Northern Pacific Railway Company. Engineering Department Records.

Copyright Notice:

Version 3
August 20, 2018

2444

2

2444

Re: Pasco Divn RFA 92 AFE ED
153 for replacing present blow
off lines with std blow off
system at Pasco roundhouse.

Tacoma, Wash., Sept. 8th, 1920

Mr. E. C. Blanchard,
Asst. Genl. Manager,
Tacoma, Wash.

Dear Sir:

I hand you herewith Pasco Division RFA 92 AFE ED 153 for replacing present blow off lines with standard blow off system at Pasco roundhouse, amount $5255.00.

This AFE prepared in compliance with Mr. Stevens' letter of August 6th.

Yours truly,

Principal Assistant Engineer.

W-S
enc.

cc-HES

On Line, M. & I. Ry.,

September 24th, 1920.

Mr. S. J. Bratager,
Principal Assistant Engineer.

Will you kindly secure the data and fill in the list of locations, AFE numbers and amounts, covering the blow-off lines for points West of Paradise. It is my recollection that the three AFE's attached completes the entire list.

Please note the last paragraph of the narrative on the AFE's reading:

"To comply with this rule it will be necessary to replace the present standard blow off pipe with standard blow off system."

It does not seem to me this statement is strictly correct. Will you kindly ascertain what facilities now exist at Paradise, Kootenai and Paradise, and if it is a standard blow off pipe.

Chief Engineer.

HES-ar

Encl.

2477

St. Paul, Minn., Nov. 3rd, 1920.

Mr. Bernard Blum,

Engineer Mtce. of Way.

Dear Sir;

In compliance with your request of November 1st I hand you herewith a set of prints of plans of blower line in round house Sheets PP 39, 40,41, 42, 43, 44, 45 and 46.

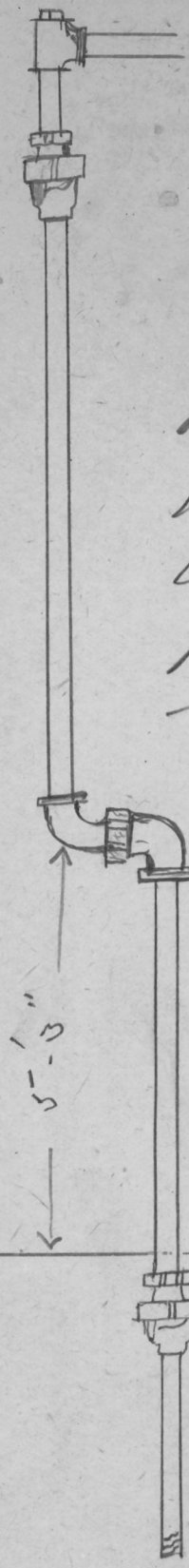
Yours truly,

SJB/FS

Encl.

Principal Asst.Engineer.

No 1

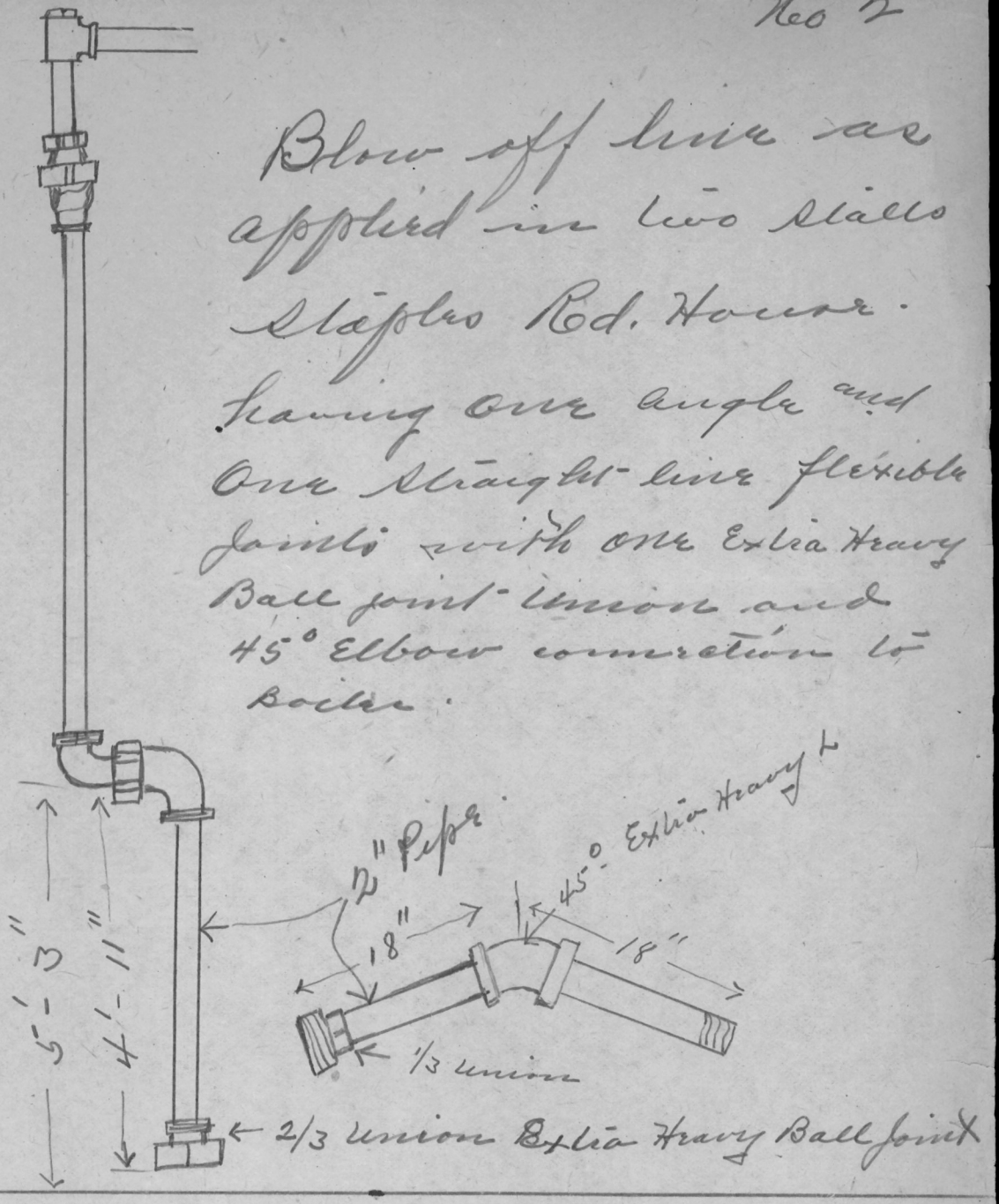


Present Standard Plan for Blowoff line having One angle and two Straight line flexible joints which allows only a limited variation in position of engine when coupled up.

when not in use this threaded end lays on Brick Floor where Threads become badly jambed up & and also apt to be tipped over. which if hung up would also be an abstruction.

No 7

Blow off line as applied in two Idaho Maples Rd. Homer. Having one angle and one straight-line flexible joint with one Extra Heavy Ball joint-union and 45° Elbow connection to boiler.



Saint Paul, November 1st, 1920.

BB-O

Mr. S. J. Bratager,

Principal Assistand Engineer.

Please let me have such prints that are necessary to cover the installation of blower line in roundhouse. This is desired for renewal for blower line, Helena roundhouse.

BERNARD BLUM.

OMR

Pls let me have prints. SJB 11/2

SJB Prints herewith 11/3-20 OMR

3444

St. Paul, Minn., October 11, 1920.

Blow-off Lines
Changing Drops

File 3727

Mr. H. E. Stevens:-

Referring to your letter of August 6th in regard to modification in roundhouse blow-off pipes.

I wished to have the advice of officers on the ground, and, therefore, secured an expression from Mr. Allen and Mr. Cutler. I attach copies of their letters hereto for your information. I think the suggestion that we more generally try out the new plan on the basis proposed by Mr. Allen and Mr. Cutler is a good one.

General Mechanical Superintendent

Mr Allen
Please note
I 1/7/12
Mr Stevens

Noted - Will provide
at next installations
10/13
B.B

COPY

Livingston, Montana,
October 2, 1920.

Bloww-off Lines
Changing Drops - C-88

Mr. H. M. Curry:-

Referring to your favor September 24th, File 3727, I would concur in Mr. Allen's suggestion that this angle fitting be tried out. Would say we have been using what practically amounts to the same thing at Laurel for some considerable time. Have found this necessary on account of making connections to some of the older power. Would suggest this be furnished each of our larger round-house points and a fair trial be given it andif satis-factory that it be adopted.

(signed) T. J. Cutler,
General Master Mechanic

C O P Y

St. Paul, Sepgember 20th, 1920.

Blow-off Line

B-899

Mr. H. M. Curry:-

Your letter of August 12th, File 3727:

I am returning theattached file of papers from Mr. Stevens and also am enclosing sketches of our present plan ofblow-off line and also of the proposed change.

We have two of these angle fittings which they are using at Staples and we have one at Mississippi Street. Mr. White at Staples seems to be of the opinion that the proposed change is working out satisfactorily. I personally looked into this and find that we can use this fitting as proposed and thereby eliminate one flexible joint, and there, undoubtedly, would be some advantages in doing this. We would save the expense of a number of ball joints.

Mr. Neish, however, does not consider that this is a very good change, as he is afraid that the angle fitting is liable to be screwed into the blow-off cock with threads crossed. However, I doubt if there would be very much liability of this provided the end of the pipe is properly threaded.

One point that is brought up in favor of this change is that the thread where it screws into the

blow-off cock would be better protected and not be liable to damage as under our present system. I hardly agree with this as the handling and carrying around of this fitting by the boilerwashers necessarily subjects it to more or less damage.

On the Yellowstone Division where they have had blow-off lines in operation for a number of years, they seem to think that our standard plan is entirely satisfactory and that we should have hangers extending from the roof to hang the end of the pipe in when not in use.

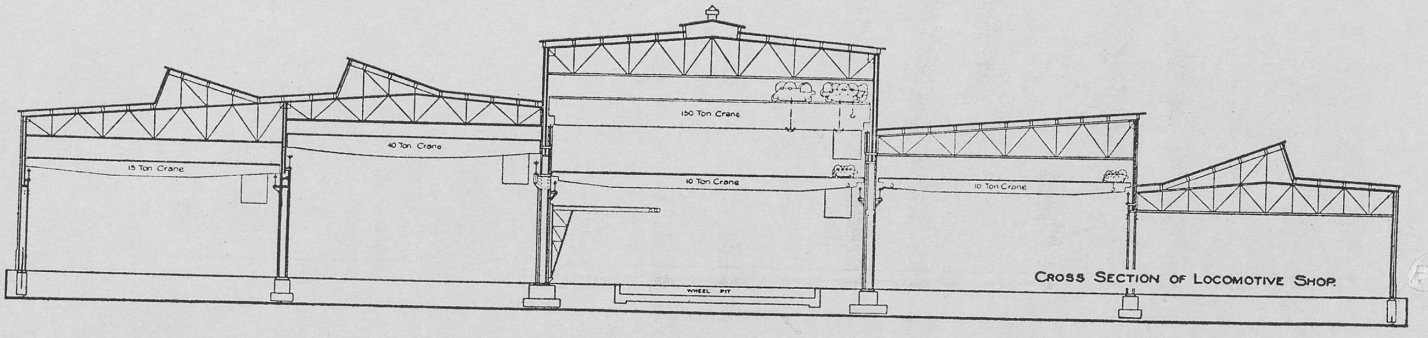
I would not at the present time agree to any recommendations that we change our standard plans, but would prefer to use the angle fittings for sometime to see if there is any great advantage in their use over our present arrangement.

(signed) C. E. Allen,
General Master Mechanic

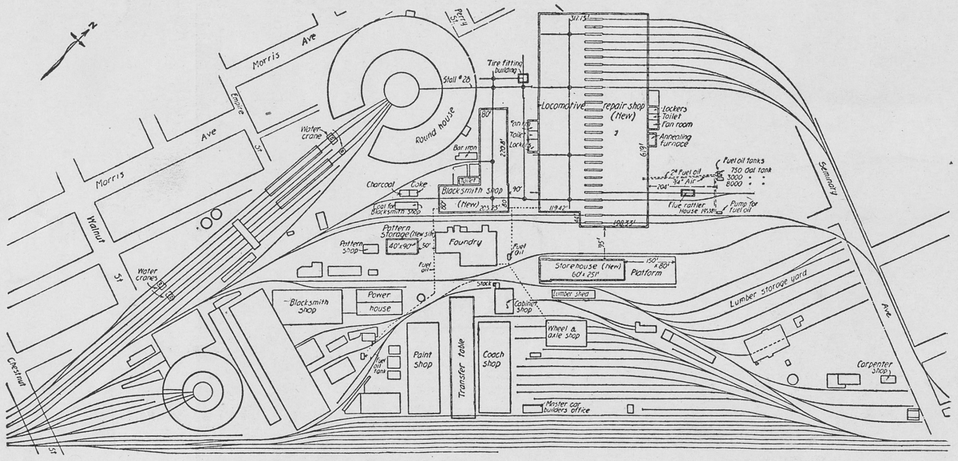
Locomotive Shops designed constructed and equipped to save money, time and labor

for

"THE ONLY WAY"



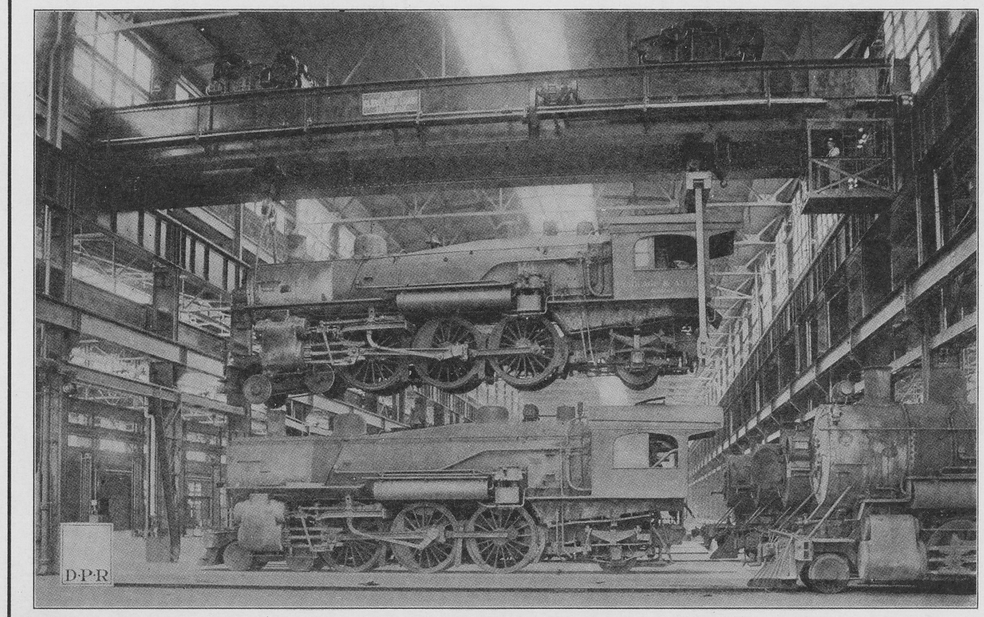
CROSS SECTION OF LOCOMOTIVE SHOP.



