

CONSTRUCTION DIARY 1920

Chuck Seyler

BR. Section, D/C

BR - 91

SCANNED  
08/24/06 By [initials]

from Dennis

2/95

282

1381

RECEIVED  
NOV 22 1920  
HIGHWAY COMMISSIONER

STATE HIGHWAY COMMISSIONER  
OLYMPIA, WASHINGTON

ROAD OR HIGHWAY *Pacific Highway*

COUNTY *Snohomish*

SECTION *Marysville - Sebawa  
South Slough Arch*

LOCATION,  
PRELIMINARY,  
OR CONSTRUCTION

*General* NOTES  
TRANSIT, LEVEL, CROSS SECTION, ETC

STATION \_\_\_\_\_ TO STATION \_\_\_\_\_

BOOK 1 OF 1 BOOKS

WORK BEGUN *May 24-1920*

WORK COMPLETED *Oct 20-1920*

ENGINEER *J. C. Bartholst*

INDEX ON NEXT PAGE

Concrete in Arch Ring 2

" " Spandrels 3

" " Railing + W Wall Ties 4

" " South Abut. 5

" " North " 6

" " Wing Walls 7

" " Footings 7

" " Corbels 7

Summary, Concrete 7

Pile Record 9

" " 10

Steel 11

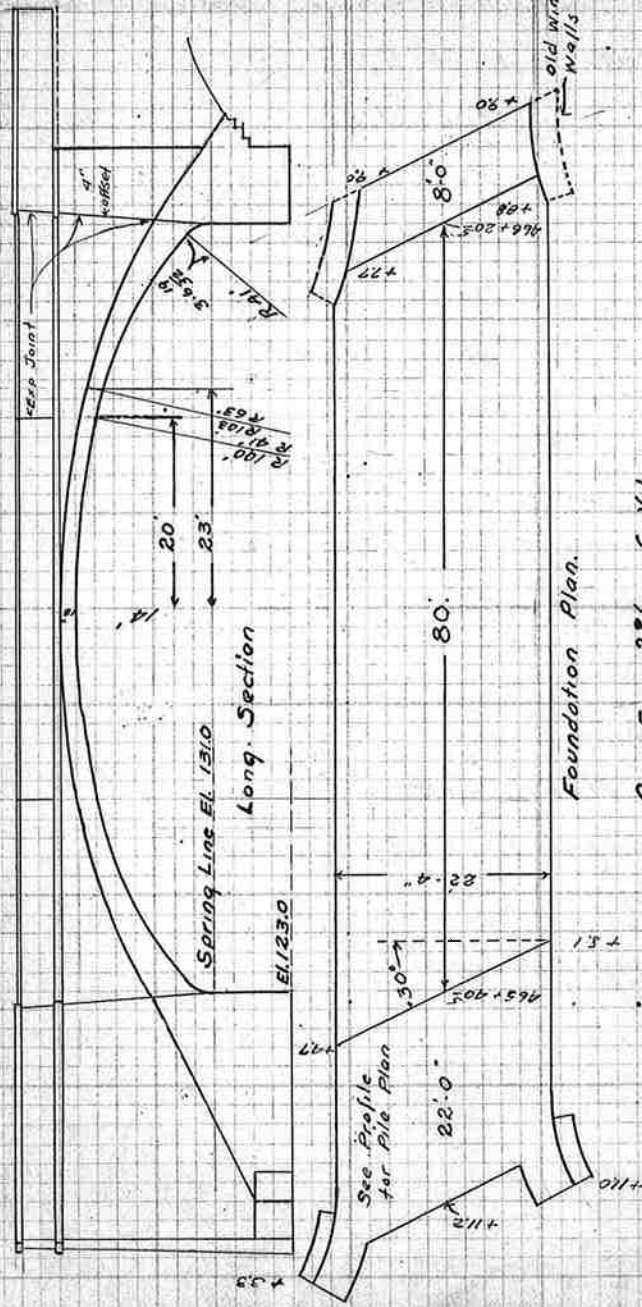
North Span.

Concrete in Slab + Supports 14

Steel " " " 15

Recapitulation 16

# South Span South Slough Arch 80'



## Foundation Plan.

Com Exc 236. CuYds

Conc. 1st C. 211.90 " "

" 2<sup>nd</sup> C. 318.26 " "

Reinf Steel 17173.9 Pounds

Piling Below Cutoff 1499. Lin ft

" Above " 642. " "

Removing W Walls 4300. " "

Exc. for Abutments

Sta.	South Abut Exc.						quan	quan.	Cuyds
	C								
465+185	+3.2 12.7	+1.0 4.3	+1.1 1.7	+11.2	+11.7 5.2	+9.5 12.7	242.80		88.1
465+285	+3.3 12.7	+4.9 8.7	+9.8 4.3	+11.2	+11.7 5.2	+9.5 12.7	232.93		45.5
465+355		+4.7 12.7	+4.4			+5.1 12.7	118.11		30.7
465+42		+4.7 12.7	+4.4			+8.1 12.7	137.17		

S.W. Wing Wall + Footing Exc

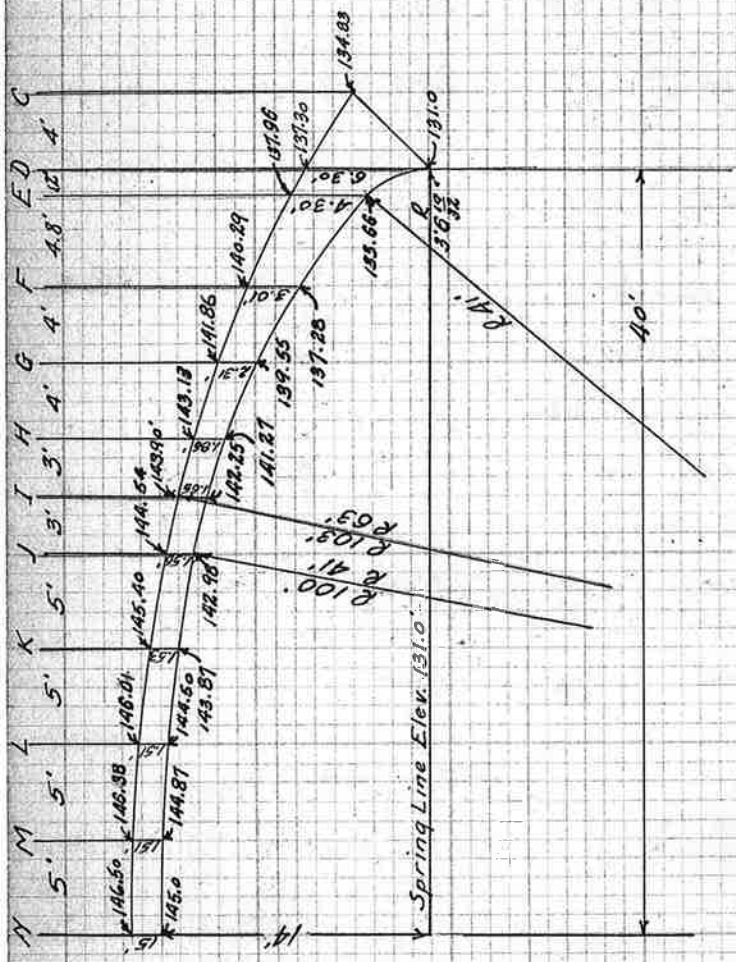
6 X 6 X 3.3 118.8 Cuff 44

S.E. Wing Wall + Footing Exc.

