M.R.O. 1—77,006—8-6-37.

(1) Number of pages_____

(2) Date of repair_____

(3) Initials of the Referencer_____

MADRAS RECORD OFFICE.

Government of Madras.

Public Works DEPARTMENT.

G.O. No. 380-81 Press Mis.
93-94-

Dated 5-2- 1873.

Not to be folded or roughly handled

No. 93. Read the following letter from the Consulting Engineer for Railways, to the Secretary to Government, Public Works Department, dated Madras, 14th January 1873, No. 20:—

I HAVE the honour to submit, for the sanction of the Government of India, the accompanying indent (in duplicate) on the Board of Directors of the Madras Railway Company for stores required for the Locomotive Department, the approximate cost being Rupees 31,770.

2. I beg to enclose two letters from the Locomotive Superintendent, explaining the necessity for the stores and the extreme urgency with which they are required.

No. 625, dated 14th December 1872.
,, 10, ,, 10th January 1873.

3. I have, in anticipation of the approval of Government, communicated sanction to that part of the indent relating to crank axles at an estimated cost of Rupees 12,000.

4. As the copper rods and crucibles are also urgently required, I beg that the Government of India may be requested to communicate early sanction to the enclosed indent.

From the Locomotive Superintendent, to the Agent and Manager of the Madras Railway Company, dated Perambore Works, 14th December 1872, No. 625.

WITH reference to the Consulting Engineer's letter No. 1,021, dated 9th December 1872, bearing your endorsement of 10th idem, I beg to inform you that I cannot pretend to correctly fill up the columns 8 and 10 of my Indent No. 85, because, so far as regards most of the articles, I can form no reliable opinion as to the "average yearly consumption," or the "period for which the supply is required."

2. I will however endeavour to furnish such explanation regarding the several items required as will, I trust, satisfy the Consulting Engineer as to the necessity of indenting for them.

3. *Crank Axles.*—The engines for which these are required are thirty in number, and have been running for the last nine years.

4. The first crank axle of this class of engines failed in April last, and within the last two or three months we have had to replace the crank axles of three more of these engines.

5. The mileage run by the engines previous to the failure of their axles is as follows:—

No. of Engine.	Miles run.
78	130,659
82	140,401
91	130,457
100	140,716
Average mileage...	135,558

6. The miles run by these engines so closely approximate, as to lead to the inference that they may be taken as a basis whereon to compute the average life-time of each crank axle of this class, and I consider it therefore prudent to at once make arrangements for the supply of a certain number of crank axles for the purpose of replacing those which may be expected to give way at any moment.

7. The mileage performed by each engine of this class up to the 30th June last is as shown hereunder—

No. of Engine.	Mileage.	No. of Engine.	Mileage.
No. 77	45,669	No. 92*	133,338
,, 78†	130,659	,, 93*	136,591
,, 79*	142,051	,, 94*	131,067
,, 80*	132,407	,, 95*	148,710
,, 81*	146,860	,, 96*	137,821
,, 82†	140,322	,, 97*	145,687
,, 83	84,335	,, 98*	136,032
,, 84	94,418	,, 99*	138,612
,, 85	99,733	,, 100†	130,083
,, 86	66,295	,, 101	118,444
,, 87*	136,534	,, 102	104,330
,, 88*	147,150	,, 103	103,034
,, 89*	135,785	,, 104	98,102
,, 90*	127,061	,, 105	96,646
,, 91†	140,983	,, 106	81,259

* Signifies that the engine thus designated may require a new crank axle at any time.
† Signifies that a new axle has already been supplied.

8. We had two spare crank axles for this class of engine in store, and three sets of duplicate wheels fitted on to axles. We have replaced the axles of two of the engines by the former, and of the remaining two engines by two pairs of duplicate driving wheels.

9. Pending the receipt of new crank axles, the two sets of duplicates are therefore incomplete, and we have only one set of duplicate wheels available for contingencies.

10. It is therefore of great importance that the crank axles now indented for should be supplied as soon as possible, and I would recommend that four of them should be sent out *via* Suez Canal.

11. I append a statement showing the consumption during the years 1869, 1870, and 1871 of gauge glasses, copper rods, iron rivets and crucibles, by which it will be seen that the consumption varies so greatly as to render an average an unsafe basis for calculation.

—	1869.	1870.	1871.	Total.	Average.
Glasses, gauge ... ... No.	263	291	518	1,072	357
Rods, copper ... ... lbs.	7,500	11,866	2,815	22,181	7,394
Rivets, iron ... ... ,,	6,000	12,568½	12,235½	31,404	10,468
Crucibles, plumbago ... No.	41	20	44	105	35

12. It will be obvious that the difficulty of arriving at a correct average applies in like manner to the fixing of the "period for which the supply is required." As an instance of the irregularity of our consumption I may mention that, during the first six months of this year, we only used 825 lbs. of copper rod, whilst in the month of July alone we used 9,227 lbs.