GENERAL LAYOUT OF THE CHICAGO AND ALTON
SHOPS AT BLOOMINGTON

D·P·R
ENGINEERS
AND
CONSTRUCTORS

A CONSOLIDATION OF
DWIGHT P. ROBINSON
AND COMPANY, INC.
AND
W·C·K



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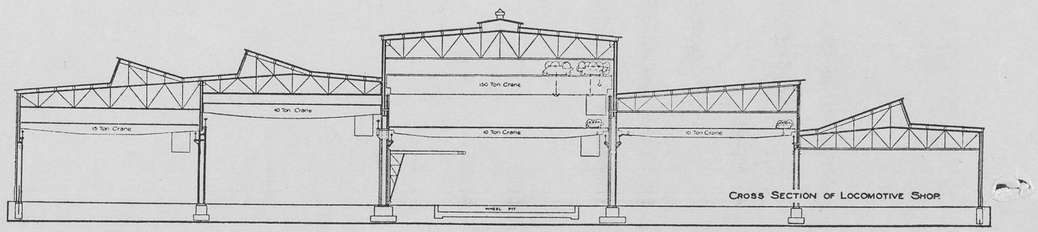


CROSS SECTION OF LOCOMOTIVE SHOP

How the Locomotive Repair Shops of the Chicago & Alton R. R. —*"The Only Way"*—at Bloomington, Illinois cut down "Shop Workman Mileage"

IN our work we come in contact with hundreds and hundreds of different plants—industrials, railroads—work of every sort. In practically every one we find "shop workman mileage" one of the problems to be solved if we are to get a high degree of efficiency in the plant's operation.

Can you see any reason why a railroad should pay workmen wages for walking 40 yards north of their job to get a tool, and 200 yards south again to the blacksmith shop to sharpen it? Certainly not.

And yet that is the way a good deal of the world's work is done.

Consider the tool layout of the machine and erecting shop we designed for the Chicago & Alton Railroad in co-operation with Mr. Douglas, chief engineer of that road. The diagram is shown on the inside of this folder.

In a railroad repair shop all work starts and winds up again on the locomotive. With 28 erecting pits there cannot be a single center of work, but take the center of the whole row of pits where the locomotive stands, describe a series of circles from the center and you will see that in so far as it is possible to do it, every facility is close at hand to every locomotive on which the men are working.

This seems like ordinary common sense.

It *is* common sense. But it isn't *ordinary* at all. Few shops are so arranged. And it takes long, technical training, wide experience and hard work, as well as common sense, to make such an arrangement.

Just for your own satisfaction, try this test on the layout of your own shops. Take the center of activity, draw circles out from this center and see just how far your own workmen travel about in the ordinary course of their work. Have you any lost "workmen's mileage"? If you have, it is costing you a pretty penny every day your plant operates.

There is another interesting point about this Chicago & Alton shop. It is practically all in one piece, under one big roof and approaching square.

It has probably been years since you dog-eared Mills' Arithmetic. But you remember this? A hundred feet of wall will enclose only 225 square feet of floor if you build 45 x 5. But the same 100 feet of wall will enclose 625 square feet if you build it 25 x 25. If memory of the little old red schoolhouse days still serves, we went on from this point to discover the economical qualities of the circle's circumference. Building a round house does not always meet our needs. Neither is a square the answer to every problem.

But the Chicago & Alton shops enclose more work room in proportion to the bricks it took to build the walls, than most shops.

To save a workman's step saves on the pay roll every day thereafter.

To save a brick on the wall saves on the initial construction cost.

To save a dollar on initial construction cost saves the interest on that dollar every year thereafter and reduces that old familiar item "fixed charges."

This shop for the Chicago & Alton is an example of the economy in construction and efficiency in operation of D. P. R. design. It is part of our business to use our head to save your workmen's heels. And this is a part of the service we offer you on any engineering or construction work — whatever your particular building problems may be.

D·P·R
ENGINEERS AND CONSTRUCTORS
A CONSOLIDATION OF DWIGHT P. ROBINSON AND COMPANY, INC. AND W·C·K

DWIGHT P. ROBINSON & COMPANY

INCORPORATED

Engineers and Constructors

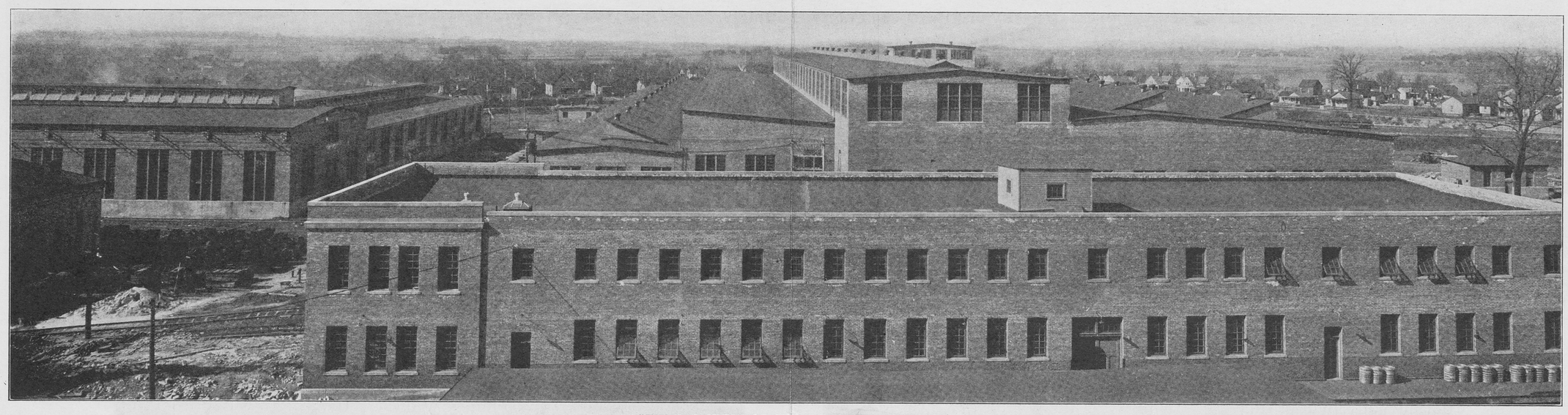
125 East 46th St., New York

CHICAGO YOUNGSTOWN PITTSBURGH CLEVELAND DALLAS LOS ANGELES

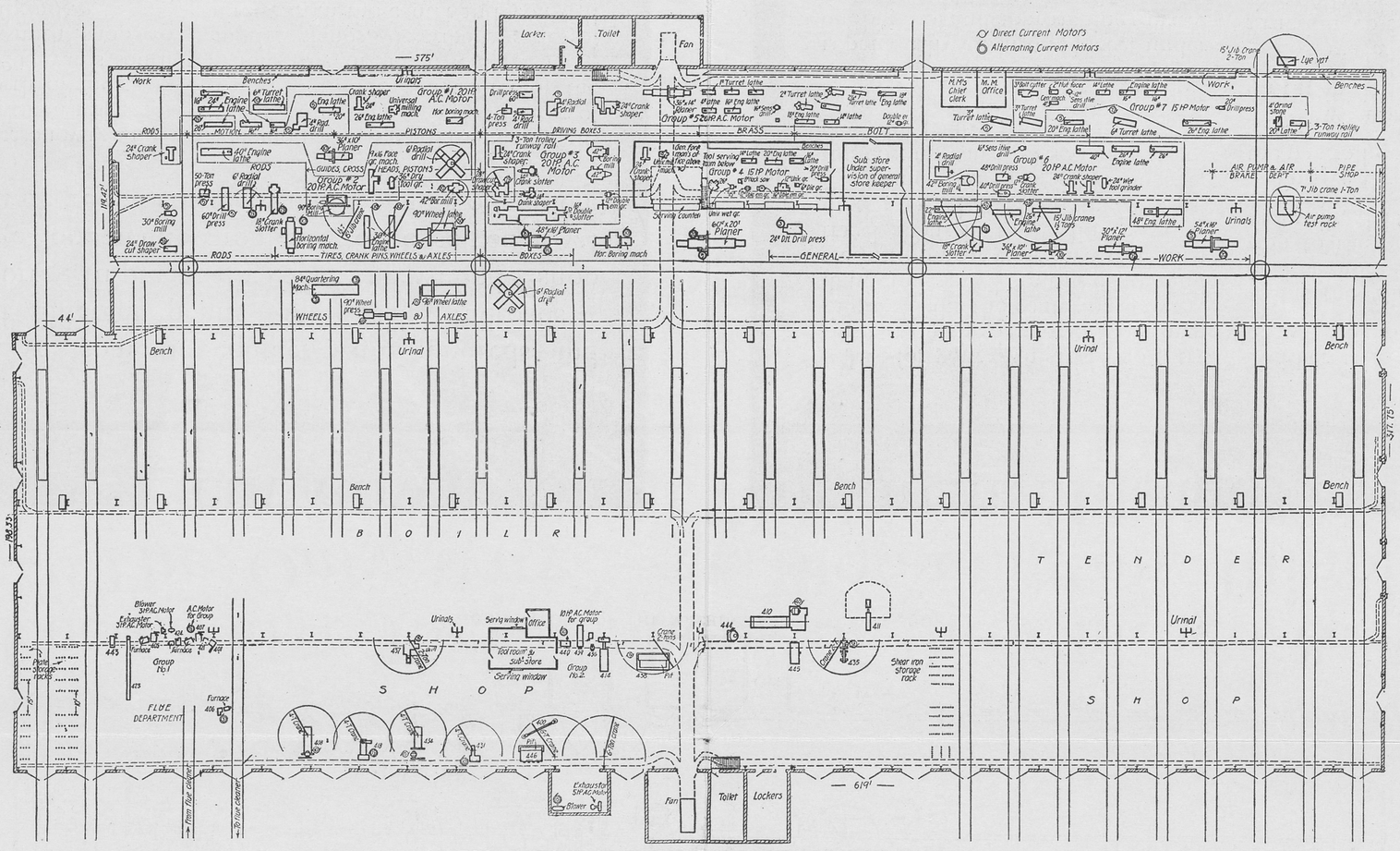
Consolidated with WESTINGHOUSE, CHURCH, KERR & COMPANY, Inc.

D·P·R
ENGINEERS AND CONSTRUCTORS
A CONSOLIDATION OF DWIGHT P. ROBINSON AND COMPANY, INC. AND W·C·K

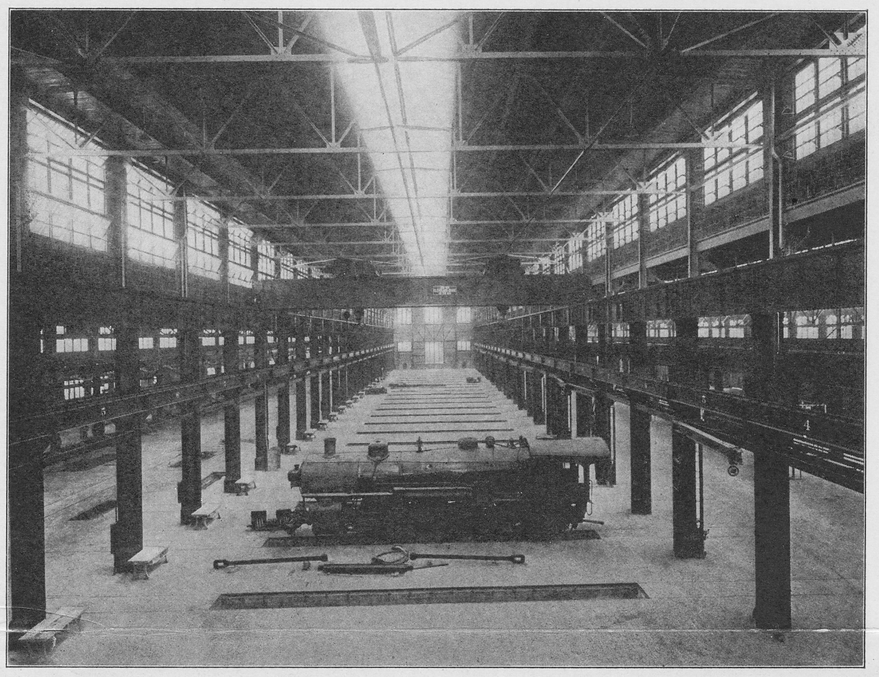
STOREHOUSE AND PLATFORM



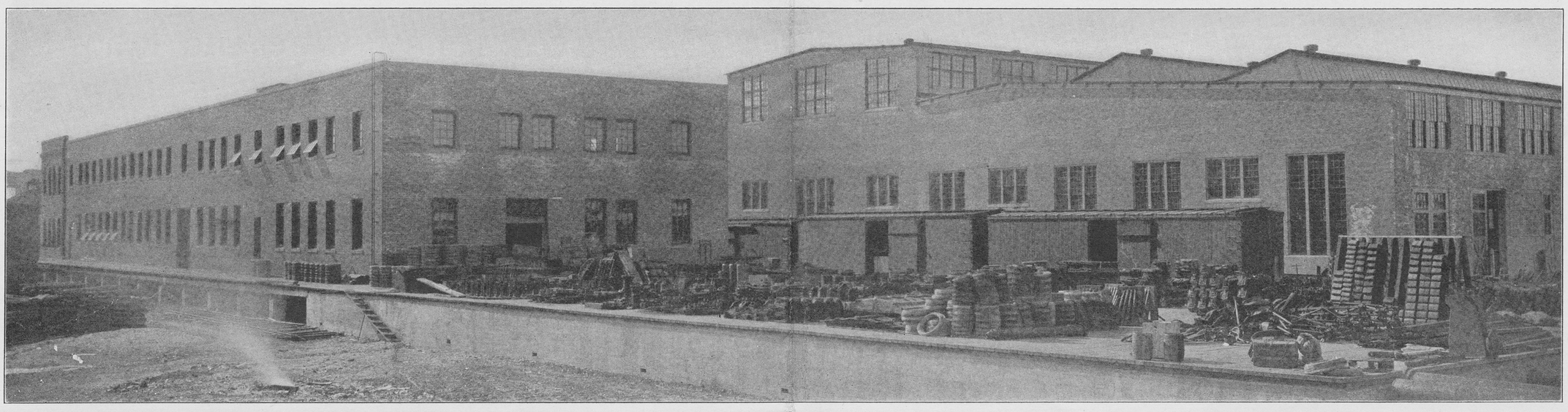
GENERAL VIEW OF SHOPS, LOOKING WEST



TOOL LAYOUT OF THE MACHINE AND ERECTING SHOP



VIEWS OF MACHINE AND ERECTING SHOP TAKEN SHORTLY AFTER THE SHOP WAS TURNED OVER TO THE RAILROAD



STOREHOUSE AND PLATFORM

2444

17

St. Paul, Minn., November 22, 1920.

Mr. H. E. Stevens:

In case you have not received a copy of the enclosed folder from the Dwight P. Robinson and Company, regarding the Chicago & Alton shop, you will probably be interested in looking it over.

W.P.D.

DWIGHT P. ROBINSON AND COMPANY
INCORPORATED
ENGINEERS AND CONSTRUCTORS
CONSOLIDATED WITH
WESTINGHOUSE, CHURCH, KERR & CO., INC.
125 EAST 46TH STREET
NEW YORK

November 17, 1920.

Mr. W. T. Tyler, V. P.,
Northern Pacific R. R.,
St. Paul, Minn.

Dear Sir:

The accompanying folder describes not a new but a modern shop. To design and build for the future--to anticipate future requirements and provide for them--is difficult but always possible.

The Chicago & Alton shop is as modern and efficient today as the day we turned it over to the client complete, ready to operate.

Our long experience in railroad work and our practical knowledge of railroad operating problems make results like this possible. If your plans include new shops, terminals or power plants let us explain without obligation how we can serve you as engineers or constructors or both.

Very truly yours,

T. N. Gilmore

First Vice-President.

UNDER CONSTRUCTION

That many companies are going ahead with necessary extensions and new plants is evidenced by the large volume of engineering and construction work we now have in hand.

This work includes industrial plants of both steel and reinforced concrete; large central power stations; industrial power plants; railroad shops; warehouses and undertakings of a miscellaneous character——in all, work aggregating many millions located in 12 States, Canada and South America.

These projects embrace engineering and construction of wide range and scope, and illustrate our ability to serve a client's needs of whatever character from the construction of a small addition to the building of a large plant completely equipped and ready to operate.

If you believe, as we do, that 1921 will see great business activity in this country, and if you intend to prepare for increased business by extending your present facilities, you should settle the preliminaries now.

A project can be lined up to best advantage before the large volume of deferred construction is begun. The advice of our specialists in the early stages is an important part of our service.

DWIGHT P. ROBINSON & COMPANY
INCORPORATED

With which is consolidated
WESTINGHOUSE, CHURCH, KERR & CO., Inc.