6 X 6 X 11. 396. Cuff 14.7  
18.3 H

North Abut Exc

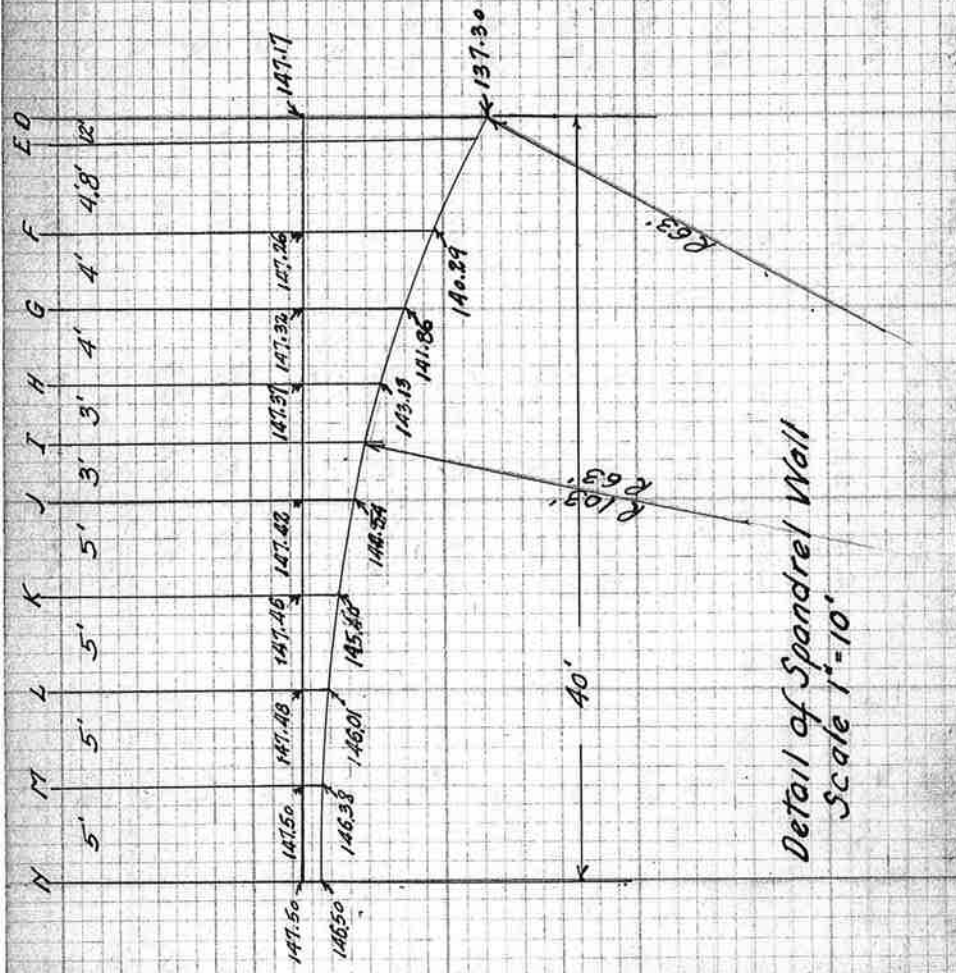
466+19	+7.7 8.4	+7.7 7.8	+9.6 3.5	+9.4	+8.8 8.4	151.50		52.6	
466+285	+9.0 8.2		+9.0		+9.0 8.2	147.60		52.6	
Total							236.0		



1st Cl. Concrete in Arch Ring

Section	Distance	Height	Width	Area $\pi \cdot$	Cu yds.
C	4'	00'	22.333'	00	10.422
D		6.30'	22.333'	140.698	
D		6.30'	21.667'	136.502	5.104
E	1.2'	4.30'	21.667'	93.168	14.079
F	4.8'	3.01'	21.667'	65.218	
G	4'	2.31'	21.667'	50.051	8.538
H	4'	1.86'	21.667'	40.301	6.692
I	3'	1.65'	21.667'	37.750	4.225
J	3'	1.56'	21.667'	33.801	3.864
K	5'	1.53'	21.667'	33.151	6.199
L	5'	1.51'	21.667'	32.717	6.099
M	5'	1.51'	21.667'	32.717	6.059
N	5'	1.50'	21.667'	32.501	6.039

1000 83 161 68 Cu Yds





1st Cl. Concrete in Spandrel Walls

Section	Distance	Height	Wid. Top	Wid. Bot.	Area a'	Quan. Cu. Yds.
D	6'	9.87'	1.17'	1.99'	15.595	2.863
F	4'	6.97'	1.17'	1.75'	10.176	1.320
G	4'	5.46'	1.17'	1.63	7.644	.989
H	6'	4.24'	1.17'	1.52	5.703	1.046
J	5'	2.88'	1.17'	1.41	3.715	.584
K	5'	2.06'	1.17'	1.34	2.585	.407
L	5'	1.47'	1.17'	1.29	1.808	.293
M	5'	1.12'	1.17'	1.26	1.361	.238
N		1.00'	1.17'	1.25	1.210	7.740

4 Walls  
Total

30.960 Cu. Yds

1st Cl. Concrete in Spandrel Wall Rail

160 Lin. Ft.  $.5 \times 2.5 = 200 \text{ Cu. Ft.}$

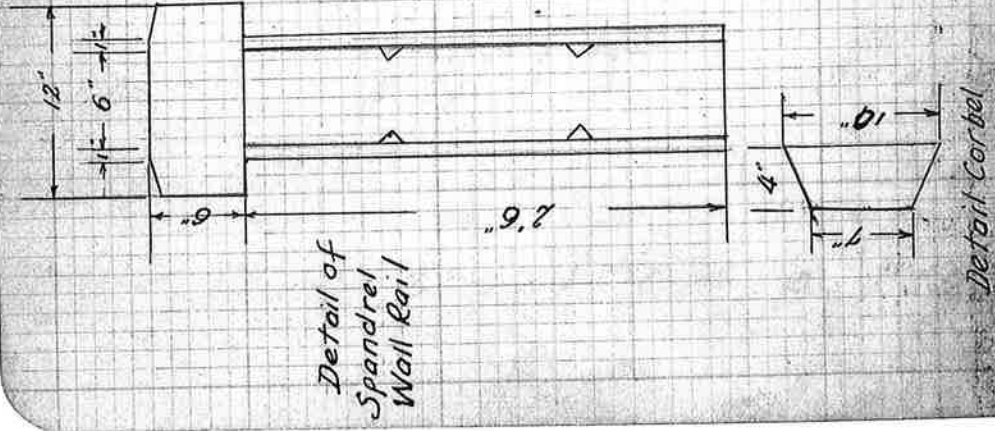
160 " " Coping  $1 \times .5 = 80 \text{ " "$

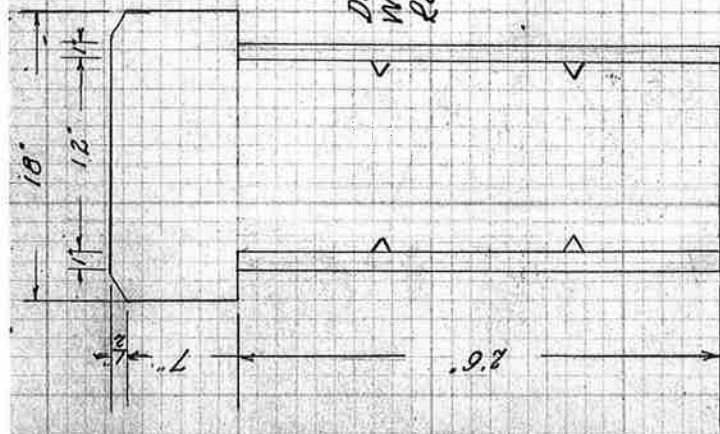
28 Panels  $1 \times 2.5 \times 0.833 = 5.831 \text{ Cu. Ft.}$

$\frac{285.831}{10} = 10.586 \text{ Cu. Yds.}$

1st Cl. Conc. in Spandrel Wall Corbel

160 Lin. Ft.  $.7083 \times .333 = 1.399 \text{ Cu Yds}$





1st Cl. Conc. in So. Wing Wall Rail

53 Lin. Ft.  $1 \times 2.5 = 132.500$  cu. Ft.  
 53 " " Coping  $.625 \times 1.5 = 49.688$  " "  
 12 Panels  $.0833 \times 1 \times 2.5 = 2.499$  " "  
 184.687 " " = 6.840 cu. Yds.

Pier Wall Rail

42 Lin Ft  $1 \times 2.5 = 105.000$  cuft.  
 42.3 " "  $.625 \times 1.5 = 39.656$  " " Coping  
 12 Panels  $.0833 \times 1 \times 2.5 = 2.499$  " "  
 147.155 " " = 5.450 cu. Yds.

