130
Concrete
Monthly Estimates.

BARRETT DAM.

LEVEL BOOK

380

W130

#13

Concrete Est.

Monthly Estimate

— Index —

— Concrete. —

Location of Grout Holes. 57

July 1920

Concrete Estimate.

Sections above 1440 Contour.
East of Contraction Joint.

	End Area	Cubic Yds.
Line #1	45	
20		40.8
" #2	65	
21.3		79.3
" #3	136	
17		75.5
" #4	104	
32		5.8
+3.2	00	
Total		201.4

Sections abov 1450 Contour
West of Contraction Joint

1	54	
		28.8
5	43	
		41.5
6	123	
		77.7
7	110	
		34.6
8	00	
		182.6

Concrete

Summary July 1920 Estimate

Estimate Sections Concrete
West of #1 Contr. Joint

8/28/20. August Estimate

~~392~~R
3+21 60 433 71 70 67 37

Contr. Joint 0+00	South Forms = 00 of Sections					
	2.4/00	2.4/23.0	2.4/46.5			
	Section #1					
0+20	2.2/00	2.0/16.2	1.8/30.0	3.0/36.4	2.0/46.0	
	Section #2					
0+40	1.6/00	1.7/11.8	2.9/29.3	3.6/47.0		
	Section #3					
0+60	2.3/00	2.8/14.	3.9/17.	3.9/38.0	4.0/43.0	4.0/56

0+70 = 00 across.

8/30/20
Bob Fisher Mixter

Estimate Sections Concrete
East #1 Contraction Joint.
August Estimate

8.6
8.7
17

B-38		3,33	1473.63		1470,30			
		0+38.7 Section						
South side form 00=								
1	C3.6 / 00	C30 / 82	C2.9 / 16.3	C3.0 / 22.4	C 3.0 / 31.6			
18.2		0+20-0						
↓	C 3.7 / 00	3.9 / 6.1	3.4 / 11.0	C 2.7 / 12 3	C 2.8 / 22.0	C3.1 / 25.1	=30 / 33=	✓
20								
↓				5.3	68.3			
Average Elev.				6..1	67.5			
				6 1	67.5			
				6,8	66.8			
392-				6.25	67.38			
				5:41	68.22			
				5,36	68. .27			

8/9/20
Fisher
Mitter

Check Location of forms
for Concrete Est.

At C 36 Sight C 46 for
Zero. — Az Right.

392					
3+21.6		6.05	73.42		67.37
Cor form	23.4r	61°-45		4.9	68.5
Cor. form	6.0	341-25r		5.2	68.2
Cor form	29.4r	351-30			
End form	57.7r	6°-0			
P.C	64.0	4-30		6.8	76.6
				16.7	56.7
cor form	19.0	352-0	Average Elev.		
cor Form	31.3r	43-30		13.7	59.7
Top of Form					68.1

Summary August 1921 Est.

Concrete

Above 1465 – sections West of Contraction Joint

Contr Joint	End Area	Cubic Yds.	
0-0	104.4		
		74.4	
20	96.6		
		79.2	307.8 cy by Sect above 1465 Cont W of Joint #1
40	117.3		
		117.3	
60	199.4		
		36.9	
70	00		
Total		3078	

Above 1465 – East of Contraction Joint

Contr Joint			
0 0	104.4		
		77.3	145.1 cy by Sect above 1465 Contour E of Joint
20.0	104.4		
		67.8	
38.2	96.6		
Total		145.1	

Contours – End Area		cu yds	
1428	00		
		4.1	
1430	110		2714.0 cy by Contours to 1465 incl W of Joint
		53.0	
1435	462		
		158.0	
1440	1244		
		323.2	
1445	2246		
		464.6	
1450	2772		
		548.6	
1455	3153		
		575.3	
1460	3060		
		587.6	
1465	3287		
sections Above 65		2714.0	

Summary August 1920 Est

Concrete

Contours East of Contraction Joint

1428	000	
		8.2
1430	222	
		154.6
1435	1448	
		308.7
1440	1886	
		390.2
1445	2328	
		459.5
1450	2635	
		488.4
1455	2640	
		337.9
1455	1817	
		345.3
1460	1837	
1465	1892	
1465	477	
		36.9
1467.3	445	

25397
454

Brought for. 2559.7

1455	878	
		61.4
1456.9	918	
1456.9	280	
		28.0
1459.6	280	

2619.1

Totals

307.8
145.1
2714.0
2619.1
5786.0
10

El 1435-1445
R Line 34-40
Add 10 cy Overhang between

Total Concrete for August = 5796.0 cy.

By Bryson ships measurement revised to 1½ cy to ship = (5956)
5796

diff by ship + Solid measure = 160 cy

9/29/20

Fisher Mixter

September 1920

Sections for Estimate

30 Radial Line = 00 = Section

& Outlet Gallery 0+24	6.66	73.21	1466.55	00
	Section 0-0 —			
0+34		6.93	66.28	33
0+50		7.28	65.93	46
0+66		7.61	65.60	60
0+82		7.87	65.34	
0+84		7.88	65.33	
— 20' —	Section 1 East —			
0.0		6.3	66.9	00
15		5.7	67.5	13
28		4.9	68.3	27
36		6.9	66.3	40
50		6.1	67.1	49
57		5.7	67.5	54
	Section 2 East			
0.0		3.9	69.3	00
20		3.8	69.4	18
33		5.7	67.5	31
44		6.8	66.4	47
49		5.8	67.4	50
61		5.7	67.5	

HI. 73.2

Section 3 East

3.8	69.4	
3.3	69.9	
4.1	69.1	
5.0	68.2	
5.7	67.5	

+ 11 for 00

Section 1 West

7.1	66.1	
6.0	67.2	
5.5	67.7	
5.5	67.7	
5.8	67.4	
6.7	66.5	
8.4	64.8	
7.5	65.7	
7.6	65.6	
6.7	66.5	
6.5	66.7	

+ 4.0' = 00 Sections

10 yds for Boulders — 11 East Sections

Sept Est. Bryson allows 350 cy

September Estimate.

Concrete below Curtain Wall—

Contour	End Area	Cu. Yds.
1412	00	
		0.6
1415	10	
		3.0
1420	22	
		6.9
1425	53	
		34.1
1428	560	
		66.5
1430	1237	
		282.1
1435	1810	
		401.4
1440	2525	
		569.1
1445	3622	
add. $\frac{15}{2} \times 2.5 =$		.7
add $\begin{cases} 55-125 \\ 56\ 170 \end{cases} = 148$ sq.		5.5
add $\frac{42}{2} \times 3$		2.2

Mars Rock

8

Concrete below Curtain Wall.

Contour.	End Area	Cu yds
add $\begin{matrix} 55 \\ 59\frac{1}{2} \end{matrix} = 560 = \frac{1275}{2} \times 41$		96.8
add $442 \times 1.4 =$		22.9
1445	3622	
1450	4544	756.1
		927.9
1455	5477	
1455 —	125 — 560	
1455 =	4792	1067.8
1460	6740	
1460 —	442	
1460 =	6298	
		1196.1
1465	6620	
Total Contours		5439.7
Sections above 1465 =		550.4
		5990.1
sub (1460) $\frac{459}{2} \times 23$		20.8
		5969.3
August Est.		5796.0
		11765.3
Overhang		25.0
Total-to-Date.		11 790.0

11,790 Masonry

Total 11,779

Bryson's Total 11

difference. 1 cyds —

Deduct for Inspection Gallery

Area Section = 26

lenght Outlet = 18' = 18

208
26
27)468 (17.3 cuyds -
27
198
189
9

Level Area Section = (26)

lenght level Section = 77.63

x Area 26

46578
15526
)2018.38 (74.755
189
178
108
203
189
148
135
13

53
26
318
106
)1378 (51 yds
135
18

11/3/20
Bryson Fisher.

Concrete Topock -
West Contraction Joint in Curtain Wall

46 - 417

9.05 1512.75 1503.70

Contraction Joint
0 0 Section

All rods above 6.7 add 3°

0-0	11.6	04.2 ✓
10	11.7	04.1 ✓
20	12.3	03.4 ✓
30	13.7	02.0 ✓
34 ✓	13.7	02.1

Section 1 - 31 line

0 0	11.0	04.8 ✓
10	11.0	04.8 ✓
20	11.4	04.4 ✓
30	12.5	03.3 ✓
34 ✓	12.7	03.1 ✓

Section 2 - 29 line

0 0	10.7	05.1 ✓
10	10.1	05.7 ✓
20	10.6	05.2 ✓
30	12.2	03.6 ✓
35	12.6	03.2 ✓

all rod - above 6.7 - 3°
HI 12.8

Section 3 = 27 line

00	6.5	06.3 ✓
10	6.0	06.8 ✓
20	11.0	04.8 ✓
30	12.3	03.5 ✓
35	12.5	03.3

Section 4 (25 Line)

00	4.4	08.4 ✓
10	5.2	07.6 ✓
20	9.9	05.9 ✓
30	11.3	04.5 ✓
35	11.7	04.1

Section 3 (23 Line)

00	5.0	07.8
10	5.0	07.8
20	5.8	07.0
35	5.8	07.0

15' — Section 6 — 00 —

	6.0	06.8

17' wide.

11/2/11

October Concrete Estimate

Add following yardage to September Total deducting amount Figured by Sections above 1465 - West of Contraction Joint & Portion of Sections South of Curtain Wall lying within Curtain Wall

Deductions

Sept. Sections within South Portion Curtain Wall	16.6
Aug. Sections west of Contr Joint in Curtain Wall	307.8
Total deductions from Sept Estimate	324.4
Inspection Gallery 146' @ .9734 Cyd =	142.0

Sept Estimate	11,790
	324.4
	11,465.6
	54206
Total yadage To Date	16886.2

	5481.1
Fillett	81.5
	5562.6
Insp. Gallery	142.0
	54206

Bryson Est- 16,972 cubic yds.

