



Northern Pacific Railway Company.
Engineering Department Records.

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WHITE RIVER BRIDGE.

Cascade Branch, N. P. R. R.

Erected 1885.

DESCRIPTION.

Single track , combination truss, deck bridge, 300 feet in length, consisting of two trusses 18 feet apart, centre to centre 8 principal panels 18ft. 6in. each; Wrought Iron Floor Beams, Wooden track stringers.

COST.

L. L. Buck, Designs, and superintendence of manufacture of iron work,.....	\$500.00
Rust & Coolidge, 336,095 lbs. Iron at 3.74 cents, delivered in St. Paul,.....	13691.95
130,112 feet B. M. Lumber,.....	1092.11
Hoffman & Bates, Erecting and painting, at \$16.00,	4800.00
Salaries and Wages, Engineers and Inspectors,.....	750.00
Incidental expenses and extra work,.....	539.35
O. R. & N. Co. freight charges,.....	396.10
N. P. R. R. freight charges, at 1 cent per ton per mile,....	3768.81
Total Cost,.....	\$25538.32

or \$85.13 per lineal foot.

SECOND CROSSING YAKIMA RIVER.

Cascade Branch, N. P. R. R.

Erected, 1886.

DESCRIPTION.

Single track, combination truss, through bridge, 300 feet in length, consisting of two parallel trusses 40 feet in depth, 20 feet apart centre to centre, 15 panels 20 feet long each; wrought iron floor beams, wrought iron track stringers.

COST.

Buck & McNulty, designs and superintendence of manufacture of iron work,.....	\$ 714.28
Rochester Bridge & Iron Works, 451,233 lbs iron at 3.6 cents delivered in St. Paul,.....	16244.38
Pilot Nuts and Test Bars,.....	59.45
89,000feet Lumber, (.feet.B..M.).....	731.93
Hoffman & Bates, erecting and painting at \$14.00,.....	4200.00
Salaries and Wages , Engineers, Inspectors Etc.....	554.00
Incidental Expenses and extra work,.....	651.41
O. R. & N. Co. freight charges,.....	256.80
N. P. R. R. freight charges at 1 cent per ton per mile,...	4204.90
Total Cost,.....	<u>\$ 27617.15</u>

or \$92.08 per lineal foot.

Jan 29th 1885



Dear Bogue

I enclose diagram from which to estimate on cost of viaducts. I need not do more than say that it is not for general distribution as our idea in getting it up was to facilitate calculations of cost of such structures in our office, but you may find it a convenience in arriving at a decision whether in any case it would be the most economical method of crossing a deep gulch, should you have any on your work. It is calculated from a complete plan that we have on hand. In the case of the piers the weight of each section is given and includes beside the diagonals and columns of the section, the weight of strut and joints at top of such section. It is for your use alone.

We had a very pleasant Alumni reception last Friday night. I was the sole representative of '68.' A list was distributed, containing names of graduates whose addresses were said to be unknown. I see V. F. Bogue's name among others. You ought to write to Nason and give him your address and tell him what you are doing. We had a very pleasant entertainment.

I hope you will find time to write to me one of these days. It is very dull here.

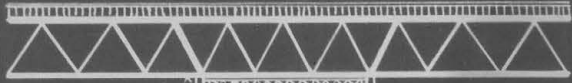
Truly yours
L. L. Buck

a 1613.



Engineer's Railway Viaduct Weights of Piers and Trusses.

Weight of Trusses 715 lbs. per lin. foot.



Total Weights of Piers
of different heights

33441 lbs

61049 lbs

90378 lbs

122464 lbs

157130 lbs

193915 lbs

235266 lbs

277245 lbs

321820 lbs

368879

Weight of Pier

A to B

22574 lbs

B to C

26668 lbs

C to D

28027 lbs

D to E

31137 lbs

E to F

32884 lbs

F to G

35323 lbs

G to H

39072 lbs

H to I

40008 lbs

I to K

43134 lbs

K to L

46933 lbs

L Base

23119 lbs

400

Buck and McNulty
Engineers

53, Broadway, New York

January 10-1885-

N. P. R. R. CO.

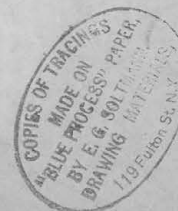
PRINCIPAL ASSISTANT ENGINEER'S OFFICE.