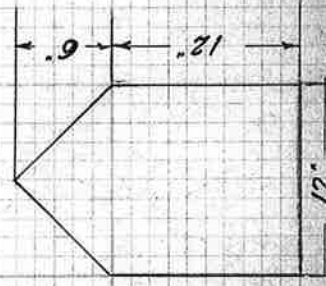
Detail of Wing Wall Rail

Wing Wall Ties 1st Cl. Conc.

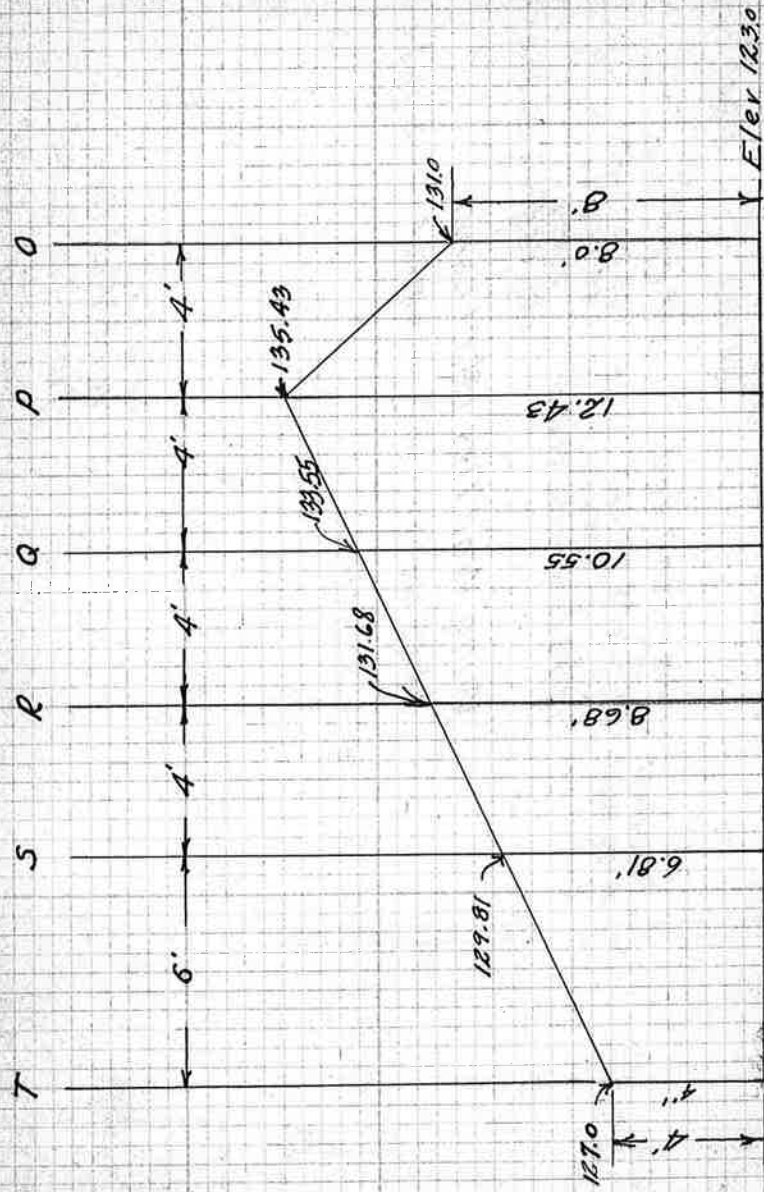
44.65 Lin Ft  $\times 1.25^2 = 55.812$  cuft. 2.067 cu. Yds.



Detail Corbel



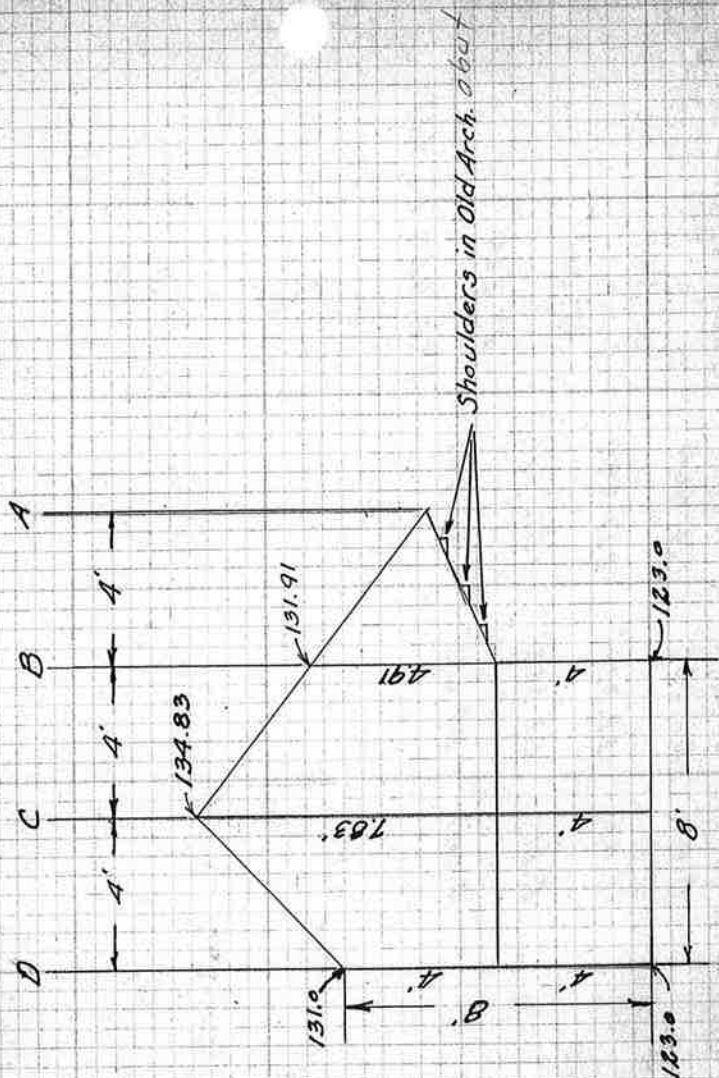
Detail of Wing Wall Ties  
 North Tie 22-32'  
 South Tie 22-33'



Detail 50. Abutment  
Scale 1" = 5'

2nd Cl. Conc. in South Abutement

Section	Distance	Height	Width	Area	Quan. Cu.Yds.
0		8.00	22.333'	178.664	
	4				33.797
P		12.43	22.333'	277.599	
	12				95.486
S		6.81	22.333'	152.088	
	6				27.669
T		4.00	24.233'	96.932	
					156.952 Cu. Yds

