19

Construction Notes

FIELD BOOK

361 S

W119

TABLES FOR EXCAVATIONS AND EMBANKMENTS.

DISTANCES FROM CENTER OF ROADWAY FOR CROSS-SECTIONING.
ROADWAY 18 FEET WIDE. SIDE SLOPES 1 TO 1.
FOR SINGLE TRACK EXCAVATION.

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

Calculated by Julien A. Hall, M. Am. Soc. C. E.

For Keith's Railroad Curve Tabels see end of book.

171887

Index

D.S.F.O.S.	Radius	285.11	El. 442.			15
Divide	wall	Left. Abut.				15-16
U.S.F.O.S.	Radius	323	Block 15-16.			16.
D.S.F.O.S.	Radius	299 63	El 462.	Bl. 15-16.		17.
DSFGS.	Radius	300 48	El. 463	BK 9		18
DSFGS.	Radius	288 01	El. 441	BK 18		18
USFOS	Radius	288 01	El. 446	BK 18		19
DSFGS.	Radius	290 91	El. 446	BK 18		19
DSFGS.	Radius	294.09	El. 451	BK 1		20
USFGS	Radius	308 62	El 486	BK 8		20
DIVIDE WALL Lt Abutt				BK 20		21
DSFOS	Lt Abut.	Radius	291 64	El. 451	BK 15	22
USFOS	Radius	323		BK 15+16		22
DSFOS.	Radius	299 63	El. 462	BK 18		23
USFGS	Radius	323		BK 9		23
DSFGS	Radius	303 08	El. 469	BK 9		23
USFGS.	Radius	323	El. 475	BK 8		24
DSFGS.	Radius	305 35	El. 475	BK 8		24
USFGS.	Lt Abut.	Radius 323	El. 452	BK 9		24
DSFGS	Lt Abut	Radius 294 69	El 452	BK 9		24
DSFOS	Lt Abut.	Radius 296°	El. 457	BK 1		25
USFOS	Lt Abut	Radius 323	BK 20			26
DSFOS	Lt Abut	Radius 296	El 457	BK 20		26
USFOS	Lt Abut	Radius				
DSFGS	Lt Abut.	Radius 279 49	El 457°	BK 21		27
USFGS	Radius					
DSFGS.	Radius	306.97	El. 480°	BK 9		28-29

Expansion Joint at 88 56					29
DSFGS	Radius 301 83	El 466	BK 9		29
USFGS	Radius 323		BK 11		30
DSFGS. Lt Abut.	Radius 297 94	El 457 85	BK 11		30
Reset P.T. 5+45 96	325' Radius from R.P.				30
USFGS. Grade DSFGS	Radius 308 62	El 486	BK 8-9-10		31
Intersection of Divide wall + expansion Joint					
D.S.F.O.S.	Radius 306 36	El 463	BK 2		33
D.S.F.G.S. Lt Abut	Radius 300 48	El 463°	BK 2		33
Sage in cable					34
USFGS	Radius 323		BK 10		34
DSFGS	Radius 304 63	El. 493°	BK 10		35
Contraction Joints 5+21 87	– 5+49°		BK 21		35
Expansion Joint 0+88 56			BK 3		36
USFGS.	Radius 323		BK 4		37
D.S.F.O.S.	Radius 296°	El 457	BK 10		38
D.S.F.O.S.	Radius 296°	El 457	BK 12		38
DSFGS	Radius 304 63	El. 473°	BK		39
Bottom of Inspection Gallery	1+16 64				40
DSFGS	Radius 306 97	El 480	BK 3		40
DSFGS	Radius 310°	El 492°	BK 10		41
DSFGS	Radius 300 36	El 463°	BK 11		42
DSFGS			BK 4		42

5/3/19

Block #10

Upstream Face Overflow Section

Set up 4+42 41 Sight 3+72 41 deflect
6°-12.5' Rt for Tangent dist = 70'

T.P. #2 Block #~~10~~ 11	4.87	55.14	50.27
0-19-15 Rt.		.575	49.39
T.P. on Board		12.38	42.76

10'	S	4+32 41	0°-53.21'
20'	S	4+22 41	1°-46.4'
30'	S	4+12 41	2°-39.6'
40'	S	4+02 41	3°-32.9'
50'	S	3+92 41	4°-26.1'
55.8'	S	3+36 61	4°-55.88'

INDEX

Continued Page 59

5/13/19

Downstream Face Overflow Section 1

Set on 4+32 41 Sight 3+36 61
deflect 4°-2.67' for Tangent Rt.
deflect 90° for Center of Circle
Radius 287.29 Ele. 445 00

T.P. on Board	0.21	42.97	42.76
Top D.S. Forms		+1.8	44.77

323 00 - 287.29 = 35.71 dist to downstream Face. - Set Points by Measurements from 323 Radius

10' on 323 R = 8.89 on 287.29 Radius.

Grades Radius 287.29 El. 445 00

42.97

00	4.34' = 4'-4"	S.	2.31	40.66
8.89	6.48' = 6'-4 3/4"	R.	4.45	38.52
17.78	6.71' = 6'-8 1/2"	Rt.	4.68	38.29
Forms.	2.00 = 2'-0"		0.03 + 0.03	43.00

5/3/19 Upstream Face Gravity Section

Set up on 2+19 63 Sight R.P.
Deflect 90° for Tangent.

5' 2+24 63 = 0°-26.6'
15' 2+34 63 = 1°-19.8'
25' 2+44 63 = 2°-13.0'

5/3/19 Check on

Downstream Face Gravity Section 2

See Page 21 Book 17

Radius 300.48 - Ele. 463.00

T.P. Rock	4.18	63.25		59.07
-9.3 P.O.R.			5.24	58.01
-18.6 Nail			5.60	57.65
00 P.O.R.			4.44	58.81
T.P. of Rock			2.20	61.05

5/4/19 B-2-M. 323' R.

Upstream Face Gravity Section

Set up on 2+19 63 Sight R.P. deflect 90° for tangent

5'	2+24 63	0°- 26.6'
15'	2+34 63	1°- 19.81'
25'	2+44 63	2°- 13'

5/4/19

Downstream Face Gravity Section 3

Radius 308.36 El. 485.00

Set on Radial line through 1+89 63 on 323 R. deflect 90° from Center of Circle

1 = 0° - 55.7'
5 = 0° 27.87'
10 = 0° 55.74'
20 = 1° - 51.48'
30' = 2° - 47.22'
40' = 3° - 42.96'
455' = 4° - 13.61'

See Page 56 Book 17

Grades Downstream Face Block #3

Radius 308.36 - El 485.00

C-3	10.63	82.26		71.63
45.5'			Grade	20.4 80.22
40.0'	7.10 = 7'-1 1/4"		Rod	43.6 77.90
30.0'	7.01 = 7' 0 1/4"		11	42.7 77.99
19.0'	7.48 = 7'-5 1/2"		x	47.4 77.52
			2.74	

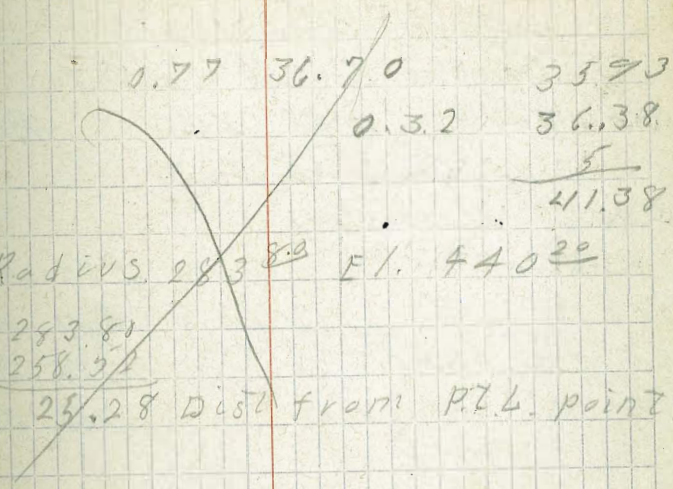
5/4/19

Upstream Face Gravity Section

Set up on 1+79.63 Sight flag on

00-30 - dist. = 209.63' deflect 18°-35' for Tang

	10'	= 0° -	53.21'
	20'	1° -	46.4'
Note Skip on line	30'	2° -	39.6'
	30.5'	2° -	43.2'
old Hail	37.2	3° -	17.8' checks



Radius 283.81 El. 440.20

283.81
258.34

25.28 Dist from P.T.4. point

B-P-M.

5/5/19

Upstream Face Overflow
Left Abutment. 323'R

Grades for El. 440.20

0-19 10.58 46.51 43593

Grade Rod = -6.31

5+42 60 Pt 323'R.

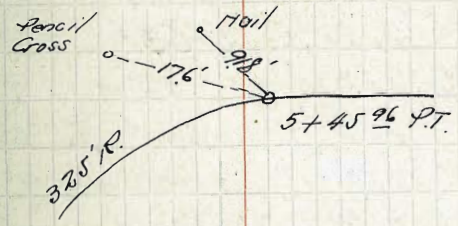
5+32 60	—		353	42.98
5+22 60	—	Dist. out to Face from 323'	467	41.84
5+12 60	1.53 =	0.15	784	38.67
5+02 60	1.33	0.13	764	38.87

5/5/19 Temporary R.Ps. P.T 325'R 5

Station 5+45 96

Nail in edge of old Core Wall 9.18'

Pencil Cross on Rock in old " 17.6'



5/6/19

Deflection Angles for 323R

1 Ft	= 0° - 5.3'	30	= 2° - 39.6'	280	= 24° - 50.0'
2	= 0° - 10.6'	40	= 3° - 32.9'	290	= 25° - 43.2'
3	= 0° - 16.0'	50	= 4° - 26.1'	300	= 26° - 36.47'
4	= 0° - 21.3'	60	= 5° - 19.3'	310	= 27° - 29.7'
5	= 0° - 26.6'	70	= 6° - 12.5'	320	= 28° - 22.9'
6	= 0° - 31.9'	80	= 7° - 5.7'	330	= 29° - 16.1'
7	= 0° - 37.2'	90	= 7° - 58.9'	340	= 30° - 09.3'
8	= 0° - 42.5'	100	= 8° - 52.2'	350	= 31° - 02.55'
9	= 0° - 47.9'	110	= 9° - 45.4'	360	= 31° - 55.76'
10	= 0° - 53.21'	120	= 10° - 38.6'	370	= 32° - 48.97'
11	= 0° - 58.51'	130	= 11° - 31.8'	380	= 33° - 42.18'
12	= 1° - 03.81'	140	= 12° - 25.1'	390	= 34° - 35.39'
13	= 1° - 09.21'	150	= 13° - 18.3'	400	= 35° - 28.63'
14	= 1° - 14.51'	160	= 14° - 11.5'		
15	= 1° - 19.81'	170	= 15° - 4.7'		
16	= 1° - 25.11'	180	= 15° - 57.9'		
17	= 1° - 30.41'	190	= 16° - 51.1'		
18	= 1° - 35.71'	200	= 17° - 44.3'		
19	= 1° - 41.11'	210	= 18° - 37.5'		
20	= 1° = 46.4'	220	= 19° - 30.7'		
21	= 1° - 51.7'	230	= 20° - 23.9'		
22	= 1° - 57.0'	240	= 21° - 17.1'		
23	= 2° - 02.4'	250	= 22° - 10.4'		
24	= 2° - 07.7'	260	= 23° - 03.6'		
25	= 2° - 13.0'	270	= 23° - 56.8'		

0.1	= 0° -	0.53'
0.2	= 0° -	1.06'
0.3	= 0° -	1.60'
0.4	= 0° -	2.13'
0.5	= 0° -	2.66'
0.6	= 0° -	3.18'
0.7	= 0° -	3.72'
0.8	= 0° -	4.26'
0.9	= 0° -	4.79'

5/6/19 B-P. 323' R.