Proceedings of the Madras Government, Public Works Department, 5th February 1873.

13. The demand for copper-piping is also very uncertain, being dependent upon the wear of the engines. As most of our locomotives come out in lots of about twenty at a time, it is probable that heavy renewals of pipes may be necessary in one particular year, whilst in other years these may be inconsiderable.

14. In the first half of the present year we used 1,782 lbs. of copper-piping; the approximate weight of those now indented for is 2,400 lbs.

15. *Boiler Plates.*—These are the plates referred to in your letter No. 2,984 of 24th August 1872.

16. *Plumbago Crucibles.*—I have ordered two gross of these of different sizes. I estimate that they will last about two years.

17. The average consumption appears much smaller, because other descriptions of crucibles have been extensively used. It is, however, found that the patent crucible is more satisfactory and economical in use.

18. The three copies of the Indent received with the Consulting Engineer's letter are herewith returned.

From the same Officer, dated Perambore Works, 10th January 1873, No. 10.

With reference to the Consulting Engineer's letters, No. 1,070, dated 19th December 1872, and No. 24 of the 8th instant, calling for "fuller explanation as to the necessity for the copper rod and the crucibles indented for," I would beg to direct your special attention to the remarks made in paragraphs 11 and 12 of my letter No. 625 of 14th ultimo, in the first of which paragraphs I explain that an average consumption is an unsafe basis for calculating future requirements, and, in the second, give an instance of the great variation of such consumption.

2. I had hoped that this explanation would have been deemed sufficient, as it is exceedingly difficult, if not altogether impossible, to arrive at even an approximate estimate of what may be required, whilst it is absolutely necessary to have at all times a sufficient stock of material in store to meet all contingencies.

3. The whole of the copper rod at present in stock is already disposed of, being needed for repairs of engines, the fire-boxes of which at once require re-staying. Our stock will therefore be completely exhausted as soon as these repairs are executed. I anticipate that it will be all used up before we can hope to get the supply now indented for, supposing it to reach us within twelve months.

4. The 13 tons of copper rod asked for may last for years, but, on the other hand, may not last six months from the time it is received. I certainly consider that great risk would be incurred were it not supplied.

5. As regards the plumbago crucibles, a reference to my Indent will show that we have none in store. We are at present dependent upon local purchases. As you are aware, we have tried to procure a supply from the stock of other Indian Railway Companies, but the prices asked were higher than those at which they can be obtained in Madras. The other descriptions of crucibles referred to in my letter are—

1*st.*—Common country-made crucibles, which have proved much more expensive in use than the patent plumbago crucibles.

2*ndly.*—Crucibles made up in our shops from the material of the old and broken plumbago crucibles.

6. To prevent further delay might I beg you to forward the Indent at once to the Board, with the request that such items as have been sanctioned may receive early attention.

Proceedings of the Madras Government, Public Works Department,
5th February 1873.

No. 94. ORDER THEREON, 5th February 1873, No. 380.

RAILWAY, No. 14.

APPROVED.

2. Ordered that the Indent be submitted for the early sanction of the Government of India.

(True Extract.)

(Signed) G. W. WALKER, Colonel, R.E.,
Secretary to Government.

No. 95. (DOCKET No. 381, dated 5th February 1873.)

COPY of the above forwarded to the Government of India.

(True Extract.)

Colonel, R.E.,
Secretary to Government.

Exd. S. T. Austin.

S. P. 3

Madras Railway
No 625 Locomotive Superintendent's Office
Perambore Works
14th December 1872.

To
The Agent & Engineer.

Dear Sir

With reference to the Consulting Engineer's letter No 1021 dated 9th December 1872, bearing your endorsement of 10th idem, I beg to inform you that I cannot pretend to correctly fill up the Columns 8 and 10 of my Indent No 85, because, so far as regards most of the articles, I can form no reliable opinion as to the "average yearly Consumption", or the "period for which the supply is required".

2 I will however endeavour to furnish such explanation respecting the several items required, as will, I trust, satisfy the Consulting Engineer as to the necessity of indenting for them.

Crank Axles.

3 The Engines for which these are required are 30 in number, and have been running for the last nine years.

4 The first Crank axle of this Class of Engines failed in April last, and within the last two or three months we have had to replace the Crank axle of 3 more of these Engines.

5. The mileage runn by the Engines previous to the failure of their Axles, is as follows:-

No of Engine	Miles runn
78	1,30,659
82	1,40,401
91	1,30,457
100	1,40,716
Average Mileage	1,35,558

6. The miles runn by these Engines so closely approximate, as to lead to the inference that they may be taken as a basis whereon to Compute the average life time of each Crank axle of this class, and I Consider it therefore prudent to at once make arrangements for the supply of a certain number of Crank axles for the purpose of replacing those, which may be expected to give way at any moment.