Contour	End Area	Cu Yds
1465	3510	
		654.2
1470	3555	
		664.1
1475	3617	
		694.3
1480	3881	
		743.1
1485	4145	
		740.4
1490	3751	
		715.5
1495	3966	
		721.5
1500	3876	
1485 } 2'	633	47.2
1487 }	642	
1495	444	34.0
1497	475	
		5014.3
Base Concrete Tower		15.7
Sections		725.1
		5755.1
Nov 1st skip Est.	-	274.0
		5481.1

Continued Page back

11/17/20
- Bob Fisher Mixter

— November Estimate -
Concrete Sections West of Contr Joint
Top of Curtain Wall

Transferred from Book 14 Page 59

B-48 10.35 1323.13 1512.78

400' Radius = 00

Contr Joint = 3+26 15

5.18		10.2	12.9 ✓
00		10.1	13.0 ✓
10		9.5	13.6 ✓
21.9		9.4	13.7 ✓

C32

5.18		10.3	12.8 ✓
00		10.0	13.1 ✓
22.2		9.5	13.6 ✓
22.2	Same as 30-elev.		09.8 ✓

C30

4.68		6.0	17.1 ✓
00		5.9	17.2 ✓
10		7.0	16.1 ✓
23.4		7.3	15.8 ✓
23.4		13.3	09.8 ✓

1523.1

C28

4.68		5.0	18.1 ✓
00		5.0	18.1 ✓
10		5.2	17.9 ✓
23.4		7.2	15.9 ✓
23.4		12.7	10.4 ✓

C26

4.68		5.0	18.1 ✓
00		5.0	18.1 ✓
10		5.8	17.3 ✓
22.3		7.2	15.9 ✓
22.3		12.4	10.7 ✓

24

4.68		4.8	18.3 ✓
00		5.0	18.1 ✓
10		5.3	17.8 ✓
20.1		7.2	15.9 ✓
20		12.4	10.7 ✓

22

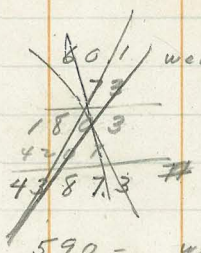
4.68		4.9	18.2 ✓
00		4.8	18.3 ✓
8		5.3	17.8 ✓
12		7.1	16.0 ✓
17.8		7.6	15.5 ✓
17.8		12.3	10.8 ✓

Platted 11/18/20

1/18/20

Building Metal Work 17

cast iron Pipe 16" – Class "B"



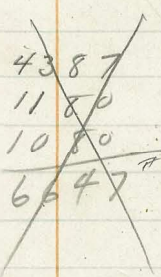
weight per ft

United States Cast Iron + Foundry Co-Cat – give CB 16" Pipe as 125# per ft

125 # per ft
73 in ft.
375
875
9125

590 – weight of Elbow.
2
1180 #

1080 # = weight 16" gate valve



Total weight.

35' of Cement pipe

Dam Not – Est. 10

9125 ✓
1180 ✓
1080 ✓
11385 #
2785
11863

Steel bars over opening for Pipe –

35' – 1 ¼" @ 4.173 per ft.

4173
35
20865
12519
146.055

Pipe =	11385
Bars	146
Copper	26
Est Oct.	11465

Dec 1 — Nov Estimate
Bob Mixter — Sections on Concrete East of Cont Joint.

Sta 00 = Upstream Face at El R.408.X

40-413 53		402	8696		1482.94

00 = Contr Joint

00	North Form			8.9	78.1 ✓
+21.5				8.6	78.4 ✓
+47.7	South Form			8.3	78.7 ✓

0+20 line

00	NF			8.9	78.1 ✓
398.6 +9.6				8.1	78.9 ✓
383.2 +25				8.1	78.9 ✓
361.3 46.9				8.1	78.9 ✓

0+40 line

00	NF			9.2	77.8 ✓
394.3 +13.9				7.3	79.7 ✓
383.7 +24.5				9.1	77.9 ✓
370.3 +37.9				8.8	78.2 ✓
361.4 +46.8	SF			9.3	77.7 ✓

0+60 line

00	NF			8.9	78.1 ✓
392.0 +16.2				8.8	78.2 ✓
387.6 +20.6				10.4	76.6 ✓

Platted 12/14/20

12/1/20
Bob
Mitter

Nov Est 1
Concrete

0+60 line

8696

371.5 +36.7			9.1	77.9 ✓
370 +38.2	New Form.		8.6	78.4 ✓
365.3 +72.9	South Forms.		8.0	79.0 ✓
			~~8.6~~	

0+80 line

406.1 00	NF on Rock		9.6	78.4 ✓
+7.1	on Conc.		10.6	76.4 ✓
398.5 +9.4			10.3	76.7 ✓
396.4 +17.8			10.8	76.2 ✓
387.5 20.7			9.6	77.4 ✓
376.5 31.7			10.0	77.0 ✓
+28.7	New form		9.6	77.4 ✓
+64.5	South form		8.8	78.2

Rec'd 12/14/20

1+00 line

South form at angle taken as 00
and pluses run north

00	South form.		
00		8.7	78.3 ✓
+17		8.6	78.4 ✓
+32.1		9.2	77.8 ✓
+43.1		8.7	78.3 ✓
+58.9	Top Con. Rock Contact	8.6	78.4 ✓

Cont 12/17

12/1/20
Burt
Mutter

Upstream Face Points-
Set on C46 Sight C 34 set
by intersection Defl. angle=
120' 8°35'-40.

C38-80' 5°43'46"
C39 70' 5°-0-48"
C40 66' 4°-17-50"
C41-50 3-34-52
C42-40 2-51-58"
C43-30 2-08-55" 5.7=23-46,4"
Forms 24 3 1°45'09
C44-20 1-25-57
C45-10 0-42-58
" 00 C46 checks .04 short for Measurement

12/1/20 Cont. from Page 15
Bob
Mixter

— Concrete —

		N.	
40-413 53	491	1487.85	1482.94

1+10 line

408 17 = 00 = End Cont. Joint Upstream Face.

00	R. Contact	9.9	78.0 ✓
9.8		9.0	78.9 ✓
26.2		9.3	78.6 ✓
44.8		9.7	78.2 ✓
+55.2	= South Form R. Contact	10.5	77.4 ✓

1+20 line

408 17 = 00

00		8.1	79.8 ✓
9.0		8.5	79.4 ✓
18		9.8	78.1 ✓
+33.2	= Rock Contact	9.9	78.0

1+24 line = Rock Contact = 00

Plotted 12/4/20

12/1/20
Bub
Mixter

Excavation for New East Tangent.

C66 = 00 Cut on Lt Abut cut

46-44 04		836	151206 ✓	150370
	400 R. Arc = 00 Sta			
	50 line			
~~0+4~~	Hand Level		~~19.3~~ ~~149~~ 28	
	1.80	1505.09	877	150329
0-4			12.0	931 ✓
C50 400 00			13.0	921 ✓
0+5			11.4	937 ✓
0+8			5.1	1500.00 ✓
0+17		151206	88	03.3 ✓
0+30			6.5	05.6
0+41			5.0	071 ✓
0+78			3.6	085 ✓
0+75	Hand Level	12.6	23.3 ✓ 1.4	10.7
0+79			11.4	11.9 ✓
0+98			8.4	14.9 ✓
1+06			5.0	18.3 ✓
			+2.0	1525.3
	52 line			
		1505.09		
0-12			40	1501.1
0-5			10.4	947
C52 00			11.0	941
0+11			13.3	918

Platted 12/3/20

Transferred Book 9 - Page 59-60

Platted 12/14/20

12/1/20 Excavation for Nov

Bub Interior

52 line.

0+17	150509	14.0	91.1 ✓
0+25		11.1	94.0 ✓
0+34		9.5	1495.6 ✓

	151206		
0+39		11.7	00.4 ✓
0+48		6.7	05.9 ✓
0+54		5.1	07.0 ✓
0+67		+2.0	14.1 ✓

54 line.

0-17	151206	4.4	07.7 ✓
C54-00		12.8	99.3 ✓
0+14		13.0	99.1 ✓
0+16		16.6	95.5 ✓
0+35		15.5	96.6 ✓
0+38		11.0	01.1 ✓
0+57		5.6	06.5 ✓

56 line

	151206		
0-6		6.0	06.1 ✓
C56 00		7.1	05.0 ✓
0+26		5.0	07.1 ✓
0+29		1.6	10.5 ✓
0+34		0.0	12.1 ✓

Platted 12/5/20

12/1/20
Bob
Mixter

Nov. Exc. Lt Abut

56 line

0+43	Estimated	1517.06		21.1 ✓
0+53	"			29.0 ✓

58 line

	Hand Level 13.0	1522.9	22.0	1509.9 ✓
0-18			+1.0	23.9 ✓
C58 00			10.0	17.9 ✓
0+18			14.0	08.9 ✓
0+27			12.6	10.3 ✓
0+38			7.6	15.3 ✓
0+38			3.6	19.3 ✓

58 Line

	H.L. 13.0	27.9 ✓	8.0	14.9 ✓
0+46			3.0	24.9 ✓
0+46			+5.0	32.9 ✓

60 Line

		1522.9		
	H.L. 12.5	1532.6 ✓	2.8	1520.1 ✓
0-11			0.0	32.6 ✓
C60 00			6.2	26.4 ✓
0+20	60 Line		14.0	18.6 ✓
0+27			13.0	19.6 x
0+35			8.5	24.1 x
0+41			2.0	30.6 ✓
0+41			+4.0	36.6 ✓

Plotted 12/3/20

12/2/20

Bob Winter for Joe.

Reran 250 R Curve.
Set 38-250 over to original Point.
Reset points on 38 Radius

Ref Point above B 38 & Below 38-250 to be changed

Set on new 38-250 Sight B 38 turn 97°09-43 check 48-250 within 1 hundreth.

Turn tangent & deflect to 24 Radial line at old Engine base Defl = 10°01'-36"

$\frac{38}{24}$
140' on 400 = 87.50 on 250

Set points for String intersection

Set 38-325-Nail in Concrete
Set 38-300 X in Rock
" 38-275 Nail in Rock.
Set on 38-275 Sight 38-325 turn 97°09-43 to west for # 8 X Sect line

Measure west from 38-375
13.34 = pencil X on Rock
7.98 further Nail in ground
13.12 " = nail in plank under derrick
34.44 = ~~Sta~~
13.22
16666 = Sta on Sect line # 8.
13.95
18061 = Sta face of Rock on Line # 8.

12/2/20 Nov Ex cal.

Bub Master Line # 8.

40 413 53		2.77	85.71		1.48294
		1.44	74.24	12.91	72.80 ✓
1+16				00	74.2 ✓
38-275				77	66.5 ✓
1+32 22				70	67.2 ✓
1+39					
1+45 56	pencil point on rock			+.65	74.89 ✓
1+45 56				42	70.0 ✓
1+53 54	Nail in ground			65	67.7 ✓
1+66	Edge pot hole			86	65.6 ✓
1+79	Top of Rock on face			89	65.3 ✓
1+80 61	Face of rock			139	60.3 ✓
		052	62.47	12.29	61.95
	119	119	51.11	12.55	49.92 ✓
1+80 61				1.1	50.0 ✓
~~1+80 61~~	1+82 6			15	49.6
1+82 6					
		171	42.66	10.16	40.95
				12.60	30.06
12/3/20					
PI Top Stake		102	50.94		49.92 ✓
1+85 6				4.3	46.6 ✓
1+85 6				15.0	35.9 ✓
2+00 61				17.0	33.9 ✓

Top Rock in Concrete 72.82 - .02 Error.
Vert 15' up.

