +7⅔ 0+20 4L	Top Loose Rock
	169.2 6⅜ TLR. 0+48	182.7 +7⅔ 0+60 7L	182.7 +7⅔ 0+20 19L	
	171.2 4⅜ TLR. 0+48 3L	182.2 +6⅞ 0+60 3R	182.3 +6⅝ 0+40	Top Loose Rock
	176.2 +0⅔ TLR. Loose 0+48 3L	182.1 +6 6/7 0+70 2L	182.5 +7 0 0+40 8L	
			182.8 +7⅔ 0+50 6L	

0+35 B start of tie rock

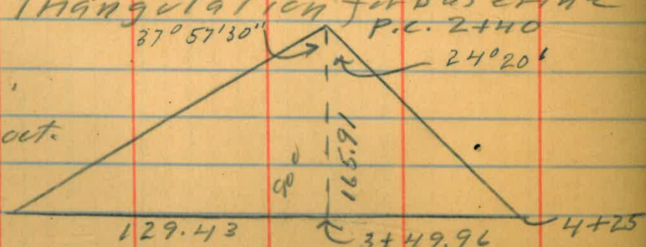
296.5 = Elev 2+40 on Second Baseline

Stadia shots to Top of bank along Rd.
Secondary BaseLine

Sta	Dist.	On Rod	Hor A	Vert. A	H.I. =
Transit at	3+49.96	Supplementary Line 96 South			301.2
49 3+75	70	4.1		-30-30	
55 4+00	90	10.5		-24-56	
49 4+25	130	9.5		-12-40	
4+25		4.7 Level			
4+00		4.3 "			
3+75		10.4 "			
70' distance		7.5 "	205° R		
3+49.96					

Triangulation for BaseLine

165.91
Dism 70.
95.91
BaseLine out.



Note those distances out are from suplementary rd line which is 96 ft south of ℄

Dist. from ℄

54'	295.2 / 42	296.5 / 4.7	
49'	256.3 / 47	296.2 / 4.3	
41'	266.5 / 45	270.8 / 10.4	296.1 / 4.5 / 13
		293.1	
		496.5 / 4.7	

5/26/30

X sections for May Estimate Rd South of Dam.

Bonham
Dewing

Sta	+	HI	−	Elev.
	13.5	203.2		189.70
4+00				
3+75				
+50				
3+28				
3+06				
2+84				
2+62				
2+40				

℄

203.2

Sta				℄		
4+00		205^{5} / $+2^{3}$ / 12		205^{5} / $+2^{3}$	221^{0} / $+18^{0}$ / 33	
3+75	187^{8} / 15^{4} / 34	193^{6} / 9^{6} / 28	193^{8} / 9^{4} / 16	199^{0} / 4^{2}	207^{6} / $+4^{4}$ / 27	
+50			191^{6} / 11^{6} / 13	195^{2} / 8^{0}	200^{3} / 2^{9} / 13	
3+28			190^{8} / 12^{4} / 6	195^{7} / 7^{5}	190^{L} / 2^{5} / 13	
3+06				190^{7} / 12^{5}	194^{8} / 8^{4} / 11	
2+84				190^{3} / 12^{9}	194^{3} / 8^{9} / 2c	
2+62				189^{L} / 13^{5}	182^{7} / 20^{5} / 6	181^{1} / 22^{1} / 18
2+40			193^{2} / 10^{0} / 7	185^{4} / 17^{8}	172^{7} / 30^{5} / 17	

Sta	+	π	−	Elev.
		203.2		
	0.0	190.1	13.1	190.1
2+25				
2+00				
1+75			12.1	178.0
	1.1	179.1		
1+50				
1+25				
1+00				
0+88				

190.1

186.8 3.3 6 | 182.7 7.2 | 174.2 15.6 17

184.6 5.5 7 | 181.3 8.8 | 174.8 15.3 13

181.1 9.0 22 | 180.6 9.5 8 | 176.0 14.1 | 173.5 16.6 9 | 174.0 16.1 12

179.1

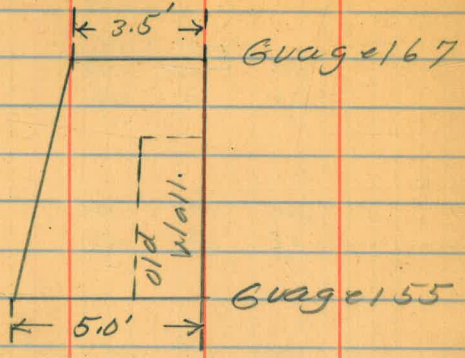
175.7 3.2 21 | 174.9 4.2 9 | 171.3 7.8 | 170.2 8.2 11

170.5 8.4

167.2 11.7

167.2

May Estimate
Rubble Wall.



X section Rubble Wall

Total & distance New Rubble Masonry Wall 581 linear feet.

$581 \times 12 \times \frac{3.5+5.0}{2} = 29,631$ cu. ft. =
1,097.44 cu. yds.

Old Rubble Wall See Page 20 282.83 " "
Total 81461 cu. yds.

Grade Stakes for Contractor on Road.

Sta	+	π	−	Elev	Grade	Gr Rod	Left	Left	℄	Right
	12.96	179.39		166.43 BM.						
0+88					167.0	12^{4}		Gr / 13		
1+00					168.0	11^{4}	C1^{3} / 13	Gr / 8		
+25					170.0	9^{4}	C6^{6} / 22	C2^{7} / 12	C1^{6}	C1^{2} / 9^{8}
$+34^{+5}$					170.6	8^{8}			C1^{9}	
+50					172.0	7^{4}	C4^{4} / 22	C4^{0} / 14	C0^{4}	Gr / 8
			0.12	179.27						
	11.12	190.39								
+75					174.0	16^{4}	C8^{6} / 25	C7^{6} / 19^{4}	C3^{4}	Gr / 8
2+00					176.0	14^{4}	C12^{0} / 31	C10^{6} / 23^{9}	C6^{7}	Gr / 8
2+25					178.0	12^{4}	C13^{0} / 33^{0}	C11^{9} / 24^{5}	C5^{8}	
2+40					179.2	11^{2}		C9^{0} / 21^{5}	C8^{0}	
			0.22	190.17						
	11.28	201.45								
2+62					180.9	10^{6}		C9^{5} / 22^{4}		