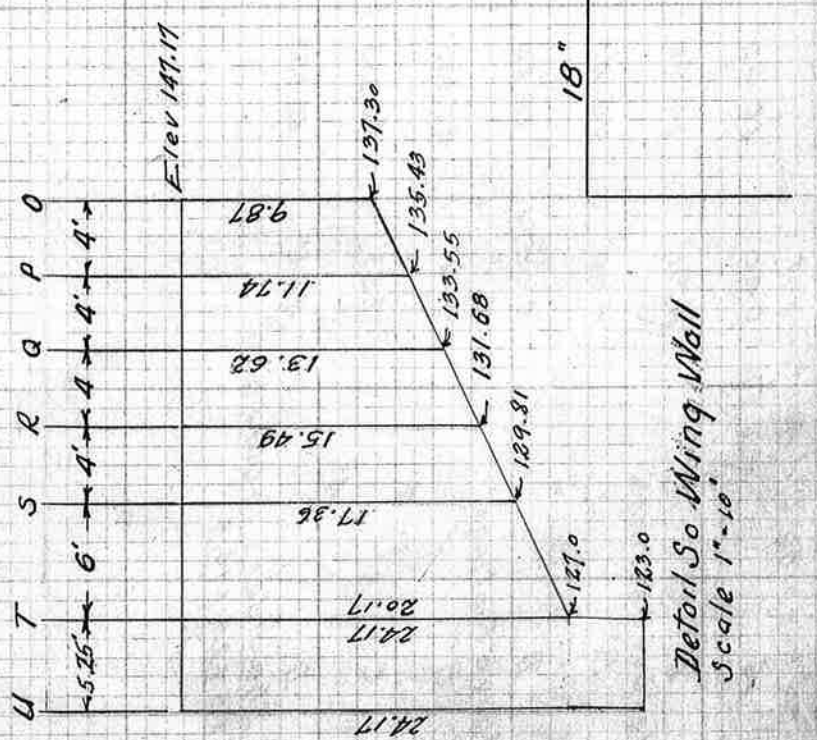
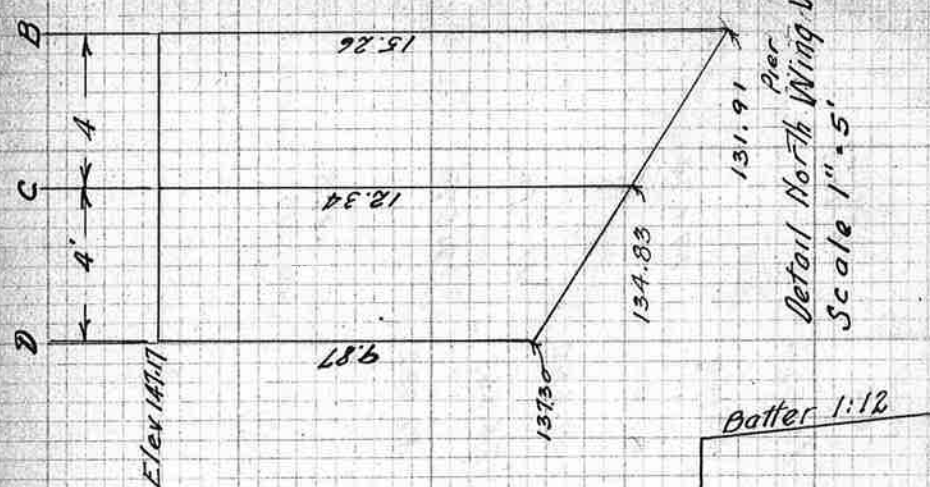


*Detail North Abutment*  
*Scale 1" = 5'*

*2<sup>nd</sup> Cl. Conc. North Abutement*

<i>Section</i>	<i>Distance</i>	<i>Height</i>	<i>Width</i>	<i>Area</i>	<i>Quan. cu Yds</i>
<i>End Lapping Old Abutement</i>					
<i>A</i>		<i>0.00</i>	<i>16.40'</i>	<i>0.00</i>	
<i>B</i>	<i>4</i>	<i>4.91'</i>	<i>16.40</i>	<i>80.524</i>	<i>5.965</i>
<i>Below Footings</i>					
<i>B</i>		<i>4.00'</i>	<i>16.40</i>	<i>65.60</i>	
<i>D</i>	<i>8</i>	<i>4.00'</i>	<i>16.80</i>	<i>67.20</i>	<i>19.674</i>
<i>Above Footings</i>					
<i>B</i>		<i>4.91'</i>	<i>22.333</i>	<i>109.655</i>	
<i>C</i>	<i>4'</i>	<i>7.83'</i>	<i>22.333</i>	<i>174.867</i>	<i>21.076</i>
<i>D</i>	<i>4'</i>	<i>4.00'</i>	<i>22.333</i>	<i>89.332</i>	<i>19.570</i>
<i>3 Shoulders in Old Abut.</i>					
<i>3 x 5 x 25 x 16.4</i>					
<i>2</i>					<i>.228</i>

*661.513 = Cu. Yds.*





South Wing Walls 2nd Class Conc

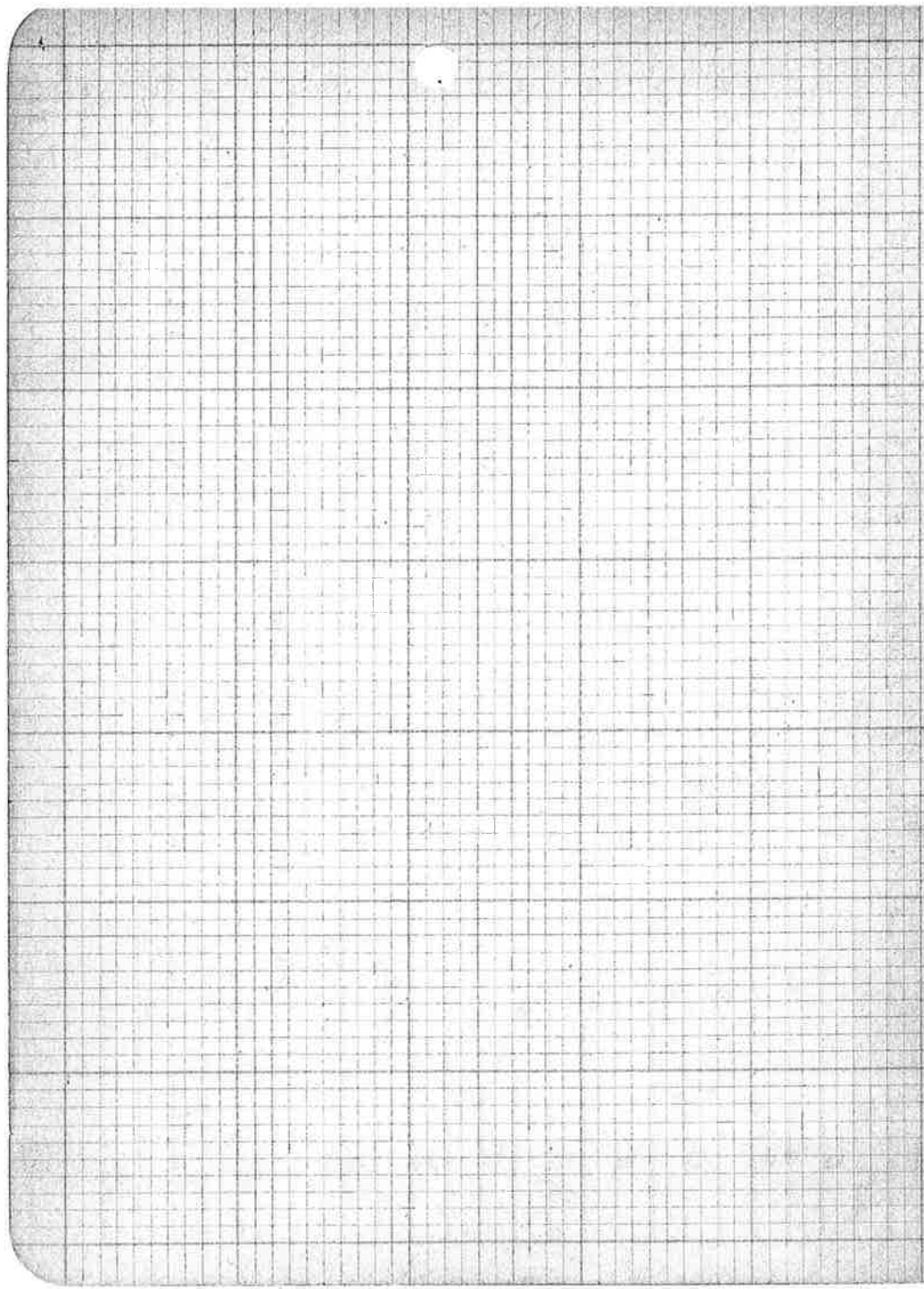
Section	Dist.	Height	Width top	Width Bot	Area	Quon Cuxys
O	4'	9.87'	1.50	2.32	18.852	3.127
P	4'	11.74'	"	2.48	23.362	3.879
Q	4'	13.62'	"	2.64	28.191	4.550
R	4'	15.49'	"	2.79	33.226	5.322
S	6'	17.36	"	2.95	38.626	9.531
T		20.17	"	3.18	47.197	
T		24.17	"	3.51	60.596	11.773
U	5.25	24.17	"	3.51	60.546	

38.127  
2 walls  
76.254

North Walls (Pier) Sec. Class Conc.