Plotted 12/5/20

Transferred Book 9 Page 58

Top Iron Pin in West wall of Canyon Top Stake

Tp on old Dam
Bottom Hole on Dec 2 - 3-30 Pm

(continued Page 24)

12/3/20
Bub
Jupiter
Joe

Set ow C-24 Sight
4+75 on C line
Intersect 24 line with
250' Radius Curve &
put point in old Concrete
near Pump Base

Set 2x4 in Bottom at
toe of Dump = 65' South
on Radial line = 24-185

24-250
65
24-185

500

102

12/3/20
Bob
Mixler
Joe

Cont from page 22
1Xov E&C

		1450.94		
2+~~00~~ 03 ~~61~~			7.7	432 ✓
2+07 30			4.9	46.0 ✓
2+11 30			4.9	46.0 ✓
	1231	6223		4992 ✓
			043	146180
2+19 61			5.7	565
2+26 61			00	63.2

33
− 1+00 61
2+13 61

Platted 12/5/20

Top stake
Nail in Concrete old Pump Base 24-250

Concrete Est.
November 1920

Contour	Area Sq ft.	Average End Area	Dist between Contour	Cubic ft
1412	00	5 x 3		15.0
1415	10	16 x 5		80.0
1420	22	38.5 x 5		192.5
1425	55	311.5 x 3		934.5
1428	568	1070 x 2		2140.0
1430	1572	2629.5 x 5		13147.5
1435	3687	4663 x 5		23315.0
1440	5639	6903.5 x 5		34517.5
1445	8168	9039 x 5		45195.0
1450	9910	10597.5 x 5		52987.5
1455	11285			
Fillet Top Elev	59+			
1455	570	656 x 4.1		2689.6
1459+	742			
1455	10715	11596.5 x 5		57982.5
1460	12967	deduct {473 x 2.3 R-Contour} on 13365 x 5		66825.0
1465	14752			
1465	8363	8709.5 x 5		43547.5
1470	9056	9489.5 x 5		47447.5
1476	9913			
1475	3605	3743.5 x 5		18717.5
1480	3882	4013.5 x 5		20067.5
1485	4145			

336.5 x 2.3 = 20 cu yds

Add Fillet	643 / 648	fr 4.3	6455 x 4.3	2775.7
" Fillet	32/00	fr 4'	16 x 4	64.0
" Fillet	16/65	fr 2'	40.5 x 2	81.0
" Fillet	7/22	fr 2.5	14.5 x 2.5	36.3
1485	3502		3629.5 x 5	18147.5
1490	3757		3863.5 x 5	19317.5
1495	3970			
Add Fillet	430 / 462	fr 4.3	446 x 4.3	1917.8
1495	3540		3674 x 5	18370.0
1500	3808		3926.5 x 5	19632.5
1505	4045		3786.5 x 5	18932.5
1510	3528			
			x 7	529076.4
			cu yds	19595.4

Add for Sections taken above last Contour.

East Contr Joint #1	802.9
South of Curtain Wall	498.0
West Contr Joint #1	781.3
Base Tower #2	16.0
Overhang	250
	21718.6
Deductions	244.0
Total Nov. Est.	21475.0

Susp. Gallery	217	
16" Drain Pipe	7	
Contour 60	20	
Total deductions	244.0	

12/27/20

12
22
37

- December Estimate -

At 38-325 Sight Center for Zero -

Concrete Sections above.

Tip of Rock				
		1.14 73.96		1472.82
38 Line - n -		325 = 00 - Dist.		
316.6	+ 8.4 ✓		9.6	64.4 ✓
303.0	+ 22.0 ✓		9.5	64.5 ✓
293.2	+ 31.8 ✓		11.0	63.0 ✓
278.2	+ 46.8 ✓		11.6	62.4 ✓
		0+12		
	- 8.4 ✓		8.2	65.8 ✓
	00		8.6	65.4 ✓
	+ 22 ✓		10.6	63.4 ✓
	+ 36 ✓		11.0	63.0 ✓
		0+22		
	- 13 ✓		7.3	67.7 ✓
	- 5 ✓		7.1	67.9 ✓
	00 ✓		7.8	67.2 ✓
	+ 8 ✓		9.0	65.0 ✓
	+ 20 ✓		9.3	64.7 ✓
	+ 21.5 ✓		9.0	65.0 ✓
	+ 35 ✓		9.2	64.8 ✓

Platted 1/1/21

26

7396

	0+35			
- 18 ✓			8.4	65.6 ✓
- 7 ✓			9.1	64.9 ✓
00			9.2	64.8 ✓
+ 10 ✓			9.5	64.5 ✓
22 ✓			9.6	64.4 ✓
28 ✓			9.5	64.5 ✓
	+50 = 00 section.			
	295 = 00 Dist.			
38 - 295	6.4	69.8	10.57	63.39
	+ area - 11' x 1.5 =			
	0 - 20			20 / 33
00 ✓			6.9	62.9 ✓
RC. + 6 ✓			7.3	62.5 ✓
- 8 ✓			6.0	63.8 ✓
- 14 ✓			5.4	64.4 ✓
	0+33			
00			7.0	62.8 ✓
- 12 ✓			5.4	64.4 ✓
+ 7 ✓			7.5	62.3 ✓
	0+33			
00 ✓			4.0	65.8 ✓
+ 5.0 ✓			4.1	65.7 ✓
- 10.6 ✓			3.7	66.1 ✓

69.8

	0+43		
-5 ✓		5.4	64.4 ✓
00 ✓		4.6	65.2 ✓
+10 ✓		4.9	64.9 ✓
+25 ✓		5.1	64.7 ✓
	0 53		
-3 ✓		4.5	65.3 ✓
00 ✓		4.5	65.3 ✓
+13 ✓		4.9	64.9 ✓
28 ✓		5.1	64.7 ✓
	0+63		
-2 ✓		4.0	65.8 ✓
00 ✓		4.0	65.8 ✓
+13 ✓		4.8	65.0 ✓
32 ✓		5.15	64.6 ✓
	0+73		
-1 ✓		4.5	65.3 ✓
00 ✓		4.5	65.3 ✓
+6 ✓		4.7	65.1 ✓
19 ✓		4.8	65.0 ✓
3~~4~~ ✓		5.2	64.6 ✓
	0+83		
~~conc...~~ 00 ✓		4.6	65.2 ✓
13 ✓		4.7	65.1 ✓
29		5.0	64.8 ✓

℄ 0+91 = 00 section

12/31/20

At 38-295 Sight Center Zero Az R.

Cor. form	32.7	82-0
E-Conduit	37.9	106-0
A C	48.6	72-30

Platted 1/1/21

12/31/30
Bob Fisher Mixter

Dec. Est.

Top of Concrete Right Abut. of Dam.

At Auxl Pt #3 from 24-38355 for Zero Az Rt.

#3			4.05	1533.27	29.22
RC Form	20.5	345-0			
Concrete Contact	51,5	347-30		17.4	15.9
Lower Lift Elev.				22.4	10.9
Average Elev. Concrete				15.6	17.7
End of Form	20.5	345-0			
	18.0	303-0			
	19.1	265-15			
	25.0	252-30			
	26.1	263-30			
	30.7	275-0			
	29.6	283-0			
	39.9	299-0			
	50.0	306-30			
	59-0	320-0			

Plotted 1/1/31

1/1/21
Bub
Fisher
Mixter

Concrete Sections for Dec Est.

East of Contraction Joint #1 –

40-420 12		5.28 1492.30		1487 02
		00 Section		
		Contraction Joint		
00 ✓			5.6	86.7 ✓
13 ✓			4.4	87.9 ✓
47-5 ✓			3.7	88.6 ✓
	0+20	#1 section		
46.5 ✓			3.6	88.7 ✓
29 ✓			2.8	89.5 ✓
17 ✓			3.9	88.4 ✓
8 ✓			4.6	87.7 ✓
00 ✓			4.6	87.7 ✓
	0+40	2		
00 ✓			4.5	87.8 ✓
7 ✓			4.5	87.8 ✓
26 ✓			3.6	88.7 ✓
45.7 ✓			3.3	89.0 ✓
	0+60	3		
47.6 ✓			3.3	89.0 ✓
26 ✓			3.6	88.7 ✓
11 ✓			5.3	87.0 ✓
00 ✓			5.3	87.0 ✓

	0+80	1492.30		
00 ✓			5.3	87.0 ✓
15 ✓			5.3	87.0 ✓
21 ✓			~~3.9~~ 4.3	88.0 ✓
40.1 ✓			4.5	87.8 ✓
48.6 ✓			5.4	86.9 ✓
	0+97			
~~47.5~~ 48.0 ✓			6.6	85.7 ✓
20.1 ✓			6.1	86.2 ✓
15.7 ✓			8.0	84.3 ✓
00 ✓			8.0	84.3 ✓
	1+04 = mean			
00 ✓	1+11		9.0	83.0 ✓
~~20~~ 15.7 ✓			8.4	83.9 ✓
20 ✓			6.6	85.7 ✓

Platted
1/1/21

— Concrete Estimate Dec. 1920.

Sections below - Curtain Wall above Elev - 1465 — ℄ Gallery = 00 Section — see September Est —

	— East —		
00	55		
20'		63.0	
1	115		
20'		104.7	
2	166		
20'		133.7	
3	195		
10'	West	72.2	
4	195		
	— West —		
00	55		
20'		64.8	
1	120		
20'		57.0	
2	34		
5'		3.1	
00	00		
		498.0 ✓	

Sections — Curtain wall — above Elev 1510 — See Nov. Est

Sta -	End Area	Cu. yds.
3+26 1/5	93	
		67.4
C32	93	
		102.5
C30	190	
		148.0
C28	219	
		151.6
C26	200	
		144.0
C24	197	
		131.4
C22	164	
		36.4
2+08	00	
		781.8 ✓

Concrete Est #11 December 1920

Sections below Curtain Wall
above 1460 Elevc—
—38 Radial Line = Base = 00—
—East—

00	140		0-63	171	
		74.2			643
0+12	194		0-73	176	
		88.8			600
0+22	285		0-83	148	
		121.1			22.0
0+35	218		0-91	00	
		20.2			
0+40	00				714.7

West

00	140				
		74.8			
0-20	66				
		30.3			
0-33	60				

0-33	96				
		44.0			
0-43	142				
		54.8			
0-53	154				
		60.2			

Concrete Est #11 December 1920
Sections in Curtain Wall East of Contr Joint #1
Contraction Joint = 00—

Section	End Area	Cu yds.
00	383	
		293.7
0+20	410	
		289.6
0+40	372	
		282.2
0+60	390	
		279.4
0+80	364	
		196.4
0+97	260	
		63.5
1+04	230	
		1404.8 ✓

Topog - Dec Est.

To be added to Estimate of Nov. 1920

Contour	Area Sq ft.	Average End Area	Dist. between Contours		Cu yds
1427.5	178	262.0 × 2.5 =	655.0 =		24.2
1430	346	616.5 × 5' =	3082.5 =		114.1
1435	887	992.5 × 5 =	4962.5 =		183.8
1440	1098	1217.5 × 5 =	6087.5 =		225.5
1445	1336	1500.0 × 5 =	7500.0 =		277.8
1450	1663	1763.5 × 5 =	8817.5 =		326.6
1455	1864				
1455	915	1137.5 × 5 =	5687.5 =		210.6
1460	1360				
1440	18	36.0 × 5	180.0 =		6.7
1445	54	194.5 × 5	972.5		36.0
1450	335	437.5 × 5	2187.5		81.0
1455	540	960.0 × 5	4800.0		177.8
1460	1380				
1455	951	1058.0 × 4.6	4866.8		180.2
1459.6	1165				
1500	290	449.0 × 5 =	2245.0		83.1
1505	608	803.5 × 5 =	4017.5		148.8
1510	999	1074.5 × 5 =	5372.5		199.0
1515	1150	1206 × 2.2 =	3256.2		120.6
1517.7	1262				

cu yds.