Engineers and Constructors

125 East 46th Street, New York

CHICAGO PITTSBURGH YOUNGSTOWN CLEVELAND DALLAS LOS ANGELES

This advertisement is one of a series which has appeared regularly during the last six months in the New York Times, New York Tribune, Chicago Tribune and Boston Transcript. This advertisement appeared in the New York Times on December 29th.

MODERNIZATION

SHOPS AND TERMINALS CAN BE MODERNIZED UNDER OPERATION

D·P·R
ENGINEERS AND CONSTRUCTORS

A CONSOLIDATION OF DWIGHT P. ROBINSON AND COMPANY, INC. AND W·C·K

This advertisement is one of a series of double pages appearing in the Railway Review and devoted to the railroad work of

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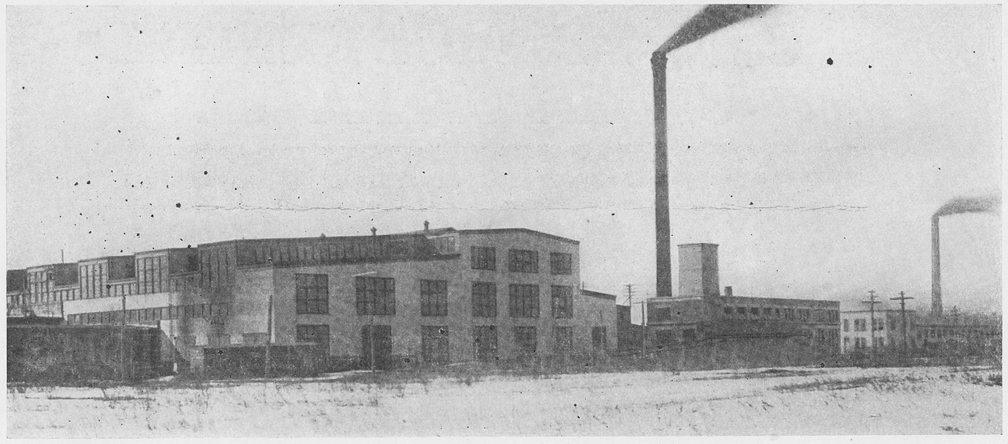


Boston & Albany R. R., Shop Extensions, West Springfield, Mass.

The new shop was fitted into place between two existing shops and was erected over and around the old power plant, which was kept in operation until the new power house was completed. The engineers and constructors were Dwight P. Robinson & Company, Incorporated—with which Westinghouse, Church, Kerr & Co., Inc., is consolidated.

IF traffic demands are to be met, more shops and terminals must be provided to keep locomotives and cars in repair. In many cases complete, new facilities are needed. In others it may be possible to modernize existing shops or terminals by rebuilding or extending them to answer the requirements of increased transportation and heavier power.

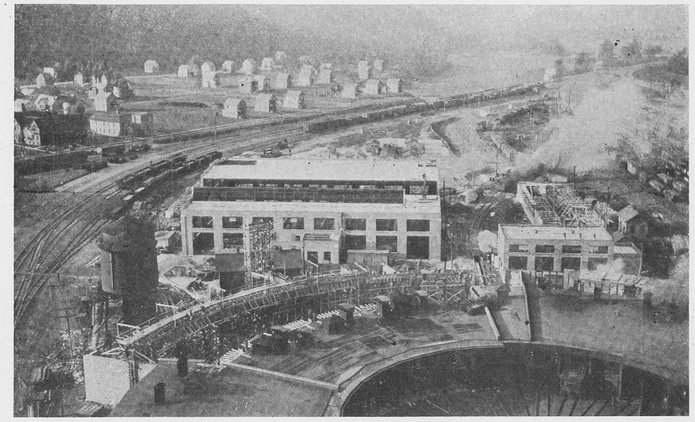
The possibilities of modernization—so often little appreciated—are illustrated by the following examples.

The Boston & Albany R. R. called us in to revamp and extend its shops at West Springfield, Mass. We built an erecting shop between two existing buildings and over the old power plant, which we kept in operation until the new power house was completed. The old shop had seven pits—the new shop has twenty. All drives were changed from steam to electric, and all the work was done **without interfering with operation in any way.**

At another time, we were retained by the Buffalo, Rochester & Pittsburgh Ry. to enlarge and modernize its terminal at East Salamanca, N. Y. In the roundhouse—to give wider openings—we moved back the door posts on the turntable side, moved the rear wall out to increase the depth of the house to provide for the largest mallet engines, extended the pits and the underground heating ducts proportionately, and built a crane runway of reinforced concrete with a 40-foot span to take care of repairs to the big locomotives. The result was not a makeshift in any sense, but a new, modern roundhouse built at low cost because the old house was conserved.

These two examples suggest how an old terminal or shop can be modernized into an up-to-date, well-equipped facility. They may also suggest a way in which our large organization, thoroughly acquainted with railroad operation, can study your problems, suggest a plan to conserve and modernize your present facilities and, as your agents, perform the actual work of design and construction.

We can furnish details of other large work we have done, explain our method and show how we can serve you as a part of your own organization.



Buffalo, Rochester & Pittsburgh Ry. Locomotive Terminal Improvements, East Salamanca, N. Y.

Showing how the locomotive terminal was modernized to take care of heavier power. The engineers and constructors were Dwight P. Robinson & Company, Incorporated—with which Westinghouse, Church, Kerr & Co., Inc., is consolidated.

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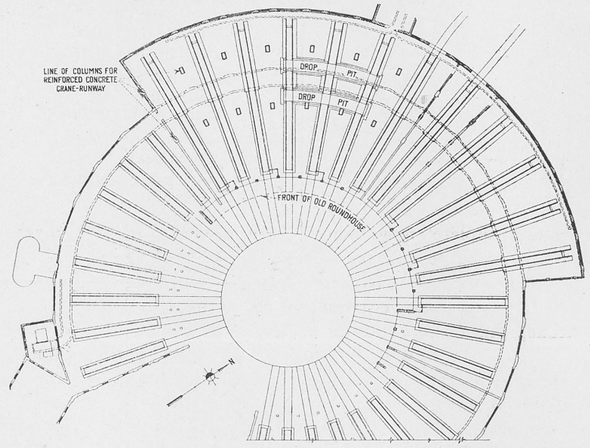

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125 East 46th Street, New York

CHICAGO PITTSBURGH YOUNGSTOWN CLEVELAND DALLAS LOS ANGELES

5444

DWIGHT P. ROBINSON AND COMPANY
INCORPORATED
ENGINEERS AND CONSTRUCTORS
CONSOLIDATED WITH
WESTINGHOUSE, CHURCH, KERR & CO., INC.
125 EAST 46TH STREET
NEW YORK

January 4, 1921.

Mr. H. E. Stevens, Ch. Engr.,
Northern Pacific R. R.,
St. Paul, Minn.

Dear Sir:

We have a well-organized department devoted exclusively to railroad work.

This department, which is under my direct supervision, is composed of engineers of long experience in the design and construction of all classes of railroad work, who were for many years members of the organization of Westinghouse, Church, Kerr & Co., which consolidated with this Company last June.

We are prepared to make studies and preliminary plans in connection with any work which you contemplate and, in cooperation with your engineering and mechanical departments, we will design, construct and equip the work.

We solicit an opportunity to discuss any proposed work with you in a preliminary way, even though you are not ready to undertake it at once.

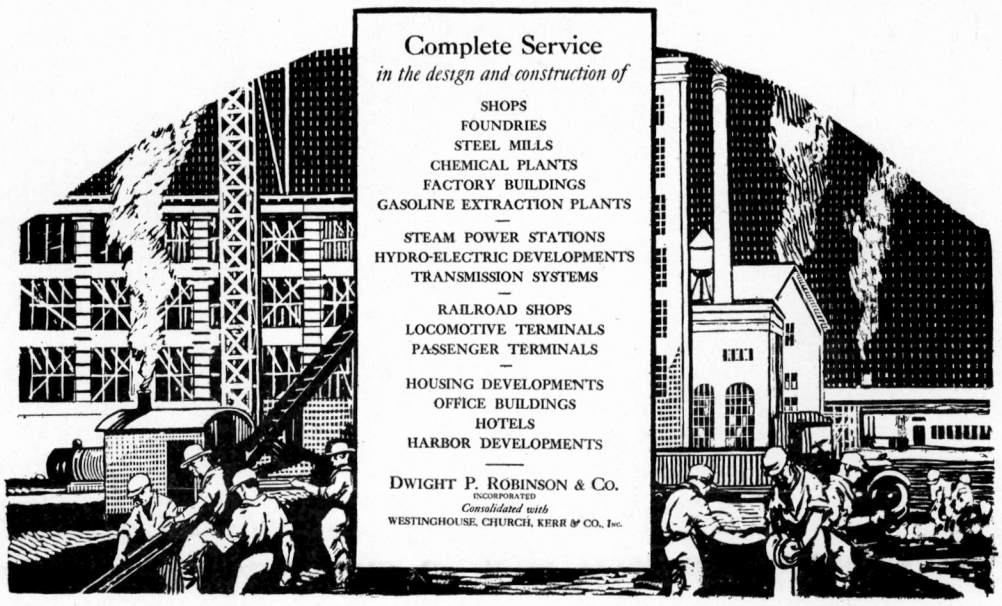
If we can serve you in any way, I shall be glad to discuss your problems with you by interview or by correspondence.

Very truly yours,

T N Gibbons

TNG.AHT

Consulting Railroad Engineer.



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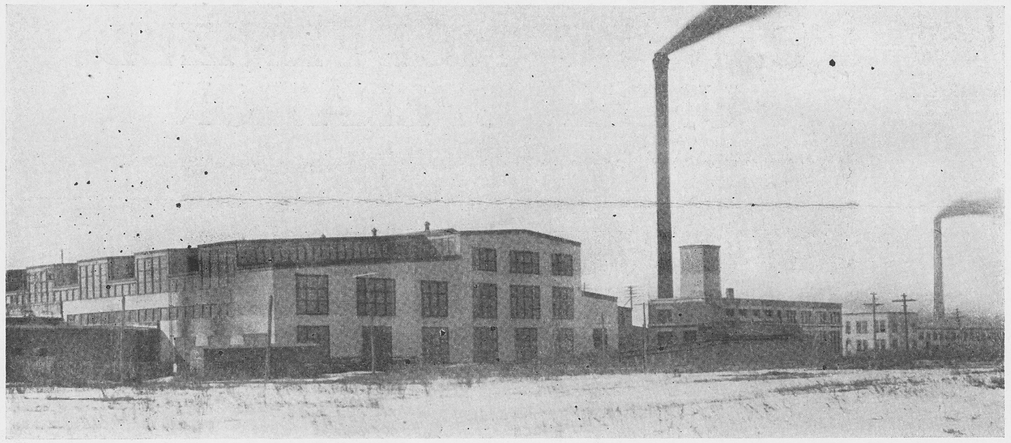

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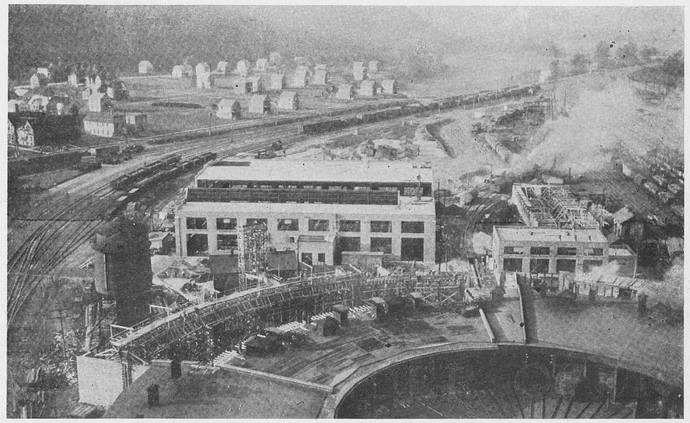

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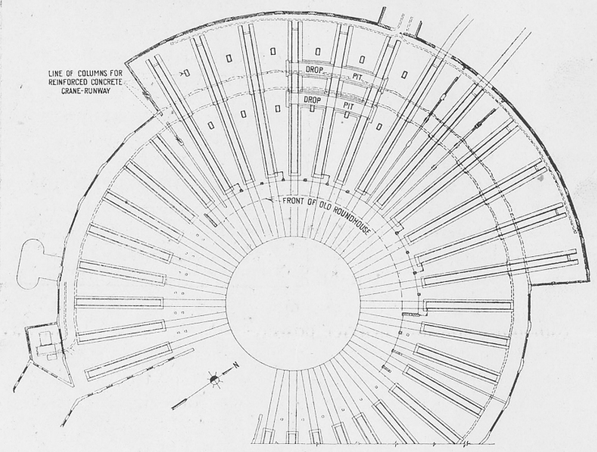

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Engineers and Constructors

125 East 46th Street, New York

CHICAGO PITTSBURGH YOUNGSTOWN CLEVELAND DALLAS LOS ANGELES

2XXX

St. Paul, Minn., January 7, 1921.

Mr. H. E. Stevens:

Supplementing my letter of November 22nd, enclosing a folder from Dwight P. Robinson & Company, regarding the Chicago & Alton shops, I enclose herewith a further letter received from them with certain literature regarding their work.

W. T. Tyler

DWIGHT P. ROBINSON AND COMPANY
INCORPORATED
ENGINEERS AND CONSTRUCTORS
CONSOLIDATED WITH
WESTINGHOUSE, CHURCH, KERR & CO., INC.
125 EAST 46TH STREET
NEW YORK

January 4, 1921.

Mr. W. T. Tyler, Vice-Pres.,
Northern Pacific R. R.,
St. Paul, Minn.

Dear Sir:

We have a well-organized department devoted exclusively to railroad work.

This department, which is under my direct supervision, is composed of engineers of long experience in the design and construction of all classes of railroad work, who were for many years members of the organization of Westinghouse, Church, Kerr & Co., which consolidated with this Company last June.

We are prepared to make studies and preliminary plans in connection with any work which you contemplate and, in cooperation with your engineering and mechanical departments, we will design, construct and equip the work.

We solicit an opportunity to discuss any proposed work with you in a preliminary way, even though you are not ready to undertake it at once.

If we can serve you in any way, I shall be glad to discuss your problems with you by interview or by correspondence.

Very truly yours,

T W Gilwood

TNG.AHT

Consulting Railroad Engineer.

1-56

August 24, 1921.

Mr. Spencer Otis, President,
National Boiler Washing Co. of Ills.,
Chicago, Ills.

My dear Mr. Otis:

Mr. Woodworth has just now referred to me your letter of August 12th on the subject of National Consolidated Locomotive Terminals.

I expect to be in Chicago tomorrow and will try and find an opportunity to run in and see you. Haven't had an opportunity to shake hands with you for a number of years. In addition to the pleasure this will give me I am interested in terminals.

Yours very truly,

Signed W. F. TYLER

FREDERICK A. GALE
VICE PRESIDENT

SPENCER OTIS
PRESIDENT

JOHN S. MAURER
VICE PRES. AND TREAS.

NATIONAL BOILER WASHING CO.
OF ILLINOIS

CHICAGO August 29, 1921.

My dear Mr. Tyler:

Shortly after you left the other day your letter came in.

As I understand the matter, you have three points in view at which terminals may be required. If you will kindly send me the ground space for one of these points we will make first, preliminary layout and in the meantime we should have from you the number of engines you expect to handle, whether it is likely a plant may be increased in size later, what class of repairs you expect to do, and approximately what space you figure will be required for machinery, and the amount of power you will expect to need outside of the house heating. This we can figure ourselves. We should also have the class of soil i.e. information necessary for our foundation.

As soon as we have been able to analyze the matter I will either come to St.Paul, or still better, if you happen to be in Chicago and will come in and go over it in a preliminary way it would be better because we have a number of alternatives here, some one of which might interest you.

Yours very truly,

Spencer Otis

President.

Mr. W.T. Tyler, V.P.,
Northern Pacific Railway Co.,
St.Paul, Minn.