Elev Radius = 190^{8} 6/2/30

Sta	+	HI	-	Elev	Grade	Gr Rod	Left	℄	Right
		201.45							
2+84					182.7	18^{8}	C 7^{8} / 19^{7}	C 8^{4}	C 13^{4} / 28^{1}
	10.56	200.73		190.17					
3+06	Start Ledge Rock		Top Elev 188^{0}		184.4	16^{3}	C 7^{0} / 18^{5}	C 10^{4}	C 11^{8} / 13^{5}
3+28					186.2	14^{5}	C 6^{2} / 17^{3}	C 9^{4}	C 15^{0} / 13^{0} nail
3+49^{96}					188^{0}	12^{7}	C 4^{8} / 15^{2}	C 8^{0}	C 14^{1} / 13^{2} nail
	6.72	206.05	1.40	199.33					
3+75	℄ 4½' left				190^{0}	16^{0}	C 7^{0} / 23^{0} C 6^{2} / 17^{2}	C 7^{0}	C 14^{6} / 24 nail
4+00	℄ swung 9' Left				192^{0}	14^{0}	Gr / 25^{2}	C 8^{0}	C 11^{2} / 19^{6} 1-1
+25					194^{0}	8^{2} / 12^{0}	Gr / 21^{4}	C 7^{4}	C 13^{2}
	8.62	211.22	3.45	202.60	TP 4+28				
+50					196^{0}	15^{2}		C 7^{0}	C 12^{7}
+75					198^{0}	13^{2}			C 11^{0}
5+00					200^{0}	11^{2}			C 9^{7} Keel
+25					202^{0}	9^{2}			C 6^{0}

Sta	+	A	−	Elev	Grade	Left	℄	Right
		211.22						
5+50					204.0	7½		C3½
5+75					206.0 Estab'l.	5½		C2½
			8.09	203.13	203.08			

X-sections + Alignment of Road change from boat landing to blacksmith shop.

6/12/30
Bonham
Deming
DeWeese

Sta	+	π	−	Elev	
	0.65	197.15		196.50	TP. R.P. 6+50 10
T.P.			12.73	184.42	
	0.16	184.58			
T.P.			12.24	172.34	
	3.24	175.58			
T.P.			8.13	167.45	opp. evaporation station nail in telephone pole
	8.32	175.71			
0+00					
+35					
+50					
0+85					
1+00					
+43					
1+55.9 + PI		15°-17' L	7.74	168.03	R.P. 10' 2 ft
	1.47	169.50			
2+00					
+50					

55

℄

163 9/24 164 5/16 169 1/9 169 1/4 170 0/4 173 3/5 175 1/12

165 0/15 167 0/12 168 8/1 171 3/1 172 9/10

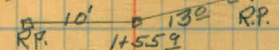
166 6/25 166 6/10 167 0/7 173 11/4 174 3/4 173 0/8 174 0/15

163 7/26 163 6/16 166 8/15 166 8/5 173 8/14 174 2/21 178 0/21 180 5/26

164 3/20 164 5/12 166 8/8 174 2/11 176 6/28

158 3/28 159 5/18 167 8/9 167 8/4 168 8/9 176 5/15 178 8/23

158 7/30 158 2/13 167 2/10 167 2/5 167 2/5 173 1/9 175 9/18



These sides reversed 175 8/22 176 6/15 167 8/11 166 6/1 166 4/1 166 0/10 162 0/17 158 9/26

156 3/24 159 3/17 160 3/9 163 3/2 163 0/1 163 5/10 168 2/15 175 2/32

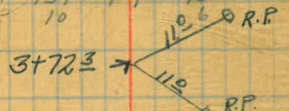
		169.50		
3+00				
	0.64	165.87	4.27	165.23
+50				
+72.3 ℄ PT		32°-46'-30"L		RP 11 L
4+00				
+50				
5+00				
+44.7 ℄ PT		44°-19'R		
	4.79	163.97	6.69	159.18
+80				
6+00				

℄

153.5 (25) 155.6 (3) 158.0 (4) 160.8 (20) 164.8 (36) 170.0 (50)

151.2 (31) 151.9 (22) 156.2 (14) 160.5 (9) 160.2 (3) 160.2 (3) 162.6 (6) 166.7 (14) 170.5 (22)

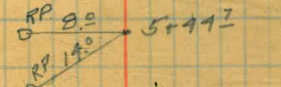
151.2 (26) 154.7 (13) 159.6 (10) 159.7 (5) 160.5 (6) 167.9 (22) 173.0 (32)



150.3 (36) 152.2 (24) 160.2 (10) 160.5 (5) 160.5 (3) 164.7 (10) 171.2 (23)

152.9 (35) 154.2 (24) 162.1 (12) 161.8 (2) 161.6 (6) 168.7 (6) 173.3 (19)

153.5 (28) 154.2 (18) 160.2 (10) 159.7 (3) 160.0 (3) 165.7 (6) 170.6 (19)



149.8 (23) 154.2 (14) 158.9 (3) 158.9 (9) 158.8 (9) 164.6 (15) 168.9 (28)

151.2 (29) 155.3 (24) 155.8 (21) 158.9 (17) 158.3 (10) 159.7 (3) 164.0 (3) 168.0 (16)

155.6 (21) 156.7 (17) 158.3 (11) 158.3 (4) 158.6 (2) 165.2 (9) 170.7 (35)