Upstream Face Overflow Section

Set up on 3+72 41 Sight Center of Circle deflect 90° for Tangent

Block # 10

14' H Edge Concrete	3+86 41	1° - 14.51'
15' H	3+87 41	1° - 19.81'
25' H	3+97 41	2° - 13.0'
35' H	4+07 41	3° - 06.2'
40' H	4+12 41	3° - 32.9'
50' H	4+22 41	4° - 26.1'
60' H	4+32 41	5° - 19.3'
70' H	4+42 41	6° - 12.3'
77 55 Hair in Wall	4+49 96	6° - 52.6'

5/6/19 Block # 10 B-P. 7

Downstream Face Overflow Section

Set up on 4+12 41 323' R.

Sight 3+72 41 deflect 3° - 32.9 for Tangent - deflect 90° for Center.

P #2 Block #11	0.22	50.49	50.27
Top D. Stream Forms	0.56	49.93	

Radius 290.92 El = 450 00

323 00 - 290.92 = 32.08' dist to downstream Face

10' Arc on 323' R. = 9 00 on 290.92 R.

Set points on downstream Face by measurements from 323' R.

450.49

9'5	00		0.49	450 00
00	7.68 = 7'-8 1/4"	S.R.	8.17	442 32
9' H	6.78 = 6'-9 1/4"	=	7.27	443 22
18' H	6.26 = 6'-3"	0.49	6.75	443 74

5/6/19 8-P. 323'R.

Upstream Face Overflow Section

Set up on $3+72^{41}$ Sight

Center of Circle deflect 90° for Tangent

30's	$3+42^{41}$	= 2°	39.6'
40's	$3+32^{41}$	= 3°	32.9'
50's	$3+22^{41}$	= 4°	26.1'
62^{65}'s	$3+09^{76}$	= 5°	33.34

5/6/19 Check on Sta $3+72^{41}$ 8

Upstream Face Overflow Section

Set Pt of 323'R = Sta $5+42^{60}$

from P.Ps on Radial line through P.T.

Set Spike at Sta $5+32^{60}$ on 323R.

Balance in between $5+32^{60}$ and

Center of Circle on Radial line. observe

foresight. - Set on $5+32^{60}$ deflect

90° from foresight for tangent

deflect 14° 12'56" - dist 160^{19} for

check on $3+72^{41}$

5/7/19

up stream face gravity section.

Block 6

Set up on 219 63 sight RFP

7' sta.	2+26 63	0°-37.2	
10' ..	2+29 63	0°-53.21	
20' ..	2+39 63	1° 46.4	
31.8 ..	2+51 43	2° 49.5	forms.

5/7/19 9

Downstream face gravity section

Block 6

Radius 297.49 Ele. 457.00

323 - 297.49 = 25.51

G3	4.95	60.02	55.07
T.P. Block 7		3.49	56.53
Top forms D.S.F.		3.79	56.23

10' on 323 = 9.21 on 297.49

60.02

N.con. 1.67 = 1'-8"	G.R. = -.342	4.69	55.33
center 6.33 = 6'-4"		9.35	50.67
N.side 6.24 = 6'-3"		9.26	50.76

5/7/19

Check on Deflections.

Set up on 0.0 323 R

Sight R.F.P. on hill

Set 1+89 63 16° 49°

Set up on 1+89 63 take back sight

Set 372 41 16° 12.64'

Set P.T. on N. side 5+42 60

31° 18.35'

Set	362 41	15°	19 43'
	352 41	14°	26.22'
	299 63	9°	45.4' checks
	279 63	7°	58.9
	269 63	7°	5.7'
61 80	251 43	5°	28.85
30	219 63	2°	39.6
10	1+79 63	0°	53.21
20	1+69 63	1°	46.4
30	1+59 63	2°	39.6
40.5	1+50 63	3	35.56
47.23	1+42 40	4°	11.21
50	1+39 63	4°	26.1
60	1+29 63	5°	19.3
70	1+19 63	6°	12.5

5/7/19 10

Check on Deflections.

Set up on 219 63 sight

189 63 2° 39 6

10'	2+09 63	0°	53 21
20'	1+99 63	1°	46.4

Set up on 0.0 sight R.F.P. on Hill

Sight 362 41 32 08 46' checks.

Set up on 362 41 sight 0.0

32° 08.46'

10	3+72 41	0°	53.21'
20	3+82 41	1°	46.4'
31.9	3+30 51	2°	49.7' forms
40	3+22 41	3°	32.9
50	3+02 41	4°	26.1

5/8/19

up stream face overflow section

Block 10.

Set up on 3+82 41 sight a.o 25° 02.8'

Checked on 3+42 41 3° 32.9'

6	3+88 41	0° 31.9'
10	3+92 41	0° 53.21'
20	4+02 41	1° 46.4'
30	4+12 41	2° 39.6'
40	4+22 41	3° 32.9'
50	4+32 41	4° 26.1'
60	4+42 41	5° 19.3'
67 55	4+49.96	5° 59.41'
70	4+52 41	6° 12.5'

tP #11 Block	10.15	60.42	50.27
forms. D.S.F.		10.54	49.88

5/8/19 11

up stream face overflow section

Block 11.

Set up on 4+42 41 sight 382 41

5° 19.3' checked on 342 41

8° 52.2'

20	462 41	1° 46.4'
30	472 41	2° 39.6'
40	482 41	3° 32.9'

Block 12

Set up on 472 41

sight 189 63 25° 04.91'

check 388 41 7 27

20	492 41	1° 46.4'
22	494 41	1° 57.0'
40		
50	522 41	4° 26.1'
60	532 41	5° 19.3'
70	542 41	6° 12.3' checked.

5/8/19

Downstream face overflow section

Radius 296.00 El. 457.00

Block 8

T.P. Block 7.	0.57	57.10		56.53
3rd from 0.0			5.51	51.59
4th from 0.0			5.48	51.62
			5.63	51.47

See Page 28 Book 17.

019-15.N.	10.90	60.29		49.39
forms			3.28	57.01
Nail in conc.			8.81	51.48
T.P. Nail on forms.			8.04	52.25
	4.20	56.45		
Point on D.S.F.			12.45	44.0
Point on D.S.F. forms.			4.65	51.80
	3.45	60.46		57.01
			8.97	51.49

5/9/19 Block 10.

upstream face overflow section

Block 10.

Set up on 382.41 sight 0.0

33° 54' 58" check 3+42.41 3° 32.9'

10	392.41	0° 52.21'
20	4+02.41	1° 46.4'
30	4+12.41	2° 39.6'
40	4+22.41	3° 32.9'
50	4+32.41	4° 26.1'
59	4+41.41	5° 14.0' forms.

5/9/19 B-P.M.

Down stream face over flow section

Block 10

Radius 296.00 El. 457.00

Set up on 4+02.41 323 R. turn towards. center.

323 − 296 = 27 Dist to D.S.F.

10′ on 323 R = 9.16 on 296 R.

G-3	5.50	60.57		55.07
Nail on forms Block 8.			3.55	57.02
T.P. Block 11.			10.26	50.31
0 19-15N			11.16	49.41
0 19′-15N.	11.16	60.55		49.39
T.P. # 2.			9.31	51.24

0.0	00 = 00	G.R.-3.55	3.55	57.00
+ 9.16	7.14 = 7′ 1¾″		10.69	49.86
+ 18.32	6.23 = 6′ 2¾″		9.78	50.77
+ 27.48	7.67 = 7′ 8¼″		11.23	49.32
+ 33.98	8.04 = 8′ ½″		11.59	48.96

5/9/19 B-P-M 13

Down stream face gravity section

Block 5

Radius 303.08 El. 469.00

Set up on 1+89.63 sight 0.0

323 R. at. 16° 49′

Set 33.45′ 2+23.08 2° 58′

T.P. Block 4	1.82	81.99	80.17
top D.S. Forms		12.76	69.23

323 − 303.08 = 19.92

G.R. 12.99

Set point at grade.

6/6/19 Radius 308.36 El. 485.00

Block 7 1+69.80 1+96.88

210 482.27 80.17

Nail opp	1+89.63	7.70 = 7′ 8½″	Sp 497	77.33	
" "	1+79.63	7.48 = 7′ 5¾″	" 475	77.53	

323 − 308.36 = 14.64

B-M.

5/10/19

Up & Downstream face Block #8.

Set up. Sta 1+89 63 sight 0+00 = 16° 49.2

E Con Set 1+96 53 0° - 57.2' dist 69

Set 2+09 63 = 1° 46.4' 20

Forms = 2+22 96 = 2° 57.4' 33.33

TP Block A = Block	1.98	482.15	480.17
Top DS Forms.		5.00	477.15
Radius 306.02		El.	477 15

323 00
306 02
16 98

GR. -5 15

N End Forms. Grade		515	477 00
center of Block.	5.62 = 5' 7½	10.77	71.38

P.

5/11/19

Block. 8. 14

Upstream face & Downstream face.

Set upon 1+89 63 sight 0+00

16° 49.2

Set 2+09 63 = 1° 46.4

forms = 2+22 90 2° 57'

T.P. Block A.	1.87	482.04	480.17

Radius 3 207.55 Elev 482 00

323 00

15.45

GR -.04

E Conc.	4.74 = 4' 9"	4.78	77.26
center of Block.	7.44 = 7' 5 1/4"	7.48	74.56
N end forms.	0.59 = 0' 7"	0.63	81.41

5/12/19

Down stream face over flow section
Left Abutment.

0-19	0.77	36.70		35.93
			032	36.38
			5	41.38

Radius 285.11 El. 442.00

285.11
258.52
26.59 Dist. from Pt. L. Point

1' = 6.03
5' = 30.14
10' = 1° 0.29'
20 = 2° 0.58'
30 = 3° 0.87
4 = 4° 1.16
42.57 = 4° 16.66

0-19		8.47	44.40		35.93
P.t.	2.35 = 2' 4 1/4"			4.75	39.65
-10	9.31 = 9' 3 3/4		G.r. - 2.40	11.71	32.69
-20	9.46 = 9' 5 1/2"			11.86	32.54
-30	9.73 = 9' 8 3/4"			12.13	32.27
-42.57	Grade.			2.40	42.00

5/12/19 15

Set Points for divide wall.
Dist from Pt. L. R. 258.52.

		Elev.
#1	12.60'	432.98
#2	20.30'	438.43
#3	35.29'	444.62
#4	45.94'	448.14
#5	55.91'	447.58

0-19	00	49.39		49.39
			10.96	38.43
			4.77	44.62
			1.25	48.14
			1.81	47.58

0-19	11.04	45.97		35.93
			12.99	32.98

5/12/19 El. top of.

