

- (1) Number of pages 8
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MADRAS RECORD OFFICE.

Public works **DEPARTMENT.**

G.O. No. 861
594-595

Press
Mis.

Dated 29-3-1865.

Not to be folded or roughly handled

WV

*Proceedings of the Madras Government, Public Works Department,
29th March 1865.*

No. 594. Read the following Circular from the Under Secretary to the Government of India:
Public Works Department (Railway), dated Fort William, 25th February 1865,
No. 4:—

Preservation of Timber.

Govts of Madras, Bombay, Bengal, N. W. P., and Punjab
Chief Commrs of Oudh, C. Provinces, and British Burmah.
Governor, Straits Settlements.
Resident at Hyderabad
Commissioner of Mysore
Agents, Govr-General, for Central India and Rajpootana.

The following letter is circulated to the
Local Governments and Administrations noted
in the margin, for information in both the Public
Works and Railway Departments.

(Signed) E. C. S. WILLIAMS, Captain, R. E.,
Under Secy. to the Govt. of India

To the Secretary to the Government of Madras, Public Works Department.

No 35, dated 19th July 1864.

From Secretary Board of Directors, to Agent East Indian Railway Company.

I beg to forward herewith a specification* for the Creosoting Apparatus required under
Indent No. 87, and which is intended for the
preservation of sleepers cut out of Cheerwood,
a species of Pine lately discovered by Mr. Sibley

* Sent to Board with Agent's No. 13, dated 22nd February
1864

in large quantities in British Gurhwal

This machine, if kept constantly at work, would require an annual supply of about
500,000 gallons of creosote, the whole of which must be imported from this country, until the
use of gas becomes common in the great cities of India, an event which is probably not near
at hand.

Mr. Sibley seems to expect that the petroleum found in Burmah may be used successfully
in place of creosote, but expensive as the latter is, I doubt if the former would not prove much
dearer, and we have no reason to suppose that it will have the same effect, at all events, in the
same degree.

The price of creosote delivered in this country, including all charges except cask^s, may be
taken at 4d. per gallon.

Assuming the most favorable circumstances for carriage, namely, that ordinary ships would
take out the creosote in wood casks, or that, if a demand were to arise, tank ships, such as
petroleum is sometimes brought over in from America, could be obtained, we could scarcely hope
to carry the creosote to Calcutta for less than 3d. per gallon.

A considerable expenditure must then be incurred in providing tank and tank waggons for
the carriage of the oil up-country, to some convenient point near that at which the sleepers
would be landed, which may be assumed to be in the neighbourhood of Cawnpoor, or say 750
miles from Calcutta.

The cost of carriage to Cawnpoor at the bare rate of one-third of a penny per ton per mile,
would be nearly 1½d. per gallon, bringing up the cost of the creosote delivered at Cawnpoor to
about 8½d. per gallon, to which must be added something for insurance and general expenses;
so that 9d. per gallon would seem to be about the minimum at which the creosote could be
valued by the time it was ready for injection into the sleeper, and I doubt if the creosote hitherto
sent out has not cost more.

The minimum quantity of creosote which should be injected into Pine timber is 10lbs, or
one gallon to the cubic foot. At this rate, the cost of the creosote absorbed by sleepers 10 feet
long would be 2s. 3d. if their section was 10 inch by 5 inch, and 3s. 2d. if their section was 12
inch by 6 inch.

Sleepers cut in India have hitherto been usually of the larger, that is, the 12 inch by 6 inch
section.

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The cost of the operation exclusive of the creosote, would probably be not less, including all charges, than 3d. per sleeper for smaller size, or say 6d. for the larger, so that the minimum total cost of creosoting a 10 inch by 5 inch sleeper in Cawnpoor would not be less than 2s. 6d., or of a 12 inch by 6 inch sleeper than 4s. 3d.

If, by the use of creosote, the durability of Cheer wood sleepers could be ensured for a period of, say, 20 years, and if there were no known method of obtaining an equally good result for a smaller sum, the advantage gained would not perhaps be bought too dear at either of these rates; but, unfortunately, it is as yet by no means clear that creosote will be effectual for so long a period in a climate like that of India.

It has been found in the south of France, that creosote vaporizes under a hot sun, and that it does not on this account materially increase the durability of wood, and sulphate of copper has almost entirely taken its place.

I am sorry also to say that, according to published accounts, experience on the Scinde Railway is rather against creosote, and that I have received unfavorable accounts of it in Bengal from one of our own Engineers.