163.97

6+50	152^{3} 16	157^{3} 6	157^{4}	158^{2} 33	160^{8} 42	164^{0} 50			
7+00	153^{2} 24	154^{3} 14	157^{2} 12	157^{8}	159^{0} 24	160^{2} 32	164^{0} 32	167^{0} 37	
+50	156^{7} 23	159^{0} 20	[illegible]^{7}	158^{9} 8	160^{0} 13	173^{1} 18	177^{0} 31		
8+00	154^{2} 29	155^{0} 20	159^{1} 10	159^{1}	159^{7} 12	160^{5} 15	168^{5} 21	172^{9} 34	
+50	151^{8} 24	156^{6} 15	158^{0} 10	158^{4}	159^{3} 26	162^{5} 34	169^{9} 50		
9+00	148^{1} 30	158^{0} 11	158^{0}	158^{2} 11	159^{2} 16	165^{3} 19	171^{0} 27		
+50	151^{6} 20	157^{7} 11	158^{7}	158^{6} 5	159^{8} 7	165^{6} 11	171^{2} 23		
10+00	150^{0} 26	153^{9} 19	154^{7} 14	158^{1} 10	158^{5}	158^{6} 4	159^{7} 8	164^{8} 11	171^{5} 26

		163.97			
10+15.8 ℄ P.T.		17°-22' R			
	12.96	171.12	5.81	158.16	
+50					
11+00					
+50					
12+00					
12+41.4 ℄ P.T.					
	12.95	171.11		158.16	
			0.03	171.08	17 beyond 12+41 ft Paved Rock
	0.04	158 20		158.16	
	2.60	148.08	12.72 6.57	145.48 141.51	

153.9 19 | 155.2 13 | 158.2 | 158.8 | 159.0 7 | 160.0 10 | 164.5 12 | 170.1 25

A.P. 9.0 ← 10+15.8

R.P. 16.0

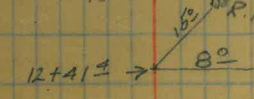
157.2 36 | 155.1 20 | 159.8 10 | 160.0 | 160.4 3 | 161.2 6 | 165.5 8 | 171.1 21

162.2 12 | 163.6 | 164.1 6 | 166.8 7 | 171.8 20

157.1 21 | 158.9 11 | 165.5 5 | 165.7 | 166.5 15 | 168.8 17 | 171.2 23

160.5 20 | 160.8 13 | 164.8 3 | 167.5 2 | 167.6 | 168.1 13 | 172.2 17 | 177.2 30

168.1 16 | 166.4 | 169.3 | 174.5 18



	+	HI	-	Elev	
B.M.	3.85	171.62			167.77
T.P.	5.10	165.93	10.79	160.83	
T.P.	6.33	165.81	6.45	159.48	
T.P.	6.22	163.74	8.79	157.02	
B.M.	152	172.60			171.08
T.P.	4.18	164.02			159.84
T.P.	4.60	164.31	4.28		159.71
T.P.	7.69	171.60	0.46		163.91

Survey of Rd at Horseshoe Bend

6/13/30
Benham
Dewing
DeWeese

Sta.	+	⊼	−	Elev.	
	12.65	154.25		141.60	Elev Water
	12.73	166.95	0.03	154.92	
					RP [illegible]
0+00	6.21	172.75	0.41	166.54	
			4.98		BM 167.77
0+50					
1+00					
+50					
			10.40	162.35	
	3.89	166.24			
2+00 * PT		39°-05 L			
2+30					
2+52² * PT		74°-00 L			

Solid rock ledge

Dirt

Rock to 3+00

℄ Right

172.8

160¹	168⁴	118⁶	168⁵	179⁵
27	10		7	19

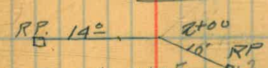
Nail in Tree 151 LT Sta. 0+10

161³	166⁶	167²	167¹	172¹	176²
16	6		15	12	27

159³	165⁸	165⁸	164⁴	172¹ 176⁸	
26	15		7	9	20

150⁸	161⁵	162³	162⁹	168⁴	174³
18	6		13	18	30

166.2

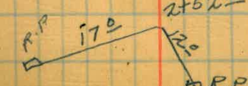


152²	158¹	161¹	161⁵	161²	174⁵
28	19	16		3	20

151⁸	154⁸	158⁴	160²	160⁷	160⁸	164⁵	169⁵
27	18	16	12		11	13	20

152⁴	155⁰	159⁴	160¹	160⁴	164²	169²
32	23	18		2	14	16

2+52²



Sta	+	℄	−	Elev.
		166.24		
2+70	Rock to 1+50			
3+00	↓			
+50				
4+00				
+50				
5+00				
+50				

Left ℄ Right

61

1662

152.0 (22) 155.9 (12) 159.8 (10) 160.5 (14) 160.7 (19) 165.8 (21) 172.8

152.5 (24) 155.0 (15) 160.4 (5) 160.6 (11) 160.6 (13) 171.6 Vertical Face Boulder

154.5 (20) 160.9 (10) 161.0 (5) 160.7 (18) 173.7

149.6 (17) 154.7 (20) 160.6 (10) 160.5 (4) 160.3 (17) 172.0

155.0 (18) 157.1 (12) 160.2 (8) 160.4 (8) 159.8 (26) 170.5

155.4 (10) 156.8 (12) 159.3 (5) 159.6 (13) 157.3 (15) 162.4 (20) 160.2 (29) 169.1

155.0 (12) 158.2 (11) 158.5 (15) 158.5 (18) 161.9 (28) 166.0

Sta	+	HI	−	Elev	
		166.24			
6+00					
T.P.	6.10	165.58	6.76	159.48	Top RP Stake R.P.
6+58 5 ± P.t.		15°-02' L			
6+75					
7+00					
+20					
+50					
8+00					
8+29 4 ± Pt		53°-24' L			
T.P.			8.49	157.09	Top RP Stake
	6.14	163.23			

~~177.4~~ 171.5   159.9 / 13.2 / 173.1

62

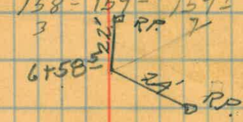
℄

166.2

$\frac{151^{7}}{21}$ $\frac{154^{0}}{13}$ $\frac{157^{8}}{8}$ 158^{5} $\frac{158^{5}}{10}$ $\frac{163^{9}}{14}$ $\frac{168^{9}}{23}$

165.6

$\frac{148^{1}}{24}$ $\frac{151^{3}}{11}$ $\frac{158^{6}}{3}$ 159^{0} $\frac{159^{4}}{7}$ $\frac{159^{5}}{18}$ $\frac{165^{6}}{23}$ $\frac{170^{6}}{35}$