Divide wall Left. Abutment.

R.P. on Radial line = 258.52

279.92	21.40			445.20	
271.12	12.60	1.22 =	1.2 3/4	434.20	432.98
278.82	20.30				438.43
293.81	35.29	22.28 =	22' 3 1/2"	466.90	444.62
304.43	45.94				448.40
314.43	55.91				447.58
285.11	26.59	13.66	13'-8"	453.31	439.65

310 + 51.48 (30.08) Top Wall 492.2

Slope ↑ 1' Rise to 0.64 dist.

279.92 + 21.40 (36.0) Top Wall 445.2

Slope 1' Rise on 0.80 ×

24392 - 1460 Top Wall 440.2 ∨

5/12/19 16

up stream face over flow section

Block 15-16

set up on 452 41 sight

542 41 = 7° 58.9'

10'	462 41	58 21	
TP ± 2 Block 18	4.00	55.24	51.24
conc. D.S.F.		5.28	49.98

10	442 41	53.21'
20	432 41	1° 46.4'
30	422 41	2° 39.6'
40	412 41	3° 32.9'
50	402 41	4° 26.1'
60	392 41	5° 19.3
70	382 41	6° 12.5' check

5/12/19.

Down stream face. over flow section

Block 15-16.

Radius 299 63 E 1462 00

23 37 to D.S.F.

10'	S		57 37
18'	S	1°	43.27
27.75	S	2°	39.20
30	S	2°	52.11
40	S	3°	49.48
50	S	4°	46.86
60	S	5°	44.22
10	N		57 37
20	forms in way		
30	N	2°	52.11
35.25	Nail E.cone	3°	20.13

P.T. # 2. Block 18		9.82	61.06			51.24
35.25	N.	5.86 = 5'-10 1/4"			4.92	56.14
30	N	5.81 = 5'-9 3/4"			4.87	56.19
20	N	5.78 = 5'-9 1/2"			4.84	56.22
10	N	5.67 = 5'-8"			4.73	56.33
0.0		5.94 = 5'-11 1/4"	G.R. +.94		5.00	56.06
10	S	5.79 = 5'-9 1/2"			4.85	56.21
20	S	5.09 = 5'-1"			4.15	56.91
30	S	4.99 = 5'-0"			4.05	57.01
40	S	4.96 = 4'-11 1/2"			4.02	57.04
50	S	5.34 = 5'-4"			4.40	56.66
60	S	5.08 = 5'-1"			4.14	56.92

5/13/19

USFGS

Block 9

set upon 00 sight R.F.P.

175'

179.63	489 63	16° 49 2	obsock
10	1+99 63	17° 42.41	
20	2+09 63	18° 35.62	
30	2+19 63	19° 28.83	

set upon 2+19 63 set 00

19° 28 30"

5'	2+24 63	0°	26.6
20	2+39 63	1°	46.4
31.5		2°	47.5

5/3/19

DSFGS

Block 9. ✓

Radius 300 4X Elev 463 ✓

G.3.	5.46	60.53 ✓		55.07
		62.53		
	32300			
	30048 ✓			
	22.52 DESt to PST			
		60.53 ✓		
N. Forms	6.02 = 6-¼" ✓		3.55	5798
Middle	5.75 = 5-9" ✓	GP	3.28	5725
S. Side	6.29 = 6-3½" ✓	+20 ✓	3.82	5671

5/13/19

DSFGS

Left About

Radius 288.01 Elev 446

IP 3 Block 2	18	0.92	52.16	51.24
Top D.S. forms.			6.90	45.26

304.46 Point E4 on PT Radius

288.01

16.45

258.52

45.94

304.46

323

288.01

34.99

5.40 46.56

10 S	=		59.68
20 S	=	1°	59.36
30 S	=	2°	59.04
40 S	=	3°	58.72
50 S	=	4°	58.40
60 S	=	5°	58.08
70 S	=	6°	57.76

32300

29491

32.09

5/3/19

USFGS.

N of RY About.

Set upon PT 323 sight
R.F.P.

10'	552 60		53 21
20	562 60	1°	46.4
30	572 60	2°	39.6

Set up on 572 60
sight 452 60 10° 39.6'
turn 90°

5/3/19 ~~DSFGS.~~ 19

Grade for R. 288.01 El 446.

0.19		13.27	49.20		35.93
0.S.D.N	5.18' = 5'-2"			8.38	40.82
GSDN	5.20' = 5'-2½"			8.40	40.80
+30	5.83' = 5'-10"		GR-3.20	9.03	40.17
+40	6.00' = 6'-0"			9.20	40.00
+50	3.77' = 3'-9¼"			6.97	42.23
+60	6.00' = 6'-00"			9.20	40.00
+70	Grade checks on Wall			3.20	446.00

DSFGS.

Gravity Section curve.

Radius 290.91 El 446.

10'	=	59 09'
15'	=	1° 28' 63'
3'	=	0° 29.54'

Grades.

0.19		10.54	46.47		35.93
+5	= 3.66 = 3'8"			4.33	42.14
+10	= -.07 = - 1"		GR =	0.40	46.07
+15			-4.33		
0.9	= 5.20 = 5'-2½"			5.07	40.80

4.57 41.90

5/13/19.

DSFGS.

Radius 294.09 El. 451.00

323.00
294.09
28.91 Dist to DSF

5' = 29.16'
10 = 58.33'
15 = 1° 27.49'

0-19-15 N		1.44	30.83		49.37
00	6.51 = 6'6"			6.34	44.49
+5	= 7.48 = 7'5¾"			7.31	43.52
+10	= 5.66 = 5'8"			5.49	45.34
+15	= 2.72 = 2'8¾"			2.55	48.28

USFGS.

Block 8.

Set upon 199.03 17°42.41'

4.81 84.98' 8.17

Top forms BBF. 3.72 81.26'
5'
86.26

Radius 308.62' El 486.00

323.00
308.62
14.38'

10' on 323 = 9.55 on 308.62

HI
84.98

00	= 5.15 = 5'2"			4.13	80.85
9.55 N	= 5.08 = 5'1"			4.06	80.92
19.10 N	= 5.02 = 5'¼"			4.00	80.98
forms N	= 4.62 = 4'7½"			3.60	81.38

5/14/

Divid wall Lt. Abut.

0-19		0.72	36.65	3593
top D.W. at R. 270.52			3.2	33.45
R.F.P. 258.52 Measure 12' towards face of dam set Point			33.45	
Point 12 ft from R.F.P 258.52			+3.05	439.70
Top D.W. at R 275.52				
Top D.W. at R 279.92			8.53	445.20
Point 214 from R.F.P. 258.52			Point at Brook	
0-19		5.46	41.39	3593
top D.W. at. R 285.20			1.72	39.67
Measure 26.68 from R.F.P 258.52.				

5/16/19 59.38

top of Div. wall.

453.45	R. 285.52	5.93	453.45
461.26	R 290.20	+1.88	461.26

5/14/19

USFOS.

Lt. Abut

set up on 542 41

542 50' 426.1'

15 10 19.81'

30' 3'396'

40 3 32.9'

5/14/17

DSEOS

LT Adv.

Radius 291.64 El 451

323 - 291.64 = 31.36

10' on 323 = 9.03 on 291.64

0-19-15N		2.84	32.23		4939
D.W. 8.38 = 8' 4½"			GR.	9.61	42.62
9.03 S 8.38 = 8' 4½"				9.61	42.62
18.065 5.49 = 5'-6"				6.72	47.51

5/14/17

USFOS.

set on 382 41

sight 492.41

at 9°45.4

10	53.21
20	1°46.4'
30	2° 39.6'
40	3° 32.9'
50	4° 26.1'
60	5° 19.3'
70	6° 12.5'

9/14/19

DSFOS

Setup on 40' South Sectage

17.

Radius 299.63 El 462.00

23.32 DCST to DSF

20 S = 1° 54.74'

30 S = 2° 52.11

40 S = 3° 49.48

60 S = 4° 46.83

T.P. #2	Block 18.	10.94	62.18		51.24
30 S	5.00 = 5' 0.0"			5.18	57.00
40 S	4.86 = 4' 10 1/4"			5.04	57.14
50 S	5.14 = 5' 1 3/4"			5.32	56.86

9/14/19

DSFOS

Block 9

Radius 303.08 El 469.00

G.S.	10.53	65.60	55.07

Set up on 219 Sight 0.0

19° 28.8'

5'	2+24		0° 26.5
20	2+39		1° 46.9
31.3			2 47.5'

323 - 303.08 = 19.92

HI 65.14

N. side	4.60 = 4' 7 1/4"		1.04	64.40
Middle	8.07 = 8' 1"		4.51	60.93
S side				

5/15/19.

U & DSFGS.

TP Block 8,	5.27	485.47		480.20
			18.60	
set up on 219 ca		sight 00		
19° 28 30"				
5' 2+24 ca		0 26.6		
20 2+39 ca		0° 46.4		
315		2° 47.0		
TP Block 8,	5.05	486.22		480.17
top of tires			8.28	476.94
TP			12.95	472.49
Radius 306.02		El 475 ca		
323 - 306.02 =		16.98		
TP	00	472.47		472.49
Middle 9.53 = 9' 6½"			5.00	467.47
N side 5.82 = 5'-10"			1.29	471.18
Radius 305.35		El 475 ca		
323 - 305.35 =		17.65		
		472.47		
N end 4.45 = 4' 5½"			1.92	470.55
Middle 7.98 = 7' 11¾"			5.46	467.01

5/15/19

DSFGS Left About

Radius 294.59 Elev 452.00

323 - 294.59 = 28.31

1' =	0° 5.83"			
10' =	0° 57.33			
20' =	1 08.53			
7' =	40.81			
12' =	1° 09.99			
17' =	1° 39.14			
22' =	2° 08.29			
27' =	2° 37.44			
319-15N.	10 33'	59.72'		49.39
00 on Rm	4.73 = 4' 8¾"		G.R. 12.45	47.27 x
+5	5.08 = 5'-1"		12.80	46.92
+10	5.40 = 5' 4¾"		13.12	46.60
+15	.09 = 0-1¼"		7.63	52.09
TP	6.38	53.30		46.92

5/15/19.

DS FOS.

Lt Abut

Radius 296.00 Ele. 457.00

323 - 296 = 27' to D.S.F.

T.P. Stake		6.38	53.30		46.92
00 over flow	9.45 = 9'-5½" on Dw			5.75	47.55

E.P. +3.70

5/15/19

Set stake 3.38 East of sta +10. at grade El. 446.60

Set point .05' East of sta +15. at grade El 452.09

Set stake 3.51 East of sta +5 at grade El. 446.41

Set stake 3.58 on D.W. East of sta 00 at grade. El 446.30

5/15/19.

U S F O S.

Left Abut.

Set up on 542 41 sight

492 41 4° 26.1'

10'	532 41	1° 53.2'	
20'	522 41	1° 46.4	
30'	512 41	2° 39.6	
40		3° 32.9	

5/15/19.

D.S.F.O.S.

Left Abut

Radius 296 00 Elev. 43.7 00

T.P. 45	6.41	53.33	46.92
Point on D.S.F.		3.57	49.76

7.24 = 7'3"

1' on 323 = 9.16' on 296 R.