D		9.87'	1.50	2.32	18.852	3.127
C	4'	12.34'	"	2.52	24.865	4.255
B	4'	15.26'	"	2.77	32.580	7.494

7.494  
2 walls  
14.988



South Wing Wall Footings 2nd Class

2 Foot's 6.96' Long 1.5' Wide 4' Deep = 3.093 Cys.

South Wing Wall Corbels

53 Lin ft. 7083 x .333

.463 "

Summary Concrete

1st Class

	1st Class	2nd Class
Arch Ring	154.600 Co Yds	South Abut 156.952 Cu.
Spandrels	30.960 . "	North " 66.513 .
" Railing	10.586 . "	South W Walls 76.254 .
" Corbel	1.399 . "	North " (Pier) 14.988 .
Wing Wall Railing	12.290 . "	Wing Wall Foot's 3.093 .
" " Ties	2.067 . "	" " Corbel .463 .
Total.	211.902 . "	318.263 . "

# Pile Record So. Abutment

Pile #	Last Drop	Pen. Las	Total Pen.	Pile Below Cutoff	Pile Above Cutoff
1	15'	3/4"	11'	13'	6'
2	17'	3/4"	12'6"	14'6"	"
3	18'	3/4"	13'	15'	"
4	20'	1/2"	12'6"	14'6"	"
5	20'	1/4"	13'3"	15'3"	"
6	21'	3/4"	12'	14'	"
7	24'	5/8"	11'6"	13'6"	"
8	20'	3/4"	12'	14'	"
9	10'	1"	11'6"	13'6"	"
10	15'	3/4"	13'5"	15'5"	"
11	20'	1/4"	12'2"	14'2"	"
12	18'	3/4"	15'1"	17'1"	"
13	20'	1/4"	15'11"	17'11"	"
14	20'	1/4"	14'3"	16'3"	"
15	20'	1"	15'1"	17'1"	"
16	12'	1/2"	15'2"	17'2"	"
17	17'	1"	13'9"	15'9"	"
18	17'	1 1/8"	14'1"	16'1"	"
19	18'	1 1/4"	14'1"	16'1"	"
20	15'	3/4"	14'9"	16'9"	"
21	20'	1 1/8"	15'8"	17'8"	"
22	16'	1 1/8"	12'9"	14'9"	"
23	13'	3/4"	14'5"	16'4"	"
24	10'	1/2"	14'2"	16'2"	"
25	20'	1/2"	14'6"	16'6"	"
26	17'	1/2"	14'3"	16'3"	"
27	15'	5/8"	13'7"	15'7"	"
28	17'	3/4"	13'10"	15'10"	"

Drop Hammer. Used

2800 Pounds

Pile Record				So. Abutment	
Pile #	Last Blow	PenLas	w Total Pen.	Pile Below Cutoff	Pile Above Cutoff
29	18'	3/4"	14'2"	16'2"	6'0"
30	15'	3/4"	11'5"	13'5"	"
31	18'	3/4"	13'4"	15'6"	"
32	17'	1/2"	14'0"	16'0"	"
33	18'	5/8"	15'8"	17'8"	"
34	20'	1/4"	14'7"	16'7"	"
35	15'	3/4"	12'5"	14'5"	"
36	15'	1/2"	12'8"	14'8"	"
37	17'	1"	11'8"	13'8"	"
38	15'	3/4"	11'10"	13'10"	"
39	15'	3/4"	11'10"	13'10"	"
40	15'	7/8"	13'1"	15'1"	"
41	17'	3/4"	13'9"	15'9"	"
42	17'	1 1/8"	12'1"	14'1"	"
43	17'	1 1/8"	13'	15'0"	"
44	17'	3/4"	13'2"	15'2"	"
45	17'	1/2"	13'	15'0"	"
46	17'	5/8"	11'4"	13'4"	"
47	17'	1 1/8"	14'6"	16'6"	"
48	14'	3/8"	9'10"	11'10"	"
49	17'	5/8"	10'7"	12'7"	"
50	15'	3/4"	10'7"	12'1"	"
51	15'	1 1/2"	11'5"	13'5"	"
52	15'	3/4"	11'10"	13'10"	"
53	20'	1 1/4"	12'4"	14'4"	"
54	17'	1/2"	12'9"	14'9"	"
55	15'	1 1/4"	10'2"	12'2"	"
56	15'	1/4"	10'9"	12'5"	"
57	17'	1/2"	10'6"	12'6"	"
58	15'	3/4"	13'9"	15'9"	"

*Pile Record So. Abutement*

<i>Pile #</i>	<i>Last Blow</i>	<i>Pen. L<sub>a</sub></i>	<i>Total Pen.</i>	<i>Pile Below Cutoff</i>	<i>Pile Above Cutoff</i>
59	15'	1/2"	10'-	12'	6'-0"
60	17'	1/2"	12'-5"	14'-5"	"
61	15'	1/2"	12'-9"	14'-9"	"
62	19'	1/2"	13'-11"	15'-11"	"
63	15'	1/2"	12'-7"	14'-7"	"
64	15'	3/4"	10'-11"	12'-11"	"
65	17'	3/4"	12'-5"	14'-5"	"
66	17'	3/4"	12'-2"	14'-2"	"
67	20'	1/8"	11'-6"	13'-6"	"
68	20'	1/2"	10'-9"	12'-9"	"
69	17'	3/4"	13'-3"	15'-3"	"
70	16'	1/2"	12'-2"	14'-2"	"
71	20'	1"	9'-1"	11'-1"	"
72	16'	1/2"	10'-2"	12'-2"	"
73	16'	1/2"	11'-9"	13'-9"	"
74	20'	3/4"	14'-10"	16'-10"	"
75	16'	1/8"	7'-2"	9'-2"	"
76	18'	3/4"	9'-9"	11'-9"	"
77	17'	1/4"	8'-8"	10'-8"	"
78	16'	3/4"	8'-5"	10'-5"	"
79	18'	1/2"	12'-7"	14'-7"	"
80	20'	1"	11'-4"	13'-4"	"
81	12'	1/2"	11'-3"	13'-3"	"
82	21'	1/4"	11'-8"	13'-8"	"
83	20'	3/4"	13'-5"	15'-5"	"
			<i>Total</i>	<i>1200'-4"</i>	<i>498' Limit</i>

*Note* Piling Above Cut off was given from cut off to spring line El. Pile driver was set 14' Above Spring Line El. When driving Piles for abuts.

# Pile Record No. Abutement

Pile #	Last Blow	Pen. Las	n	Total Pen	Pile Below Cutoff	Pile Above Cutoff
1	19'	1 1/4"		14' 10"	16' 10"	6' 0"
2	17'	1 1/4"		15' 8"	17' 8"	"
3	18'	1 1/2"		16' 0"	18' 0"	"
4	19'	1"		15' 2"	17' 2"	"
5	19'	1 1/8"		15' 3"	17' 3"	"
6	15'	1/2"		10' 9"	12' 9"	"
7	18'	1"		13' 7"	15' 7"	"
8	19'	1 1/4"		15' 2"	17' 2"	"
9	15'	1/2"		9' 10"	11' 10"	"
10	15'	1/2"		10' 0"	12' 0"	"
11	15'	1/2"		11' 3"	13' 3"	"
12	15'	3/4"		11' 6"	13' 6"	"
13	15'	1/2"		8' 8"	10' 8"	"
14	15'	3/4"		6' 7"	8' 7"	"
15	15'	1/2"		8' 9"	10' 9"	"
16	15'	3/4"		8' 0"	10' 0"	"
17	17'	1/2"		7' 10"	9' 10"	"
18	20'	1/2"		7' 0"	9' 0"	"
19	20'	1/2"		5' 0"	7' 0"	"
20	20'	1/8"		4' 10"	6' 10"	"
21	22'	3/8"		5' 1"	7' 1"	"
22	22'	1/4"		7' 11"	9' 11"	"
23	24'	1/4"		7' 0"	9' 0"	"
24	22'	1/4"		10' 0"	12' 0"	"
					294.	144
				Below 1200	Above 498	
				" 294	" 144	
				Totals	642	110 ft

# Steel South Slough Arch

## Long. in Arch Ring + Abuts

Pieces	Size	Length	Tot. Length	Pounds	
66	3/4 $\phi$	40'	2640.0	4012.8	Top steel
22	3/4 $\phi$	40	880.0	1337.6	Bot "
44	3/4 $\phi$	32	1408.0	2140.2	" "
2	3/4 $\phi$	4	8.0	15.5	Splices
12	3/4 $\phi$	8	96.0	145.9	"
9	3/4 $\phi$	6	54.0	82.1	"
42	3/4 $\phi$	16	672.0	1021.4	Extra in Haunch
				8755.5	