No. 2788

Name L. L. Buck.

Date Jan. 12 & 29 1885.

Subject Enclosing blue
print single track
By viaduct.

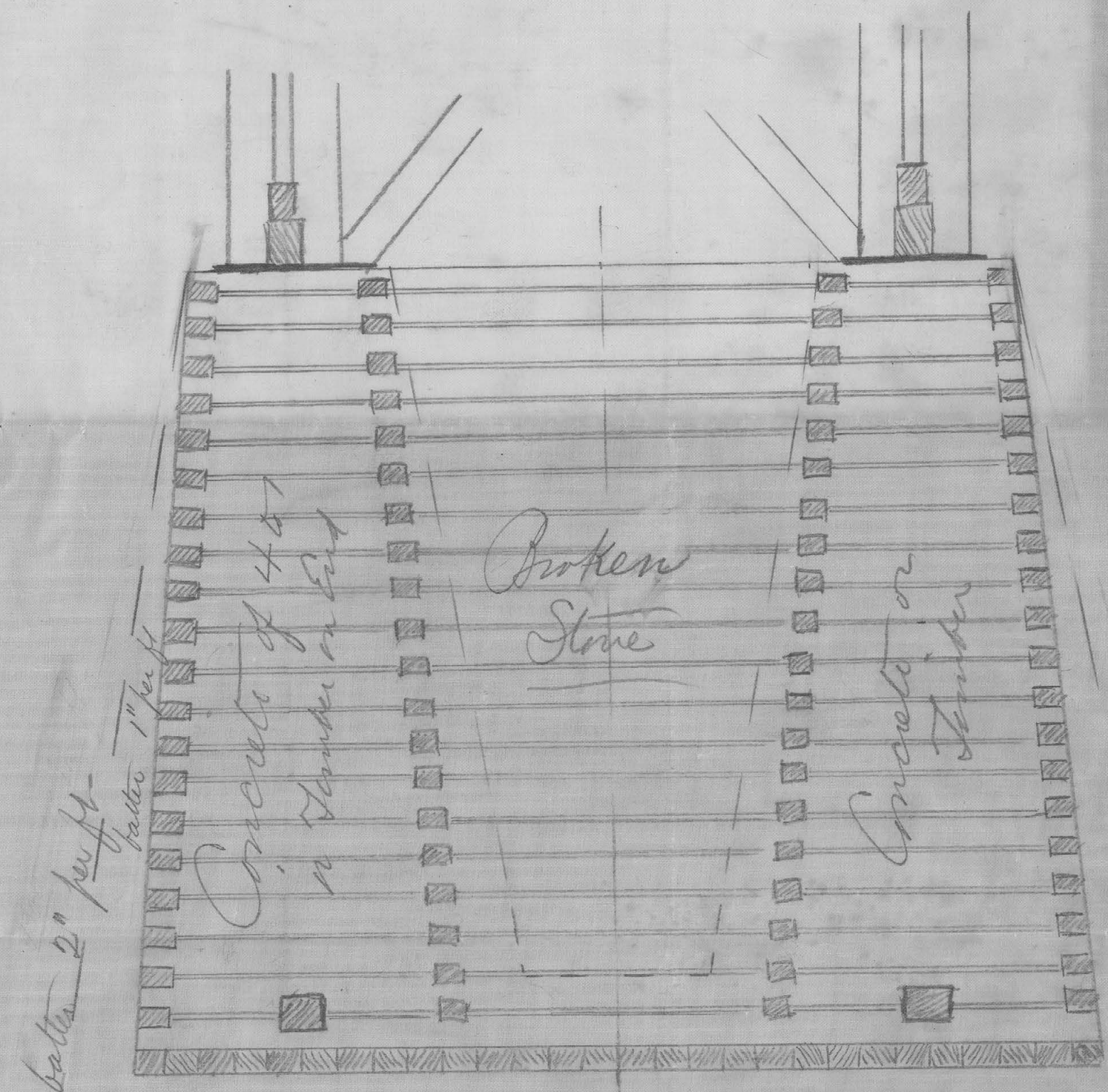


NORTHERN
PACIFIC R.R.
MAR
28
1885
ENGINEER'S OFFICE
PORTLAND, OR.