August 30, 1921.

My dear Mr. Otis:

I am just now in receipt of your letter of the twenty-ninth. I will get the information requested to you at as early a date as possible, but it is likely, however, to be three or four weeks.

In the meantime I wish to say that I enjoyed very much having a little visit with you and the next time I am in Chicago will make it a point to see you.

With best regards, I am,

Sincerely yours,

Mr. Spencer Otis, President,
National Boiler Washing Co. of Ills.,
Chicago, Ills.

1-56

St. Paul, Minn., September 8, 1921.

Mr. T. H. Wilson:

Referring to the attached letter from Mr. Spencer Otis, President of the National Boiler Washing Company:

Please let me know whether we have any place on the Northern Pacific, where we do not have a boiler washing plant, where this would fit.

Signed W. T. TYLER

St. Paul, Minn., September 9, 1921.

Mr. W. T. Tyler:

Returning Mr. Spenser Otis' letter of September 6th, with enclosure, to you about boiler washing plants.

We have a number of places on the Northern Pacific where this arrangement could fit.

I produced a scheme for boiler washing plants on the Northern Pacific a long time ago as a part of our fuel economy program.

The first installation was made at Dickinson.

We next got authority to put in a plant at Dilworth, in 1913.

Through negotiations with the National Boiler Washing Company, they made us a considerable reduction in price if we would buy two plants instead of one. By that arrangement we gained a plant for Mandan.

When we built Mississippi Street engine terminal, we saved enough money in the construction of the buildings to include a boiler washing plant there without exceeding our appropriation.

We next got a straight-out authority for a boiler washing plant at Jamestown and later for Glendive.

In their order of next importance, the following

engine terminals should be equipped with boiler washing plants:

Livingston
Forsyth
Laurel
Billings
Duluth
Tacoma
Parkwater
Northtown
Seattle
Missoula
Pasco
Helena
Staples
Auburn

It is not generally known but it is a fact that boiler washing plants are economical in engine fuel and in engine hours even where the water used in the boilers of locomotives is of good quality.

W. W. Wilson.

FREDERICK A. GALE
VICE PRESIDENT

SPENCER OTIS
PRESIDENT

JOHN S. MAURER
VICE PRES. AND TREAS.

NATIONAL BOILER WASHING CO.
OF ILLINOIS

CHICAGO

September 6, 1921

Mr. W. T. Tyler, Vice Pres.,
Northern Pacific Ry. Co.,
St. Paul, Minn.

Dear Sir:

Enclosed please find copy of letter which we recently sent to the Mechanical Department of the various roads in the United States and Canada.

When the matter was first brought to my attention it did not seem possible that what we had always considered the least item of saving could amount to enough in dollars and cents to pay for the building of a plant, and when we sent out this letter I looked on the matter as an unusual but interesting condition. Since then I have learned there are plenty of cases in this country where the railroads are using from 75 to 125 percent of water shown here, and even then they are cooling their boilers altogether too fast for good practise.

I am sending you the enclosed letter only because I am sure it will interest you, and it is not at all necessary that you acknowledge its receipt.

Yours very truly,

President.

SO-Sl-

FREDERICK A. GALE
VICE PRESIDENT

SPENCER OTIS
PRESIDENT

JOHN S. MAURER
VICE PRES. AND TREAS.

NATIONAL BOILER WASHING CO.
OF ILLINOIS

CHICAGO

We have just offered to build a National Hot Water Boiler Washing and Filling System complete including buildings and foundations for a 40 stall engine house, and rent it to the railway company for five years - they giving us 60 monthly notes of $900 each without interest. This is less each month than the water they are now throwing away.

The conditions are these -

They are changing water on an average of 20 engines a day including 8 boilers washed. Their practice is to turn cold water into the boiler when they commence to blow out. Water metered into the pit averages 18,000 gals. and is costing them 10¢ per thousand gallons or $1.80 per engine.

Value of water now thrown away - $1.80 per engine.
Amount paid us for complete boiler washing plant $1.50 per engine, or for 20 engines $30.00 per day for 30 days or $900 per month.

The water saved is not only paying for the plant and leaving a profit but the railway company have without cost the following savings:

Use of a Hot Water Boiler Washing and Filling Plant with its attendant saving in boiler repairs and engine failures. Saving of 30 tons of coal a day (amount now required to get up steam from cold water). Saving of $720.00 a month in labor. Time of locomotive saved by hot water washing and changing gives them the use of 6 engines per day.

All this without one dollar of cash investment. Railway Company may take title to plant at end of lease. IS NOT THIS THE TIME TO THINK HARD?

Yours very truly,

SO-Sl-

President.

Western Trip.

St.Paul, Minn., Sept. 21, 1921.

Mr. W.T.Tyler,
Vice President.

Mr. H.M.Curry,
General Mechanical Supt.

For your information I enclose copy of a letter I have just received from Mr. Elliott, indicating that Mr. Spencer Otis is likely to call upon you in the near future about his proposed roundhouse plan.

Charles Donnelly

encl.

Northern Pacific Railway Company

Office of the Chairman

Howard Elliott
Chairman

34 Nassau Street
New York City

September 15, 1921.

My dear Mr. Donnelly:

Mr. Spencer Otis came in to see me today about an improved roundhouse plan. I used to know him a great many years ago, and I told him the best thing for him to do was some time to run up to St.Paul and see Mr. Curry and others who are familiar with the details of our situation.

He has some suggestions about the heating of roundhouses that may be interesting to Mr. Curry, especially if we get round to re-vamping our Forsyth engine terminal. He also has some other suggestions which I think it will pay our technical people to consider.

I told him I would write you about it, so that our people might understand that he was coming along.

Yours very truly,

signed Howard Elliott

Mr. Charles Donnelly, President,
Northern Pacific Railway Company,
St.Paul, Minn.

copy

On St. Paul Division,
September 22, 1921.

Mr. Charles Donnelly,
President.

This will acknowledge your letter of September 21st, with copy of letter from Mr.Elliott regarding Mr. Spencer Otis and his improved enginehouse plant.

Mr. Otis has not a "roundhouse". Instead of that he has a rectangular enginehouse where all of the work, that is cleaning fires, putting on coal and sand and other work necessary at a locomotive terminal, is done under cover.

As I wrote you sometime ago, I know Mr. Otis personally and am now investigating his proposition. I am sending a copy of this letter to Mr. Curry because I note that a copy of your letter has gone to him.

Copy to Mr. Curry.

St. Paul, Minn., September 27th, 1921.

Memorandum for Mr. Page:

Returning your file about boiler washing plants.

The proposal that I wrote on September 13th for additional boiler washing plants will fit in where we do not now have such plants.

Of the stations listed, we have contracts for water only at the following for engine terminal use:

Livingston	2.75	cents per 1000 gallons.
Helena	4.2	" " " "
Billings, about	6.7	" " " "

W. H. Wilson.

enclo.

Would this fit -
where we do not
have a boiler washing
plant at this time

Look into water
contract.

St. Paul, Minn., September 13, 1921.

Mr. W. T. Tyler:

The proposal of Mr. Spenser Otis to install boiler washing plants on railroads without capital expenditures on the part of the railroad should not be entertained by us.

Boiler washing plants should be furnished to requirements of specifications and for Northern Pacific main line points the following is about what is required:

Blow-off, wash or fill three boilers at the same time and maintain proper temperatures and pressure for both washout and filling water and have a maximum capacity for washing and filling thirty-five locomotive boilers per day of 24 hours. The apparatus should save the water blown out from locomotive boilers and maintain the heat in the water as far as possible; blown off water to be filtered in such a manner to make it suitable for boiler washing purposes and so arranged that temperatures can be reduced when the desired temperature is below 150 degrees Fahr.

When one to three locomotives having 150 pounds pressure are being blown off, the plant should be able to furnish sufficient washout water at 150 degrees and sufficient filling water at 180 degrees to wash and fill the same boiler, or similar boilers, without the use of new steam.

Such a plant would cost installed at this time about $36,000.00.

Saving would be about 1000 pounds of coal and 3000 gallons of water for each locomotive boiler washed and returned

to service.

At Livingston, this would produce a saving of $616.50 per month or $7,398.00 per year.

The proposal of Mr. Spenser Otis contemplates the installation of a boiler washing plant based on the number of boilers washed.

At Livingston, this would amount to 295 boilers per month or 3,540 boilers per year.

Mr. Spenser Otis' minimum is apparently $900.00 per month.

For sixty months, we would pay $54,000.00 which, of course, would be extremely profitable to Mr. Otis and very costly to the Northern Pacific.

If we divided the cost of our plant in sixty monthly payments, the amount would be $600.00 per month against $900.00 per month as proposed by Mr. Otis.

The Northern Pacific should install their own boiler washing plants when they decide to extend the program.

We should provide for three boiler washing plants in our 1922 budget; one for Livingston, one for Laurel and one for Duluth.

Boiler washing plant for Forsyth should be included in any new engine terminals under consideration.

M. H. Wilson.

St.Paul, Minn., October 24, 1921. D

Mr. H. E. Stevens:

Referring to the attached file in regard to Mr. Otis' plan for rectagular engine terminal:

When yourself and Mr. Curry have time, I wish you would go over this matter in detail and let me have your opinion as to the use of this plan at any point on our line. I will be glad to have a talk with you about it.

Enclo

FREDERICK A. GALE
VICE PRESIDENT

SPENCER OTIS
PRESIDENT

JOHN S. MAURER
VICE PRES. AND TREAS.

pers. wrote

NATIONAL BOILER WASHING CO.
OF ILLINOIS

CHICAGO October 5, 1921

Mr. W. T. Tyler, Vice Pres.,
Northern Pacific Ry. Co.,
St. Paul, Minn.

Dear Sir:

Enclosed please find a comparison from a railroad standpoint as between buying and paying cash for a NATIONAL HOT WATER BOILER WASHOUT AND FILLING SYSTEM, and acquiring the same plant on a rental basis.

Please note especially two things -

First, the enormous earnings of a single plant, and a very moderate size plant at that, during the 15 years of its life.

Second, that under present conditions, including the allowed earnings on capital expenditure a railroad can have the use of a plant without putting up a penny and at the end of its life they will be some thousands of dollars better off than if they had purchased the same plant for cash.

The earnings shown in this case are based on the railroad company's own estimate of the savings in labor, coal, and water for each engine handled, and on the number of engines being washed and changed today (something like 30% below normal) so that the actual earnings for the 15 years will be greater than shown.

Also please note that the interest on the investment in one case, and the rental in the other, are deducted from the savings.

In the particular case in which these figures were made the railroad already had a number of plants and based the saving on actual operation. They had money appropriated for an additional plant but by accepting this plant on a rental basis the cash becomes available for the purchase of some machine tools badly needed.

Yours very truly,

Spencer Otis

President

SO-S1

1

TIME PAYMENT VS. CASH PAYMENT PLAN UNDER WHICH RAILROAD CAN PURCHASE WASHOUT PLANTS FROM THE NATIONAL BOILER WASHING COMPANY, CHICAGO.

****

CASH PLAN		TIME PAYMENT PLAN	
Cash	$28,000.00	Rental - $666.00 per month or per annum	$7,992.00
Interest 7% per annum	1,960.00	For 5 years	39,960.00
Saving on basis of operation (see detail below)		Saving same as under Cash Payment Plan- 15 years @ $30,168.00 per annum	452,520.00
Per month --- $2,514.00		Less 5 years rental	39,960.00
" annum --- 30,168.00		Net saving	$412,560.00
(15 years) -$452,520.00			
Saving per annum less interest $30,168.00- $1,960.00	28,208.00	Depreciated value at end of 5 year period - 66 2/3% of $28,000.00	18,666.00
Or during life of plant, 15 years	423,120.00	Allowed earnings 5 1/2% on depreciated value for 10 years	10,266.00
Allowed earnings 5 1/2% on original cash investment of $28,000.00 - $1540.00 per annum, or for 15 years	23,100.00	Net saving	412,560.00
Total saving during life of plant	$446,220.00	Allowed earnings	10,266.00
		Total	$422,826.00
Less original investment, $28,000.00	28,000.00		
Net saving	$418,220.00		

****

Net saving on rental plan	$422,826.00
" " " cash basis	418,220.00
Amount in favor of rental plan of purchase	$4,606.00

****

Railroad would acquire ownership after 5 year period expires.

NOTE:- Basis of saving operation modern washout plant, National Boiler Washing Co.

Total number engines washed per month --120
" " " water changed " " --120

Saving per engine washed:	Labor	$3.30,	Water	2.75,	Coal 4.95,	total	$11.00
" " " changed:	"	2.50	"	2.50	" 4.95	"	9.95

120 engines @ $11 ----- $1320
120 " @ $9.95---- $1194
$2514.00

Explanations: Life of plant - 15 years in both cases.
Interest on Cash price - 7%.
Allowed earnings on capital expenditures - 5 1/2% (Transportation Act)
Saving by use modern plant - $2514.00 per month each case.
Savings made in other than labor, water & coal not included.
No account taken of decrease cost of boiler repairs and time saved in engine house.
No account taken of Maintenance costs as they would be the same in both cases.

2474

St. Paul, November 2nd, 1921.

Mr. H. E. Stevens,

Chief Engineer.

Dear Sir:

Referring to Mr. Tyler's letter of October 24th in regard to "Mr. Otis' plan for rectangular engine terminal".

I notice from the file that Mr. Otis has not a "roundhouse" but a rectangular engine house where all the work of cleaning fires, putting on coal and sand and other work necessary at a locomotive terminal is done under cover.

I notice also from the file that Mr. Tyler is investigating his proposition.

Until we have a plan and description of the design I am not able to offer any criticism.

There is a short article on the same subject by C. C. Lance of the National Boiler Washing Co. in the Railway Review Oct. 15th, 1921, pages 499, 500 and 501 but there is no plan to show what the proposition really is.

Yours truly,

SJB/FS

Encl.

S. Bratay

Principal Asst. Engineer.

2447

St. Paul, November 2nd, 1921.

Mr. H. E. Stevens,

Chief Engineer.

Dear Sir:

Referring to Mr. Tyler's letter of October 24th in regard to "Mr. Otis' plan for rectangular engine terminal".

I notice from the file that Mr. Otis has not a "roundhouse" but a rectangular engine house where all the work of cleaning fires, putting on coal and sand and other work necessary at a locomotive terminal is done under cover.

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Yours truly,

SJB/FS

Encl.

Principal Asst. Engineer.

2444

Saint Paul, November 3rd, 1921.

Mr. H. M. Curry,

General Mechanical Superintendent.

Please look over the attached file received with Mr. Tyler's letter of October 24th, about rectangular engine terminal.

There is nothing whatever in the correspondence that gives any idea as to the design Mr. Otis has in mind other than his letter of August 12th, which states that he is going to consolidate all of the various engine facilities under one house, using I presume a rectangular house with either transfer table or long approach leads. This type of house is not a new scheme by any means, but if you have any information as to Mr. Otis' particular modification of this plan I should be glad to confer with you. If not, I will return the plan to Mr. Tyler with the suggestion that Mr. Otis furnish us with some information that we can check up and discuss.

Chief Engineer.

HES-ar

Encl.

FREDERICK A. GALE
VICE PRESIDENT

SPENCER OTIS
PRESIDENT

JOHN S. MAURER
VICE PRES. AND TREAS.

W. 2. 2

NATIONAL BOILER WASHING CO.
OF ILLINOIS

CHICAGO August 12, 1921

Mr. J. G. Woodworth, Vice Pres.,
Northern Pacific Ry. Co.,
St. Paul, Minn.

Dear Sir:-

Records show that it is from 1 to 5 hours from the time a locomotive is taken from a train until it is placed in roundhouse.

The route of an engine from train to house now is

1st - to an assigned track
2nd - " cinder pit
3rd - " coaling station
4th - " sand and water station
5th - " turn table

Locomotives are only in hands of transportation department 12 hours out of 24. Any system that will save 1 hour and 10 min. in turning engine means the use of one extra locomotive for each ten handled.