1475	4909	4911.5 × 5' =	24557.5	909.5
1480	4914			
1475	1067	1094.5 × 4.2 =	4596.9	170.3
1479.5	1122			
1475	328	529.0 × 3.8 =	2010.2	74.5
1478.8	730			
				3369.9
		error of		+ 180.2
				3550.1

December Est #11

November Topog —

Contour	Area Sq ft	Average End Area	Dist between Contours	
1412	00			
		5	x 3	15.0
1415	10			
		16	x 5	80.0
1420	22			
		38.5	x 5	192.5
1425	55			
		311.5	x 3	934.5
1428	568			
		1070	x 2	2140 0
1430	1572			
		2629.5	x 5	13147.5
1435	3687			
		4663	x 5	23315.0
1440	5639			
		6903.5	x 5	34517.5
1445	8168			
		9039	x 5	45195.0
1450	9910			
		10597.5	x 5	52987.5
1455	11 285			
1455	10715			
		11596.5	x 5	57982.5
1460	12478			
		13365	x 5	66825.0
1465	14252			
1465	8363			
		8709.5	x 5	43547.5
1470	9056			
		9489.5	x 5	47447.5
1475	9913			
1475	3605			
		3743.5	x 5	18717.5
1480	3882			
		4013.5	x 5	20067.5
1485	4142			

Contour	Area Sq ft	Average End Area	Dist between contours	
Lift #1	{643 / 648	645.5	x 4.3	2775.7
1485	3502			
		3629.5	x 5	18147.5
1490	3757			
		3863.5	x 5	19317.5
1495	3970			
Lift #2	{430 / 462	446	x 4.3	1917.8
1495	3540			
		3674	x 5	18370.0
1500	3808			
		3926.5	x 5	19632.5
1505	4045			
		3786.5	x 5	18932.5
1510	3528			
				194891

Total Topog Nov	19489.1
add - Topog Dec	3369.9
set W-C.W. # Joint #1	781.8
" E " " " 1	1404.8
" South Curtain Wall	498.0
" " " at Bar #2 Tower	714.7
Overhang	235.0
Total for Dec —	26493.3

2/1/20

January 1921
Concrete Estimate — #12

BM East Curb Joint #3		0,9 6	1510,3 4		1509,38	+ 21,5
Wall on Block.		5.7	13.8	2,2 6	1508.08	+ 8,3
						· 00
5+51,3		54+11 3				- 4,7
00				5.5	08,3 ✓	
15				5 4	08.4 ✓	
30.1				5.3	08.5 ✓	00
		(54)				- 47
29,4				5.0	08 8	9,0
21,2				4 0	09.8	20,4
00				5 0	08.8 ✓	
		52				00
28.5	level across			3 8	10,0 ✓	- 4,7
						183
		50				
27.8	level across			3.2	10.6 ✓	
						00
Top of Forms		3.1	1521.1		1518.00	- 47
		R = 400' = 00				+ 169
		c 49				1.8,
00				8 0	13.1 ✓	
- 5.1				8.1	13.0 ✓	00
+ 8.0				8.0	13.1 ✓	- 4.8
13.0				10 3	10.8 ✓	14.6
22.0				10.3	10 8 ✓	
					✓	

1521,1

48

	8.5	12.6 ✓
	7.0	14.1 ✓
	5.3	15.8 ✓
	6.3	14.8 ✓
47		
	4 1	17,0 ✓
	4 0	17,1 ✓
	5.6	15,5 ✓
	5.4	15,7 ✓
45		
	4.7	16 4 ✓
	4.7	16 4 ✓
	4 9	16.2 ✓
(43)		
	4 4	16 7 ✓
	4 4	16.7 ✓
	4.7	16 4 ✓
3.44 1520.0	4.5	1516.6
(41)		
	3.9	16,1 ✓
	3.9	16,1 ✓
	4.0	16.0 ✓
		✓

450 ft = .09

1520.0

(39)

00	5.7	14.3 ✓
− 4.8	5.7	14.3 ✓
+ 12.4	6.1	13.9 ✓

(38)

00	7.6	12.4 ✓
− 5.2	7.6	12.4 ✓
+ 12.1	8.3	11.7 ✓

3+58 —

00	8.0	12.0 ✓
− 5.3	8.1	11.9 ✓
+ 12.3	8.4	11.6 ✓

3+46

00	8.5	11.5 ✓
− 5.3	9.0	11.0 ✓
+ 11.9	8.6	11.4 ✓

(33)

00	8.6	11.4 ✓
− 5.3	8.7	11.3 ✓
+ 11.5	8.6	11.4 ✓

(3+27)

00	8.6	11.4 ✓
− 5.3	8.7	11.3 ✓
11.5	8.6	11.4 ✓

✓

Platted 7-1-71

3.0 × 4.8 × 17.

3.0 × 5 × .17

4.8
3.
14.4
17
1008
144
244.8
243
1.8

19.07

5
3
15
17
105
15
255
243
12.0

9.4

94
91 ✓
18.5 avg

Deduct for spillways

Contour	End Area			Cu yds.
1412	0 0			
		5' X 3' =	15.0	0.6
1415	10			
		16 X 5	80.0	3.0
1420	22			
		71 X 5	355.0	13.2
1425	120			
		369.5 X 3		41.1
1428	617			
		965 X 2		71.5
1430	1311			

(Continued from Page 40)

Steel in Tunnel

carried forward				10275.6
Vertical 150 Bars -	3/4"	- 5-8 1/2'	- 8565 @ 1.913	1638.5
Horiz. sides 12 "	1/2"	80'	960 @ .85	816.0
" roof 7 "	1/2	8-5" =	595 @ .85	506.0
Arches roof 38 "	3/4"	- 8-4 1/2 =	318.25 @ 1.913	609.0
" " 38	3/4	7-2	272.44 @ 1.913	521.0

1/2" Bars over Outlet Tunnel

1 - 11-8
1 11-0
1 - 9-3
1 - 8-3

- 40.2 lin ft @ 85 — 34.0

Used Extra

5 - 3/4"	- 5-8 1/2 =	28.5 @ 1913	54.0
6 1/2"	30'	180.0 @ .85	153.0
15 - 1/2	@ 3.0	45 @ .85	38.0

Total Reinforcing for Jan. 1921 = ~~146450#~~ 2 St. # 1/2

2-15-21
Fisher
Mixter.

Location Downstream Steps of Curtain Wall -

C 28 2.76 20 99 18,23

At 38-359.15 chained 5.20
= 38-364.35 ✓ 11.7 19.63
5 76
370.11
4 92
375.03

11.7 0 9 3
Lift #4 12.0 09.0
Lift #3 5.8 15.2
Lift #2 At 38-364.35 Sight Center 99 for Zero Az Right.

Lift #1

49.0	277-45 ✓
87.7	278-45 ✓
87.7	274-30 ✓
49.0	269-30 ✓
3.6	180-0 ✓
48.5	90-30 ✓

Platted 2-15-21

At 38-370.11 Sight Center for Zero Az Rt. Lift #2

	100.5	278-30 ✓	5.3	127-30
Lift #4	96.8	276-0		
	49.5	271-15		
lift #4 3	49.5	271-15		
	11.3	25-45		

2.42
2.50
4.92 = 1st Lift -

359.15
5 20
364.35
5 76
370.11
4 92
375.03

30
2 76
5.76

3.50
1.70
5.20

49	21.8	
47	23.3	
45	23.5	✓
43	23.1	✓
4+10	22.5	✓
3+90	21.5	✓
3+70	20.8	
3+50	20.4	
3+30		20.1

from Contr Joint
30 toward
48

Estimate #12

1921 January Est— Summary

Contour	Upstream	Center	Toe	Total End Area	Cubic yards
1412		00		00	0.6
1415		10		10	3.0
1420		22		22	13.2
1425		120		120	41.1
1428		619		619	71.5
1430		1311		1311	
1427.4	00			00	0.2
1428	20			20	13.2
1430	335			335	208.2
1435	1913			1913	
1427.5			171	171	23.8
1430			344	344	
1430				1680	4045
1435				2689	
1435				4579	1050.8
1440				6770	1513.8
1445				9579	1992.2
1450				11937	2376.3
1455				13727	
1455				990	184.3
1459.6				1174	
1455				12737	
1460				15644	2627.7
1460				12864	
1465				14152	25015
					13026

Contour	West Contr. Joint	East Contr. Joint	Total End Area	Cubic yards
1465	3508	4856	8364	
1470	3545	5526	9071	1614.3
1475	3617	6297	9914	1758.2
Toilet (4-24) 1475		904	904	
1479.2		904	904	140.6
1475		96	96	
Toilet (3-8) 1478.8		256	256	24.8
1475	3617	5286	9003	
1480	3896	5725	9621	1724.4
1485	4153	6020	10173	1832.8
1485		360	360	
Toilet 1489.1		430	430	60.0
Lath 1485		638	638	
1489.3		648	648	102.4
1485	3515	5658	9173	
1490	3774	5788	9563	1734.8
1490	3774	3837	7611	
1495	3542	4539	8081	1453.0
1500	4108	5568	9676	1644.1
1505	4626	6316	10942	1909.0
1510	4548	4320	8868	1834.2
West End 1510	916		916	
1515	1148		1148	191.4
1517.2	1262		1262	120.5

(Continued) See next Page

Estimate #12

1921 January Estimate Summary

Contour	West Contr Joint	East Contr Joint	Total End Area	cubic yards.
1477.5		3	3	
				1.8
1480		35	35	
1480		45	45	
				39.2
1485		379	379	
				96.8
1490		667	667	
East Tangent 1505			971	
				188
1505.5			1055	
	add Cubic yds			4
				16304.8

(additions)

sheet 1	13026.1	
" 2	16304.8	
Sect west Joint #1	789.8	
" East " 1	645.2	
south of C wall	498.0	
" " "	714.7	
	31970.6	

31971
330
31641
270
31711

31711 Total for January 31

Deductions

7752.60	cu ft =	287+8' chamber = 295 lineal ft x 26.28
735.84	"	28' outlet Gallery x 26.28
115.23	"	16" Drainage Pipe Steel 69' lin ft
72.45	"	16" cement " 35' Lin ft.
240.00	"	8 - 1 x 1 x 30' = Drainage Wells.
8916.12 = 330.2 Cu yds		

Metal in Tower placed To Feb 1st

2 Flap valves at 4090# each	8180
1 - 30" valve @ 3000	3000
1 - 30" nipple 2½' long @ 390# per ft	975
1 - 30" T - 3 bells	3500
3 - lengths 30" pipe @ 400# per ft inc Bell 12' long	14400
2 pcs ⅜ chain 145' each = 290' lin ft @ 1.7 per ft	493
2 " " " 3' " 6 " " " "	10
8 - steps inside ladder ¾ round 4½' each = 36' @ 1.5	54
2 Guards " " " " 8-2½" = 16-5 @ 1.5	25
7½ lin ft 2" iron pipe @ 3.61	27
	30664#

Base - Reinforcing Outlet Tower to Feb 1st 1921

4 - 30# rail 8-3' each 33' @ 10# per ft	330
4 " " 14-3 " 57 " " "	570
6 " " 18-4 " 110' @ 10 " "	1100
Vert rails 24 - 30# rails = 720 @ 10 " "	7200
Horizontal ½" hoops	
14 ½" Bars @ 63'4" = 886.6 @ .85	753.6
4 - ¾" " 10'3½" each 41.17 @ 1.913	79.5
4 " 11-9 " 47.0	90.0
4 " 13'2½" " 52.82	101.5
8 " 1-3 10.00	19.0
T 3½" 12.57 " 37.71 @ .85	32.0
	10275.6

Continued
See Page 37

3-1-21
Bob
Fisher
Mixter.