C.P. Block 18. 3.16 54.40 51.24

Grades.

Nail South			4.64	49.76
+ 1.0	8.72 = 8'-8¾"		6.12	47.28
- 9.10	8.33 = 8'-4"	T.P.	5.73	48.67
+ 18.32	8.24 = 8'-3"	+1	5.64	48.76
27.48	Rock 7.06 = 7'-0¾"	+2.6	4.46	49.94
Nail South.	7.24 = 7'-3"		4.64	49.76
+ 4.58	8.46 = 8'-5½"		6.20	48.20

5/16/19

USF U.S.

Left. Abut

Set upon 572 41

Sight. 80' 492 41 7° 5.7'

30' 542 41 2° 39.6'

40 532 41 3° 32.9'

50 522 41 4° 26.1'

60 512 42 5° 19.3'

70 502 42 6° 12.5'

342 41 = 448 East from P on Nail

5/16/19

DST=GS.

Left Abut

Radius 297.49 Elev 457

323 − 297.49 = 25.51

5' on 323 = 4.60 on 297.49

54.40

0.0 = 8.57 = 8'-7" 5.98 48.43

+4.6 = 5.94 = 5'-11¼" 3.34 51.06

+9.2 = 8.58 = 8'-7" 5.98 48.42

+13.8 = 6.64 = 6'-7¾" 4.04 50.36

GR 1810

7/6/19

USFGS

Setup on [illegible]

Sight	Flag	19° 28.87	
6'	4 24 62	0°	26.6
15'	4 34 62	1°	19.81
25'	4 44 62	2°	13.02
31.2		2°	45.40

7/6/19

USFGS

Block 9.

Dist from 323 P 15.45

Radius 20755 El. 482 00

TP Block 373	85.32			80.17
S End 11.28 = 11' 3½			14.00	70.32
Middle 9.25 = 9' 3"		G.R. -3.32	12.37	72.75
N 11.95 = 11' 6½			14.85	70.47
Firms N 6.83 = 6' 10'			10.15	75.17

Radius 30697 El. 480

323 00

30697

16.03

85.32

N End 4.86 = 4' 10½		G.R. -3.32	10.18	75.14
Middle 8.71 = 8' 8½			14.03	71.29
S End				

5/17/19. USFGS + DSFGS

Block 9

set up on 219 63

sight 0 19° 28. 87'

10 229 63 0° 53.21'

20 239 63 1° 46.4

31.3 250 93 2° 45.93

DSFGS.

Dist to DSF - 16.03

Radius 306 97 EI 4 80 00

TP Block 7 523 85.40 80.17

N side. 00 = 5.40 4 50 00

N. middle 4.03 = 4' ½" 9.43 75.97

S. " 4.53 = 5' 6½" 9.93 75.47

S 1.03 1' ½" 4.37 81.03

5/19/19 Expansion joint at 88 38

323. R.

set up in 00 on tangent.

set Exp. 88 37 = 88 39

TP 6.90 65.97 34.07

income. 573 60.24

0

66.24

Radius 301.83' EI. 466 00

32300

30183

21.17 dist. to DSF

6 Radius.

6597

80 = 1.61 = 1' 7½" ✓ ax 1.58 64.39

11.17 + 5.72 = 5-9¾" ax + 00 5.59 60.28

21.07 - 5.59 = 5'-7" 5.52 60.41

Distances to begin Slope

00 301.25 - dist = 21.76 - 58 64.68

1107 299.18 - dist = 23.82 - 2.65 60.38

2107 299.24 - dist = 23.76 2.59 60.41

5/17/17

USFGS.

Set upon 299^{63}

Sight 269^{63} 2° 39.6'

22.3 2+77^{22} 1° 58.50'

299 ^{63}
280.77
18.86

Exp. J.
18 ^{86} 2+80^{77} 1° 40.21'

5/17/17

USFGS.

Left Abut.

Radius 297.94 El. 57.85'

tp. block 11.15 62.39 57.24

t.p. forms 4.54 57.85

Dist to DSF = 25.06

Set points from N End of Dam sta 7

sta 6+30

Reset P.T 5+45^{96} - 315 R from R.Pt
measure 20' - 30' - 40' on tang for
Stations 5+65 ^{96} - 5+75 ^{96} - 5+85 ^{96}

Set on 5+85 ^{96} PoT Turn 90° from Tang
dist of 25^{06}' for downstream
face Gravity Section El 1457.85

5/19/19

Upstream Face G. Section

2+09 63 = Set up Sight 0+00 - Left =
for long. = 18° - 35.5'

Block 8 = 1+96 85 to 2+23 97

2+19 63	10	0 - 53.2	
2+29 63	20	1 - 46.4	
2+39 63	30	2 - 39.6	
2+49 63	40	3 - 32.9	
2+50 93	41 30	3 - 39.8	Forms Nail

Block 9 =
2+23 97 to 2+51 05

2+49 63 - Set up Sight 0+00 Left =
for long = 22° - 8.44'

Block 10 = 2+51 05 to 2+78 13

2+59 63	10	0° - 53.2'	not set
2+69 63	20	1° - 46.4	set.
2+77 43	27.8	2° - 41 45'	Forms Nail

Grades Block 9 - 2+23 97 to 2+51 05

TP Rock Block 7 - 527	85.44		480.17
Top Forms D.S. = G.S.		4.25	81.19
Radius = 308 62		1=1 = 486 00	
343 00 - 308 62 = 14 38		dist to D.S. Face	
10' on 343 = 9 55 on 308 63		G. Rad = +0 56	
1.25 = Forms Not Set - 4.70 = 4'-8½"		4.14	81.30
00 Not Set		4.30	81.14
9 55 ———	4.86 = 4'-10¼"	4.25	81.19
19.10 ———	4.81 = 4'-9⅜"		

5/19/19 Grades downstream Face Gravity 31

Block #10 = 2+51 05 to 2+78 13

019-15N	11.17	60.56			449.39
T.P. Rock Block 12	4.58	63.95	1.19		59.37
T.P.			2.61		61.34
Top Stod's			+ 4.2		68.15
Radius 302.26 - E1 =					467.00
343 20 - 302.26 = 20.74 dist to D.S. Face					
10' on 343 = 9.31 on 302.26 R.					
T.P.	2.17	63.51			61.34
M. forms	5.82 = 5'10"		G.R. +0.19	2.33	61.18
Middle	7.09 = 7'-1"			3.60	59.91
S. middle	7.92 = 7'-11"			4.43	59.08

5/29/19

Intersection of Divide wall & expansion joint.

Set upon 2+89.63 sight center
Put point in at 30.74 from 323 R
set up on point on 302.74 R.
Radius 302.26 El. 467.00

8.29 =	47'		
10' =	56.87'		
10.29 =	58.38	05.78	
11.39 = inside face at			64.80

See page 28 Book 17.

D.S.F. Nail.	5.33	36.86	51.53
8.29		5.27	51.59
10.29		5.50	51.36

Grade at top of D.W. 484.11

Set point on D.W. 15' from face of dam. set another point 2' S.

5/29/19 U.S.F.G.S. 32

Left Abut.

0-29.	5.07.	61.19	56.12
topforms		3.37	57.82
			62.82

Set up on 4 52 41
Sight 4.92.41 3° 32.9'

50	4 92 41	4°26.1'
60	5 02 41	5°19.3'
Ft. 9.09	5 42 60	8°00.1'
70	5 12 41	6°12.3'
80	5 22 41	7° 5.7'
91	5 32 41	7°58.7'

Set upon PT 520.
Sight RFP on hill.
Turn 90°.

10'	5+52 60	
20'	5+62 62	

5/19/19

D.S.F.O.S.

Left About

Radius 300.36 Ele. 163.00

325 - 300.36 = 24.64

10'		57.23'
20'	1°	54.46'
30'	2°	51.69'
40'	3°	48.92'

0-20	3.21	61.33		56.12
00 3.18 = 5' 2"			3.51	57.82
+10. 5.19 = 5' 1½"			3.46	57.87
+20 5.33 = 5' 6½"			3.86	57.47
+30 6.00 = 6' 00"			4.33	57.00
+40 6.27 = 6' 3¼"			4.60	56.73

5/19/19

33

D.S.F.O.S.

Left About

Radius 300.48' Ele. 463.

325 - 300.48 = 24.52'

Turn Right Angle

3'	90° From Center
15'	91' " "
23'	91' " "

61.33

00 5.20 = 5' 2½"		3.53	57.80
+5 5.30 = 5' 3½"		3.63	57.70
+15 5.62 = 5' 7½"		3.93	57.38
+25 Sat G Rode on.	5/20/19		

5/12.

Sage on big cable.

Asum Zl.	12.66	512.00		500.00
S. End cable				512.00
	5.59	505.59		506.41
N End cable				505.59
T.T.P.			13.05	492.54
	0.35	492.89		
T.T.P.			12.66	480.23
	0.54	480.87		
T.T.P.			12.65	468.22
	0.68	468.90		
T.T.P.			12.46	456.44
	10.33	466.77		
	7.33	463.77		
Sheva on cable				463.77

5/20/19.

USFGS

Block 10 = 27 51.25 E 27 28.12

687 upon 27 49.63

Sight flag 22° 8.44

1.54 set nail

10 27 57.63 53.21'

20 27 69.63 1° 46.4'

26.07 2° 18.67'

8/1/19. DSF 65.

Block 10.

Radius. 304.63 E1 493

T.P. Block 12.	10.10	69.41		59.31
top forms.			1.38	68.03
				73.07
323 - 304 62	= 18 32			
T.P.			3.91	65.56
		69.47		
N forms.	5.74 = 5'9"		2.21	67.26
Middle	8.76 = 8'9"	6.47+3.53	5.23	64.24
S. Middle	8.58 = 8'7"		5.05	64.42

8/2/19.

Contract Joints.

BM 2

Set upon	502 41		
Sight.	4 32 41		239.61
19.26.	521 87		1° 42.47'
Set upon	502 41	Sight	
pt. on hill.			
Exp. Joint at	5.40 00		
D.S.F. see page 33. Book 12			
0-20	12.67	68.79	37.12
			5.44 63.35

5/21/19

Exp. Joints.

Set upon	432 41		
Sight 00	462 41		2°39.6'
35.3	4+62 71		3°07.8'
18.87	4+13 54		1°44.33
	386 46		

Set upon 382 41 Sight 00.
33°54.88'

Check	502 41		18°38.6'
23.03	3+59 38		2°02.55

T.P. Block 18.	9.89	61.13		51.24
549.00			5.02	56.11
521.87			4.77	56.36
467 71			11.01	50.12
413 54			5.24	55.89
359 38			6.07	55.06

5/21/19

USFGS

Right Abut.

Set upon 00 on Right Abut.
Set Exp. Joint 88.36.
8.93 S. 07 Exp. Joint 79 63
388 R.F. west of sta 79 63
Sta 69 63 R.F. 4.53 west
59 63 R.F. 4.79 west.

0+79 63 Nail 388 West = 1.88 to Face
0+69 63 " 453 " = 2.53 " "
0+59 63 " 4.79 " = 2.79 " "

5/20/19.

Check Measurment

2+89 65
22 63
3+12.28 from 0.0 = 3+12.28

from P.C.