The NATIONAL CONSOLIDATED LOCOMOTIVE TERMINAL means every facility is furnished on each track. An engine goes direct from the train to the house in one move and in practically the same time it now takes to go to assigned track, and on each track the fire may be cleaned and cinders handled, coal, sand, water, an ample supply of hot water furnished for washing boilers or changing water, special inspection pits, ample drop pit facilities and post cranes are also a feature - all this is done under one roof so that bad weather will not affect the result.

As compared with the Regulation Roundhouse:

The NATIONAL CONSOLIDATED LOCOMOTIVE TERMINAL will give you the use of one extra engine for each ten handled;

Will cut the cost of labor in turning and light repairs very nearly in the middle.

We are prepared to build this terminal complete and of any capacity and to include power house, shop, storeroom and washroom, either for cash or we will build them without cash payment and rent them to you for a term of years, the savings effected in operation will more than pay the rent. I believe we can show you that we can do this at a price that will compare favorably with present terminal cost. If interested we shall be glad to furnish characteristic drawings or go into the matter in detail.

Yours very truly,

Spencer Otis

President.

SO-Sl-

FREDERICK A. GALE
VICE PRESIDENT

SPENCER OTIS
PRESIDENT

JOHN S. MAURER
VICE PRES. AND TREAS.

NATIONAL BOILER WASHING CO.
OF ILLINOIS

CHICAGO August 12, 1921

Mr. W. T. Tyler, Vice Pres.,
Northern Pacific Ry. Co.,
St. Paul, Minn.

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Yours very truly,

Spencer Otis

SO-Sl- President.

St. Paul, Minn., November 10, 1921.

Engine Terminals

File 4054

Mr. H. E. Stevens:-

Referring to your letter of November 3rd, and returning the accompanying papers.

Not having any information as to Mr. Otis' particular modification, in compliance with your request I am returning the papers.

General Mechanical Superintendent

2444

Saint Paul, November 11th, 1921.

Mr. W. T. Tyler,

Vice President.

Dear Sir:-

I am returning you herewith file received with your letter of October 24th, about the Otis plan for rectangular engine terminal.

Correspondence gives no information whatever as to type of design which Mr. Otis has developed other than his letter of August 13th which indicates he intends to consolidate all of the engine facilities under one roof. Attempts to develop this type of house have previously been made and it may have possibilities under certain operating conditions. Without further information as to details of the plan, we are not in a position to consider and discuss the matter.

I referred the file to Mr. Curry to ascertain if he had any information, and he advises that he has none.

Yours truly,

Chief Engineer.

HES-ar

Encl.

2444

St. Paul, Minn., November 12, 1921.

Mr. H. E. Stevens:

Referring to your letter of November 11th and returning papers in regard to Mr. Otis' plan for rectangular engine terminal.

I sent Mr. Curry yesterday another letter from Mr. Otis in this connection, together with blue prints giving further details of his plan.

W. T. Tyler
FB

Held for letter from Curry 11/14

St. Paul, Minn., November 14, 1921.

Engine Terminals

File 4054

Mr. H. E. Stevens:-

Replying further to your letter of November 3rd:

Under date of November 11th Mr. Tyler writes me as follows:

"I am enclosing herewith a letter under date of November 7th from Mr. Spencer Otis, President, National Boiler Washing Company, together with blue prints referred to, with reference to the National Consolidated Locomotive Terminals.
Please return when they have served your purpose."

I am forwarding Mr. Otis' letter of November 7th andprints referred to.

General Mechanical Superintendent

FREDERICK A. GALE
VICE-PRESIDENT

SPENCER OTIS
PRESIDENT

JOHN S. MAURER
VICE-PRES. AND TREAS.

NATIONAL BOILER WASHING CO.
OF ILLINOIS
WORKS: BARRINGTON, ILLINOIS

PUMPS, PIPES, VALVES AND FITTINGS

BOILER WASHING PARTS CARRIED IN STOCK

NATIONAL HOT WATER WASHOUT AND FILLING SYSTEMS FOR LOCOMOTIVE BOILERS
NATIONAL FUEL OIL FACILITIES FOR LOCOMOTIVE TERMINALS CONSTRUCTED COMPLETE

TEL. HARRISON 3601 CHICAGO RAILWAY EXCHANGE

WOOD AND STEEL TANKS FOR ALL PURPOSES

GENERAL PIPE WORK FOR STEAM, AIR AND WATER SYSTEMS

November 7, 1921.

Mr. W. T. Tyler, Vice President,
Northern Pacific Railroad,
St. Paul, Minnesota.

Dear Mr. Tyler:

Referring to the National Consolidated Locomotive Terminal, I am sending you herewith prints

D-1013 - Twin Type arrangement for Yard Layout;
C-1014 - " Arrangement with turntable for Yard Layout;
C-1015 - Yard Layout with Turntable;
C-1016 - Elevation - Twin Type National Consolidated Locomotive Terminal.

This is especially designed for an intermediate terminal where the engines from the south can go north through the next division. There is very little turning of engines but in case you are short of room a covered turntable will lend itself very nicely to the scheme. This was brought out in our conversation in St. Paul. I had been rather hoping to see you down here. I hope to be in St.Paul again next week and will look forward with pleasure to seeing you.

Yours very truly,
NATIONAL BOILER WASHING COMPANY.

President.

SO-S1-
Enc-

TIME PAYMENT VS. CASH PAYMENT PLAN
UNDER WHICH RAILROAD CAN PURCHASE
WASHOUT PLANTS FROM THE NATIONAL
BOILER WASHING COMPANY, CHICAGO.

****

CASH PLAN		TIME PAYMENT PLAN	
Cash	$28,000.00	Rental - $666.00 per month or per annum	$7,992.00
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Net saving on rental plan -------$422,826.00
" " " cash basis------- 418,220.00
Amount in favor of rental plan
of purchase---------- $4,606.00

****

Railroad would acquire ownership after 5 year period expires.

NOTE:- Basis of saving operation modern washout plant,
National Boiler Washing Co.

Total number engines washed per month --120
" " " water changed " " --120

Saving per engine washed: Labor $3.30, Water 2.75, Coal 4.95, total $11.00
" " " changed: " 2.50 " 2.50 " 4.95 " 9.95

120 engines @ $11 ----- $1320
120 " @ $9.95---- $1194
$2514.00

Explanations: Life of plant - 15 years in both cases.
Interest on Cash price - 7%.
Allowed earnings on capital expenditures - 5 1/2% (Transportation Act)
Saving by use modern plant - $2514.00 per month each case.
Savings made in other than labor, water & coal not included.
No account taken of decrease cost of boiler repairs and time saved in engine house.
No account taken of Maintenance costs as they would be the same in both cases.

Saint Paul, November 15th, 1921.

Mr. S. J. Bratager:

I am attaching file about rectangular engine house design proposed by the National Boiler Washing Company, which we were discussing this morning.

It will be necessary for us to go into some detail in making reply, and I will have to have at least approximate comparative estimates of trackage and buildings involved in such a scheme as compared with layout of our established practice.

This information, however, can be worked up at your convenience and at times when it will not delay work of real importance.

Chief Engineer.

HES-ar

Encl.

FREDERICK A. GALE
VICE-PRESIDENT

SPENCER OTIS
PRESIDENT

JOHN S. MAURER
VICE-PRES. AND TREAS.

NATIONAL BOILER WASHING CO.

OF ILLINOIS
WORKS: BARRINGTON, ILLINOIS

PUMPS, PIPES, VALVES AND FITTINGS

BOILER WASHING PARTS CARRIED IN STOCK

WOOD AND STEEL TANKS FOR ALL PURPOSES

GENERAL PIPE WORK FOR STEAM, AIR AND WATER SYSTEMS

NATIONAL HOT WATER WASHOUT AND FILLING SYSTEMS FOR LOCOMOTIVE BOILERS
NATIONAL FUEL OIL FACILITIES FOR LOCOMOTIVE TERMINALS CONSTRUCTED COMPLETE

TEL. HARRISON 3601 CHICAGO RAILWAY EXCHANGE

SALES DEPARTMENT

November 28, 1921.

Mr. H. E. Stevens, Chief Engr.,
Northern Pacific Ry.,
St. Paul, Minn.

Dear Sir:-

NATIONAL LOCOMOTIVE DROP PIT

We are enclosing Half Tone of the NATIONAL LOCOMOTIVE DROP PIT, on the back side of which is a chart showing some of the savings effected in the operations of same. They are important in items of LABOR, TIME, EXPENSE and increased capacity of Engine House.

You will appreciate the following advantages in the use of the NATIONAL LOCOMOTIVE DROP PIT:

No Jacking of Locomotive.

No Removal of Section of Track to take out a pair of Drivers, Trailers or Engine Truck Wheels.

No Jacking required to remove and replace Spring Hangers or Bolts.

Perfect Safety and Perfect Control.

Only two (2) men required for all operations.

All Engine Houses should be equipped.

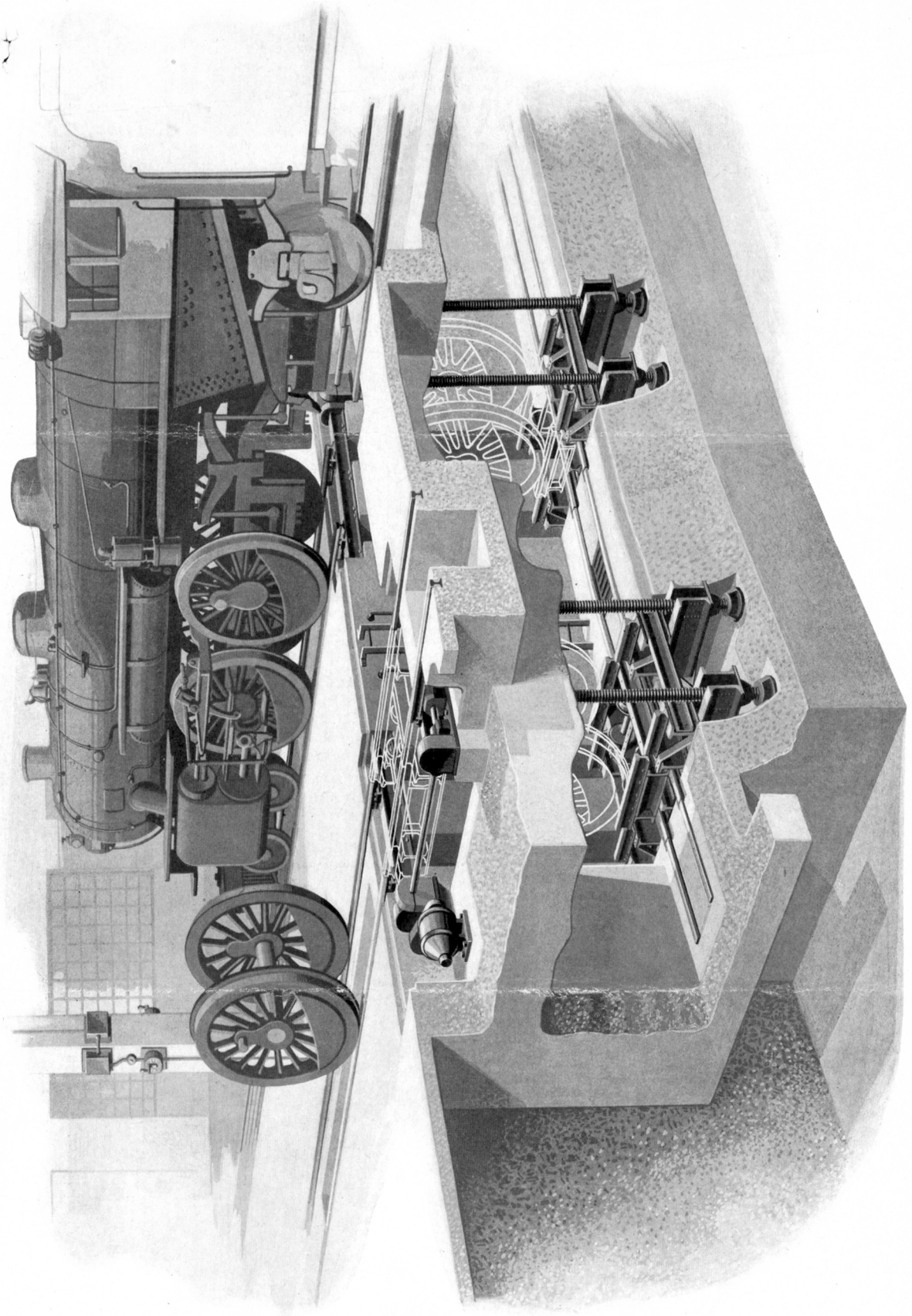
We both SELL and RENT NATIONAL LOCOMOTIVE DROP PITS.

Yours very truly,

NATIONAL BOILER WASHING COMPANY

By Frederick A. Gale.
Vice President.

FAG/LH



NATIONAL LOCOMOTIVE DROP PIT
(BINGAMAN PATENT)

NATIONAL BOILER WASHING COMPANY
OF ILLINOIS

General Office: Railway Exchange Bldg., Chicago

Works: Barrington, Illinois

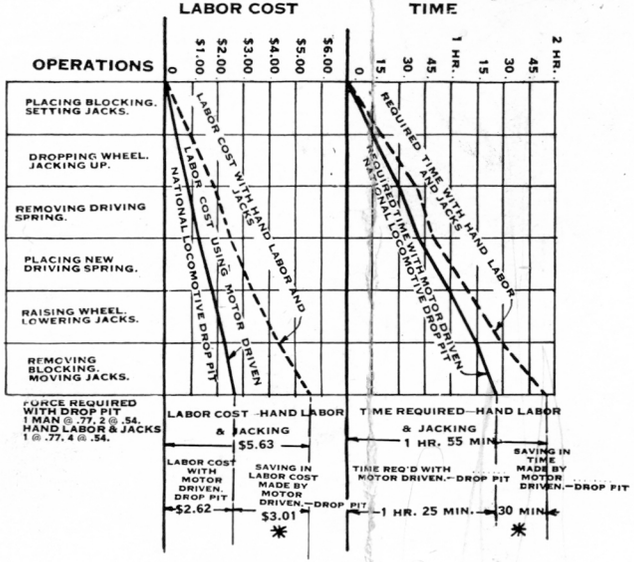
NATIONAL BOILER WASHING COMPANY

OF ILLINOIS

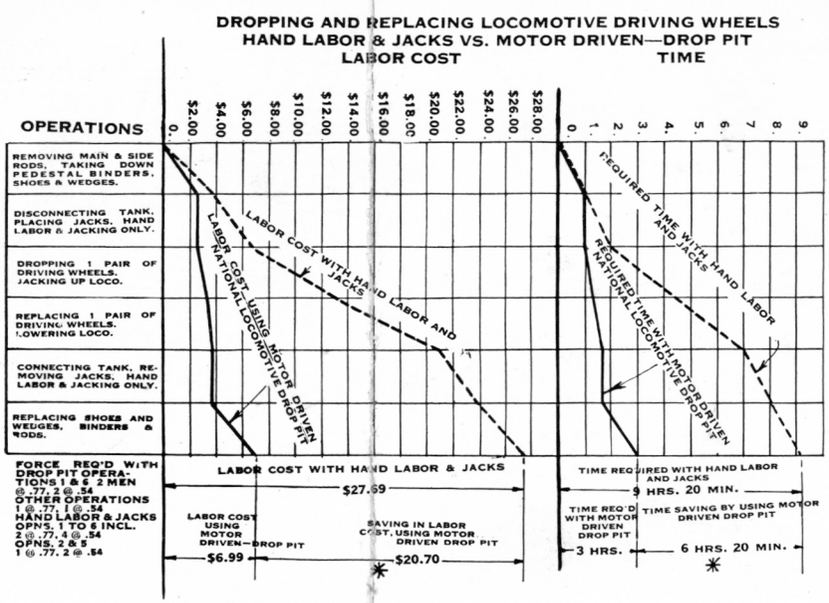
General Office: Railway Exchange Bldg., Chicago