Transferred from Book 16 - Page 50-57
February Monthly Estimate #13

Sections

52-468		10.76	43.59		1532.83	2.7			
				4.79	38.80	4.1			
		400' Radius = 00				9.0			
		3+81.5 Contr Joint				11.0			
2.7				7.2	36.4	14.9			
00				7.2	36.4				
4.7				6.7	36.9	2.7			
7.6				6.2	38.4	00			
10.7				4.6	39.0	3.9			
14.7				4.7	38.9	7.3			
		3+90				14.2			
2.7				7.4	36.2				
00				7.3	36.3				
11.4				5.1	38.5	2.7			
15.3				5.0	38.6	00			
		4+00				3.9			
2.7				7.9	35.7	7.3			
00				7.6	36.0	14.2			
11.2				5.4	38.2				
15.2				5.3	38.3				
		4+10							
2.7				7.9	35.7				
0.0				7.7	35.9				
5.0				6.0	37.6				
14.2				5.1	38.5				

Plotted 3-1-21

43.59
4+20 (47)

							7.8	35.8	
							7.0	36.6	
							6.1	37.5	
							5.1	38.5	
							5.2	38.4	
		4+30							
							7.6	36.0	
							7.6	36.0	
							7.2	36.4	
							5.7	37.9	
							5.7	37.9	
		4+36.3							
							7.6	36.0	
							7.6	36.0	
							7.2	36.4	
							5.7	37.9	
							5.7	37.9	

Plotted 3-1-21

3-1-21

Bub Fisher Mixter.

Transferred from Book 16 Page 50

February Estimate #13

— Sections —

T.P.	8.8	47.60	38.8
	4+36.3 Conte Joint-		
0		5.0	42.6 ✓
8.0		5.2	42.4 ✓
13.7		4.8	42.8 ✓
	4+50		
0.0		5.0	42.6 ✓
8.0		5.2	42.4 ✓
13.7		4.8	42.8 ✓
	4+60		
0.0		5.3	42.3 ✓
9.0		5.2	42.4 ✓
15.0		5.1	42.5 ✓
	4+70		
0.0		5.8	41.8 ✓
16.2		5.8	41.8 ✓
	4+80		
0.0		6.4	41.2 ✓
9.0		6.1	41.5 ✓
16.1		6.5	41.1 ✓
	4+85.5 Conte Joint		
0.0		6.2	41.4 ✓
8.0		7.0	40.6 ✓
16.0		7.0	40.6 ✓

Platted 3-1-21

February Estimate #13

— Metal + Reinforcing Placed —

Metal Work in Dam

Estimate #12 — 11748 #

Copper placed in Feb- — 133.25 #

11881.25 #

Metal Work in Outlet Tower.

Estimate #12 for Jan-1921 — 30.664 #

1 Lenght 30" pipe @400# per ft — 4800.

8 - 3/4" Inside steps @ 4 1/2 lin ft = 36@.15 — 5.4.

5 " " Bands @ 8-2 1/2" = 41'@.15 — 6.15

35.579.5

Estimate #13 — 17.789 Tons

Reinforcing Outlet Tower

1 Horz. 1/2" Hoop @ 63'-4" = 63.3@.85 — 53.8

Total Vert 30# rail in Place — 1254 ✓

Total - " " " " to Feb 1st — 720

534 lin ft @ 10# = 5340.0

Estimate #12 — 14645.0

Total for Estimate #13 — 20039.0

Vertical Rails Total March 1st

2 rails from Elev	1505 To 1531-21 @ 30	630 Lin ft
3 " " "	1512 - 1534 3@22	66 " "
7 " " "	1531 1558 7@27 1554+21	210
4 " "	1531 - 1555 4@24 = 96+12 cap	108
8 " "	1531 To 1552 8@21 168+24 lap	192 ✓
3 " "	1531 1544 = 3@13 = 39+9 lap	48

Inplace March 1st — 1254 ✓

Summary Concrete Est #13
February 1921

contour				
[center] 1412		00	00 ✓	0.6 ✓
1415			10 ✓	3.0 ✓
1420			22 ✓	13.2 ✓
1425			120 ✓	41.1 ✓
1428			619 ✓	71.5 ✓
1430			1311 ✓	
[Toe] 1427.5			171 ✓	
1430			343 ✓	23.8
[Center+Toe U.S. F.] 1427.4			00 ✓	
1428.0			20 ✓	0.2 ✓
1430.0			335 ✓	13.2 ✓
1435.0			1889 ✓	205.9
1430			1654 ✓	
1435			2690 ✓	402.2
1435			4579 ✓	
1440			6757 ✓	1049.7 ✓
1445			9580 ✓	1512.7 ✓
1450			11939 ✓	1992.5
1455			13714 ✓	2375.8
[Toe] 1455			956 ✓	
1459^{6}			117.4 ✓	181.4
1455			12763 ✓	
1460	15762 - RC 489		15273 ✓	2595.9
(sections)				10,482.2

Checked for May Est ✓ 10482.7

					10482.2
1460	12974 - RC 489			12485	
1465				14246	2475.1 ✓
sections	west of #1	Contr J #1 50 to Line	East 50 / [illegible]		
1465				8384 ✓	
1470				9072 ✓	1616.3 ✓
1475				9918 ✓	1758.3 ✓
1475		945		945 ✓	
1479^{2}		985		985 ✓	150.1 ✓
1475				8973 ✓	
1480				9803 ✓	1738.5 ✓
1485				10497 ✓	1879.6 ✓
1485				1546 ✓	
1489^{3}		20,350.9 Total sheet 1		1603 ✓	250.8
1485				8951	
1490				10083	1762.4 ✓
1495				11012	1953.2 ✓
1495				1091	
1499^{3}				1157	179.0 ✓
1495				10269	
1500				12248	2084.9 ✓
1505				14322	2460.2 ✓
1505				971	18.8 ✓
1505^{5}	add 4 cu yds			1055	4.0 ✓
					28813.4

Curtain Wall Lift #1

February Concrete Est

Contour	West of #1 Contr Jt	East of #1 - To 50 Line	50 line to 62 line	Total End Area		1505 =	area of concrete outside of 380 × 1 = 14.1 cu yds.		Cu yds
1505				574	91.4 ✓				
1509 3				574					14.1 ✓
1505				12307					
1510				11469	2201.5 ✓	1477.5			
1510	Deduct spillway			1385		1480		3	1.8 ✓
1513 5				1360	193.2 ✓	1480		35	
1510				916		1485		45	39.2 ✓
1515				1154	191.7 ✓	1490		379	96.8 ✓
1517 2				1262	120.8 ✓	1495		667	
1510				5506		1488		00	1.1 ✓
1515				4980	970.9 ✓	1490		31	
1515				4722		1495		348	35.1 ✓
1520				4640	866.9 ✓				
1520				1838					35367.1
1523				1810	202.7 ✓				
1520				2810					
1525				2771	516.8 ✓				
1530				2700	506.6 ✓				
1530				1878					
1535				1834	343.7 ✓				
1535				878					
1540				844	159.4 ✓				
1540									

See Page 45

Summary Concrete Est #13
- February -

			Cu yds.
#10	By sections	West Cont'e Joint #1 above 1510	781.8
#8	" "	South C Wall above 1465	498.0
#41	" "	" " " " 1460	714.7
#13	above 1535		136.0
		Total Sections	2130.5
		Add overhang	270.0
		Sections + Overhang	2400.5
		Total Topog	353671
			377676
		Total Deductions.	383.2
		Total for Est = 13	37384.4

Deductions.

Spillway 2 - 5" X 5 X 28 =	1400.0	
Gallery 295 lin ft @ 26.28	7752.6	
Outlet Gallery 28 " @ 26.28	735.84	
16" Drainage pipe steel 69 lin ft	115.23	
16 " " " Cement 35 " "	72.45	
Air Vents Insp. Gallery 271-1 in ft 1X1 Brx	271.00	
	10347.12	383.2
	14	
Total deduction for Feb.		383.2

For March deductions see Page 50

2-21-21
Fisher Mixter
SW cor Tower Fillet

-Bottom- Block #1
Concrete Sections for Check on Batches

Copied Book 17 - Page 5

	1.68	25.86		1524.18
T.P.	(see page 47)		00	25.86
	400 Radius - 0 d			
T.P.	0.04	25.90		2586
	(3+84.0)			
+ 4.3			43	21.6
00			43	216
- 12			44	21.5
- 12			59	20.0
- 21.1			61	19.8
	(3+90)			
+ 4.3			42	21.7
00			42	21.7
- 12.6			44	215
- 12.6			54	20.5
- 21.5			59	20.0
	(4+00)			
+ 4.3			38	221
00			38	221
- 7.0			37	22.2
- 14.0			45	21.4
- 14.0			58	20.1
- 22.0			59	20.0

(41) 25.90

(4+10)			
+ 4.3		3.8	22.1
0.0		3.8	22.1
- 14.8		4.5	21.4
- 14.8		5.8	20.1
- 21.4		5.8	20.1
4+20			
+ 4.25		3.9	22.0
00		3.8	22.1
- 6.0		3.8	22.1
- 14.6		4.2	21.7
- 14.6		5.5	20.4
- 22.9		5.7	20.2
4+30			
+ 4.3		4.0	21.9
00		3.8	22.1
- 6.0		4.1	21.8
- 16.0		4.5	21.4
- 16.0		4.9	21.0
- 23.0		5.1	20.8
4+34½			
+ 4.3		4.0	21.9
00		4.0	21.9
+ 23.0		4.5	21.4

2-22-21

Fisher
Mixter

Block #1
Bottom of Concrete Sections for Check

Upstream face = 00

T.P.	(See PP 27)	2,56		25.86
		4+34.6		
00			3.8	24.6
Top of Form			06	27.8
7.0			41	24.3
17.5			44	24.0
25.3			43	24.1
		4+44.6		
Top of Form			05	27.9
00			36	24.8
10			41	24.3
16.			46	23.8
25.5			46	23.8
		4+54.60		
00			3.9	24.5
70			4.2	24.2
21			4.4	24.0
26.3 (26.8)			46	23.8
		4+64.6		
06			3.6	24.8
12 (5.3)			3.8	24.6
25.5 (21.8)			4.5	24.9
		4+74.6		
00			44	24.0
7.0 (3.3)			42	24.2
16.5 (11.8)			41	24.3
26.7 (23.8)			47	23.7

Deductions

Construction Joints

#1	1.0 x 5.2 x 10.4	
#1	1.15 x 17.8 x 0.9	
#2	.10.2 x 1.2 x 5.0	

Block #2
Top of Concrete Sections for Check on Batches.