## Transv. Steel in Abutment

20	3/4 $\phi$	16.	320	486.4	Note This steel was put in on acct. of Abut being put in. in three long. sections
1	"	25.	25	38.0	
1	"	26.5	26.5	40.4	
				564.8	

## Trans. in Arch Ring + bending up into spandrels + Rail

10	3/4 $\phi$	18'	180.0	273.6	
8	"	20'	160.0	243.2	
8	"	22	176.0	267.5	
8	"	23	184.0	279.7	
4	"	26	104.0	158.1	
13	"	4'5"	57.5	87.4	Splices Trans.
24	"	25	600.0	912.0	Long. Rail + spandrel
4	"	16	64.0	97.3	Extra in span wall Near Top for splices long
15	"	2	30.0	45.6	splices in Rail Perp
54	"	6'	324.0	492.5	Extra ties from Arch to spans
8	"	13	104.0	158.1	Extra Perp in Span Wall Near
4	"	12	48.0	73.0	" " "
4	"	8'6"	34.0	51.7	" " "
				3139.7	

451	3/8 $\phi$	Random.		10350	Stirrups
8	3/4 $\phi$	30.	240.0	465.6	in Wing Wall Ties
				1500.6	



North Wing Wall (Pier)

Pieces	Size	Length	Total Length	Pounds	
10	3/4	25'	250.0	380.0	Perp
4	1/2"	15'	60.0	91.2	Hor. in Top of W.W. Bent Do
12	"	8	96.0	145.9	"
4	"	25'	100.0	152.0	Rail

South Wing Walls 769.1

6	3/4	21	126.0	191.5	Perp
6	"	23	138.0	209.8	"
6	"	25	150.0	228.0	"
12	"	27	324.0	492.5	"
6	"	29	174.0	264.5	"
4		28	112.0	170.2	Long.
14		25	350.0	532.0	"
6		20	120.0	182.4	"
4		28'5"	114.0	173.3	" Rail

2444.2

Totals.