5/1/19.

USFGS.

Block

setup on 2+49.52
sight 00 22° 8.44

11 2+59.63 53.21
21 2+69.42 1° 46.4
23 2+77.18 2° 26.4

6/22/19

DSFGS

Block 11.

TP Block 7.	5.51	85.68		80.17
T.T.P.			11.91	73.77
Top forms.			11.30	74.38

Radius 306° 00' E.I. 480°

323 − 306° 00' = 16.03

T.T.P.	1.93	75.70		73.77
S.M.Side	6.45 = 6' 5½"		2.15	73.63
W. "	9.84 = 9' 10	G.P. = 4+10	5.54	70.16
N. forms	8.10 = 8' 1¼"		3.80	71.90

6/22/19.

DSFOS.

Block 12.

Radius 296° 00' E.I. 457° 00'

Point on Radii of 2+89 63 = 00.

T.P. Block 12.	0.10	59.47		59.37
8.12 S.	5.61 = 5.7½"		8.08	51.39
0.0	5.53 = 5.6½"	G.P. = 2+47	8.00	51.47
9.16 N.	5.34 = 5.4"		7.81	51.66

5/23/19

USFGS

Right About.

setup on 0.0 320 R. at 5

End of Tangent.

sight R.F.P.

set nail 31 Feet N. 0+31

Nail. 0+35.5

0+39 Rear face cone wall 5' wide.

Nail 0+72.5

Nail 0+88.56 Exp Joint.

Nail 0+95.51

5/23/19.

39

Set up on 0-1.6 End of Tangent.

Sight R.F.P.

set nail 31 Feet N. at 0+29.4

Nail. 0+33.9

0+37.4 Rear face cone wall. wall 5' wide.

Nail. 0+70.9

" 0+86.96 should be at. 88.39.

" 0+93.96

copper on wall 1+16.54

5/23/19.

DSFGS.

Right Abut.

Radius 304 C3 El. 473 on

C-3.	1.35	72.98		71.63
on cont,			3.36	
top turns			+0.74	73.72

323 - 304 C7 = 18.37

OPP. Sta 93.96.		72.98		
on Tangent. 5.61 = 5 7/4	G.R.12		5.58	67.40

5/23/19.

Inspection Gallery.

C-3	12.16	83.79		71.63
Bottom of inspection gallery at Sta. 1/6 64			16.70	67.09

5/24/19 D.-171.

Block 4 - 0+88.39 to 1+15.64 323 line

A				
00		318	500.27	497.09
P Rock		0.73	490.21	10.79	489.42
Top Studs D.S Face				9.40	80.81

Set on Nail 0+29± 323 line

Set Nail in forms 0+88.39 and in Center of Block on 323 line.

Radius = 306.97 El = 480.00

323 - 306.97 = 16.03 to DS Face

490.21

Center Block	6.59 = 6'-7"	Sp	16.80	73.41
Nail Forms DS.F.	Cut 1.41 = 1'-5"		8.80	81.41
Set Grade on Forms	00		10.21	480.00

Rt Abut - Grade for Landing - Gallery

Landing 128" = 10.67 below 492 = 481.33

C-3		10.65	82.28	71.63
Point on Forms Side of Gallery			0.75	81.53
Nail on DS Forms	0.84 = 0'-10"	Sp	1.59	80.69

5/24/19 Block 10 - 2+51.05 to 2+78.13 41

Up a down stream face of dam

Set on 323 R. Sta 2+49.63 Sight

0+00 - defl for tangent = 22°-8.3'

32 0°-17.1' = Sta 2+52.83

10' = 0°-53.21' = " 2+59.63

20' = 1°-46.4' = " 2+69.63

and 27 = 2°-23.6' = Sta 2+76.63

Radius 310.00 El = 492.20

	old New		H.I.		
P Rock Block	4-6	11.00	91.17		80.17
Top Concrete				5.25	86.95

Set Points 13' from 323' Radius

Nail opp. 2+51.83	6.27 = 6'-3¼"	Sp	5.24	85.93
" " 2+59.63	6.47 = 6'-3¼"	"	5.44	85.73
" " 2+69.63	6.45 = 6'-5½"	"	5.42	85.75
" " 2+76.63	6.55 = 6'-6½"	"	5.52	85.65
" " 2+54.63			9	85.98

5/24/19 Block 11 = 2+78 63 to 3+05 21

B-M Up & Downstream Face Block 11

Set on 2+59 63 Sight 0+00

defl for tangent = 23° - 1.63' Set Nail at Sta 2+74 63 - 15' distant

15' = .1° - 19.81'

Set on 2+74 63 Sight 1+39 63

135' defl for tang. 11° - 58.4'

3.23 = 0° - 17.22' Sta = 2+77 86

32 = Sta

3.55 " = 2+78 18

23.55 = 2° - 5.33 " = 2+98 18

Forms. 31.12 2° 45.44 " = 3+05 36

D. Stream Grades. Block 11

0-20	619	462.31		456.12
TP Rock Block 12 for Check			2.94	59.37
TTP Block 11	5.01	59.75	7.57	54.74
			2.00	57.75
				5.10
				63.35

Radius - 300.36 EI. 463 00

32300 - 300.36 = 22.64

Cableway

On Cable	1.0	501.00		500
TP Rock	12.12	512.32	.8	500.2
TP Rock	3.63	15.92	.03	512.29

Grades.

Radius ~~463~~ 300.36 - EI - 463 00

1.42	0° - 36.78'	Set on Sta	2+98 18
10'	= 0° - 57.23'	Divide Wall on 323	= 2+80 77
20'	= 1° - 54.46'		17 41
30'	= 2° - 51.69'		
40'	= 3° - 48.92'	17.41 on 323' = 16.19' on 300.36'	
16.19	= 1° - 32.6		
14.19	= 1° - 21.2		

Set on Sta 2+98 18 Sight 2+74 63

23.55 dist defl for tang = 2° - 5.33'

Turn Inward Center set Nail 22.64 for downstream Face

TP Rock Block 11	496	463.00 59.70			54.74
2' North D Wall	7.45	= 7' - 5½"		4.15	55.55
4.19 " "	8.81	= 8' - 9¾"	GR	3.51	54.19
14.19 " "	9.14	= 9' - 1¾"	=	5.84	53.86
20.61 " "	4.84	= 4' - 10"	+3.30	1.54	58.16
		= Nail on Forms.			

5/26/19 Block 4 0+88 39 - 1+15 54

B-11 Up & downstream Gravity Sect.

Set on 323 R - Sta 0+29 40

R Rock S. of Road	0.78	90.26		489.48
Top Concrete DSF			8.10	82.16
Top Forms DSF			3.52	86.74
	Radius	307.69	El.	82.50
	Radius	308.74	El	86.50

323.00
307.69
15.31 dist to D.S.F.

323.00
308.74
14.26 dist to DSF

90.26

7.76	82.50	
3.76	86.50	

Check

	0.71	90.19		489.48
			7.69	82.50
			3.69	86.50

Grade for 1' below Top. Radius 309.96 El = 491.2

323.00
309.96
13.04

90.19

Forms North	7.07' = 7'-0 3/4"		6.06	84.13
Center	7.98' = 7'-11 3/4"		6.97	83.22
Gallery N	3.57' = 3'-6 3/4"		2.56	87.63
gallery S.	3.65' = 3'-7 3/4"		2.64	87.55
Forms S.	4.49' = 4'-6"		3.48	86.71
Nail in D.S. Forms.	4.49' = 4'-6"		3.48	86.71

Set up on 0+29 40

Set Nail on 323 in forms 5588 from Set up
= Sta 0+85 28

E+ Joint = 0+61 14
" " = 0+33 89

0+85 28 Nail
E+ 0+61.14 Joint
24 14

South side Gallery 0+90.73 on 323 line
North " " 0+94.73 " " "
El. Landing Stairs Downstream E. = 481.53
El Top Step on land & Inspection Gallery
on 318 R =

323 485.26 481.53
Top Step on Landing 318R = 346 481.80
out side Steps - 8" rise 12" tread

5/26/19

B-M Block 11 2+78 13 to 3+05 21

Up & down Stream Face Overflow

Set on 2+74 63 Sight 1+59 63

115' defl. for Taog = 10°-12.0'

3.55 = 0°-17.72' 2+78 18

23.55 = 2°-5.33' 2+98 18

7 30

Forms N 30.85 = 2°-44.11' 3+05 48

Grades Block 11

TP Rock Block 6	1018	90.35		80.17
On Edge Concrete			471	85.64
				22.04
Nail set in Bottom TP				63.60
				5
				68.00

Set up on 2+98 18 Sight 2+74 63

dist 23.55 defl 2°-5.33 for Tangent

turn to Center for Nail at

Radius = 303.99 EI = 468 00

323 - 303.99 = 19.01

2+98 18

2+80 77

17 41 on 323 = 16.39 on 303.99

1' = 0°-5.65

10' = 0°-56.54

Divide N 16.39 = 1°-32.6'

Forms N 6.20 = 0°-35.0'

5/27/19 44

SM Grades R 303.99 EI 468 00

		502	68.62	63.60
16.39 D Wall	4.40 = 4'-4 3/4"		502	63.60
10'	4.35 = 4'-4"	TP	497	63.65
00	3.88 = 3'-10 1/2"		450	64.12
EN 62	3.12 = 3'-1 1/2"	062	374	64.88

Block 11 - 2+78 13 to 3+05 21 Overflow

Set on 2+74 63 Sight 1+59 63 = 115' defl

for Taog = 10°-12.0'

3.55' = 0'-17.72' = Sta 2+78 18

23.55' = 2°-5.33' = " 2+98 18

Forms N 30.95 = 2°-44.66 3+05 33

9/27/19 Grades Block 11

TP Block 6	1018	49035		48017
Top Concrete on Edge B 11			469	85.66
				16.69
Nail Set in Bottom TP				68.97

	507	474.04	6897
Radius	309.72	EI	475.2°

378 00 - 309.72 = 13.78

Cont. Page 45

Block 10 Line & Grade for
Divide Wall

Set on 2+59 63 Sight 1+59 63
100' = defl for tang = 8° - 52 2'
Turn to Center Set Point at 13'
Set on 310 R on Radial line
373 : 21.14 : 310 : 20.29
1 = 0° - 5.54
10' = 0° - 55 45'
20' = 1° - 50 90
20.29 = 1° - 52.51'

Top Concrete	5.36	9102		8566
			+118	492 20

5/17/19

45

Cont. from Page 44

R = 309.72 E1 = 475 20

Set on 2+98 18 Sight 2+74 63

23.55' dist defl for tang = 2° - 5.33'

Turn to Center Set Nail at 13.78 -

2+98 18
2+80 77 DWall
17.41

74 on 323 = 7.08 on 309.72
10' " " = 9.57 " 309.72

Nail Set from Top	13.10	5.07	7404 (17.)	68.97
Forms 14.66 - 1.02' = 1' - 1/4"			+014	74.18
00 = 6.32' - 6' - 3 3/4"			5.16	68.88
9.57 = 6.19' - 6' - 2 1/4"			5.03	69.01
14.65 = 6.52' - 6' - 6 1/4"			5.36	68.68
16.65 = DWall			no Rod	