$\frac{147^{0}}{22}$ $\frac{152^{0}}{9}$ $\frac{158^{0}}{9}$ 160^{0} $\frac{159^{3}}{22}$ $\frac{166^{0}}{47}$

$\frac{150^{5}}{32}$ $\frac{155^{5}}{21}$ $\frac{160^{4}}{16}$ 159^{2} $\frac{160^{9}}{7}$ $\frac{166^{5}}{13}$ $\frac{170^{8}}{26}$ Boulders

$\frac{154^{2}}{29}$ $\frac{161^{3}}{18}$ $\frac{160^{2}}{13}$ 160^{3} $\frac{160^{3}}{2}$ $\frac{165^{3}}{5}$ $\frac{170^{3}}{15}$ Boulders

$\frac{154^{8}}{25}$ $\frac{160^{1}}{10}$ 159^{4} $\frac{159^{5}}{4}$ $\frac{167^{4}}{11}$ $\frac{172^{4}}{20}$ F.L.R.

$\frac{147^{6}}{24}$ $\frac{150^{0}}{13}$ $\frac{154^{1}}{5}$ 156^{7} $\frac{156^{5}}{14}$ $\frac{170^{2}}{41}$

$\frac{150^{1}}{26}$ $\frac{151^{8}}{19}$ $\frac{156^{3}}{12}$ 156^{1} $\frac{157^{0}}{5}$ $\frac{161^{6}}{17}$ $\frac{165^{6}}{35}$

Sta	+	H	−	Elev
		163.23		
8+50				
9+00				
+50				
+77.4 APT		94°-43'R		
10+00				
TP	10.15	170.37	3.01	160.22
+50				

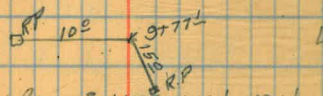
163.2

156.4 (16) 156.4 (8) 156.4 156.4 (9) 161.3 (10) 168.4 (30)

147.7 (18) 151.5 (8) 156.6 (3) 156.8 156.5 (11) 162.8 (16) 164.8 (32) 168.8 (50)

149.5 (26) 157.0 (9) 156.8 156.2 (7) 164.3 (9) 170.6 (20)

152.0 (25) 157.6 (10) 157.5 157.3 (6) 162.3 (7) 163.1 (11) 174.1 (29)



large rock

153.0 (24) 158.7 (16) 158.8 168.4 (3) 181.1 (7)

170.4

151.9 (32) 155.7 (10) 160.3 (7) 160.2 160.2 (9) 165.2 (18) 170.3 (34)

Sta	+	R	-	Elev	
		170.37			
11+00					
+50					
12+00					
12+51.5 RP					
			2.04	168.33	To left 12+42 T.P.
T.P.	0.27	159.46	11.18	159.19	
			12.00	147.46	

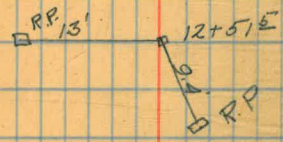
170.4

157.4 / 22 | 163.8 / 8 | 163.4 | 163.1 / 8 | 167.7 / 12 | 172.7 / 29

157.5 / 19 | 169.7 / 6 | 169.8 | 164.4 / 8 | 171.2 / 2 | 173.2 / 20

159.2 / 20 | 161.1 / 14 | 165.3 / 11 | 166.4 | 166.4 / 3 | 172.5 / 7 | 178.0 / 21

157.2 / 28 | 162.8 / 18 | 166.6 / 15 | 168.5 | 168.7 / 4 | 175.0 / 15



Xsection of Rd for June Estimate

6/21/30
Bonham
Dewing

Sta	+	⊼	-	Elev	
	4.71	196.11		191.40	
2+40 PC					190.9/35 189.5/24 178.9/8 178.4 178.1/13
2+62					190.9/35 196.9/24 180.0/6 179.7 179.7/10 181.1/16 185.2/26
2+84					190.2/35 191.0/21 182.1/8 181.6 182.1/8 slope 79 on Rod 208.0/43 VA=9°-25'
3+06					190.9/35 192.0/20 185.2/9 184.0 186.9/10 218.4 VA/25 20°-20' 225.2/26
3+28					190.9/35 191.5/17 186.4/9 186.6 188.7/8 197.0/14 219.6 VA/14 25°-32' 263.0/46
3+49.77 PT					190.9/35 192.9/16 188.2/8 188.9 190.1/8 198.9/11 200.5/14 222.7 V.A. 27°-30'/14 258.0/43
	9.43	200.83		191.40	
3+75					201.0/24.0 196.2/21 190.0/10 190.4 190.6/3 204.6/24 226.6/32 239.0/34.0

Sta	+	℄	−	Elev
		200.83		
4+00				
4+25 −17				
4+46				
4+75				
4+95 −84				
			0.94	199.89
	10,12	210.01		
5+25				
5+50				

200.4 22 | 192.3 13 | 191.8 | 192.0 2 | 194.1 10 | 211.0 13 | 218.0 23 | 221.0 33

197.8 20 | 193.5 16 | 193.7 | 194.2 3 | 213.8 27 | 235.0 37 | 241.0 41

1st Sec. 241.0 / 41.0

194.2 33 | 195.7 | 210.7 31 | 239.5 31 | 2nd Sec. 256.0 / 35.0

196.8 24 | 197.7 | 202.2 | 233.5 23 | 237.0 23

198.8 19 | 198.6 | 198.4 6 | 200.9 11 | 219 14

200.2 19 | 201.4 | 201.5 4 | 204.2 9 | Vert Bank

204.7 16 | 204.4 | 204.6 2 | 211.0 6 | Vert. Bank.