Feb 22 1921
Bub
Mixter
Nail in Fillet
NW Cor Tower

8.17 32.47 24.30

3+84

400+38	5.4	27.1
400 R	5.4	27.1
" - 13	4.8	27.7
" - 21.6	4.5	28.0
3+90		
400+38	5.8	26.7
" R.	5.7	26.8
" - 10	5.7	26.8
" - 16	5.1	27.4
" - 21.7	4.8	27.7
4+02		
400+38	6.1	26.4
400 R.	6.1	26.4
" - 13	5.6	26.9
" - 22.2	5.3	27.2

Check on Batches

Block #2

3247

4+10

400+3.8	5.8	26.7
" R.	5.7	26.8
" -10	5.5	27.0
" -22.6	5.1	27.4

4+20

400-3.8	5.5	27.0
" R.	5.5	27.0
" -13	5.2	27.3
" -22.8	5.0	27.5

4+30

400+3.8		27.1
" R.		27.0
" -10		27.1
" -22.7		27.5

Subtract —

width 1.1
lenght 10.4
Height 2.1

add

8 X 6.8 X 5.5 = 29.92
9 X 15.4 X 5.6 = 7762

107.54 = 4 cuyds

Check on Batches

48

Block #1

from above T.P. Rock

11.04 3363 2259

4+34 6

4+50

400-3.7	5.7	27.9
" R	5.8	27.8
" -13	5.9	27.7
" 22.7	5.7	27.9

4+60

400-3.7	5.6	28.0
400-R	5.6	28.0
" -13	5.0	28.6
" 23.5	4.0	29.0

4+70

400+3.7	5.6	28.0
" R	5.4	28.2
" -13	4.4	29.2
" -22.4	4.2	29.4

4+80

400+3.7	5.7	27.9
" R	5.5	28.1
" -13	4.5	29.1
" -22.4	4.1	29.5

Check on Batches-

Block #1

33.63

(4+80)

400 + 37.2	5.8	27.8
" R	5.6	28.0
" -13	5.1	28.5
" -22.9	5.2	28.4

(4+86.87)

4.5 F 37.2 cut	5.9	27.7
400 R.	5.8	27.8
" -13	5.4	28.2
" -21.6	5.4	28.2

Subtract offsets in Forms

Average	Width =	1.0	Cuyds.
"	Depth	4.4	1.58
"	Lenght	10.4	
add --	Width	1.0	
"	Depth	6.4	2.50
"	Lenght	10.55	

3/11/21
Bob Fisher Mixter.

March Concrete Est # 14

Keyways - D.S.F. Lifts -

Subtract -

		Cu yds
Lift #1	00	
Lift #2	1 - 1 x 10 x 10	3.7
Lift #3	2 - 1 x 10 x 10	7.4
	1 - 1 x 5 x 20	3.7
	2 - 1 x 10 x 20	14.8
Lift #4	1 - 1 x 5 x 10	1.8
	4 - 1 x 10 x 10	14.8
Lift #5	1 - 1 x 5 x 9	1.7
	1 - 1 x 5 x 15	2.4
	4 - 1 x 10 x 10	14.8
Lift #6	3 - 1 x 10 x 20	22.2
	2 - 1 x 5 x 10	3.7
Lift #7	1 - 1 x 10 x 15	5.5
	1 - 1 x 10 x 20	7.4
		103.9

Ends -

1 - 1 x 5 x 30	5.5
1 - 1 x 5 x 15	2.4
	7.9

Total subtract. 112 cu yds

3-26-21
Fisher
Mixter

March Concrete Est-

Average Elev. of Top at Difference Lifts —

B.M. Nail in ½" stump

	10.16	47.93 ✓		1537 77
			56	
4+86 ±			46	
To			47	
5+50.8			50	
			50	
			5 | 249	
			4.98	
Mean for Section =			5.0	43.0 ✓
TP	2.7	38.1	12.5	35.4
			5.2	
5+508			47	
to			45	
6+05.8			67	
			76	
			93	
		6	380	6.33
			36	
			20	
			18	
Mean for Section =			6.3	31.8
	10.4	58.3	00	47.93

53 / 532	37 / 546	23 / 560	Average Elev.
52 / 531	33 / 550	20 / 573	54.2
53 / 530	37 / 546	24 / 559	

3-26-21 Transferred from Book 17 51

Page 12

T.P	10.4	58.3	47.93
10.0 / 48.3	7.8 / 505	6.6 / 517	Average Elev.
9.9 / 45.4	8.4 / 49.9	7.0 / 51.3	49.1
11.4 / 46.9	11.0 / 47.3	10.8 / 47.5	

Transferred from Book 19 - Page 15-17 ✓
March Estimate Concrete.

Average Elevation for Block 2+19²¹/₀
2+72,91

Average for Block = 1540±

E Outlet Tunnel 0+20 08	8.64	49,75		1541.11
			11.1	38.8
			10.4	39.4
Average El. for Section. 39.8			9.7	40.1
			9.0	40.8
			11.2	38.6
Average El for Section 40.4			10.0	39.8
			8.3	41.5
			8.1	41.7
			11.3	38.5
			10.3	39.5
Average Elev for Section 40.1			8.2	41.6
			8.0	41.8
			11.6	38.2
Average Elev for Section 40.0			10.1	39.8
			9.0	40.8
			8.6	41.2

Transferred from Book 19 - Page - 15-17.

Block from
2+19²¹ West to Rock Contact

Average for Block 1538.5

	49.75			
			11.4	38.4
Average for Section		38.9	11.2	38.6
			10.3	39.5
			10.6	39.2
			11.4	38.4
			11.0	38.8
Average for Section		38.9	10.6	39.2
			10.7	39.1
			10.6	38.2
			11.4	38.4
Average for Section		37.8	12.3	37.5
			12.6	37.2

Average Elev. Blk. 2+72⁹¹ To 3+26¹⁹
Elev. 1532.6

Hub ℄ of Tunnel	8.49	49.60		1541.11
	0.89	37.71	12.78	36.82
	6.94	33.12	11.53	26.18
			0.5	32.6

April 1st
1971

Estimate #14 -

CONTOUR	West of Contr J #1	3+25-4+85	4+85 East	MARCH EST. Total End Area	Mean Area x Difference in Elevation	Cubic Yds.
Below	see	Estimate #13				28813.4
1505						91.4
1505						
1509 3						
1505	4222	5010	3157	12389	12771.5 x 5 = 63857.5	2365.1
1510	4632	4292	4230	13154		
1510	763			763	854 x 5 = 4270.0	158.1
1515	945			945	1009 x 2.7 = 2724.3	100.9
1517.7	1072			1073		
1510	3228	4292	4230	11750	11752 x 5 = 58760.0	2176.3
1515	3330	4216	4208	11754		
1515			544	544	534 x 1.4 = 747.6	27.7
15164			524	524		
1515		1380		1380	1380 x 4.5 = 6210.0	230.0
15195		1380		1380		
1515	3330	2869	3665	9864	9842 x 5 = 49210.0	1822.6
1520	3380	2816	3624	9820	9783 x 5 = 48915.0	1811.7
1525	3406	2760	3580	9745	9684 x 5 = 48420.0	1793.3
1530	3386	2700	3536	9622		
1530			508	508	508 x 5 = 2040.0	28.2
15315			508	508		
1530			1755	1755	1755 x 5 = 8775.0	117.0
15318			1755	1755		

Contour	West of 3+25 Int.	3+25 - 4+85	4+85 - East	
1530	758			758
1531.9	758			758
1530	970			970
1532.6	970			970
1530	1748	1885	1276	4909
1535	1875	1830	1242	4947
1535	930			930
1538.5	930			930
1535	946	1830	1242	4018
1540	908	1780	1210	3898
1540			1216	1216
1543			1186	1186
1540		1780		1780
1545		1718		1718
1545		900		900
1549.1		856		856
1545		828		828
1550		800		800
1554.2		774		774

758 X 1.9 =	1430.2	53.3
970 X 2.6 =	2522.0	93.4
4928 X 5 =	24640.0	912.6
930 X 3.5 =	3255.0	120.6
3958 X 5 =	19790.0	733.0
1201 X 3 =	3603.0	133.4
1749 X 5 =	8745.0	323.9
878 X 4.1 =	3599.8	133.3
814 X 5 =	4070	150.9
787 X 4.2 =	3305.4	122.4
		42311.2

Next Page

Total To beg.	42311.2
By Sections South of Certain Wall above 1465	498.0
" " " " " 1460 "	714.7
Overhang	270.0
	43793.9

Deductions

Gallery 391 Lineal ft @ 26.28	10275.48
Outlet Gallery 28" " @ " "	735.84
16" Drainage Pipe steel 69" Lin ft.	115.23
16" " " Cement 35 " "	72.45
Air Vents Insp. Gallery - 271 linft 1X1 Box	271.00
	11470.00

Deductions = 425 cuyds

27 / 11470.0

108

67

54

130

43794

425

43369

4-21-21
Bob
Fisher

Mean Elevation of
Blocks for Concrete Est.

C 2+70		10 18	59.03	1548.85
			10.7	48.3
			9.3	49.7
2+064			8.4	50.6
to			7.5	51.5
2+72.5			9.1	49.9
			10.6	48.4
			10.6	48.4
			8.3	50.7
			7.1	51.9
			8.6	50.4
			9.3	49.7
			10.3	48.7
			4.7	54.3
1+93.0			4.4	54.6
to			4.7	54.3
2+06.4			4.9	54.1

April Est

7/3/20

Bob Fisher Mixter

Location of Grout Holes.