GR = +11.6

Check Elc

TP 8.12	12.85	7222		59.37
Nail 9.57			3.25	68.97

5/57/19

RP Measured from -1.6 on 3+34
9.5 + 11.09 = 20.59' South to hub

20.59
1.60
2219 = (0+22.19) South of 0+00

Set up on Sta 0+29.40 measure
16.828 East for Nail & 11' West for Nail
Set up on offset lines & measure
4.49 North for Sta 0+33.89 Ex Joint
Measure North 31.74 for Contr Joint
at Sta 0+61.14

5/58/19

Block 11 - 2+78.13 - 3+05.21
Overflow Section
Set up = 2+74.63
Divide Wall or Center 1st Pier = 2+80.77
2+74.63
13.88 to 1st Pier 6.14

Sight 00 deff for tang = 24°-21.44'
6.14 = 0°-32.64' 2+80.77
16.14 = 1°-25.85' 2+90.77
20.02 1st Pier 1°-46.51' ℄ Pier 2+94.65 #1
31.04 2°-45.11' Forms 3+05.67

Set on 2+94.65 Turn to Center
deff for Tang = 1°-46.51' Set Nail
at 8.37 for El. 481.20

Set on Div 2+80.77 Sight 3+05.67
24.9' dist deff for Tang = 2°-12.49

Set on Point ℄ Pier #1 at 8.37 from 3+38
= Radius 314.63
1' = 0°-5.46
10' = 0°-54.63
Ex 11.23 1°-1.349
WS 16.44 1°-29.81'

5/18/19

Grades Block 11 - 2+78 13 - 3+05 21

R = 3146.3 El = 481.20

T.P. Rock Block 12	3.00	462.37		459.37
Nail in Wall	8.95	470.98	0.34	462.03
Above Nail	→ 8.63			
		479.61		
Nail in forms N. 2.00 = 2'-0"			0.41	479.20
00 6.52 = 6'-6 1/4"		SR =	4.93	474.68
Divide Wall 7.58' = 7'-7"		.59	5.99	473.62
ON Con. Wall 2.39' = 2'-4 3/4"			0.80	478.81

Bottom Cutwater = 480.20

B. Cut Water 2+94 65 P#1 SR = .00 479.61

0.59' = 0'-7 1/4" .59

P Rock Block 11 2.65 476.96

R - for El 475.00 = 305.35

R - for El 476.00 = 305.69

1' = El = 0.34

.1 = .034

205.35
.054
305.404

1.6
204
34
.0544

R = 305.404 El 475.16

32300
305.40
17.60

17.60
15.69
1.91

5/17/19

47

S.M. Block 3 0+61 14 to 0+88 39 - 323 line

TP from A00	0.83	490.31	489.48
Top Forms Distance		9.14	481.17

Seton Sta 0+39.4 Set Nail East

R - 482.00 = 307.55

R - 481.00 = 307.26

1' = E = .29

.1 = E = .029

.17 = 1.7 x .029 = .049

307.26

307.309

R = 307.31 El = 481.17

323 - 307.31 = 15.69

TP from A00	0.76	90.24	89.48
Top Nail in Forms		9.08	81.16
			600
			75.16

5/28/19 Block 11 = 278 13/10 to 305 21

Grades Cont. from Page 47

TP Rock Block 11	2.36	79.32		476.96
			~~4.12~~	~~475.20~~
Grade for O.G. Section 0.33' = 0'-4"	R.R. = 4.12		4.45	74.87

Bottom Pier D.S.F. 15' from 325' 476.25

74.87

1.38

1.38' = 1'-4 1/2"

49133
47625
15.08
.04
.6032
2
1.2064

1.5 = width at 491.33

2 | 2.706
1.35 = 1'-4 1/4"

49133
47793
13.40
5360
2
1.0720
1.5
2.572

2 | 2.572
1.285 = 1'-3 3/8"

		139	477.93

5/29/19 Left Abutment Up + 48

downstream Face Gravity Section

Set up on Sta 7+37 96 Ranin up Stream Face to Pt on 325R.

Grades D.S. Face

Q 71	429	76.99		72.70
Top From D.S. Face G.			1185	65.14

R. for 466 = 301.83
R. for 465 = 301.39
diff for 1' = 0.44

.1 = .044
-.14
176
44
.0616

301.39
.06
301.45

Radius = 301.45 El = 465.14

325.00
301.45
23.55

5/29/19 Right Abutment Gravity Sectn
B-F-M

Set on Sta. 0+29.40

Set Nail at 4.93 = 0+34.33 =
Nail in North Face Forms.

Set Nail at 10 = 0+39.40
" " " 20 = 0+49.40
" " " 31.48 = Face North Centr. Pier
at St. 0+60.85 (Should Check 0+61.14)
Nail at Sta 0+70
" " " 0+80
" " " 0+87.31 in Face Concrete
" " " 0+87.83 Top Block 4
" " " 0+90.00 " " 4
" " " 1+00.00 " " "
" " " 1+10.00 " " "
" " " 1+15.00 " " "

Grades Block 3 0+61.14 to 0+88.37

TP Rock from A00	083	90.31	489.45
Top D.S Forms		269	87.62
R = 30.86		El = 487.83	

3.73 - 30.886 = 14.14 = dist to DS Face

Nail int. opp 0+60.85	5.02 = 5'-0¼"	8.33	4	81.98
" opp 0+70	6.29 = 6'-3½"	9.60		80.71
" " 0+80	6.51 = 6'-6"	9.82		80.49

Hi = 4.90

49

Fillets Blocks 2 + 3

49.31

Nail on 3 line at Derrick 78.49

440

dist 22.77 East.

Set on Nail from C-3 Sight C-3
for 270°

		R.	El
Top F. Face D	75°-45'	9.2	73.69
" " Rock	58°-15'	9.2	73.69
Bot. F. "	20°-15'	12.65	70.24
Top F. Rock Contact	30°	12.65	70.24
" " Face	30°	12.65	70.24
Bottom F. Rock	20°-30'	17.40	65.49

Top = 64.52

24.8 → B = 56.54

629			
Top Fillet		24	60.57
" " Top Concrete		64.33	56.54
Top Forms		+ 0.19	64.52

Contr. Joint = Sta 57 47.92 on 3.25 line

5/29/19 Block 11 – 2+78 63 to 3+05 21
8-F-M

Overflow Section

Crest of Overflow + Cut water

Set up on Sta 2+79 63 Sight
00 – 323' R. defl for tang =
24° – 21' 44"

3107	–	2° – 45' 27"	= Sta 3+05 70	Forms
614	–	0° – 32' 64"	2+80 77	
2002	–	1° – 46' 51"	= 2+94 65	
1200	=	1° – 03' 81"	2+86 63	

R Rock Block 12	014	459.51		459.37
Nail in forms			1.69	457.82
Dist to top Nail				23.32
El Top Nail	188	90.02		481.14

Radius 323 El = Crest = 484.7

TP Block 9 = 2+73 97 – 2+51 05 – 323R		7.12	8.290
Check TP Block 7		9.88	80.14
Bottom Cut water		9.82	480.20
3107 Nail in forms	2.97' = 2'-11 3/4"	8.29	81.73
2002 Hub	4.67' = 4'-8"	9.99	80.03
1200 "	4.61' = 4'-7 1/4"	9.93	80.09
614 "	4.59' = 4'-7"	9.91	80.11

T.S. – 9.82

5/29/19

50

Grades for El 483.70

490.02

632 483.70

6.14	632
10.14	"
14.14	"
18.14	"
22.14	"
26.14	"
30.14	"

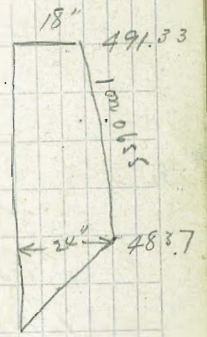
Cut Rod = 6.32

Set Nail in front forms on Grade

491.33
483.70
7.63

24"
18"
6"

7.63 / .50000 = .10655
4578
42220
38115
4050



5/29/19 $512\frac{91}{}$ on 323 = $504\frac{48}{}$ on 318

Inspection Gallery Lt Abut.

Set up on 323 R Sta $5+12\frac{91}{}$

Sight $4+62\frac{41}{}$ defl 4°-26.1 for tang Torin to Center of Curve Set Nail on Gallery dist 5' = 318'R.

Defl 318'R.

1' = 0° — 5.41

10' = 0° - 54.052 $5+14\frac{48}{}$ on 318

20' = 1° - 48.104 $5+24\frac{48}{}$ " "

North of 00 - 24' = 2° - 09.72 $5+28\frac{48}{}$ " "

E+ Joint 3148 = $5+35\frac{96}{}$ " "

" " on 323R = $5+44\frac{42}{}$

B 21	6.60	61.70		55.10
Top Rock			3.32	58.38
Top last step			4.99	56.71
3 steps = 1.98				58.69
Grade for 35' = 0.35				.35
Sta 24' N of 00 Grade =				59.04
24	59.04	2.71 = 2'-8 3/4"	5.37	56.35
20	59.00	1.90 = 1'-10 3/4"	4.60	57.10
10	58.90	1.45 = 1'-5 1/2"	5.25	56.45
00	58.80	0.68 0°-8 1/4"	3.58	58.12
- 11	58.69			
Nail PT to Forms	2.69	62.97	1.42	60.23
Nail Sta 34'			6.43	56.54

5/31/19 Block 3 - 0+61.41 to 0+88.39 51

Grade Top Dam Block 3

TP from Acc 391	493.39		489.48
Top Dam Top Landing		1.19	492.20

Set on $8+79\frac{42}{}$ Set Nail South from Block 3

Set Nails on 323 line measure 13' and set Nails for Top D. Stream Face

Block 2 $0+33.89$ to $0+61\frac{14}{}$

TP from Acc	0.51	489.99	489.48
Average Top Concrete		1.780	477.19
		5	

Radius = $307\frac{55}{}$ EI = $482\frac{29}{}$

$373 - 307\frac{55}{} = 15\frac{45}{}$ dist to DS Face

Forms South

Block 2

0.86	490.34		489.48
Top Steel Forms		5.51	484.83
		8.17	482.27
Radius = 307.55	EI = 834		482.00
$323\frac{00}{} - 307.55 = 15.45$			500
Radius = 308.86	EI = 334		487.00
323 - 308.86 = 14.14			

5/30/19 Block 6 1+42 72 to 1+69 80

F-M-B Up & downstream Face Gravity Sect

Set on 1+19 63 Sight 1+39 63

Set Nail in South forms at 3.18 = face Block 5 - Sta 1+42 81

20	1° - 46.4'		1+39 63
Forms 23.18	2° - 3.35'		1+42 81
33.18	2° - 56.56'		1+52 81
43.58	3° - 51.9°		1+63 21
Forms 50.48	4° - 28.56'		1+70 21
60 00	5° - 19 3 check		

G 00	11.75	85.03		473.78
TP Rock Block 6			1.43	82.60
TBM on End Core Wall #			5.71	79.32
	3.34	85.94		
Top Forms DSF			+1.6	87.54
	Radius 309 10		El =	487 00
323 00 - 309 10 = 13.90				
TP Block 6	4.21	86.81		82.60
F.N.	1.94 = 1'-11 1/4"		1.75	85.06
43.58	4.90 = 4'-10 3/4"		4.71	82.10
33.18	4.77 4'-9 1/4"		4.58	82.23
F. South	00 - Grade		+0.19	487 00