Sta	+	I	−	Elev	
		210.01			
5+75					
6+00					
			6.94	203.07	203.08
	10°	176°		166°	
6+88					
1+00					
+25					
+50					
+75					
			0.4	175.6	

$205\frac{2}{14}$ $205\frac{7}{}$ $205\frac{7}{4}$ V Bank

$204\frac{6}{17}$ $207\frac{1}{}$ $207\frac{6}{6}$

$172\frac{0}{20}$ $167\frac{4}{11}$ $167\frac{5}{}$ $167\frac{5}{9}$ I

$175\frac{7}{22}$ $169\frac{2}{11}$ $168\frac{6}{}$ $168\frac{4}{12}$

$176\frac{2}{22}$ $171\frac{6}{8}$ $170\frac{8}{}$ $170\frac{2}{16}$

$187.8\ 178\frac{5}{31}$ $177\frac{2}{22}$ $172\frac{1}{15}$ $172\frac{4}{10}$ $174\frac{2}{10}$

$193.0\ 182\frac{1}{37}$ $181\frac{0}{24}$ $174\frac{9}{19}$ $174\frac{4}{8}$ $173\frac{3}{12}$

Sta	+	℄	−	Elev
	7.1	182.7		175.6
2+00				
2+25			.08	179.9
	11.2	191.1		

199.2 188.0 184.9 176.5 174.3 175.7
42 31 25 7 12

202 191.1 187.1 178.3 177.5 177.0
43 33 24 7 13

June Estimate Spillway Discharge

Bonham
Dewing
6/26/30

Sta	+	HI	−	Elev
	4.58	157.42		152.84
TP			9.02	148.40
	0.74	149.14		

3+25 — Use old x-section

3+50 — 143.2/49.0 — F.L.R. → 141.7/47.1 — 140.0/43.8 — 139.8/39.0 — 140.6/32.3 — 140.7 — 140.9/12.5 — T.C.S.

3+66 — 153.3/49.2 — F.L.R. 147.1/49.2 — F.L.R. 144.1/45.7 — 142.5/41.3 — 142.1/34.7 — 142.2/24.5 — 141.4 — 141.5/11.5 — T.C.S.

3+75 — 157.0/49.0 — F.L.R. 145.4/44.2 — 142.5/39.5 — 142.9/31 — 142.5/23 — 141.8 — 141.7/11 — T.C.S.

+97 — 223.3/94 — 193.7/80 — 176.0/60 — 159.2/52 — F.L.R. 146.2/49 — 142.2/44 — 142.7/4 — 142.5/9 — T.C.S. — 1+45

4+13 — 221.5/89 — 216.0/89 — 211.6/85 — 185.4/68 — 177.7/60 — 158.4/55.4 — 148.4/48 — 144.2/42 — 143.3 — 143.2/7.4 — T.C.S.

221.5/89 — 216.4/89 — 211.6/85 — 196.2/68 — 185.4/68 — 177.9/60 — 158.4/55.4 — 148.4/48 — 144.2/42 — 143.3 — 143.2/7.4 — T.C.S.

4+25 — 219.7/88.5 — 211.3/80.8 — 208.2/78.2 — 195.8/78.8 — 178.1/66.5 — 169.4/55.3 — 152.7/45.3 — 145.7/36 — 144.2/29 — 143.8 — 144.0/6.7 — T.C.S.

Base Line

Station					Notes	Right page (elevation / offset)	Station
		14914					
4+50					O.O. for Ledge Rock	$\frac{207^{0}}{86^{5}}$ $\frac{197^{9}}{73}$ $\frac{186^{2}}{70}$ $\frac{176^{4}}{62^{5}}$ $\frac{161^{1}}{43}$ F.L.R. $\frac{147^{6}}{32^{2}}$ $\frac{144^{6}}{27^{4}}$ $\frac{144^{6}}{1}$ $\frac{144^{7}}{5}$ T.C.S.	0+95
+75						$\frac{177^{0}}{47^{0}}$ $\frac{171^{8}}{45^{5}}$ $\frac{167^{0}}{38^{0}}$ $\frac{160^{0}}{33}$ Top Ledge Rock $\frac{156^{0}}{32}$ F.L.R. $\frac{147^{5}}{29^{3}}$ $\frac{145^{5}}{24}$ 145^{6} $\frac{145^{6}}{3^{6}}$ T.C.S.	0+70
5+00						$\frac{161^{9}}{28^{1}}$ T.L.R. $\frac{159^{3}}{27^{4}}$ T.L.R. $\frac{153^{3}}{23^{5}}$ F.L.R. $\frac{148^{3}}{23^{5}}$ $\frac{146^{5}}{20}$ 147^{4} $\frac{147^{9}}{2^{5}}$	0+45
+15	673	159,5+	152,8+			$\frac{180^{2}}{43^{8}}$ $\frac{174^{8}}{39}$ T.L.R. $\frac{162^{4}}{25}$ F.L.R. $\frac{150^{4}}{19}$ $\frac{148^{7}}{16^{5}}$ $\frac{148^{7}}{11}$ $\frac{147^{7}}{9}$ 148^{3}	
5+25						$\frac{181^{0}}{52}$ $\frac{181^{0}}{47}$ $\frac{178^{8}}{43}$ $\frac{163^{1}}{21}$ F.L.R. $\frac{152^{2}}{18^{2}}$ $\frac{148^{6}}{13^{5}}$ $\frac{148^{6}}{8^{2}}$ 148^{6}	0+20
5+35						$\frac{182^{5}}{46}$ $\frac{165^{3}}{22}$ T.L.R. $\frac{158^{5}}{19}$ F.L.R. $\frac{154^{0}}{19}$ $\frac{148^{6}}{11^{4}}$ 148^{8}	0+08
$5+40^{2}$					Use old X section	T.L.R. $\frac{160.0}{12}$ F.L.R. $\frac{157^{3}}{12}$ $\frac{153^{4}}{7^{5}}$ 151^{9}	
$5+44^{05}$						$\frac{166.0}{16}$ 163.5 End of Excavation	0+00