Works: Barrington, Illinois

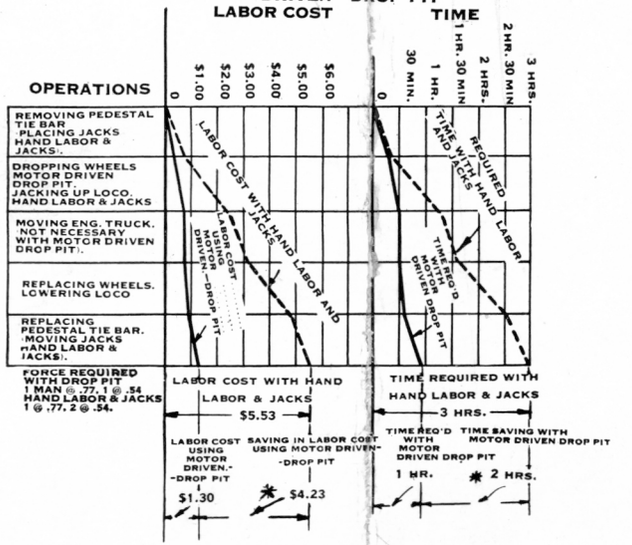
RENEWING LOCOMOTIVE DRIVING SPRINGS
HAND LABOR & JACKS VS. MOTOR DRIVEN DROP PIT



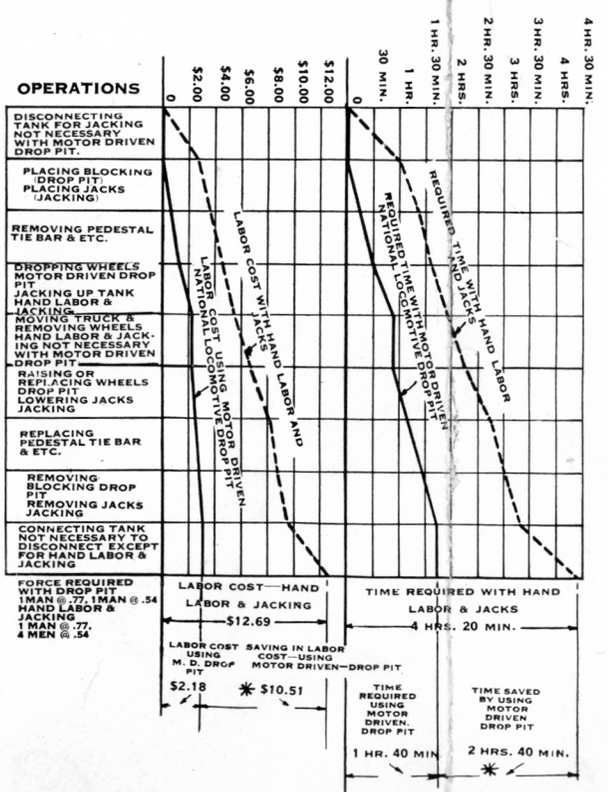
DROPPING AND REPLACING LOCOMOTIVE DRIVING WHEELS
HAND LABOR & JACKS VS. MOTOR DRIVEN—DROP PIT



REMOVING AND REPLACING ENGINE TRUCK WHEELS
HAND LABOR & JACKS VS. MOTOR DRIVEN—DROP PIT



REMOVING AND REPLACING TENDER TRUCK WHEELS
HAND LABOR & JACKS VS. MOTOR DRIVEN DROP PIT



* INDICATES SAVINGS

FREDERICK A. GALE
VICE-PRESIDENT

SPENCER OTIS
PRESIDENT

JOHN S. MAURER
VICE-PRES. AND TREAS.

NATIONAL BOILER WASHING CO.

OF IL' NOIS
WORKS: BARRINGTON, ILLINOIS

PUMPS, PIPES, VALVES AND FITTINGS

BOILER WASHING PARTS CARRIED IN STOCK

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NATIONAL FUEL OIL FACILITIES FOR LOCOMOTIVE TERMINALS CONSTRUCTED COMPLETE

TEL. HARRISON 3601 CHICAGO RAILWAY EXCHANGE

SALES DEPARTMENT

November 28, 1921.

Mr. H. E. Stevens, Chief Engr.,
Northern Pacific Ry.,
St. Paul, Minn.

Dear Sir:-

NATIONAL POST CRANES

We are enclosing Bulletin on the NATIONAL POST CRANES.

We would call your attention to the Chart on Page 3, showing the important savings effected by this facility in LABOR, TIME and EXPENSE in handling the heavy parts of locomotives for repairs.

They are moderate in price and may save the first cost in a fortnight.

We both SELL and RENT the NATIONAL POST CRANE.

Yours very truly,

NATIONAL BOILER WASHING COMPANY

FAG/LH

By Frederick A. Gale.
Vice President.

8 P Tower 1 P 11/30 Rec'd 12/2 N.

NATIONAL POST CRANE

BINGAMAN PATENT

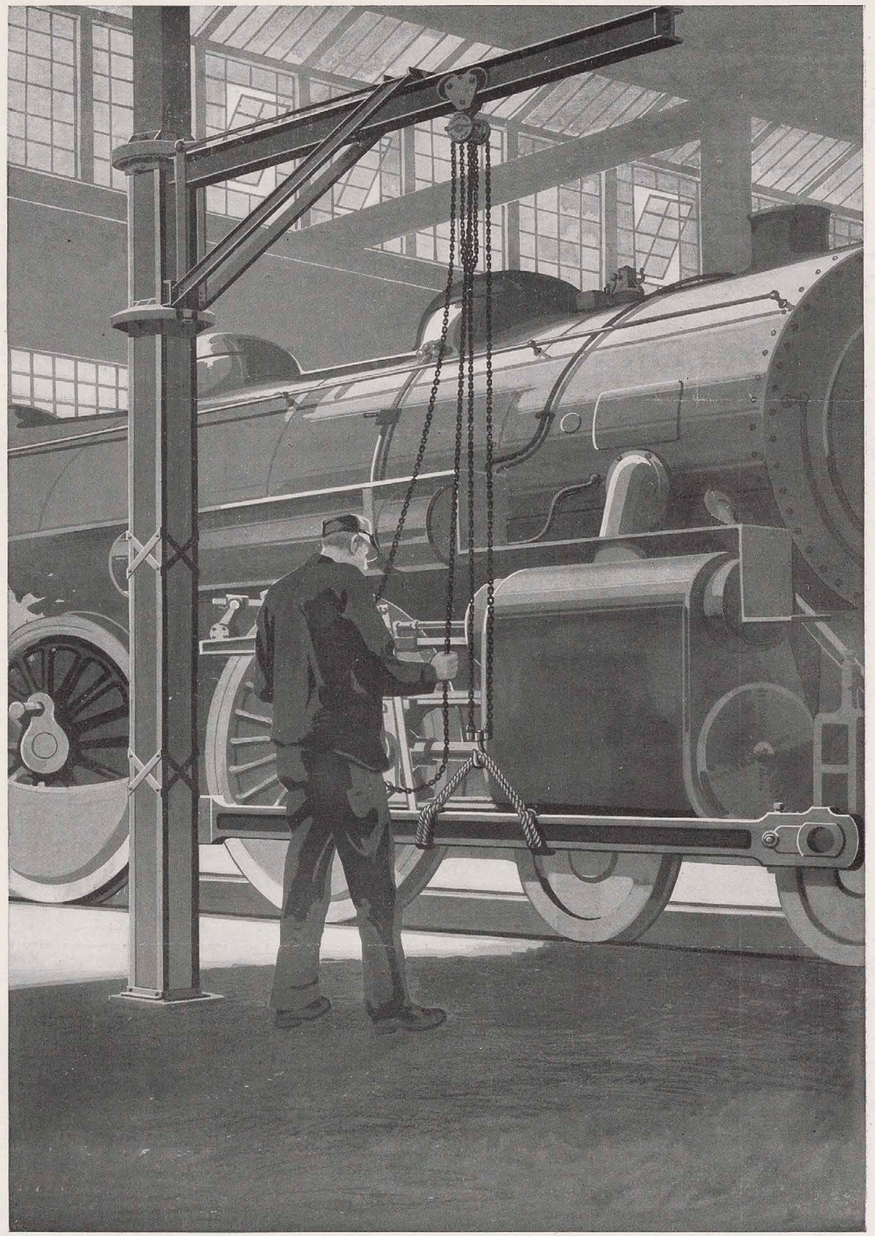
NATIONAL BOILER WASHING COMPANY

OF ILLINOIS

ENGINEERS AND BUILDERS OF LOCOMOTIVE TERMINAL FACILITIES

General Office: Railway Exchange Bldg., Chicago

Works: Barrington, Illinois

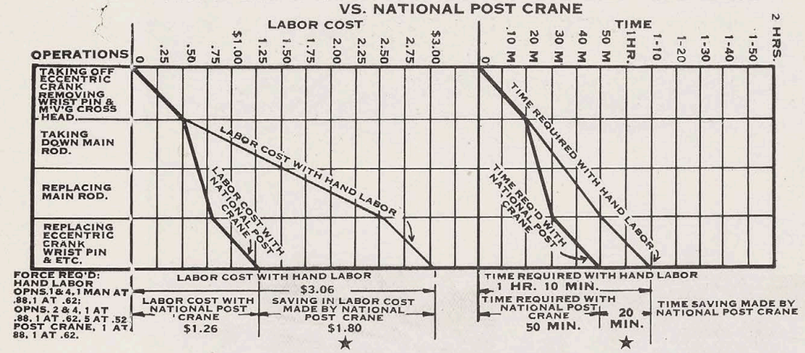


NATIONAL POST CRANE

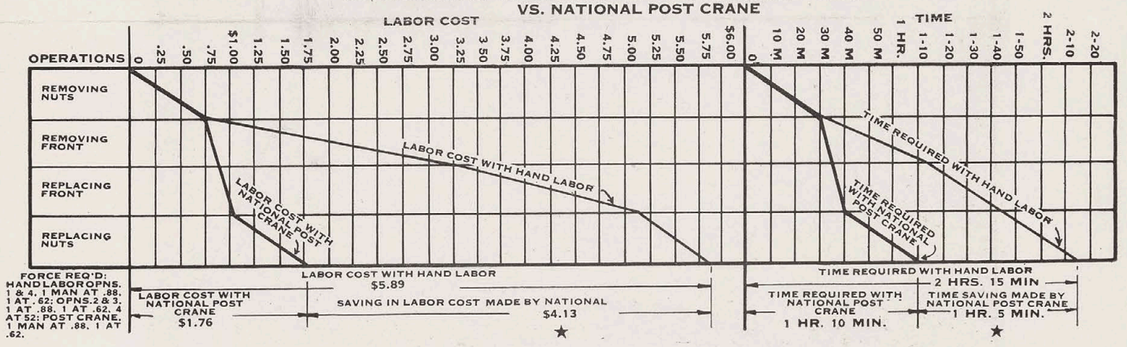
BINGAMAN PATENT

NATIONAL BOILER WASHING COMPANY
OF ILLINOIS

REMOVING AND REPLACING ONE LOCOMOTIVE MAIN ROD
COMPARISON OF LABOR COST AND TIME REQUIRED HAND LABOR VS. NATIONAL POST CRANE



REMOVING AND REPLACING SMOKE BOX FRONT
COMPARISON OF LABOR COST AND TIME REQUIRED HAND LABOR VS. NATIONAL POST CRANE



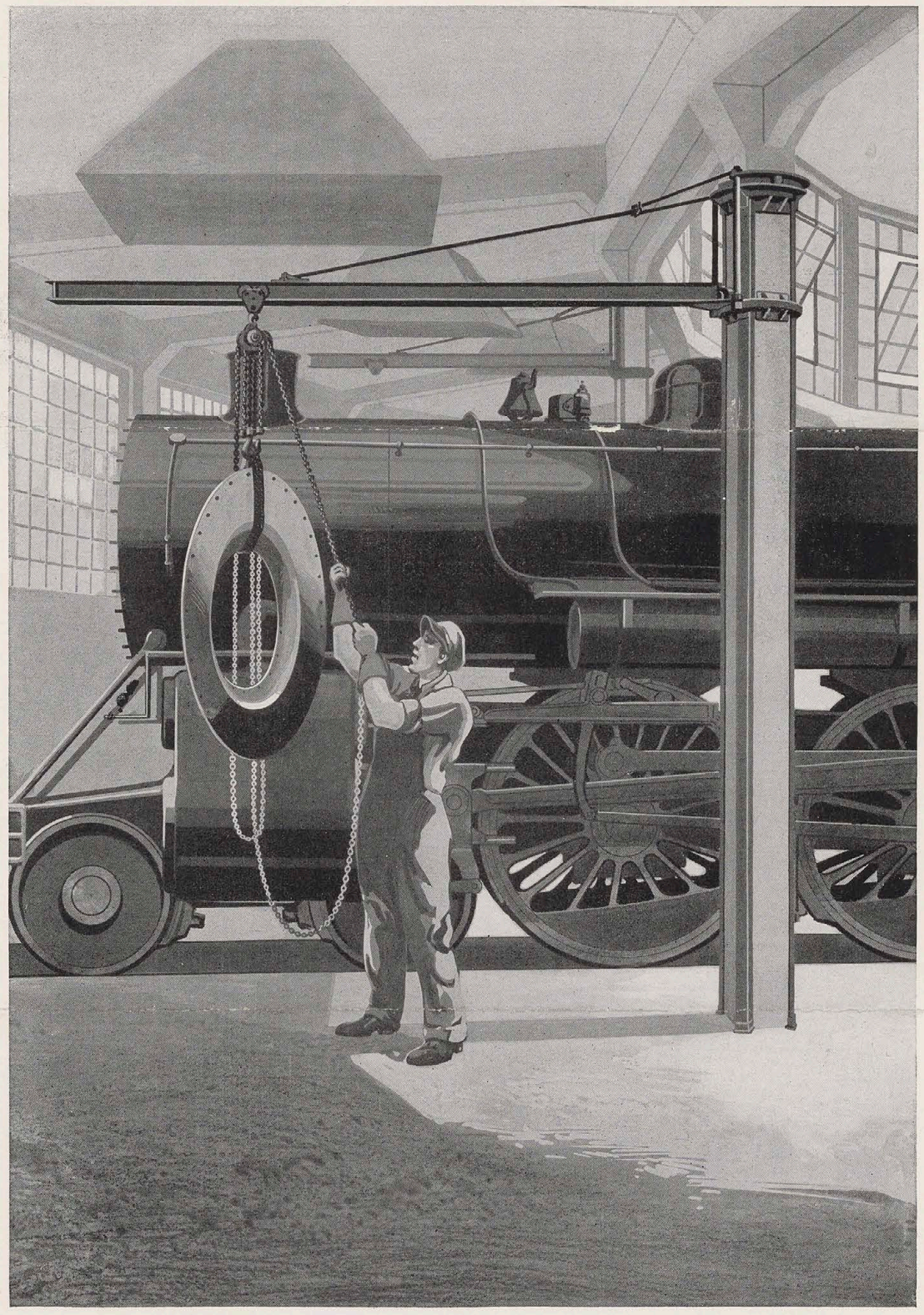
★ INDICATES SAVING.

NATIONAL POST CRANE has an 18-ft. radius, swings a *full circle,* is equipped with chain block, 1½-tons capacity, and is adapted for use in Engine Houses in removing and replacement of smoke stacks, front ends, pilots, pilot beams, main rods, side rods, sand boxes, air pumps, cylinder heads, pistons, cross heads, etc. They are also adapted to serving machine tools, blacksmith's forge and loading platforms.

¶ Effects very important *Savings* in Manual Labor as well as Time Required.

¶ *In making your order state outside dimension of post* to which crane is to be applied; also state *whether post is of wood, conrete or steel construction.*

NATIONAL BOILER WASHING COMPANY
OF ILLINOIS



NATIONAL POST CRANE

BINGAMAN PATENT

NATIONAL BOILER WASHING COMPANY

OF ILLINOIS

2444

FREDERICK A. GALE
VICE PRESIDENT

SPENCER OTIS
PRESIDENT

JOHN S. MAURER
VICE PRES. AND TREAS.

