

1899
Public Works (190—) Department.

RAILWAYS.

G.O., No. 318 Ry

1899
DATED 21-3-190—.

[Despatch Abstract.]

Replacing brass tubes with steel for
locomotive boilers Forwarding to the

Government of India copies of letters
from the Agents, Madras and South
Indian Railways on the subject of
~~Ref.~~

Indexed

2702 8/12-1-99 to 5/3/99
1 98.16 99. to 11/3/99

Letter No.47 M.G.R., dated 17th January 1898 from the Locomotive Superintendent, North Western Railway, Lahore, to the Manager, North Western Railway, Lahore.

Steel tubes for Locomotive Boilers.

Deputy Director General of (Stores) No.8582 S.
of 6th August 1897, copy received under your
endorsement No.547/Loco. of 4th September 1897.

My reply to that letter is :-

1st.- Steel tubes can be substituted for brass for the good and sufficient reason that it has been done already and is now done by many Railways. I have used and have had experience, extending over many years, of these tubes and do not object to using them again.

2nd.- In reply to the second enquiry in which lapwelded steel tubes are specially mentioned, I believe such tubes can be safely used but do not admit that the question can be decided on the great saving in first cost and any one who does so will be deceived, for it is not a question of first cost but of total cost. Steel tubes cannot be used a second and third time and when done with are worthless, while brass tubes can ~~xx~~ and are used several times and when worn out, realise a good price as old brass. Further, to abolish the use of brass tubes and suddenly substitute steel might lead to very serious consequence. The men may not be accustomed to the use and would at first be exposed to difficulty.

2. What I advise is that each Railway be supplied with a proportion not greater at first than 20% of the tubes and be allowed to test their usefulness. English practice is brass tubes, American ~~Steel~~, each considers its own the best. The actual difference in cost is not said to be great in the long run. If steel tubes are to be supplied to North Western Railway I would not restrict the use to lapwelded but would leave it open to take solid drawn homogeneous.

K.P.G.

3 To 2 Ro en² 4461/98
1025 RS d₁ 16.9.98

6/9

India Office,
Whitehall,
London, S.W.

S.2101 26th July 1898.

Sir,
I have the honour to enclose for your information a copy of a report, dated 21st July 1898, by the Consulting Engineer with reference to a letter from the Director of Railway Construction No. 97 S. of 3rd February 1898.

I have the honour to be, Sir,
Your obedient Servant,
(Sd.) R. Grant Burls
Director General of Stores.

The Secretary to the Government of India
Public Works Department.

2 To LRO CN-4461/98
1025 RS Ls 16.9.98
Goul Rd.

3

4/9

COPY REPORT BY THE CONSULTING ENGINEER DATED 21ST JULY 1928

Experiment alone will show how far it is advisable to replace brass tubes with steel as the question depends on local conditions and more particularly on the character of the water.

Steel tubes are largely used on almost all the important lines in this country and are the standard type in America. It also appears that steel tubes are preferred to brass in Burma and on the Bombay and Baroda Railway.

Steel tubes can be easily pieced by a good smith using an ordinary open fire and no special plant is required.

It is a common practice however to braze on copper ends when the steel tubes require piecing.

Lap welded steel tubes cost about £22. 10s. 0 per ton and solid drawn steel tubes are rather more than twice as expensive. Brass tubes cost about £68.

Old steel tubes are worth about 45/- per ton as scrap but are seldom sold as the Railway Companies use them for fencing and other purposes.

On one or two of the lines ferrules are not used with steel tubes and they appear to be unnecessary.

Copper coated steel tubes cost rather more than copper tubes and are certainly not as good.

4461/98
1025 RS dt 16.9.98
Govt of India

(No. III.)

5,000-15-3-88.

No. 11312.

992

MADRAS RAILWAY.

AGENT AND MANAGER'S OFFICE,

MADRAS, 18th October, 1898.



ER to see
then await reply from A
To 19.10.98
M

The Agent and Manager,
M. R. Co.,
4901
19.10.98

The Consulting Engineer for Railways.

Madras.

Sir,

May 3

With reference to your memorandum No. 2702 of the 3rd instant,

I have the honor to enclose, for your information copy of a letter from

the Company's Locomotive Superintendent, No. B. 2733 of the 11th instant
1352

on the subject of replacing brass tubes with steel for locomotive boilers

I have the honor to be,

Sir,

Your most Obedient Servant,

CSC

Wm. S. M. M.

Agent and Manager.

MADRAS Railway.
Loco: Superintendent's Office,
Perambur Works, 11th Decr 1898

No. B 2733
1352

The Agent and Manager.

My dear Sir,

Your No. $\frac{11319}{9672}$ of the 4th Instant.

Whether iron, steel, brass or any other description of boiler tubes will or will not give satisfaction and do good work appears to be, so far as the experience on this line goes to show, entirely a matter of wonder.