166.17 Levels to determine Elevations of Trunnions 7/7/30

Barhaven Dam 1929

Sta	+	T	−	Elev	
	6.60	159.44			B.M. 152.84
					Set To
Pier #6 WestSide			2.46	156.98	157.00
" #5 EastSide			2.41	157.03	157.00
" #5 WestSide			2.38	157.06	157.00
" #4 EastSide			2.44	157.00	157.00
" #4 WestSide			2.45	156.99	157.00
" #3 EastSide			2.42	157.02	157.00
" #3 WestSide			2.38	157.06	157.00
" #2 EastSide			2.42	157.02	157.00
" #2 WestSide			2.44	157.00	
#1 EastSide			2.42	157.02	157.00

These trunnions also checked for line, 7/7/30

166.17	159.44
159.44	7.64
6.73	167.08

72

⊡ Lead Plug + Tack on Trunnion & set in parapet Wall

⊡ Stake in ground 50' beyond E end spillway and Trunnions

Levels on Cutoff on Piers

7/8/30
Bonham
Downing

	+	X	−	Elev	Grade
	5.81	173.19		167.38	
Pier #1					170.17
#2		✓	4.24		W 168.95
		✓	4.36		E 168.83
#3		✓	5.57		W. 167.62
		✓	5.69		E 167.50
#4		✓	6.90		W. 166.89
		✓	7.02		E. 166.17
#5					166.17
#6			✓		166.17
#7			✓		166.17

Elevations Set for Bridge Slab.

	3.03	174.57 ✓			BM. 171.54
Pier #2 East Side			4.91	169.66	
#3 West "			6.12	168.45	
#3 East "			6.24	168.33	
#4 West "			7.45	167.12	
#4 East "			7.57	167.00	
#5 Both "				167.00	
#6 " "				167.00	
#7 " "				167.00	

Levels to set B.M. on Parapet Wall

Sta	+	⊼	−	Elev.	
	6.45	159.29		152.84	
			2.28	157.01	added to 7.57
	8.44	173.02		164.58	
			1.48	171.54	Elevation top last Pilasteron straightaway at N end Parapet Wall

Levels on Cutoff on Piers

Seat Parapet Wall		Elevations	Grades
	3.00	170.02	
#2	3.94	169.08	168.95
	3.97	169.05	168.95
	4.18	168.84	168.83
	4.18	168.84	168.83
#3	5.39	167.63	167.62
	5.385	167.635	167.62
	5.50	167.52	167.50
	5.51	167.51	167.50
#4	6.72	166.30	166.29
	6.72	166.30	166.29
	6.84	166.18	166.17
	6.86	166.16	166.17
#5	6.85	166.17	166.17

Stadia Shots for X-section to right of 50' line
Spillway Channel

4/24/30
Bonham
Dewing
Moore

H.I. = 123^{0}

Transit at 0+00 Forsight at 0+00 out 50'

Note:- Distance out is from Base Line.

Sta	Stadia R.	Hor A.	Ver A.	Rod		Hor Dist.	Diff. Elev	Elev.		
0+00	100	0-0	31°-50'	1^{5}		72.0	43.3	166.3 (72)		
0+00	220	0-0	38°-55'	1^{4}	Lath at pt. 29' back + 6^{8} higher	133.0	106.4	229.4 (133)	Lath	236^{2} (162)
0+25	203	11°-36' L	34-30	1^{0}	Lath at pt 38' back and 8^{5} higher	138.0	94.0	217.0 (135)	Lath	225^{5} (176)
0+25	160	12-21 L	31°-15'	2^{8}		117.0	68.2	191.2 (114)		
0+25	120	14°-42 L	25°-59'	0^{6}		97.0	46.7	169.7 (94)		
0+25	104	17°-22' L	21°-53'	1^{5}		86.0	38.2	161.2 (82)		
0+25	73	21°-21' L	15°-15'	1^{4}		68.0	17.1	140.1 (63)		
0+50	85	35°-56 L	14°-12'	2^{4}	Lath at pt. 57' back and 19' higher	80.0	17.8	140.8 (65)		
0+50	170	22°-27' L	30°-39'	2^{0}		126.0	72.6	195.6 (117)	Lath	214.6 (174)
0+73	177	30-50 L	26-32	2^{0}	Lath at pt. 36' back and 12^{0} higher	142.0	68.8	191.8 (122)	Lath	203^{8} (172)

Transit at 1+25 sighting at 50' 1+25

H.I. = 79^{7}

Sta	Stadia R.	Hor A.	Ver A.	Rod	Hor Dist.	Diff. Elev	Elev.
0+75	202	23-58' R	39°-25'	2^{0}	120.0	97.3	177.0 (111)
0+75	310	12-50 R	35°-31'	10^{0}	205.0	136.3	216.0 (177)
0+75 ? Check by plotting	145	30-10 R	31°-49'	1^{7}	104.0	63.2	142.9 (90)
1+00	209	9-08 R	35°-55'	3^{0}	137.0	96.2	175.9 (135)
1+00	240	5-32 R	33°-35'	6^{0}	166.0	104.4	184.1 (162)

Transit at 1+25 Foresight 50 left at 1+25 H.I. = 79.2

Sta	Dist.	Hor Ang.	Vert A.	Rod
1+00	155	11°-11' R	34°-22'	2 ±
0+75	112	38°-24' R	29°-37'	0 ±
1+00	111	16-26 R	29-47	0 ±
1+00	103	18-38 R	29°-06'	1 ±
1+08	86	18-17 R	26°-15'	2 ±
1+25	103	0-0	28°-24'	5 ±
1+25	110	0-0	28°-05'	0 ±
1+26	123	0-0	27°-51'	2 ±
1+50	140	12-05 L	24°-03'	8 ±
1+75	117	28-25 L	13-22	9 ±
1+85.5	115	34-10 L	9°-47'	10 ±

Transit @ 0+00 Foresight at diagonal H.I. = 122.8

77	0-0	32°-10'	1 ±
95	0-0	32°-27'	1 ±
250	0-0	42-30	3 ±

Hor Dist.	Diff Elev.	Elev.
106.0	72.5	152.2 (105)
85.0	47.6	127.3 (68)
84.0	47.2	126.9 (81)
79.0	42.5	122.2 (75)
69.0	31.7	111.4 (66)
80.0	47.5	127.2 (80)
86.0	45.2	124.9 (76)
96.0	48.3	128.0 (96)
116.0	43.4	123.1 (114)
111.0	36.0	115.7 (94)
112.0	8.6	88.3 (93)
55.0	33.3	156.1 (55)
68.0	41.5	164.3 (68)
136.0	118.7	241.5 (136)
160.0		248.0

Grade stakes for Contractor On Road.