Check on TP Block 7

80.17 old

8681

TP Rock D 7 {1+69 70 to 1+96 88} 666 80.15

5/30/19 Gravity Section

Grades Block 3 - 0+61 14 to 0+88 39

TP Rock from 400	420	493.68	489.48
Top Concrete Block 3		- 8.2	85.48
Top " Block 4		2.5	91.18

Grades Block 3

Radius = 309.80 El = 491.2

R for 492 2 = 310.00

R for 491 0 = 309.76

1.20 = .24

.1 = .020 .2 = 309.76 + .04 = 309.80

323 00 - 309 80 13.70

Forms S.	460' = 4'-7 1/4"	SR	7.08	486.60
Center	5+7' = 5'-2 3/4"	"	7.70	485.98
Wall N.	00 = 0.0	TBS	2.98	491.20

5/30/19 B-M-F. Gravity

Grades Block 4 = 0+88 39 - 1+15 62

TP from A 00			470	493.68	489.48
			0.81	493.01	1.48	492.70
0+87 83		Nail 6"			2.96	90.05
0+90		Face			3.02	89.99
1+00		3 3 0			2.92	90.09
1+10		Ds			3.07	89.94
1+15					3.04	89.97

All DS. Nail 6 inches in from Face

Downstream Face

Nail 6" in from					
Forms opp. 0+87 83					1.48	492.70
Nail opp 1+00					1.48	492.7
" " 1+10					1.48	492.7
" " 1+15					1.48	492.7

5/30/19 Elevations Left Abutment for

Concrete Estimate Hand Level

					93.40
7+37 96	End Dam.	00	93.40	7.0	86.4
7+11 42				8.0	85.4
6+84 17				10.4	83.0
6+56 72				14.4	79.0
6+29 67	TP	2.0	85.40	13.0 / 7.0	83.40 / 78.4
6+02 43				16.4	69.0
5+75 17					
5+47 92					

5/30/19 53

Gravity Section 4 Abutment

P-21	498	477.68		472.70
Top DS Forms			12.60	465.08
			5.00	
				470.08
A Rock			6.12	471.56

Set on 7+37 96 Sight RPs on hill

Set 40d spike 12 04 = Sta 7+50

Set Temporary Point at Sta 6+30 93

X in Rock at Sta 6+15 96

Nail in Rock at Sta 6+05 90

Downstream Face

Radius 303.49 El 470 00

325 00 303.49 = 21.51 dist to DS Face

Set up at 90° from 6+30 93 dist 21 51

	405	475.61			471.56
685 N.C.S. Cut 3.94				2.17	73.44
515 Fill 0.37 = 0'- 4½"				5.98	69.63
485 3.04' = 3'- 0½"				8.65	66.96
385 5.68' = 5'- 8¼"				11.29	64.32
285 6.69' = 6'- 8¼"				12.30	63.31
185 6.80' = 6'- 9½"				12.41	63.20
85 North 7.12 = 7'- 1½"				12.73	62.88
00 Forms Cont. Joint .09 = 00"				5.61	470 00

5/31/19

F-B-17 Block 6 1+43.72 to 1+69.80

Set on 1+19.63 Sight 1+39.63

Set Nail in forms at 23.23 from set up.

1° = 20 = 1°-46.4' for tangent

Forms 23.23 2°-36.3'

30 2°-39.6'

40 3-3.9

F.N 50.48 4°-38.2'

Radius 310.00 El. = 492.20

P.T. Top old Conc Wall	5.65	84.97			479.32
T.P. Nail in forms	5.56	89.81	0.72		84.25
			2.21		
Nail opp. 23.23	4.60	= 4'-7 1/4"	2.21		87.60
" " 30 (at 15)	4.84	= 4'-10 1/4"	2.45		87.36
" " 40 (at 15)	5.14	= 5'-1 3/4"	2.75		87.06
" " 50.48	3.80	= 3'-9 3/4"	1.41		88.40

Piers # 4

13.16 to Nail

5.72

18.88

.70

19.58

8.04

27.62 from ℄ Pier #1 to Sta 3+22.41

Sta Pier #1 = 2+94.65

27.62

(BP) → 3+22.27

3+38.54 = ℄ Pier # 4

3+22.27

16.27 on 3+3 R.

Set on 3+22.27 deflect from old 3+42.41

16.27 1°-26.54 = 3+38.54 ℄ P. # 4

20' = 1°-46.4 = 3+42.27

14.92 = 1°-19.41 = 3+37.19 = New Ex Joint

Ex. Joint at 3+32.29 Set over to 3+37.19 at El. 457.00

6/2/19

Gravity Section Lt Abut.

Set on 6+30 93 on 325'

Checked ℄ in Rock 6+15 96 on 325'

Set Ex. Joint at 5+79 61 on 325'

" " " at 6+06 86 "

5+45 96 +2.20 Face Contr. Joint = 5+48 16

℄-71		9.63	482.33	472.70
Top DS Forms.			4.60	477.73

Radius = 306.35 El. = 478 00

325 00 − 306.35 = 18.65 dist to DSF.

Set Point 18 65 at 90° from 6+30 93

Set Contr. Points on DSF at 24 97 and 51 32

		H.I.		
℄ 71		9.75	82.45	472.70
6+30 93	DSF 0.85' = 0'10¼		5.3	77.15
6+15 96	6.00' = 6'-0"		10.45	72.00
C.S. 6+06 86	6.57' = 6'-6¾"		11.02	71.43
5+95 96	6.55' = 6'-6¾"		11.00	71.45
5+85 96	4.95' = 4'-11½"		9.40	73.05
5+75 96	6.85' = 6'-10¼"		11.30	71.15
5+65 96	6.69' = 6'-8¼"		11.14	71.31
5+55 96	7.12' = 7'-1½"		11.57	70.88
5+48 34	7.34' = 7'-4"		11.79	70.66

Grade = -4.5%

6/2/19

55

Block 12 3+05 21 to 3+32 29

Set on 2+74 63 Sight 00 323 R.

defl for tang = 24°-21.44'

2+84 63	0°-53 21'	10
2+94 63	1°-46.40'	20
3+04 63	2°-39.6'	30

Set on 3+04 63 Sight 0+00

defl for tan 27° 01.12

3+24 63	1°-46 40	20'
3+34 63	2°-39.6	30'
Forms N 3+37 15	2°-52.97	31 52

TP Block 9	601	88.91	82.90
Nail in Forms See Pg 50		7.77	81.14
			20.51
Nail in Bottom Ladder ——			60.63

Set on 3+34 63 Sight 3+04 63

defl 2°-39.6 for long

20 = 1°-46.4

26 8 = 2°-32 5

OVERFlow Section
Grades Block 12

R = 303 99 EL = 468 00
323 − 303 29 = 19.01

Nail in Ladder 565 466.28 460 63

18.8	5.24' = 5'-3"		3.52	62.76
9.4	4.69' = 4'-8¼"	Sp	2.97	63.31
00	5.82' = 5'-10"	1:1½	4.10	62.18
Nail Forms N.	2.18' = 2'-2¼"		0.46	65.82

Block 6 − 1+42 72 to 1+69 50

580 95.28 489.48
Top dam 3.08 492 20

Set Nail on Grade on every Second Stud.
Line Nails set at 12.5' from 323' Line

6/7/19 56
6/3/19 Block 6 − 1+42 72 To 1+69 80
Set on 0+00 Set 1+09 63 from R.P.s.
109.63 = 9° 43.43

Set on 1+09 63 Sight 0+00 defl 9°-43.43' for 429

33.50'	2°-58.26	1+43 13 Nail in 5 Form.
40	3°-32.9	1+49 63
50	4-26.1	1+59 63
60	5°-19.3	1+69 63
60 33	5°51.06	1+69 96 F. Hook

R. from A00 579 95.27 489.48
Grade D.S.F. Block 2 8.27 487.00
323 00 − 308.86 = 14.14 dist for El 487 00
Radius 309 50 El = 491 20
323 00 − 309 50 = 13 20

Nail F.S.	3.69' = 3'-8¼"	7.76	Sp 87.51
Center	8.61' = 8'-7¼"	12.68	82.59
		11.31	83.96

323.00
308.10
14.90
13.20
1.70

Distances from Front face to Rear Face

Top of Overflow Section

Crest of Weir at 2' from Upstream F					484.7
1.73 < 3.16	1.73 + 3.16	=	4.89	4'-10 5/8"	484.2
	2.00 + 4.97	=	6.47	6'-5 5/8"	483.7
	2.00 + 5.48	=	7.48	7'-5 3/4"	483.2
	2.00 + 6.34	=	8.34	8'-3 7/8"	482.7
	2.00 + 7.07	=	9.07	9'-0 7/8"	482.2
	2.00 + 7.75	=	9.75	9'-9"	481.7
	2.00 + 8.37	=	10.37	10'-4 1/2"	481.2
	2.00 + 8.94	=	10.94	10'-11 1/4"	480.7
	2.00 + 9.49	=	11.49	11'-5 7/8"	480.2
	2.00 + 10.00	=	12.00	12'-0"	479.7
	2.00 + 10.49	=	12.49	12'-5 7/8"	479.2
	2.00 + 10.95	=	12.95	12'-11 3/8"	478.7
	2.00 + 11.40	=	13.40	13'-4 3/4"	478.2
	2.00 + 11.83	=	13.83	13'-10"	477.7
	2.00 + 12.25	=	14.25	14'-3"	477.2
	2.00 + 12.65	=	14.65	14'-7 3/4"	476.7
	2.00 + 13.04	=	15.04	15'-0 1/2"	476.2
	2.00 + 13.42	=	15.42	15'-5"	475.7
P.T. Parabola	2.00 + 13.78	=	15.78	P.T. 15'-9 3/8"	475.2

dist from P.C.

dist from P.T.

Reinforcing 4" from D.S.F.

2 - 15'-10 1/2"	15'-5 1/2" from D.S.F.
2 - 14'-6"	13'-6"
2 - 12'-10 1/2"	12'-
2 - 11'-6"	10'-6"
2 - 10'-3 1/2"	9'-
2 - 9'-4 1/2"	7'-6"
2 - 8'-8"	6'
2 - 8'-2 1/2"	4'-6"
2 - 7'-11"	3'-
2 - 7'-11"	18" from D.S.F.
2 - 8'-4"	4" from upstream face.

Top pier = El 491.33

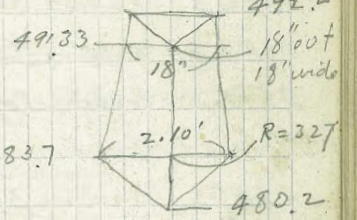
Piers for Roadway over Spillway Section

Face Divide wall = 2+80.77
13.88 - dist to Center 1st Pier.
2+94.65 = Sta. Center 1st Pier.
14.63 dist between Piers C to C
17 Piers

3+09.28 = 2
14.63
3+23.91 - 3
14.63
3+38.54 - 4
14.63
3+53.17 - 5
14.63
3+67.80 - 6
14.63
3+82.43 - 7
14.63
3+97.06 - 8
14.63
4+11.69 - 9
14.63
4+26.32 - 10
14.63
4+40.95 - 11
14.63
4+55.58 - 12
14.63
4+70.21 - 13
14.63
4+84.84 - 14
14.63
4+99.47 - 15
14.63
5+14.10 - 16
14.63
5+28.73 - 17
13.88
5+42.61 - Face Divide Wall Left Abutment

Pier Width at El. 491.325 = 18 inches.
Batter 10" 25" 60" Sides = .04

Crest = 484.7
El. - Scaled = 476.25' to Bottom Pier on 310 R.
El. Beginning O.G. Section 475.20
Distance from 325'R at El 475.20 = 15.784 =
Radius 309.216
Top Piers = El 491.33



y = R.
x = El.