1 - 2 + 3

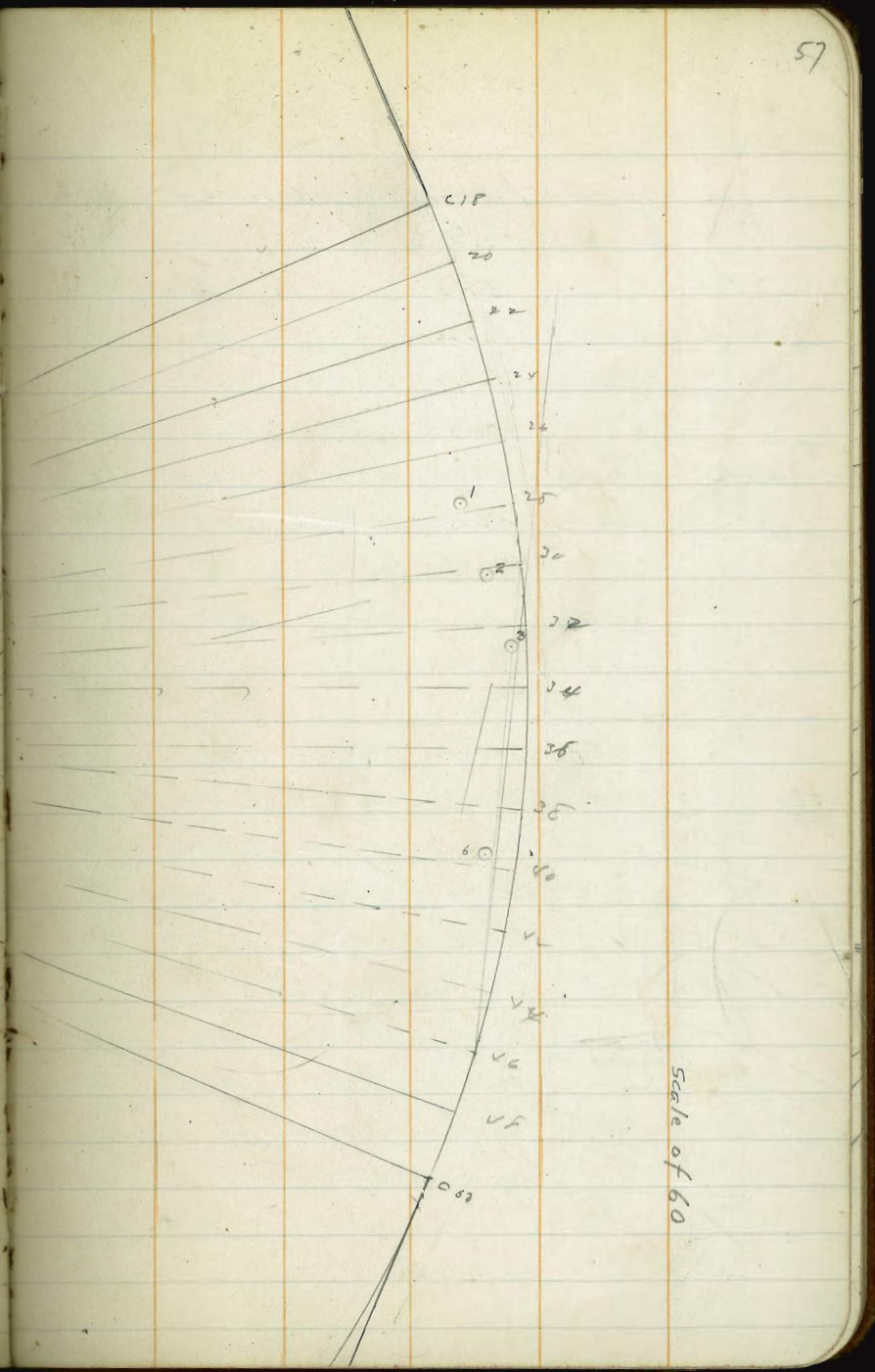
At C-30 Sight C-46 for Zero Az Rt.

TP Rock C 46		5.93	44 51		3858
				8.2	36.3
Hole # 1	27.3	131°-39'	Depth	21.0	15.3
				9.4	35.1
Hole # 2	11.1	70°-44'	Depth	21.0	14.1
				15.3	29.2
Hole # 3	26.7	8°-08'	Depth	21.0	08.2

At C31 Sight C46 for Zero Az Rt.

					326
Hole # 4	44.3	5°-58'	Depth	21.0	11.6
					40.7
Hole # 5	68.8	4°-18'			
Hole # 6					

C31



Scale of 60

Concrete Estimate April 1921

Estimate #15 –

By Topography above 1505 Contour.

Contour.	West Contr J #1	3+75 to 4+85	4+85 East	cu. ft.	cu yd
1505		574		574	91.4
1509.3		574		574	
1505			25	25	3.0
1507			55	55	
1505	4203	4610	3525	12328	2384.3
1510	4612	4580	4230	13422	
1510	111			111	21.4
1515.2	111			111	
1510	90			90	20.0
1516	90			90	
1510	3910	4580	4232	12722	2353.1
1515	4045	4464	4182	12691	
1515	4045	4214	4182	12441	2327.4
1520	4375	4140	4180	12695	2373.3
1525	4700	4066	4170	12936	2418.2
1530	5000	3970	4210	13180	
1530			496	496	27.5
1531.5			496	496	
1530	747		747		52.6
1537.9	747		747		
1530	604		604		106.6
1534.4	704		704		

Contour	West of Contr J #1 (3+75)	3+75 to 4+85	East of 4+85	Cubic Feet	Cubic Yards.
1530			1392	1392	92.5
1531.8			1392	1392	
1530			625	625	50.3
1532			732	732	
1530	3650	2798	1272	7720	1426.5
1535	3740	2700	1246	7686	
1535	338			338	38.8
1538	360			360	
1535	3256	2700	1246	7202	1320.7
1540	3200	2660	1202	7062	1287.8
1545	3136	2530	1180	6846	
1545	1224	1720		2944	539.1
1550	1216	1662		2878	
1550	1216			1216	192.5
1554	1202			1202	
1550		1662		1662	303.0
1555		1610		1610	
					17430 × 3

Topog above 1460 takes in area from downstream forms set 1-30-21

Sections for April Est. include yardage taken by Topog

Contour 1460 South of Curtain Wall		5540
" 1465 " " " "		5866
		11406
		5702.5
	28512 cuft = 1056 cu yds	285125 cuft.
Deduct contour 60	21	
	1035	

Summary of Estimate # 15

Section Top of Curtain Wall	9,55.6
Section East Cont. Joint #1 in Bottom South of Curtain Wall	1333.4
" West " " " " " " " "	2898.1
By Topography up to Elev. 1505	28813.4
overhang	270.0
By Topography above Elev 1505	17430.3
By Batch measurement - April 30	2505
	51951.3
Deductions for April -	1625.0
Total to May 1st 1921	50326.3
March Est.	43515.0
April Est.	6811.3

Deduction

deduct Keyways		100.0
690	Lineal ft air vents 1' □	25.5
369	" " Gallery 4x7=26.26 □'	359.2
101	" " " 9x7=26.26 □	98.3
69	" " of 16" steel pipe	4.3
35	" " of Cement pipe	2.7
		590.0
		1035
Contour - 1460 - 1465 -		1625.0
Total Deductions		

5-30-21
Fisher
Mixter.

Concrete Estimate
May 1921
Sections below Curtain Wall -
East of Contraction Joint.

34-363.51

2.65 91.44 1488.79

00 Section = Contraction Joint

Platted 5-31-21

00		4.9	86.5
10		5.1	86.3
20		5.3	86.1
30		7.1	84.3
40		8.4	83.0
48		9.4	82.0
55.6		10.6	80.8
	0+20		
00		3.1	88.3
10		3.7	87.7
20		5.6	85.8
30		6.3	85.1
40		6.3	85.1
50.		7.4	84.0
58		9.4	82.0
	0+40		
00		4.5	86.9
10		5.6	85.8
20		6.8	84.6
30		7.0	84.4
40		7.7	83.7
50		9.6	81.8
55		9.8	81.6

91.44

	0+60		
00		4.0	87.4
10		5.7	85.7
20		7.0	84.4
30		7.6	83.8
40		8.9	82.5
49		9.2	82.2
53		10.0	81.4
	0+80		
00		4.1	87.3
10		5.4	86.0
20		6.7	84.7
30		7.5	83.9
40		8.7	82.7
50		9.6	81.8
59		10.0	81.4
	1+00		
00		4.2	87.2
10		5.7	85.7
20		6.0	85.4
30		7.4	84.0
40		8.2	83.2
51		9.5	81.9

5-30-24

0+20 91.44

00	5.0	86.4
10	6.3	85.1
20	7.2	84.2
24	7.7	83.7

Sections West Contr. Joint –

34-363 51 97.22 1488.79

00 section = Contraction Joint

00	5.5	91.7
10	5.4	91.8
20	5.4	91.8
30	5.4	91.8
40	5.4	91.8
50	6.0	91.2
62	6.8	90.4

0+20

00	3.2	94.0
10	3.3	93.9
20	4.0	93.2
30	3.7	93.5
37	2.1	95.1
40	3.3	93.9
50	4.8	92.4
60	6.3	90.9
64	6.8	90.4

97.22

0+40

00	7.8	89.4
10	7.5	89.7
20	5.0	92.2
30	7.2	90.0
40	7.0	90.2
50	7.1	90.1
62	7.3	89.9

0+60

00	8.2	89.0
10	7.0	90.2
20	8.5	88.7
30	9.4	87.8
40	9.0	88.2
50	9.7	87.5
64	11.2	86.0

0+50

00	8.2	89.0
7.0	8.2	89.0
7.2	9.7	87.5
20	10.2	87.0
30	10.2	87.0
40	9.2	88.0
50	10.2	87.0
63	10.7	86.5

97.22

0+80

00	4.3	92.9
10	5.0	92.2
20	4.9	92.3
30	6.2	91.0
40	7.5	89.7
50	9.7	89.5
61	12.0	85.2

0+90

11. RC	6.0	91.2
20	5.9	91.3
30	7.0	90.2
35	7.6	89.6

0+97

6.6.	90.6

June 1st MAY-ESTIMATE Sheet (1)

-1412 to 1460-

	Final Topog		Sq feet	Cu yds
1412	00	5 X 3	15.0	0.6
1415	10	16 X 2	80.0	3.0
1420	22	71 X 5	355.0	13.2
1425	120	369.5 X 3	1108.5	41.1
1428	619	965 X 2	1930.0	71.5
1430	1311			
1427.5	771	257 X 2.5	642.5	23.8
1430	343			
1427.4	00	10 X 0.6	60.0	0.2
1428	20	1775 X 2	355.0	13.2
1430	335	1112 X 5	5560.0	205.9
1435	1889			
1430	1654	2172 X 5	10860.0	402.2
1435	2690			
1435	4579	5668 X 5	28340.0	1049.7
1440	6757	8168.5 X 5	40842.5	1512.7
1445	9580	10759.5 X 5	53797.5	1992.5
1450	11939	12826.5 X 5	64132.5	2375.8
1455	13714	1065 X 4.5	4899.0	181.4
1455	956			
1459.6	1174	1401.8 X 5	7009.0	259.59
1455	12763			
1460	15273			10842.7

OK - Final to 1460 -

Sheet 2 63.

Deduct BC-1460 (489)

Below Curtain Wall. 1460 - 1485.