STA	+	Π	-	Elev.	
	6.40	172.83		166.43	
0+88 58					167.0
1+00 48					167.96
			4.35	168.48	
+25 08	5.66	174.14			169.96
+50					171.96
+75 01					173.96
2+00 +19					175.96
+25					177.96
+40					179.16
2+62					
+84					
3+06					

F8 0/195 10' out

F5 8/177 cut

Levels to Establish B.M. in Spillway

	+	H.	−	Elev
	3.03	174.57		
T.P.			12.46	162.11
	0.54	162.65		
T.P.			11.98	150.67
	0.04	150.71		
T.P.			12.85	137.86
	1.50	139.36		
			12.73	126.63
	0.83	127.46		
			8.09	119.37

B.M. on Plaster N End Parapet Wall Straightaway
171.54

Level on Road.

B.M.	9.07	212.15		203.08	
6+00			4.25	207.90	207.96
5+75			4.85	207.3	203.96
5+50			4.85	207.3	203.96
5+25			5.25	206.9	201.96
5+00			7.15	205.0	199.96
4+75			8.05	204.1	197.96
B.M. on Last Pilaster on Straight away Parapet Wall.					171.54

Cut.	
Sta. 6+55	2.0
	0.2
	1.3
	3.3
	5.0
	5.0
	6.1

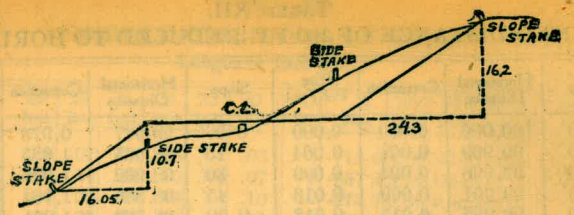
Record of B.M. & T.P.
on Road & Spillway

	+	HI	−	Fld Elev
B.M.	9.23	167.85		158.62
	11.42	175.35	3.92	163.93
	10.87	185.06	1.16	174.19
	12.46	191.52	6.00	179.06
	11.02	201.85	0.69	190.83
	10.68	211.23	1.30	200.55
	65.68		7.47	203.79
			7.47 / 58.21	

Old B.M.'s + T.P. Established by Parker
Stationing refers to base line "B"

T.P.	about 2+41.5	Elev.	119.74	O.K. Check by
	Baseline 2+41.5 &	about	117.6	
T.P.	about 2+69	Elev	107.84	Check by
	Baseline 2+69 &		110.2	
T.P.	Sta 2+89	Elev.	97.02	OK
T.P.	Sta 3+49	"	84.78	OK
T.P.	15' left 3+90	"	72.45	OK
T.P.	Sta 4+40		60.19	
B.M.	Top of solid rock pt. 30' right at 5+08		47.92	
T.P.	about 4+60		48.40	
T.P.	20 ft left 4+80		36.16	OK
T.P.	6 ft left 5+15		13.66	OK
T.P.	10 ft right 5+25		5.15	
Elev 6+55.2 Sta of Road.			203.08	
Elev R.P. beyond 6+55			196.50	

IMPROVED TABLES
AND
INFORMATION



DISTANCES FROM SIDE STAKES FOR CROSS-SECTIONING.

SLOPE 1½ TO 1. ROADWAY OF ANY WIDTH.