2. Experiments have been tried both by myself and my predecessors over and over again with tubes of almost all kinds and although on certain parts of the Company's system, notably the N. W. line, iron and steel tubes will do fairly well, directly an engine fitted with these is transferred to other sections, the tubes begin to leak and fail.

3. The tubes with which we have chiefly experimented are,

1. Ordinary brass tubes.
2. " Steel "

MADRAS RAILWAY.

From
The Agent and Manager,
M. R. Co.,

To
The Consulting Engineer
for Railways.

Dated
188

Recd.
No.

3. Howell's patent homogeneous metal copper coated tubes.
4. Howell's patent homogeneous metal copper sleeved tubes.
5. Allen Everett & Co's Patent Red metal tubes.
6. Copper tubes.

4. Tubes No. 1 fail in two ways, (a) on the Salem and Padanur divisions by corroding away ^{at the fire box end until a groove is formed} first inside the ferrule, and the tube breaks off, (b) in Madras by becoming apparently "hot short" and breaking off, sometimes after they have been in a few months only, close to the fire box end.

5. Tubes Nos. 2, 3 and 4 do fairly well on the N. W. Line as long as the water is good and nothing happens to make a leak. Directly this happens and a film of rust forms it seems to be impossible to again get the tubes tight. The copper coated tubes are also found to pit and corrode very badly, while the copper-sleeved tubes fail through the sleeves becoming slack on the tube ends.

6. Tubes No. 5 have done in some cases very well indeed, while in others, notably with the new Passenger Engines, they have given

given endless trouble, breaking off short with
out apparent reason after a few months' work
only.

7. The final outcome of the experience
gained on the Madras Railway is that the only
dubies upon which dependence can be placed
are those made entirely of copper which,
although more expensive in first cost, appear
to be far less affected by change of water and
therefore outlast dubies of any other kind.

Yours faithfully,
sd/ C. E. Phipps.
Loco. Supt.

True copy!
For Mr. J. W. V. A.
Agent & Manager.
18th Decr 1891.

CSC

MADRAS RAILWAY.

The Agent and Manager.

The Consulting Engineer

for Railways.

From
To
Dated
Recd.
No.
188

992

18-10-98

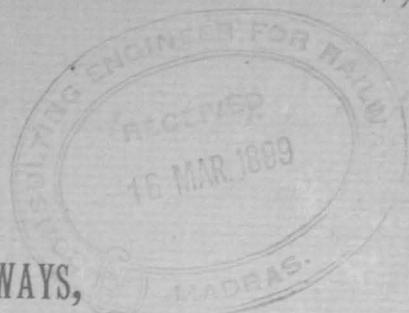
Am

No. 245

South Indian Railway Co., Ltd.,

AGENT'S OFFICE,

TRICHINOPOLY, 15th March 1899.



The AGENT

(SOUTH INDIAN RAILWAY,

The CONSULTING ENGINEER FOR RAILWAYS,

MADRAS.

Sir,

Yr 7M

In reply to your reminder No. 2702 dated 11th March 1899, I have the honor to point out that your original endorsement was not understood as calling for the submission of any report, the connected papers being merely forwarded for information. Our Locomotive Superintendent states that he has already given steel boiler tubes a trial, but does not consider that they are equal as regards wear to Brass tubes as on this line the water used is generally of a quality likely to cause rapid deterioration to steel tubes. He also states that he would prefer solid drawn homogeneous steel tubes to lapwelded ones, and that he thinks the information given as regards prices is somewhat inaccurate as he is of opinion that there is a considerably larger quantity in a ton of Brass tubes than one of steel and that steel tubes are somewhat thicker than Brass.

I have the honor to be,

Sir,

Your most Obedient Servant,

A. D. G. Shetty.

Captain R.E. Agent.

Mud

No.

(No. 1.)

MADRAS RAILWAY.

AGENT AND MANAGERS OFFICE,

MADRAS,

Agent and Manager.

Sir,

To

Consulting Engineer for Railways.

188

5,000-11-11-85.

No. 318 Ry 4

Government of Madras,

PUBLIC WORKS DEPARTMENT,
Impr **RAILWAY BRANCH.**

To

THE SECY. TO THE GOVT. OF INDIA,

P. W. DEPARTMENT

Madras, the 21st March 1899.

SIR,

With reference to your
Memo N: 1025 R.S. of 16th September 1898,
I am directed to forward, for the infor-
mation of the Govt of India, copies of
the marginally noted letters from the
Agents of the Madras and South India
Railways on the subject of replacing
copper tubes with steel for locomotive
boilers.

Yd
21.3.99.

Despatched on 22/3/99

N: 11319 of 18-10-98
992 from AM
N: 2459 of 15-3-99
from A
with enclosures.

From
THE AGENT,
South Indian Railway,
Trichinopoly.
To
THE CONSULTING ENGINEER FOR
RAILWAYS,
Madras.
Dated
Received
No.
18
ENCLOSURE.