	East Cent. J	West Cent. J	End Area (.5225)	Sq ft	Cu yds
1460	4363	3162	7036	41010	
1465	4956	4412	9368	49230	1519.0
1470	5456	4868	10324	53555	1823.3
1475	5828	5270	11098		1983.5
	deduct (654)				
1475	5174	5270	10444	54095	2003.5
1480	5298	5896	11194		
1485					
1480	5298		5298	26870	995.2
1485	5450		5450		

8324.5

MAY ESTIMATE #16

Sheet 3

— Curtain Wall — 1460 — 1510 —

Contour	west Contr Joint	3+25 to 5+50	5+50 East	Total End Area	Cu yds.
1460	3270	3726		6996	
1465	3490	4342		7832	1373.0
1470	3520	4742		8262	1490.2
1475	3574	5398		8972	1595.8
1480	3896	5948		9844	1742.2
1485	4148	6348		10497	1883.3
1485	638	908		1546	
1489.3	648	976	whole Area =	1603	250.8
1485	Deduct 1/2 from Total			8951	
1490	3774	5642	667	10083	1762.4
1495	3980	5915	1117	11012	1953.2
1495		1091		1091	
1499.3		1157		1157	179.0
1495	3980	5244	1465	10269	
1500	4108	5415	2725	12248	2084.9
1505	4600	5594	4128	14322	2460.2
			add 4 Cu yds		
1505			971	971	18.8
1505.5			1055	1055	
1505		574		574	91.4
1509.3		574		574	

May Estimate #16

Curtain Wall

64

Sheet 3

	west Contr Joint	3+25 4+85	4+85 East	Total End Area	
1505			25	25	
1507			55	55	3.0
1505	4203	4600	3525	12328	
1510	4612	4580	4230	13422	2384.3
	— Total Sheet 3 —				19272.5

June 1st

MAY ESTIMATE #16 — Curtain Wall — 1510 – 1538 — Sheet 4

Contour	West 3+25	3+25 4+85	4+85 East	Total End Area	Cu yds
1510	111			111	
1515½	111			111	21.4
1510	90			90	
1516	90			90	20.0
1510	3910	4580	4232	12722	
1515	4045	4464	4182	12691	2353.1
1515	4045	4214	4182	12441	
1520	4375	4140	4180	12695	2327.4
1525	4700	4066	4170	12936	2373.2
1530	5000	3970	4210	13180	2418.2
1530			496	496	
1531½			496	496	27.5
1530	747			747	
1531½	747			747	52.6
1530	604			604	
1534½	704			704	106.5
1530			1392	1392	
1531.8			1392	1392	92.8
1530			625	625	
1532			732	732	50.3
1530	3650	2798	1272	7720	
1535	3740	2700	1246	7686	1426.5
1535	338			338	
1538	360			360	38.8
		Total Sheet 4			11308.3

May Estimate #16 — Curtain Wall — 1535 – 1555 — Sheet 5 (65)

Contour	west 3+29	3+25 4+85	485 East.	Total End Area	Cu yds
1535	3256	2700	1246	7202	
1540	3200	2660	1202	7062	1320.7
1545	3136	2530	1180	6846	1287.8
1545	1224	1720		2944	
1550	1216	1662		2878	539.1
1550	1216			1216	
1554½	1202			1202	192.5
1550	4+28	1662		1662	
1555	4+82 to 4+82	1610		1610	303.0
		Total Sheet 5			3643.1

Deductions

Gallery – 391 lineal ft @ 26.28		10275.48
Outlet Gallery 101 lineal ft @ 26.28		2654.28
16" Drainage pipe steel 69 lineal ft @ 1.67		115.23
" " " Cement 73 " " @ 2.07		151.11
Air Vent Gallery 271 lineal ft @ 1x1 box		271.00
		13467.10
Deductions	498.8	108 266 243 237 216 211 = 498.8
Keyways	100.0	
Total deductions =	600.0	

June 1st

Summary May Estimate-

Sheet 1		10482.2
sheet 2		8324.5
Sheet 3		19272.5
Sheet 4		11308.5
Sheet 5		3643.1
		53030.8
Below 1465	Sections South of Curtain Wall East Contr J	265.7
" "	" " " " West " "	94.7
above 1480	" " " " East Contr J.	1048.3
Above 1485	" " " " West " "	1012.0
Sections Top of Curtain Wall		955.6
Overhang		270.0
		56677.1
Deductions		600
Total Concrete to June 1st =		56077 cuyds-

Bysom 56117
56077
Diff. — 40 cuyds.

July 1st 1921 — Concrete Estimate — 66

Summary June Estimate

Sheet 1	1412 To 1460	10482.7
Sheet 2	1460 to 1505 below Curtain Wall	14631.5
Sheet 3	1460 To 1510 — Curtain Wall	19272.5
Sheet 4	1510 to 1538 " "	11308.3
Sheet 5	1538 to 1556 " "	3643.1
Below 1465	S of C.W. East Contr Joint	265.7
1465	S of C.W. West Contr Joint	94.7
Sections: Top	of Curtain Wall	955.6
	Overhang	270.0
section S.C.W.	East Contr Joint above 1490	1610.6
" " "	West " " above 1505	9301
		63464.8
		600.0
Deductions See May Est		62864.8
Bysom		62698.0
Diff.		166.8

August 1921

Summary July Est. #18

Sheet 1	10482.7
Sheet 2	11412.7
Sheet 3	19272.5
Sheet 4	11308.3
Sheet 5	3643.1
Sheet 6	9579.8
Total Sheets	65699.1
July Sections above 1505	1473.5
" " " 1525	835.9
Top of C.W.	955.6
Overhang	270
Above 1460	94.7
" " "	265.7
	69594.5
deductions.	550.0
	69044.5
Bureau Total	68753
Diff -	292.

Elevation of Coordinate + Reference Points West of Outlet Tower.

Station	Elev		Station	Elev.	
6-470.65	1615.38	Hub	18-411.19	1548.30	Hub
			18-438.09	1554.12	Hub.
8-450	1601.89	Hub.	18-470.25	1561.57	Nail in Rock
			18-488.25	1561.11	Hub.
10-446.58	1597.77	End of Steel Pipe sewer Joint.	18-502.17	1564.95	Nail in Rock.
10-350	1576.97	Hub			
B.M. 12-330	1570.96	Nail in stump	℄ Tunnel 0+20.08	1541.11	Hub
			SW Cor Outlet Tower Fillet	1524.18	Nail in Concrete
12-426.28	1587.35	Nail in Rock	NW Cor. Outlet Fillet Tower	1524.30	Nail in Concrete
12-437.0	1588.38	Nail in Rock			
12-455.29	1587.34	Nail in Rock			
12-502.09	1600.83	Nail in Rock.			
14-417.92	1578.5 ov.	ton Rock			
14-436.28	1574.94	ton Rock.			
14-495.10	1588.91	Nail in Rock.			
R.P. ℄ Outlet Tower	1581.45	Hub.			
16-446.17	1567.82	Nail in rock.			
B.M. 16-468	1572.94	Nail in stump,			

Elevation of Coordinate Reference Pt.

Station	Elev
455.29 "B" Line	
Tangent 12	
" 14	
" 16	
P.C. 18	1557.81
20	1545.11
22	1534.73
24	1525.20
26	1503.25
28	1488.45
30	1472.35
32	
34	
36	
38	1470.30
40	1473.85
42	1480.64
44	1489.94
46	1502.68
48	1512.78
50	
52-468"	1532.83

Station	Elev.
450 - "B" Line East Tangent.	
54	
56	1550.34
58	1559.53
60	1568.41
62	1579.43
64	1588.64
66	1603.56
68	1617.48
70	1624.03
74	1633.50
325 Line East Tangent.	
60	1571.25
62	1582.89
64	1591.57
66	1602.58
68	1612.52
70	1623.02
72	1633.50

Elevation of Coordinate Reference Points.

Station	Elev
390 Line East Tangent.	
50	1524.46
52	1536.34
54	1540.42
56	1551.41
58	1260.76
60	1571.50
275 Line East Tangent	
60	1567.79
62	1579.68
64	1588.49
66	1600.42
68	1614.82
70	1622.85
72	1633.30
250 Line	
38	1491.47
40	1496.25
42	1507.15
44	1511.11
46	1519.99
48	1526.28

Station	Elev.
250 Line	
50	
60	1568.21
C Line	
48	1516.75
50	1522.70
52	1526.16
54	1534.24
56	1544.97
58	1553.97
60	1564.05
62	1573.18
64	1581.76
66	1591.76
68	1602.39
70	1613.53
72	1624.63
74	1635.20

Elevation of Coordinate Point + Reference Points

Misscelleanous Station	Elev.		Misscelleanous Station	Elev.	
0-0			14-417.92	1574.[illegible]8	✓
0-0			14-436 28	1574.96	✓
2			14-495 10	[illegible]88.87	✓
2			16		
4-350	160[illegible]		16-399	1539.58	✓
4-455	161[illegible]	✓	16-383.90	1569.[illegible]2	✓
6-480	161[illegible]	✓	16-446 17	1567.78	✓
6			16-490 09		
8			16-464.44		
8-450	160[illegible]	✓	18-		
10			18-303	1529.40	✓
10-315	15[illegible].77	✓	18-488	15[illegible]08	✓
10-442 Top of Concrete	15[illegible]		20-312	15[illegible].59	✓
10-447	159[illegible]	✓	20-421 21	15[illegible].71	✓
12			20-505	1549.60	✓
12-315	15[illegible].72	✓	20-		
12-340 13	1569.42	✓	20-409 24		
12-426 32	1587.32	✓	22-409 24		
12-437 10	1588.34	✓	22-417 40		
12-502.09	1600.80	✓	22-497 40	1542.61	✓
14			BM about 24-432	1525.75	✓
14-319	1551.84	✓	24-505		
14-350.42	1556.70	✓	24-800	Ref. Pt	

For Elevations West of Outlet Tower See Page 68 –

See Page 68

Elevation of Coordinate Point + Reference Points

Misscelleanous Station	Elev.	
26		
26-471 90	1510.42	✓
26-500 + on Rock accross Condiut	Ref. Pt.	✓
26		
28-		
28-481 77	1503.57	✓
28- + on Rock across condiut.		✓
30-431.23		
38-282.46	1463.59	✓
BM Near B-30	1471.73	✓
31-430	1461.29	✓
32		
34-118.66		
34-274.14	1467.05	✓
34-425 84		
34-477.82	~~Covered by water~~	
34-434 28	PI	
38-229.54	1509.45	✓
38-480 41	1477.56	✓
38-425	1469.45	✓
40-		
40-219 10	1513.09	✓
40-413 53	1482.94	✓
40-674	Ref. Pt.	
40		

Misscelleanous Station	Elev.		
42-217 11	1514.56	✓	
42-412 67	1486.04	✓	
42-420 12	1487.02	✓	
42-434 02	1491.70	✓	
42-624	1586.01 Ref. Pt.		+ on Rock
44			
44-422		✓	
44-218.90	1517.70	✓	
44-414.49	1491.53	✓	
44-670	1500.82 Ref. Pt.	✓	
46-			
46-338 2	1481.42		
46-414 04	1503.70		
46-432 22	1509.72		
48-			
48-416 05			Pt on Derrick Anchor
50-015 64			
50-171.36			
50		✓	
52-468 11	1532.83		

List of B.M's -

Harris BM	Iron Pin	40-5" of Conveyor #2 Datum Bench Mark	1676.33
		West end "P" Line above Retaining Wall	1751.67
		Nail in Rock 30' N of (3+00) West Cable	1764.33
		Nail in 2x8" North side Tunnel.	1630.97
		Nail in Stump about 10-340	1579.55
		Nail - 10-446.55 End steel Pile Concrete	1597.75
		Nail in stump about 12-330	1570.88
		Nail in Stump about 16-468	1573.90
		Nail in stump about 17-410	1530.96
		On Top Rock near Concrete Tower #1	1546.24
		Nail in Rock - 24-432 -	1525.75
		T.P. on Rock 44-385	1474.44
		Nail in Stump near "B" 30	1471.73
		Nail in stump 11' East 52-468 11"	1537.77
		Hub about 7+60 with witness.	1649.80
		Old engine Base West side Canyon	1461.38
		Top of Rock 7' East of 34-329 -	1472.82
BM		50-345.65 East of Cont'r Joint #3 Nail in Rock	1509.38

IMPROVED TABLES AND INFORMATION

1512.75
4 53
1508.22

1512.75
4 61
1508.15

568
5.18

1513.2
1508.2

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50
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388
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18