NATIONAL BOILER WASHING CO.
OF ILLINOIS

CHICAGO December 3, 1921.

My dear Mr. Stevens:

I want to thank you for the very pleasant time I had yesterday.

I am sending you, by express, a reproduction of an original drawing of the first steam shovel that was built. I feel sure this will interest you. — not yet received 12/8

As I mentioned to you, we are working on a plan to try and see how much of the good things we are trying to accomplish in an engine terminal we can apply to a roundhouse, and I will send you a print in a few days.

Please do not forget to call me the next time you are in Chicago.

Very truly your friend,

Spencer Otis

Mr. H.E. Stevens, Ch. Engr.,
Northern Pacific Railroad,
St. Paul, Minn.

Helfer print 1/12

Saint Paul, December 5, 1921.

Mr. Charles Donnelly,

President.

Dear Sir:-

In accordance with your verbal instructions, Mr. Curry arranged for an interview with Mr. Otis, patentee of the consolidated locomotive terminal, and we spent last Friday going over these plans with Mr. Otis.

Mr. Otis brought with him a set of the general detailed sketches, which give a fair idea of the basic principles of his scheme. Attached are a few of these prints, sheets 571, 572 and 575, illustrating the general arrangement of the interior of these houses.

You will note it is proposed to use the entering section of the house as a cover for the engine while the fires are knocked and the engine is being coaled and watered. The cinder pit is an open trench upon a 1½% grade, and it is proposed to keep a stream of water circulating through this pit and into the sump which will wash the cinders through the house to the sump pit where they will be picked up by crane and deposited in cinder cars.

Alongside each track is a coal pit into which the coal is dumped from bottom dump cars, and from which it is picked up by clam shell bucket operated from an electric overhead crane and deposited into locomotive tender.

An 8" water line runs along the rear of the house, from which the water is tapped into the tenders as needed.

The house is divided transversely by a center partition giving room for storing two locomotives on each track. After the

fire is knocked and the engine is coaled and watered, it is moved ahead to a front stall, where the balance of the work and inspection on the engine may be completed. If the front stall is occupied, then the balance of this work must be performed in the same section of the house where the coaling and watering is handled.

In the front section of the house is also a suggested arrangement for a basement machine shop; the idea being that wheels and other material could be dropped into this shop and handled under the locomotive without the necessity of raising them up to track level again, as we do in our standard roundhouse layouts.

The operation of coaling a locomotive is of necessity a dirty one, and if handled a ton at a time by a clam shell, as proposed by this layout, would surely result in coal dust all over the locomotive, machinery and everything else in the house. Furthermore, the operation would be slow and expensive. By the use of a modern type of balance bucket automatic dock, the elevation of the coal is handled very economically, and the operation of dropping it into the tank does not require more than three to five minutes. Our docks are constructed to serve one, two, three or four tracks, as may be needed, and for efficiency, economy and cleanliness, there is no comparison between the two systems. After talking with Mr. Otis he apparently agreed that he would have a better layout if he cut the coaling arrangement out of the house.

Knocking the fire, especially with the coal used on the Northern Pacific, is also a dirty operation and results in strong sulphur fumes, and if dropped into water a smudge of smoke and steam would result that would fill any ordinary house to a point making it

untenable. If ventilation is secured by forced draft, the expense of heating this house in our climate would be prohibitive. Some years ago the Northern Pacific tried an experiment of this kind by constructing a cinder pit in the roundhouse at Dilworth. This pit was used about six months, and being found impracticable it was filled up and bricked over. This pit differs from Mr. Otis' plan, in that we handled the cinder pans by electric trolley and his plan proposes to dump them into a stream of water which will convey them to a sump.

Constructing a basement as a machine shop would be expensive account of the heavy bridging which would be required for supporting the locomotives overhead, and it would be difficult to properly light and ventilate such a basement for machine work.

The trackage layout proposed would require the construction and maintenance of an enormous amount of trackage as compared with a roundhouse layout, and it is quite questionable if a locomotive could be handled from the main tracks through the numerous switches into and out of one of these roundhouses as quickly as we handle them with our present layouts, especially in the winter time when the switches are choked with snow and ice.

Mr. Otis frankly admitted that proposition was in a very experimental state and would doubtless require many modifications before it became a practicable reality. Apparently his main idea was to get up some terminal scheme a little different from anything now in existence, in order to secure, if possible, a valid patent covering same. This patent to be used as a basis for financing terminal construction.

If financing of this character will assist us in getting improvements in our terminal facilities, such as boiler washing plants, new turntables, coal docks, cinder pits, etc., this angle of the proposition may be worthy of careful consideration, as we have many places where capital investment would result in a substantial savings in daily operating expenses. It seems to us, however, that we ought to be able to work out a scheme which would permit this financing without a radical and very questionable departure from accepted and proven practice in terminal construction.

So far as Mr. Otis' terminal layout as now developed is concerned we certainly could not recommend an experiment of this character on the Northern Pacific.

If you will return the prints after you have looked them over, we will develop some figures on comparative costs; Mr. Otis having made the claim that this type of construction was not substantially in excess of present roundhouse type. Considering the land, tracks, buildings and machinery involved in constructing a layout on his principles, this statement is very hard to credit.

Yours truly,

Chief Engineer.

Gen'l. Mech. Superintendent.

cc-Mr. Rapelje.

2444

Saint Paul, December 9th, 1921.

Mr. S. J. Bratager:

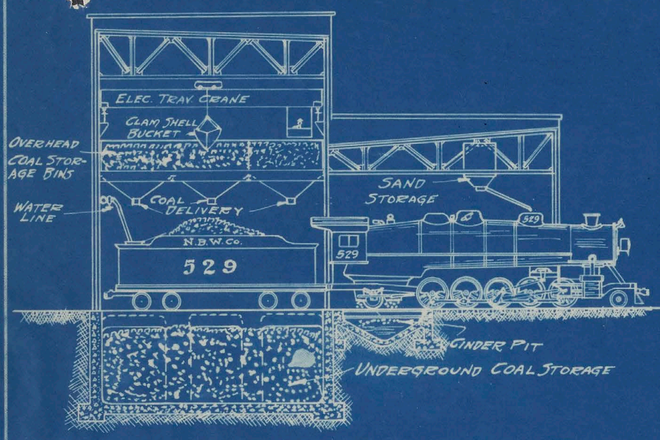
Please note the attached letter to Mr. Donnelly of December 5th, and his reply, about the Otis type of consolidated locomotive terminals.

As we discussed, I do not want to go to the expense of making any detailed comparative sketches and estimates, but at some convenient time I would be glad to have an approximate comparative cost of a terminal built along the Otis lines, as compared with a terminal of equal capacity on the lines of our standard roundhouse layout.

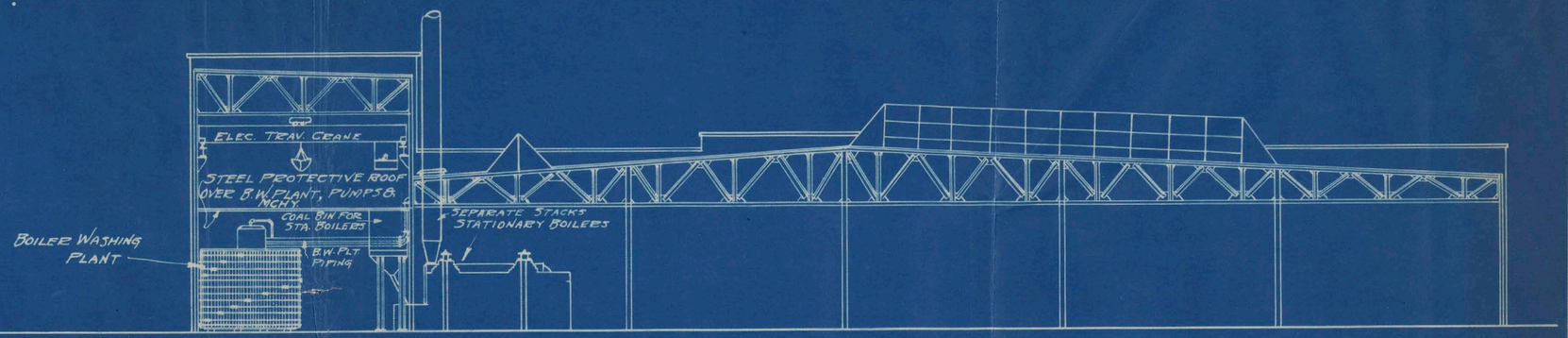
Chief Engineer.

HES-ar'

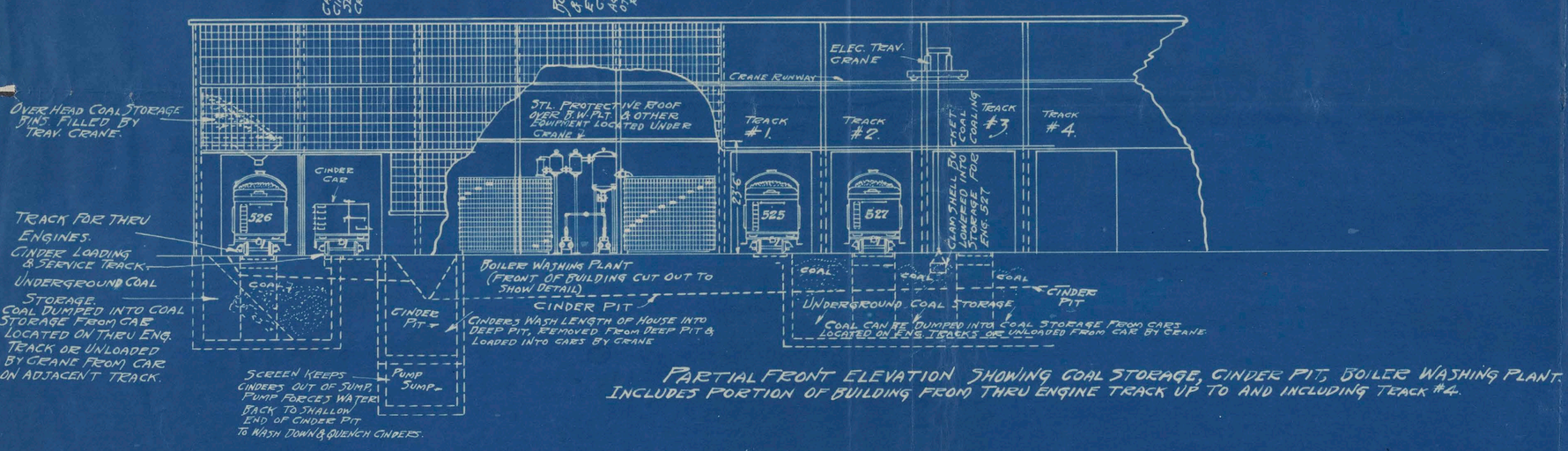
Encl.



SECTION AT THRU ENGINE TRACK
SHOWING OVERHEAD & UNDERGROUND COAL STORAGE
& CINDER PIT.



SECTION LOOKING TOWARDS PORTION OF
HOUSE CONTAINING MACHINERY, BOILERS & ETC.
THIS PART OF BLDG. IS 60'-0" x 240'-0".



PARTIAL FRONT ELEVATION SHOWING COAL STORAGE, CINDER PIT, BOILER WASHING PLANT.
INCLUDES PORTION OF BUILDING FROM THRU ENGINE TRACK UP TO AND INCLUDING TRACK #4.

FOR FLOOR PLAN SEE DRG. # D-570.
FOR TYPICAL SECTION SHOWING INSPECTION & ENGINE PITS AND DROP PITS SEE DRG. # C-571.

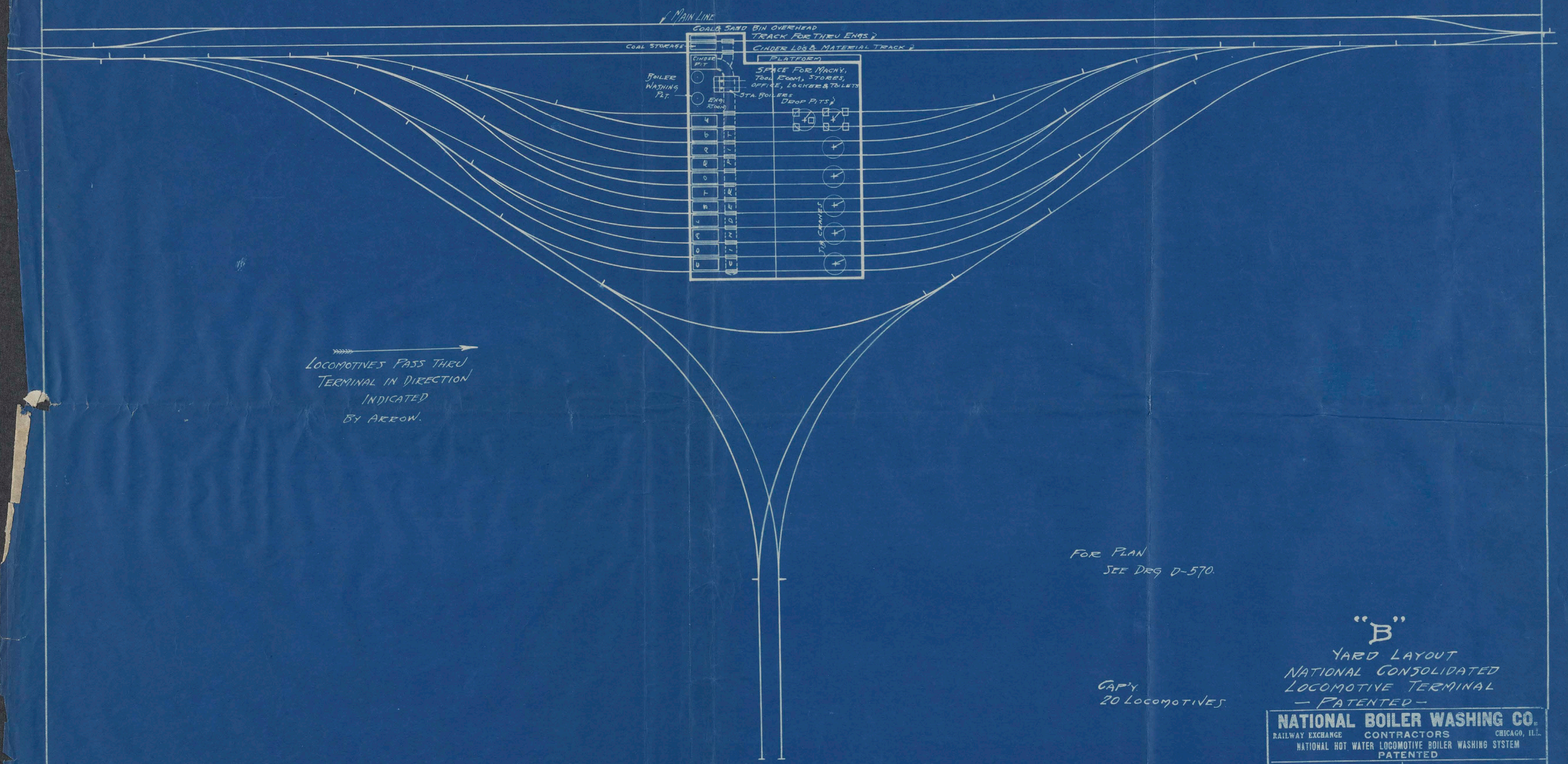
"B"

SECTIONS & ELEVATION
SHOWING OPERATING METHODS.
NATIONAL CONSOLIDATED
LOCOMOTIVE TERMINAL
-PATENTED-

NATIONAL BOILER WASHING CO.
RAILWAY EXCHANGE CONTRACTORS CHICAGO, ILL.
NATIONAL HOT WATER LOCOMOTIVE BOILER WASHING SYSTEM
PATENTED

SCALE 1" = 20'-0"		DATE. 8-25-21.
MADE BY [illegible]	CHECKED BY [illegible]	C-575
APPROVED MECH. ENGR.		

RVD. DATE



LOCOMOTIVES PASS THRU TERMINAL IN DIRECTION INDICATED BY ARROW.