But neither the present state of science nor actual recorded experiment and experience are yet sufficient to decide this question: coupled, however, with the undoubted cost of creosote, they are sufficient to make it desirable that the machinery which is now to be sent out should be suited to the use, not only of creosote, but of sulphate of copper, and of what is known of Burnett's fluid, that is, chloride of zinc, both of which are far cheaper as preservatives than creosote.

To adapt the machinery to the use of sulphate of copper, it is necessary that certain portions of it, which may be of iron when creosote is employed, should be of copper or gun metal, and the cylinder itself must be coated with paint or asphalt. But, so far as I can judge, without making detail drawings, these modifications would not add to the cost of the machinery as much as £200 no special construction is necessary for chloride of zinc.

The cost of the sulphate of copper, delivered in Cawnpoor, would probably be about 4d. per lb. At the most, 1½ lbs., worth (say) 6d., would be sufficient for each sleeper of the 10 inch by 5 inch section, or 2½ lbs., worth (say) 10d., for the 12 inch by 6 inch size, and the total cost of the operation would be in the former case not more than 10d., or in the latter than 1s. 4d. The sulphate is injected in the form of a watery solution, containing about 2½ per cent. of the sulphate, under a pressure of about 150lbs. to the inch.

Some years ago, 1,000 sleepers prepared with chloride of zinc, were sent out to India by the Board, but no reliable record exists in the country of the result. Such reports as we did receive were favourable, and I believe it has been found to answer well in the Scinde Railway. It was for a long while in vogue in this country, but owing to the difficulty of ascertaining if the injection had actually been performed, it ultimately gave place to creosote. This difficulty is now said to be overcome by the use of a coloring matter; but, whether it be so or not, if the operation be carried on by the Company's own Engineers, there will be no risk of dishonesty, and the efficacy of the coloring matter is comparatively unimportant.

The cost of the chloride of zinc process will be much less than even that of the sulphate of copper.

The quantity of the concentrated colored chloride requisite to prepare a load of timber, or 50 cubic feet, is 6 pints. This is mixed with about 30 gallons of water, and forced like creosote or sulphate of copper into the wood under heavy pressure. The chloride is delivered here in metallic drums fit for a sea voyage, each containing 10 gallons, weighing about 180 lbs., and costing £2 10s.; delivered at Cawnpoor, it may be reckoned to cost £3 for the 10 gallons, or 9d. per pint. At this rate the value of the quantity consumed by the 10 inches by 5 inches sleeper would be about 3½d., and by the 12 inches by 6 inches sleeper about 5½d.

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The cost of performing the operation would be less than that of either creosoting or copperising, and the total cost, including the fluid, would probably not exceed 6d. for the small-sized sleeper, or 9d. for the large.

The chloride of zinc has therefore the advantage in point of cost over the sulphate of copper, and still more so over the creosote.

It is also cleaner than creosote, and would not require, like sulphate of copper, that the shikes and chairs should be turned where they come in contact with the sleeper; and it is therefore much to be wished, as there is good reason to believe it will, that it may be found successful.

Looking, therefore, to the importance of the sleeper question, to the economical working of the line, and to the figures which I have above given, I beg to recommend that the machinery to be ordered for creosoting be also adapted to the use of either chloride of zinc or sulphate of copper, and that a sufficient quantity of both these substances be sent out to allow of 20,000 sleepers being prepared with each of them. The supplies of creosote will, I presume, form the subject of indents in the usual manner.

To save time, I have prepared the specification for the machinery, on the supposition that the Board will adopt these views; and I beg to recommend that tenders for it be obtained by public advertisement.

No. 595.

ORDER THEREON, 29th March 1865, No. 861.

Communicated to the Superintending Engineers.

(True Extract)

(Signed) CHARLES A. ORR, Colonel, R. E.,
Secretary to Government.

To the Superintending Engineers

Exd. S. T. Augustin.

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10861

Communicated to the
Superintending Engineers.

W.D.
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To The Staff Engineers of
~~the Station~~ Dept. C

X282

Chapman
29th March/65 }

Recd 30th March

701/1865 L. Dept.
No. of Govt. for March
702

Railway.

CIRCULAR No. 4.

To

FROM

SECY. TO GOVT. OF INDIA,
IN THE PUBLIC WORKS DEPT

Dated 25th February, 1865.

Received 14 March

Circulates for information correspondence on the
subject of the mode of preserving wooden sleepers.

No. 594. 595

With an order

10861-294, Inc. 2/65

10861-294, Inc. 2/65