El. Bot. Cut Water 480.20
At El - 483.70 = 2.10 wide = 327 R
At El - 491.33 = 326.5 R.
Stop Plank Grove 483.70 - 6½" wide
12" Between Grooves.

Bottom Piers

Bottom Piers on 310 R. = 476.25
at El. 476.25 Piers = 2.7' Wide

(INDEX) continued from Page 1

KEITH'S RAILROAD CURVE TABLES.

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HOW TO USE KEITH'S TABLES.

EXAMPLE.

Wanted a Curve with an Ext. of about 12 ft. Angle of Intersection or I. P.=23° 20′ to the R. at Station 542+72.

Ext. in Tab. IV opposite 23° 20′=120.87
120.87÷12=10.07. Say a 10° Curve.

Tan. in Tab. IV opp. 23° 20′=1183.1
1183.1÷10=118.31.

Tab. V. correction for A. 23° 20′ for a 10° Cur.=0.16
118.31+0.16=118.47=corrected Tangent.

(If corrected Ext. is required find in same way)
Ang. 23° 20′=23.33°÷10=2.3333=L. C.

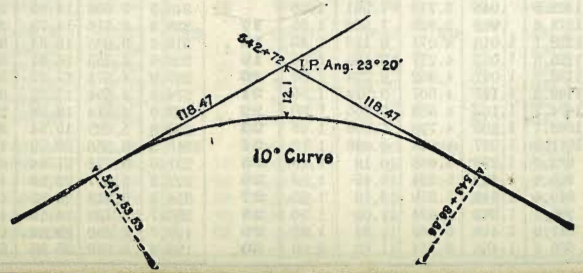
2° 19½′=def. for sta.	542	I. P.=sta.	542+72
4° 49½′= " " "	+50	Tan.=	1.18.47
7° 19½′= " " "	543	B. C.=sta.	541+53.53
9° 49½′= " " "	+50	L. C.=	2.33.33
11° 40′= " " "	543+	E. C.=sta.	543+86.86
	86.86		

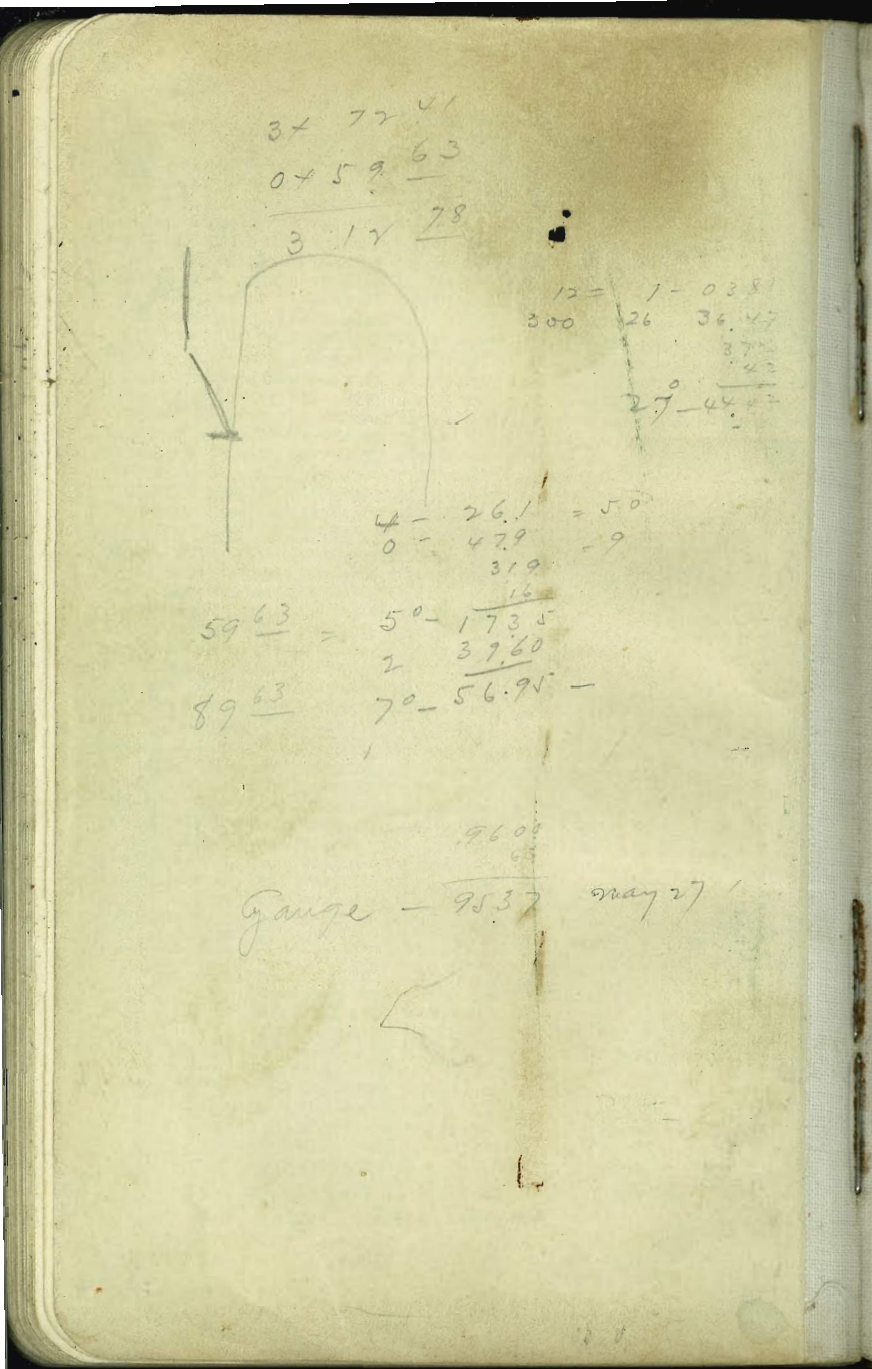
100—53.53=46.47×3′(def. for 1 ft. of 10° Cur.)=139.41′=
2° 19½″=def. for sta. 542.

Def. for 50 ft.=2° 30′ for a 10° Curve.

Def. for 36.86 ft.=1° 50½′ for a 10° Curve

(These tables are published in Field Books of KEUFFEL & ESSER Co., New York, N. Y.)





DISTANCES FROM CENTER OF ROADWAY FOR CROSS-SECTIONING.

ROADWAY 14 FEET WIDE. SIDE SLOPES 1½ TO 1.

FOR SINGLE TRACK EMBANKMENT.

	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	
0	7.0	7.2	7.3	7.5	7.6	7.8	7.9	8.1	8.2	8.4	0
1	8.5	8.7	8.8	9.0	9.1	9.3	9.4	9.6	9.7	9.9	1
2	10.0	10.2	10.3	10.5	10.6	10.8	10.9	11.1	11.2	11.4	2
3	11.5	11.7	11.8	12.0	12.1	12.3	12.4	12.6	12.7	12.9	3
4	13.0	13.2	13.3	13.5	13.6	13.8	13.9	14.1	14.2	14.4	4
5	14.5	14.7	14.8	15.0	15.1	15.3	15.4	15.6	15.7	15.9	5
6	16.0	16.2	16.3	16.5	16.6	16.8	16.9	17.1	17.2	17.4	6
7	17.5	17.7	17.8	18.0	18.1	18.3	18.4	18.6	18.7	18.9	7
8	19.0	19.2	19.3	19.5	19.6	19.8	19.9	20.1	20.2	20.4	8
9	20.5	20.7	20.8	21.0	21.1	21.3	21.4	21.6	21.7	21.9	9
10	22.0	22.2	22.3	22.5	22.6	22.8	22.9	23.1	23.2	23.4	10
11	23.5	23.7	23.8	24.0	24.1	24.3	24.4	24.6	24.7	24.9	11
12	25.0	25.2	25.3	25.5	25.6	25.8	25.9	26.1	26.2	26.4	12
13	26.5	26.7	26.8	27.0	27.1	27.3	27.4	27.6	27.7	27.9	13
14	28.0	28.2	28.3	28.5	28.6	28.8	28.9	29.1	29.2	29.4	14
15	29.5	29.7	29.8	30.0	30.1	30.3	30.4	30.6	30.7	30.9	15
16	31.0	31.2	31.3	31.5	31.6	31.8	31.9	32.1	32.2	32.4	16
17	32.5	32.7	32.8	33.0	33.1	33.3	33.4	33.6	33.7	33.9	17
18	34.0	34.2	34.3	34.5	34.6	34.8	34.9	35.1	35.2	35.4	18
19	35.5	35.7	35.8	36.0	36.1	36.3	36.4	36.6	36.7	36.9	19
20	37.0	37.2	37.3	37.5	37.6	37.8	37.9	38.1	38.2	38.4	20
21	38.5	38.7	38.8	39.0	39.1	39.3	39.4	39.6	39.7	39.9	21
22	40.0	40.2	40.3	40.5	40.6	40.8	40.9	41.1	41.2	41.4	22
23	41.5	41.7	41.8	42.0	42.1	42.3	42.4	42.6	42.7	42.9	23
24	43.0	43.2	43.3	43.5	43.6	43.8	43.9	44.1	44.2	44.4	24
25	44.5	44.7	44.8	45.0	45.1	45.3	45.4	45.6	45.7	45.9	25
26	46.0	46.2	46.3	46.5	46.6	46.8	46.9	47.1	47.2	47.4	26
27	47.5	47.7	47.8	48.0	48.1	48.3	48.4	48.6	48.7	48.9	27
28	49.0	49.2	49.3	49.5	49.6	49.8	49.9	50.1	50.2	50.4	28
29	50.5	50.7	50.8	51.0	51.1	51.3	51.4	51.6	51.7	51.9	29
30	52.0	52.2	52.3	52.5	52.6	52.8	52.9	53.1	53.2	53.4	30
31	53.5	53.7	53.8	54.0	54.1	54.3	54.4	54.6	54.7	54.9	31
32	55.0	55.2	55.3	55.5	55.6	55.8	55.9	56.1	56.2	56.4	32
33	56.5	56.7	56.8	57.0	57.1	57.3	57.4	57.6	57.7	57.9	33
34	58.0	58.2	58.3	58.5	58.6	58.8	58.9	59.1	59.2	59.4	34
35	59.5	59.7	59.8	60.0	60.1	60.3	60.4	60.6	60.7	60.9	35
36	61.0	61.2	61.3	61.5	61.6	61.8	61.9	62.1	62.2	62.4	36

Calculated by Julien A. Hall, M. Am. Soc. C. E.