8755.5

564.8

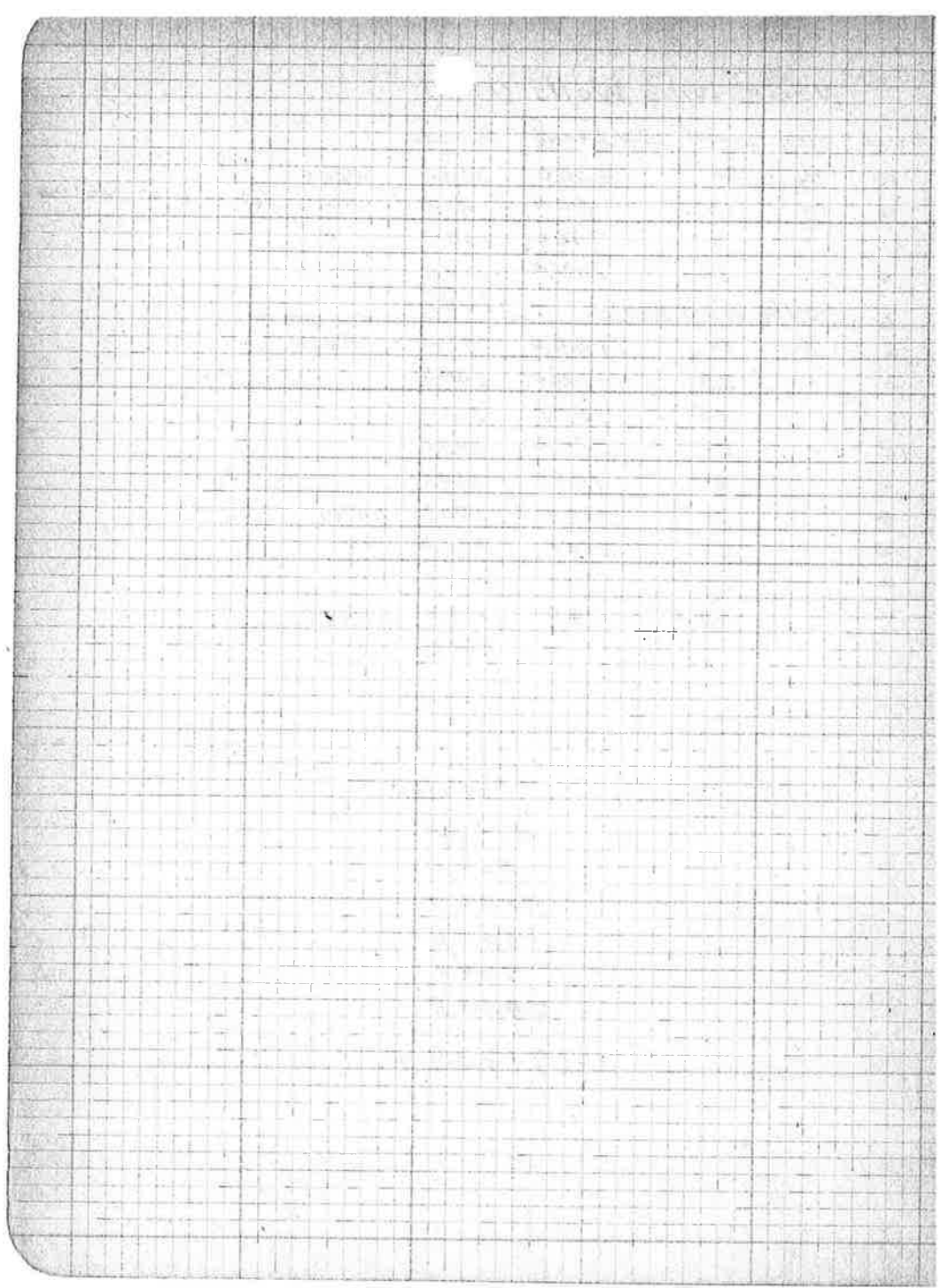
3139.7

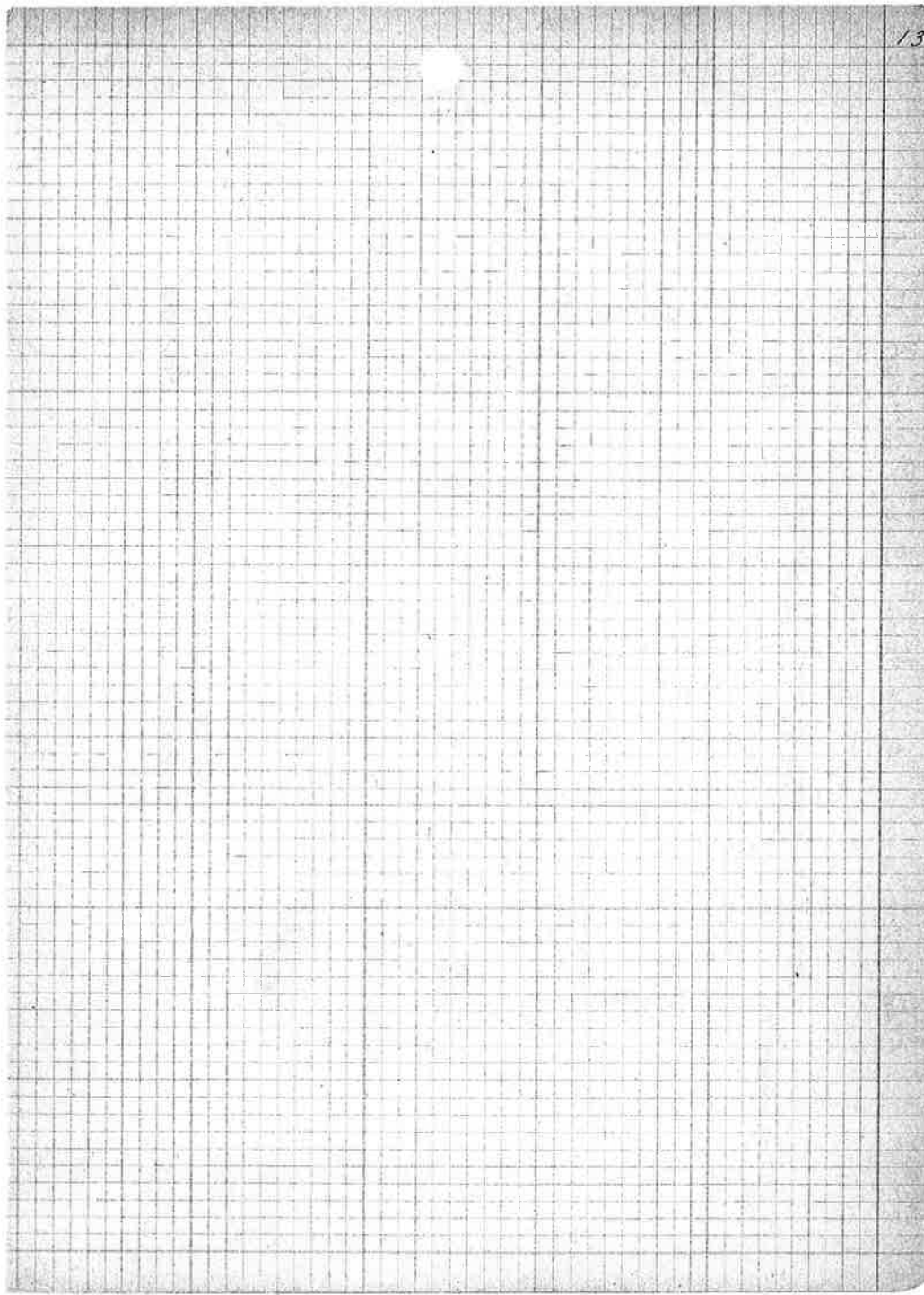
1500.6

769.1

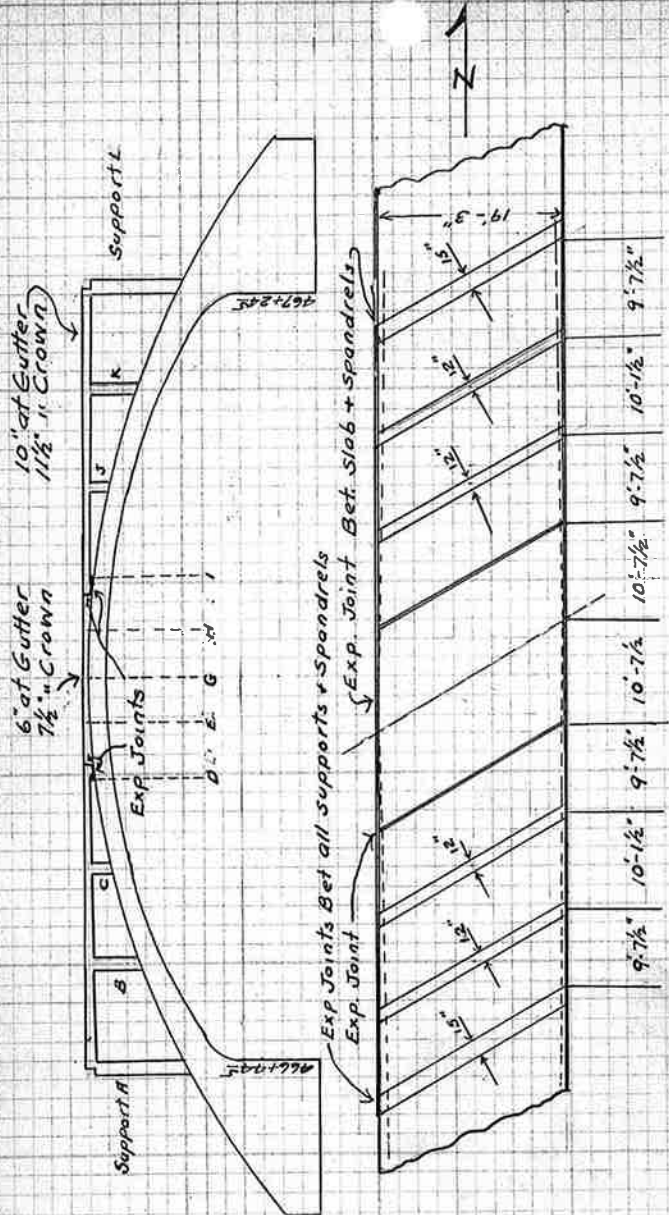
2444.2

17173.9 #





Floor slab over North Span South Slough Arch.



Conc. First Glass 8029 CuYds  
Reinf Steel 7152.1 Pounds

### Concrete in Supports

Support	Width Top	Width Bot.	Height	Area	Quant. Cuyds
South Face	22.20	20.94	10.00	215.70	
A-15'					9.588
North Face	22.20	20.94	9.20	198.44	
South Face	22.20	21.33	5.08	110.57	
B 12"					3.995
North Face	22.20	21.33	4.83	105.13	
South Face	22.20	21.83	2.08	45.79	
C 12"					1.631
North Face	22.20	21.83	1.92	42.27	
South Face	22.20	21.83	1.84	40.51	
J 12"					1.566
North Face	22.20	21.83	2.00	44.03	
South Face	22.20	21.50	4.67	102.04	
K 12"					3.945
North Face	22.20	21.50	5.08	111.00	
South Face	22.20	20.94	8.50	183.36	
L 15"					8.888
North Face	22.20	20.94	9.30	200.60	

#### Totals

Supports 29.613 Cuy.  
 Slab A to D. 19.256 "  
 " I. to L. 19.256 "  
 Slab D to I 12.163 "  
80.288 "

Total in Supports 29.613 Cu.Yds

### Concrete in floor slabs

A to D 30.15' Long, 19.25' Wide, .8958' Thick. 19.256 Cuyds  
 I " L " " " " " " " " " 19.256

	Thickness	Width	Area	Quant.
D	1.233	19.25	23.74	3.886
E	.703	19.25	13.53	2.256
G	.563	19.25	10.84	2.256
H	.703	19.25	13.53	3.765
I	1.173	19.25	22.58	12.163

# Steel in Supports + Slabs. 0

## Support A

Pcs	#	Length	Total Length	Pounds	
4	1/2"	21.5	86.0	74.0	Transv
3	"	19.0	57.0	49.0	"
14	"	10.0	140.0	120.4	Perp
14	3/4"	10.5	147.0	285.2	"
14	"	2.0	28.0	54.3	Dolls
				582.9	

## B

2	1/2"	19.0	38.0	32.7	Transv
2	"	21.25	42.5	36.6	"
1	"	19.6	19.6	16.9	"
28	"	6.0	168.0	144.5	Perp
14	3/4"	2.0	28.0	54.3	Dolls
				285.0	

## C

2	1/2"	21.33	42.7	36.7	Transv
1	"	19.25	19.3	16.6	"
28	"	3.0	84.0	72.2	Perp
14	3/4"	2.0	28.0	54.3	Dolls
				179.8	

## J

2	1/2"	21.25	42.5	36.6	Transv
1	"	18.0	18.0	15.5	"
28	"	3.0	84.0	72.2	Perp
14	3/4"	2.0	28.0	54.3	Dolls
				178.6	

## K

1	1/2"	19.25	19.3	16.6	Transv
1	"	20.25	20.3	17.5	"
3	"	21.33	64.0	55.0	"
28	"	6.0	168.0	144.5	Perp
14	3/4"	2.0	28.0	54.3	Dolls
				287.9	