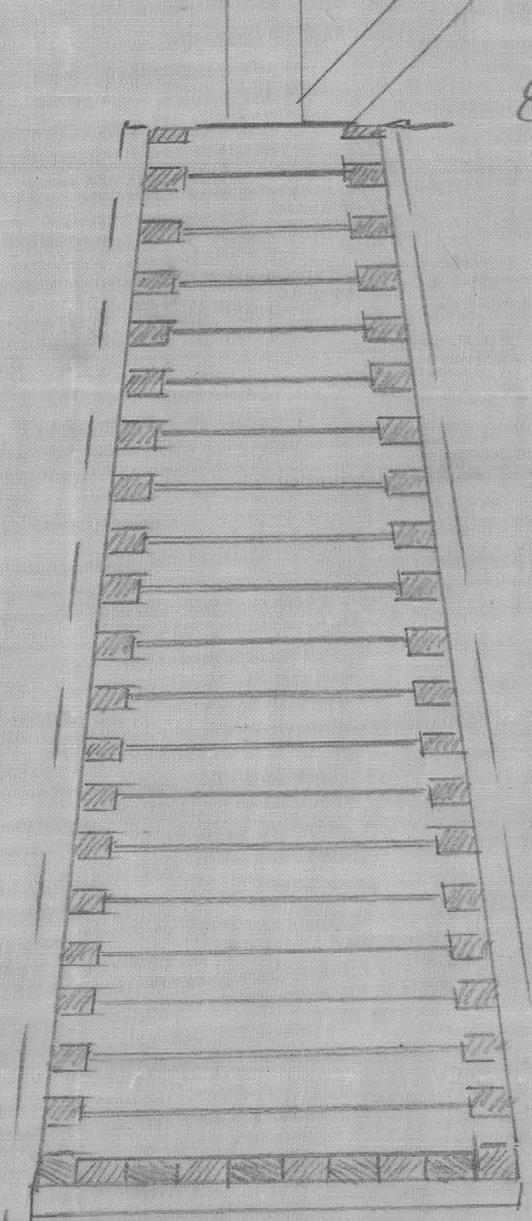
Full lines are tracing of Mr. Burck's
drawing for Pier
Outer dotted lines are those for
which concrete is estimated.
Walls of crib 12" thick

Concrete required to fill crib as per
outer lines and note about 175 yds -
to fill spaces between boulders
under crib say $\frac{15}{100}$ yds
Total - 190 yds
About $1\frac{1}{2}$ barrels per yard - 285 barrels each pier

Probably 400 to 500 Hbls
Cement sufficient for
2 Piers



Scale $\frac{1}{4}'' = 1'$



Elev 678

Fill Solid up to dotted line
10' above base

High Water

Low Water

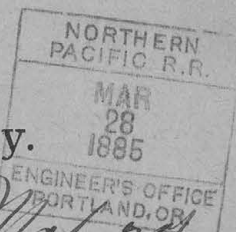
About 2' below river bed

13' 6"

Elev 678

PRINCIPAL ASSISTANT ENGINEER'S OFFICE

Subject Pier plans white
River bridge.



Northern Pacific Railroad Company.

Ida Prairie Station, *March 27* 1885
W. H. Kennedy Esq And Esqr
 Dear Sir,

There was not time to after receipt of Mr. Boguis telegram to make finished tracing of pier plan. I have however made pencil tracing. Tracing shows by full lines the pier according to Mr. Buck's plan. The outer dotted lines have an increased batter giving an increased base. The concrete needed for such a pier is about 190 yards - including 15 yards for leveling up under crib.

In any case I think some concrete should be used. The bottom of present excavation (5 ft below low water) shows very large boulders on which it will be almost impossible to get good bearing without some concrete. There are now 100 bbls Rosendale cement at Tacoma Coal Bunkers sent there by mistake which might be sent here at slight expense.

Respectfully
A. D. Bush