FOR PLAN SEE DRG D-570.

CAP'Y. 20 LOCOMOTIVES

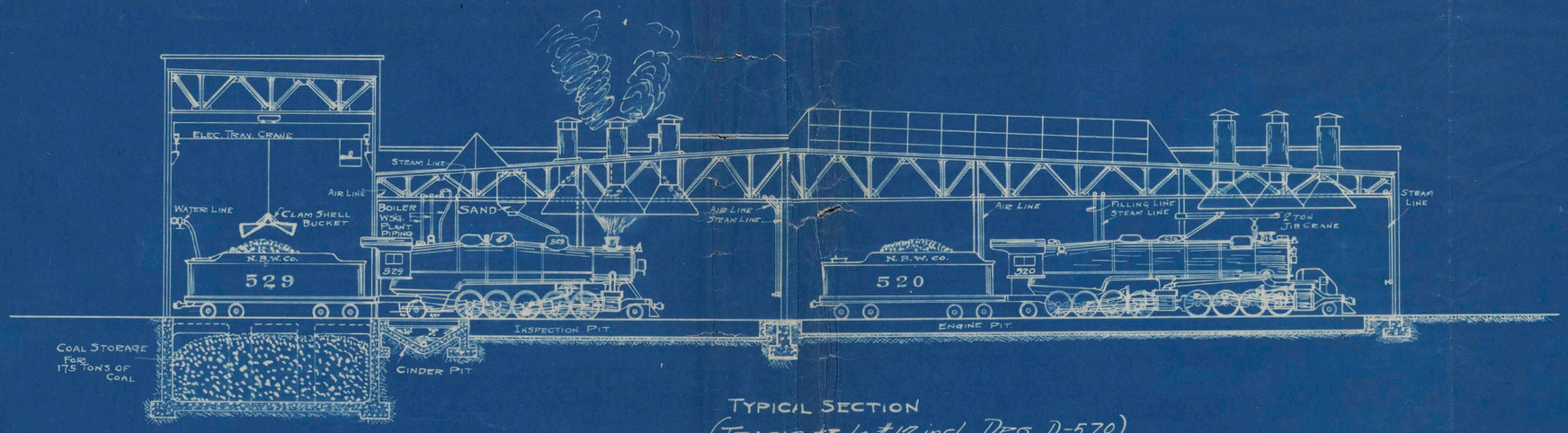
"B"

YARD LAYOUT
NATIONAL CONSOLIDATED LOCOMOTIVE TERMINAL
— PATENTED —

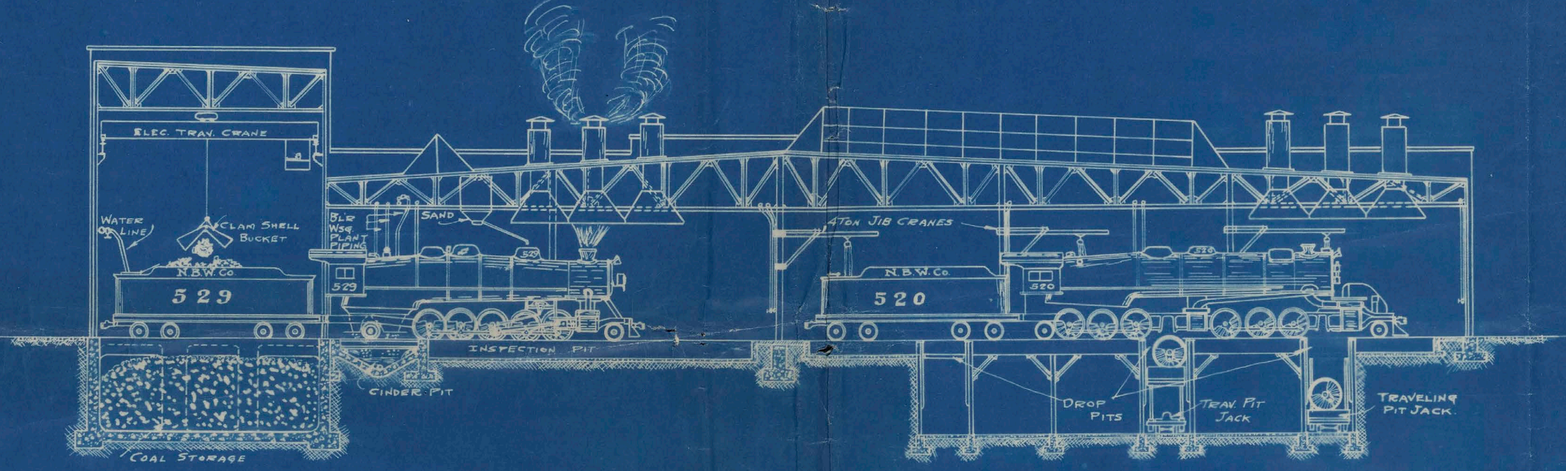
NATIONAL BOILER WASHING CO.
RAILWAY EXCHANGE CONTRACTORS CHICAGO, ILL.
NATIONAL HOT WATER LOCOMOTIVE BOILER WASHING SYSTEM
PATENTED

SCALE 1" = 100'-0"	DATE 8-17-21
MADE BY E	CHECKED BY E
APPROVED MECH. ENGR.	C-572.

RVD. DATE



TYPICIL SECTION
(TRACKS #3 to #12 incl. DRG. D-570)
COAL STEAGE, INSPECTION PIT & ENGINE PITS



SECTION AT DROP PITS.
(TRACKS #1 & #2 DRG. D-570)
AT REPAIR PORTION OF TERMINAL.

"B"
SECTIONS
NATIONAL CONSOLIDATED
LOCOMOTIVE TERMINAL
— PATENTED —

NATIONAL BOILER WASHING CO.
RAILWAY EXCHANGE CONTRACTORS CHICAGO, ILL.
NATIONAL HOT WATER LOCOMOTIVE BOILER WASHING SYSTEM
PATENTED

SCALE	DATE 8-16-21	
MADE BY ±	CHECKED BY ±	C-571.
APPROVED MECH. ENGR.		

RVD. DATE

Saint Paul, December 9th, 1921.

Mr. S. J. Bratager:

Please note the attached letter to Mr. Donnelly of December 5th, and his reply, about the Otis type of consolidated locomotive terminals.

As we discussed, I do not want to go to the expense of making any detailed comparative sketches and estimates, but at some convenient time I would be glad to have an approximate comparative cost of a terminal built along the Otis lines, as compared with a terminal of equal capacity on the lines of our standard roundhouse layout.

Chief Engineer.

HES-ar

Encl.

St.Paul, Minn., December 7, 1921.

Mr. H.E.Stevens,
Chief Engineer.

I have yours of December 5, about Mr. Otis' proposed consolidated locomotive terminal, and the sketches which you transmitted therewith. I return these sketches herewith.

I should be glad to see your figures on comparative costs; but as it seems so utterly unlikely that we should want to consider the construction of such a terminal, I think we ought not to spend a great deal of time in working up the figures in connection with it.

Charles Donnelly

encl.

Saint Paul, December 5, 1931.

M[redacted] Charles Donnelly,

President.

Dear Sir:-

In accordance with your verbal instructions, Mr. Curry arranged for an interview with Mr. Otis, patentee of the consolidated locomotive terminal, and we spent last Friday going over these plans with Mr. Otis.

Mr. Otis brought with him a set of the general detailed sketches, which give a fair idea of the basic principles of his scheme. Attached are a few of these prints, sheets 571, 572 and 575, illustrating the general arrangement of the interior of these houses.

You will note it is proposed to use the entering section of the house as a cover for the engine while the fires are knocked and the engine is being coaled and watered. The cinder pit is an open tranch upon a 1½% grade, and it is proposed to keep a stream of water circulating through this pit and into the sump which will wash the cinders through the house to the sump pit where they will be picked up by crane and deposited in cinder cars.

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Yours truly,

Chief Engineer.

Gen'l. Mech. Superintendent.

cc-Mr. Rapelje.

FREDERICK A. GALE
VICE-PRESIDENT

SPENCER OTIS
PRESIDENT

JOHN S. MAURER
VICE-PRES. AND TREAS.

NATIONAL BOILER WASHING CO.

OF ILLINOIS
WORKS: BARRINGTON, ILLINOIS

PUMPS, PIPES, VALVES AND FITTINGS

BOILER WASHING PARTS CARRIED IN STOCK

NATIONAL HOT WATER WASHOUT AND FILLING SYSTEMS FOR LOCOMOTIVE BOILERS
NATIONAL FUEL OIL FACILITIES FOR LOCOMOTIVE TERMINALS CONSTRUCTED COMPLETE

WOOD AND STEEL TANKS FOR ALL PURPOSES

GENERAL PIPE WORK FOR STEAM, AIR AND WATER SYSTEMS

TEL. HARRISON 3601 CHICAGO RAILWAY EXCHANGE

December 12, 1921

Mr. H. E. Stevens, Chief Engr.,
Northern Pacific Railroad,
St. Paul, Minn.

Dear Sir:

How many times have you been asked to make a budget, a "hope sheet" as one Chief Engineer accurately puts it, and after working out what you really needed and getting it down to the last figure, you would take it upstairs and get all the way from nothing to a very small part of what you looked on as absolutely essential? Occasionally the President or Board may not have agreed with you as to the need of equipment asked for, but I think you will agree it has generally been cut out because they could not see their way clear to get the money at that time.

Today, however, you can go upstairs and say that you want boiler washing plants, drop pits, and post cranes, and very likely other terminal equipment, and that you will furnish money out of your present operating costs to pay for their rental, and when the lease is complete the equipment will belong to the railway company and can be put into capital.

We would be glad to furnish absolute proof, if there is any doubt in your mind, that monthly rental for any of the above equipment is less than the actual monthly saving effected by their use.

Yours very truly,

Spencer Otis

President.

SO-S1-

2444

December 14, 1921.

Mr. Spencer Otis, President,
National Boiler Washing Company,
Railway Exchange,
Chicago, Illinois.

My Dear Mr. Otis:

I have your letter of the third advising that you are sending me by express reproduction of original drawing of the first steam shovel.

As I advised you verbally, I should be very glad indeed to have a copy of this old print, and as it has not yet come to hand, I should be glad if you would trace to ascertain if it has been lost in transit.

I also have your letter of the 13th, about your plan for financing improvement work. In making report on this matter I expressed the view that if your method of financing would assist us in getting some much needed improvements I felt it merited thorough consideration.

Yours truly,

2444

FREDERICK A. GALE
VICE-PRESIDENT

SPENCER OTIS
PRESIDENT

JOHN S. MAURER
VICE-PRES. AND TREAS.

NATIONAL BOILER WASHING CO.

OF ILLINOIS
WORKS: BARRINGTON, ILLINOIS

PUMPS, PIPES, VALVES AND FITTINGS

BOILER WASHING PARTS CARRIED IN STOCK

WOOD AND STEEL TANKS FOR ALL PURPOSES

GENERAL PIPE WORK FOR STEAM, AIR AND WATER SYSTEMS

NATIONAL HOT WATER WASHOUT AND FILLING SYSTEMS FOR LOCOMOTIVE BOILERS
NATIONAL FUEL OIL FACILITIES FOR LOCOMOTIVE TERMINALS CONSTRUCTED COMPLETE

TEL. HARRISON 3601 CHICAGO RAILWAY EXCHANGE

December 14, 1921.

Mr. H. E. Stevens, Ch. Engr.,
Northern Pacific Railroad,
St. Paul, Minnesota.

Dear Sir:

Referring to our conversation in St. Paul recently in regard to terminal matter:

I am enclosing herewith a set of prints showing Consolidated Terminal worked out in the form of a roundhouse, and with coaling station outside of the house. The idea being to bring the engine direct to the house and head in. Fire cleaned, boilers washed, filled, tender wheels and driver wheels dropped, all on each stall. You will note that the center of the house is left for machine tools. Office, tool room, and storeroom can be provided in two stories in this space if wanted.

Cinder pit commences from center and runs to main pit at each end of the house, and there is provision for grab bucket carried by monorail motor hoist, taking the cinders from the pit.

You will note in one case we provide for power house at the end of the building. The same truck and grab bucket that serves the cinders can be used to supply coal for hoppers to stationary engines. Two drop pits run clear around the house. The one near the inside of the circle is for tender wheels to be supplied with pneumatic table on truck. Drop a set of wheels, run them to center and take them into shop. The outer circle is supplied with screwed motor driven table on truck. You can take down a set of wheels on any pit and take them to center and run them up into the shop. In this case the engines would be coaled as they leave the house.

Will send some sections in a few days. In the meantime, will you please show this to Mr. Rapelje?

Yours very truly,

President.

2444

SPENCER OTIS
RAILWAY EXCHANGE
CHICAGO

December 15, 1921.

Mr. H. E. Stevens, Ch. Engr.,
Northern Pacific RR.,
St. Paul, Minn.

Dear Sir:

We are just in receipt of word from the express company that shipment of picture of steam shovel which Mr. Otis made to you, has been damaged in transit. We are therefore having another picture framed and it will go forward early next week. We are writing this so that you may understand reason for delay in receipt of the above.

Very respectfully,

E Slater
Secy to Mr Otis

Sl-

2444

FREDERICK A. GALE
VICE-PRESIDENT

SPENCER OTIS
PRESIDENT

JOHN S. MAURER
VICE-PRES. AND TREAS.

NATIONAL BOILER WASHING CO.

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TEL. HARRISON 3601 CHICAGO RAILWAY EXCHANGE

WOOD AND STEEL TANKS FOR ALL PURPOSES

GENERAL PIPE WORK FOR STEAM, AIR AND WATER SYSTEMS

December 17, 1921.

My dear Mr. Stevens:

I have your letter of the 14th. The Express people have reported that the picture was damaged (broken glass) in transit and will have it replaced, which I presume accounts for delay. I know you will enjoy the print when you receive it.

I am very glad, indeed, to note the last clause of your letter. I hope 1922 may prove a prosperous one and as comfortable as may be expected in the railroad world

Very truly yours,

President.

Mr. H. E. Stevens, Ch. Engr.,
Northern Pacific RR Co.,
St. Paul, Minn.

2444

December 17, 1931.

Mr. Spencer Otis, President,
National Boiler Washing Company,
Railway Exchange, Chicago.

Dear Sir:-

I beg to acknowledge receipt of your letter of the 14th with prints of a round roundhouse with some of the features of your rectangular roundhouse.

As explained to you personally, we have no place in sight at the present time where we would be interested in any roundhouse construction, but I have referred the prints to Messrs. Rapelje and Curry for their comments.

Yours truly,

2444

FREDERICK A. GALE
VICE-PRESIDENT

SPENCER OTIS
PRESIDENT

JOHN S. MAURER
VICE-PRES. AND TREAS.

NATIONAL BOILER WASHING CO.

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TEL. HARRISON 3601 CHICAGO RAILWAY EXCHANGE

December 19, 1921.

Dear Mr. Stevens,

I have your letter of the 17th. I am sending you this stuff as it comes along, not that I expect you have any immediate use for it but because of the kind interest you have shown in the whole matter.

I should be very glad, indeed, to hear what Messrs. Rapelje & Curry have to say.

Yours very truly,

President.

Mr. H.E. Stevens, Ch. Engr.,
Northern Pacific Ry.Co.,
St. Paul, Minn.

St. Paul, December 22nd, 1921.

Mr. O. M. Rognan,

Architect.

Dear Sir:

Please note attached file about Otis type of consolidated locomotive terminals.

We do not want to go to the expense of making any detailed comparative sketches and estimates, but Mr. Stevens wishes ~~that~~ at some convenient time to have an approximate comparative cost of a terminal built along the Otis lines, as compared with a terminal of equal capacity on the lines of our standard roundhouse layout.

Kindly have this done.

Please return the file with your reply.

Yours truly,

SJB/FS

Encl.

Principal Asst. Engineer.

2444

St. Paul, December 22nd, 1921.

Mr. O. M. Rognan,

Architect.

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SJB/TS

Encl.

Principal Asst. Engineer.