	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	
0	0 00	0 15	0.30	0.45	0.60	0.75	0.90	1.05	1.20	1.35	0
1	1.50	1 65	1 80	1.95	2.10	2.25	2.40	2.55	2.70	2.85	1
2	3.00	3.15	3.30	3 45	3.60	3 75	3.90	4.05	4.20	4 35	2
3	4.50	4 65	4.80	4.95	5 10	5 25	5 40	5.55	5.70	5.85	3
4	6.00	6 15	6.30	6.45	6.60	6 75	6.90	7.05	7.20	7.35	4
5	7 50	7.65	7.80	7.95	8.10	8.25	8.40	8.55	8.70	8.85	5
6	9 00	9 15	9.30	9.45	9.60	9.75	9.90	10.05	10.20	10.35	6
7	10.50	10 65	10.80	10.95	11.10	11.25	11.40	11.55	11 70	11.85	7
8	12.00	12 15	12.30	12.45	12.60	12.75	12.90	13.05	13.20	13.35	8
9	13 50	13 65	13 80	13 95	14.10	14.25	14.40	14 55	14.70	14.85	9
10	15.00	15 15	15 30	15 45	15.60	15.75	15.90	16.05	16.20	16 35	10
11	16 50	16 65	16 80	16.95	17 10	17.25	17.40	17.55	17.70	17.85	11
12	18 00	18.15	18.30	18 45	18.60	18 75	18.90	19.05	19.20	19 35	12
13	19 50	19 65	19.80	19.95	20.10	20.25	20 40	20.55	20.70	20.85	13
14	21.00	21 15	21.30	21.45	21 60	21.75	21.90	22 05	22 20	22 35	14
15	22 50	22 65	22 80	22 95	23.10	23.25	23.40	23.55	23.70	23.85	15
16	24.00	24 15	24 30	24 45	24.60	24.75	24 90	25 05	25.20	25.35	16
17	25.50	25 65	25.80	25 95	26.10	26 25	26 40	26.55	26.70	26.85	17
18	27.00	27 15	27.30	27 45	27.60	27.75	27.90	28.05	28 20	28.35	18
19	28 50	28 65	28 80	28.95	29.10	29.25	29 40	29.55	29.70	29.85	19
20	30 00	30 15	30.30	30.45	30.60	30.75	30.90	31.05	31.20	31.35	20
21	31 50	31 65	31.80	31.95	32 10	32 25	32.40	32.55	32 70	32 85	21
22	33 00	33 15	33 30	33 45	33.60	33 75	33.90	34.05	34.20	34.35	22
23	34 50	34 65	34.80	34.95	35.10	35 25	35 40	35.55	35.70	35 85	23
24	36 00	36 15	36.30	36 45	36.60	36.75	36.90	37.05	37 20	37.35	24
25	37.50	37.65	37 80	37.95	38.10	38.25	38.40	38.55	38.70	38.85	25
26	39 00	39 15	39 30	39 45	39 60	39.75	39.90	40.05	40.20	40.35	26
27	40 50	40 65	40 80	40.95	41.10	41.25	41 40	41.55	41.70	41.85	27
28	42 00	42 15	42.30	42.45	42.60	42 75	42.90	43.05	43.20	43.35	28
29	43 50	43 65	43.80	43 95	44.10	44 25	44 40	44.55	44.70	44 85	29
30	45 00	45 15	45.30	45 45	45.60	45.75	45 90	46.05	46 20	46.35	30
31	46.50	46.65	46.80	46 95	47.10	47.25	47.40	47.55	47.70	47.85	31
32	48 00	48.15	48.30	48 45	48.60	48 75	48.90	49.05	49 20	49.35	32
33	49.50	49 65	49.80	49.95	50.10	50.25	50.40	50.55	50 70	50.85	33
34	51 00	51.15	51.30	51.45	51.60	51.75	51 90	52.05	52.20	52.35	34
35	52 50	52.65	52.80	52.95	53.10	53.25	53.40	53.55	53.70	53.85	35
36	54 00	54 15	54.30	54 45	54.60	54.75	54.90	55.05	55.20	55.35	36
37	55 50	55 65	55.80	55 95	56.10	56.25	56.40	56.55	56.70	56.85	37
38	57 00	57.15	57 30	57 45	57.60	57 75	57.90	58.05	58.20	58 35	38
39	58 50	58.65	58 80	58 95	59.10	59 25	59.40	59 55	59.70	59.85	39
40	60 00	60 15	60 30	60 45	60 60	60.75	60 90	61.05	61 20	61.35	40
41	61.50	61 65	61 80	61 95	62 10	62 25	62.40	62 55	62 70	62.85	41
42	63 00	63.15	63 30	63 45	63 60	63 75	63 90	64 05	64 20	64.35	42
43	64.50	64 65	64 80	64.95	65.10	65 25	65 40	65.55	65.70	65.85	43
44	66 00	66 15	66 30	66.45	66.60	66 75	66.90	67.05	67.20	67.35	44
45	67 50	67 65	67 80	67 95	68.10	68.25	68.40	68.55	68.70	68.85	45
46	69 00	69 15	69 30	69.45	69.60	69 75	69.90	70.05	70.20	70.35	46
47	70 50	70 65	70 80	70 95	71.10	71.25	71 40	71.55	71.70	71.85	47
48	72.00	72 15	72.30	72.45	72.60	72.75	72.90	73 05	73.20	73 35	48
49	73 50	73 65	73.80	73.95	74.10	74.25	74.40	74.55	74.70	74.85	49
50	75.00	75.15	75.30	75.45	75.60	75 75	75.90	76.05	76.20	76.35	50

Computed by L. Leland Locke.

7.65 Rod 7.32
7.00 V.A. = 7.58 to 0+73
.65

51° @ 16-30' Direct 0+50
46° @ 16-40 " 0+25
" = 0+00
53.84 @ 1°-30' 2' on Rod
Transit at 0+28

0+73 V.A 21-10 13 on Rod

0+50 20-46 " "
0+25 H.I. = 44.
0+00 13-50 0 "

172.57
12.22
160.35

16581
169.
1.81

+ π — 100

13.2. 0.58 EL. 99.42
112.62 T.P. 7.48
2.48 110.14
9.06 119.20
5.01

11419 = 128.75 T.P.
6.5
120.1

114.6
6.5
121.1

15702
6221.46
16324
16400
20
-16400
16324
76.748
08
5960

14443
10540
249.83

167.77
.385
171.62
16400
7.62

171.62
1079
16083
510
16593
645
15948
633
16581
879
15702

N 16-E

4+00 25°-20'

203.4
13.2
216.6
5
1216.1
7.3
223.4

10÷2=5

a/b = Tan

12)100

636 = El.

89-60
26-34
63-26
90-00
26-34

c 9.0

16593
164
193

5 c/ft
3
15

79.5
16
95.5

.3201
50
16.005

6'6½" x 44"

2449 ft
.625
24)150
144
60

21148
346
21494

785 x 44

3+54)25,920
24 178
17420

12)7.5

211.48
5.75
217.23 = H.I.
12.03
205.20 = EL.
2.49
207.69 = H.I.
4.61
203.08 Elev. 6+55

20769
11.19
196.50 = Elev RP.

3+54)17280
17270

1728
15
17280
8640
25920

19493
455
19948

211.48
2.36
213.84 = H.I.
12.31
201.53 = H.I.
6.60
194.93 Elev Radius PT.

171.60
8.00
163.60

7.8
6.0
6.8
3.5
3.2

116.9
89.7
552
92
92
10.672

10.7
5.6
16.3
172.2
188.5

171.00
1.57
172.57

116 ft 5.6 on Rod V.A. 5°-39' to stake 172.2
8.0
180.2
9
179.3
9.7
189.0
3.1
185.9

9.7
7
16.7

298.0
4.8
302.8 = H.I.

4.8 = H.I.

.89

230' 9.1 on Rod V.A. 33-36
to Elev 185.9

160'
70
90

159.5
70
89.5

191.40
18370
185.10
5.5
166.6

185.9
9.1
195.0 = E.I.
106.0
301.0
4.8
296.2

15936
49684
67552

5700 Elev 200.0 209.7

40
8
320

166.20

12.7

3.2"

37
8
296

191.40
960
201
10.7
190.3

3.14
2
6.28

6"

9.00
3.00
12.00

171.08
1.52
172.60
164
8.60

163.91
7.69
171.60
164
7.60

172.60
12.76
159.84
4.18
164.02
164
02

164.02
4.28
159.74
4.60
164.37
0.46
163.91