## Support L

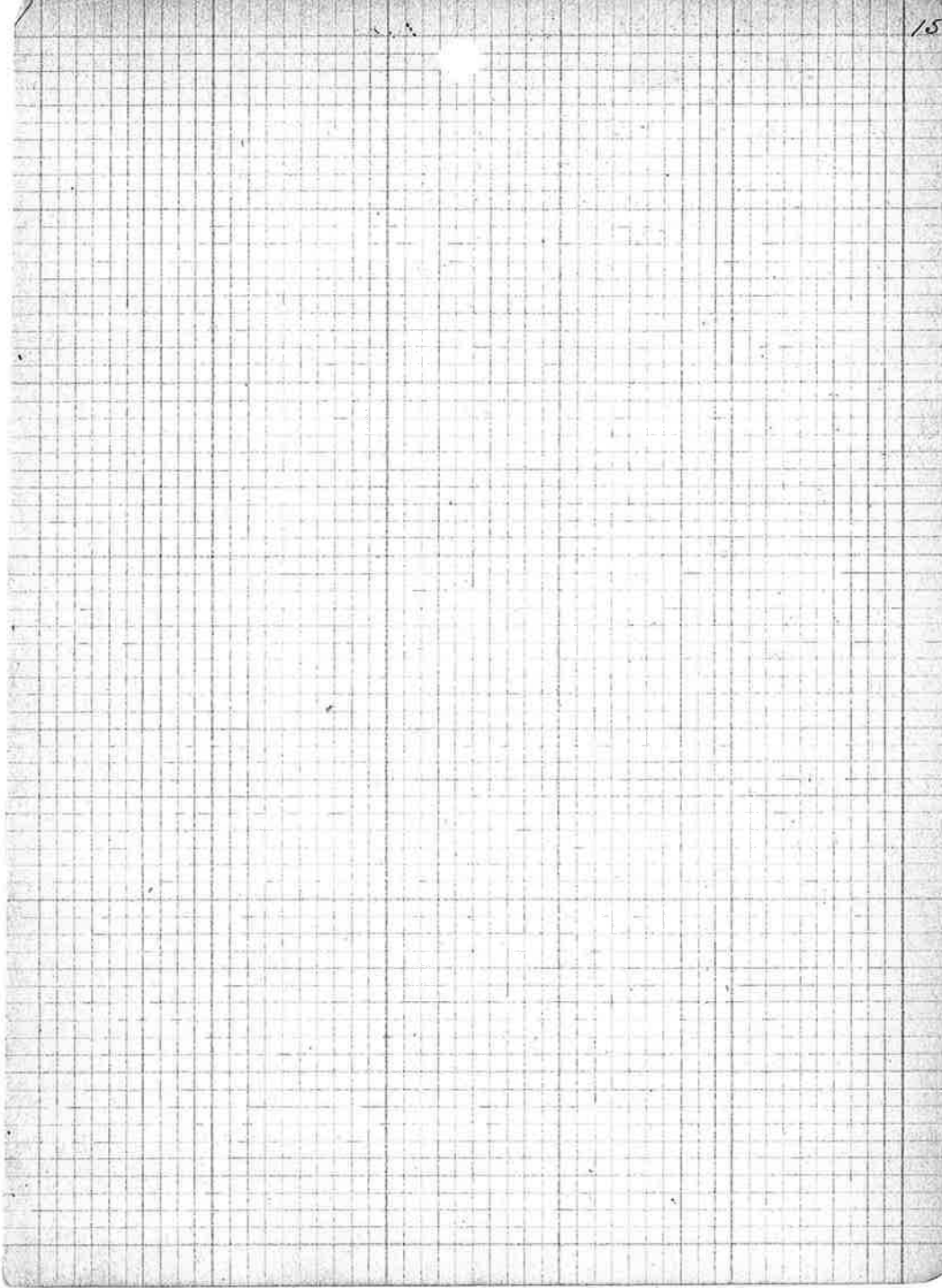
Pcs	#	Length	Total Length	Pounds	
4	1/2"	19.0	76.0	65.4	Transv
2	"	19.5	39.0	33.5	"
1	"	21.25	21.3	18.3	"
14	"	10.0	140.0	120.4	Perp
14	3/4"	10.33	144.6	280.5	"
14	"	2.0	28.0	54.3	Dolls
				572.9	

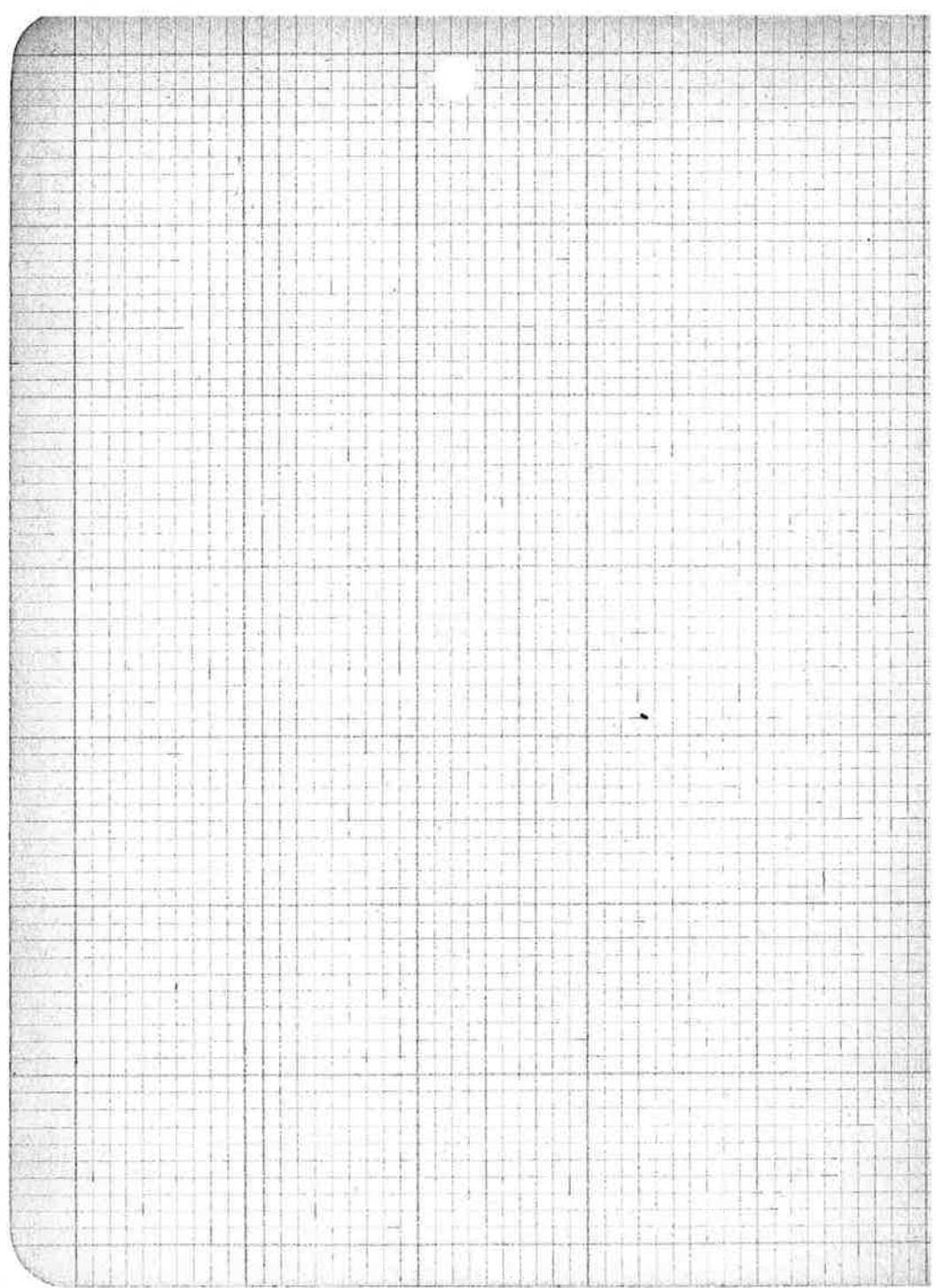
## Floor Slab

28	3/4"	30.0	840.0	1629.6	Long
10	3/4"	30.0	300.0	456.0	"
38	3/4"	34.0	1292.0	2506.5	"
17	1/2"	21.0	357.0	307.0	"
9	1/2"	21.5	193.5	166.8	Transv
				5065.5	

## Totals

582.9
285.0
179.8
178.6
287.9
572.9
5065.5
7152.1







### Recapitulation

Com. Exc.	236.	Cu Yds
Concrete 1 <sup>st</sup> Class	292.19	" "
" 2 <sup>nd</sup> "	318.26	" "
Reinf Steel	24326.	Pounds
Piling below Cut off	1494.	Lin ft
" Above " "	642.	" "

*WPK*