7. The mileage performed by each Engine of this class up to the 30th June last is as shewn hereunder.

No of Engine	Mileage	No of Engine	Mileage
No 77	46,669	* No 92	139,338
+ " 78	130,659	* " 93	136,591
* " 79	142,057	* " 94	131,067
* " 80	132,407	* " 95	148,710
* " 81	146,860	* " 96	137,821
+ " 82	140,322	* " 97	145,687
" 83	84,335	* " 98	136,032
" 84	94,418	* " 99	138,612
" 85	99,733	+ " 100	130,083
" 86	66,295	" 101	118,444
* " 87	136,534	" 102	104,330
* " 88	147,150	" 103	103,034
* " 89	135,785	" 104	98,102
* " 90	127,061	" 105	96,646
+ " 91	140,983	" 106	81,259

* Signifies that the Engine thus designated may require a new Crank axle at any time.

+ Signifies that a new axle has already been supplied.

8. We had two spare Crank axles for this Class of Engine, in Store, and 3 sets of duplicate wheels, fitted on to axles. We have replaced the axles of two of the Engines by the former and of the remaining two Engines by two pairs of duplicate Driving wheels.

9. Pending the receipt of new Crank axles, the two sets of duplicates are therefore incomplete, and we have only one set of duplicate wheels available for Contingencies.

10. It is therefore of great importance that the Crank axles now indented for should be supplied as soon as possible, and I would recommend that 4 of them should be sent out via Suez Canal.

11. I append a statement shewing the Consumption during the years 1869, 1870 and 1871 of Gauge Glasses, Copper rods, Iron rivets and Crucibles, by which it will be seen that the Consumption varies so greatly as to render an average an unsafe basis for Calculation.

	1869	1870	1871	Total	average
Glasses Gauge &c	263	291	518	1072	357
Rods Copper &c lbs	7,500	11,866	2815	22,181	7394
Rivets Iron "	6,600	12,568½	12235½	31,404	10,468
Crucibles Plumbago &c	41	20	44	105	35

12. It will be obvious that the difficulty of arriving at a correct average applies in like manner to the fixing of the "period for which the supply is required". As an instance of the irregularity of our Consumption, I may mention that, during the first six months of this year, we only used 825 lbs of Copper rod. whilst in the month of July alone we used 9227 lbs.

13. The demand for Copper-piping is also very uncertain, being dependent upon the wear of the Engines. As most of our Locomotives come out in lots of about 20 at a time, it is probable that heavy renewals of pipes may be necessary in one particular year, whilst in other years these may be inconsiderable.

14. In the first half of the present year we used 1782 lbs of Copper-piping, the approximate weight of those now indented for is 2400 lbs.

Boiler Plates

15. These are the plates referred to in your letter No 2984 of 24th August 1872.

Plumbago Crucibles

16. I have ordered two gross of these of different sizes. I estimate that they will last about two years.

17. The average Consumption appears much smaller because other descriptions of Crucibles have been extensively used. It is however found that the patent Crucible is more satisfactory and economical in use.

18. The three Copies of the Indent received with the Consulting Engineer's letter are herewith returned:-

Yours &c
(Sd) W. Barton Wright
Locomotive Superintendent

/True Copy/

(illegible)
Agent & Manager

wm

P.W. 253/73.

Madras Railway
Locos. Superintendent's Office
Perambore Works 10th January 1873.

No. 10.

To

The Agent and Manager

Dear Sir,

With reference to the Carpenter Engineer's letter No. 1070 dated 19th December 1872 and No. 24 of the 8th instant, calling for "fuller explanation as to the necessity for "the Copper road and the Crucibles indented "for," I would beg to direct your special attention to the remarks made in paras 11 and 12 of my letter No. 625 of 14th ultimo, in the first of which paras I explain that our average consumption is our safest basis for calculating future requirements; and in the second, give our reasons of the great variation of such consumption.

2. I had hoped that this explanation would have been deemed sufficient as it is exceedingly difficult, if not altogether impossible, to arrive at even an approximate estimate of what may be required, while it is absolutely necessary to have at all times a sufficient stock of materials in store to meet all contingencies.

3. The whole of the Copper road at present in stock is already disposed of being needed for repairs of Engines, the Fireboxes of which almost require re-slaying. Our stock will therefore be

completely exhausted as soon as these repairs are executed. I anticipate that it will be all used up before we can hope to get the supply now indented for, supposing it to reach us within 12 months.

4. The 13 Tons of Copper rod asked for may last for years, but, on the other hand, may not last six months from the time it is received. I certainly consider that great risk would be incurred were it not supplied.

5. As regards the Plumbago Crucibles, a reference to my Indent will show that we have none in store. We are at present dependent upon local purchases. As you are aware, we have tried to procure a supply from the stock of other Indian Railway Companies, but the prices asked were higher than those at which they can be obtained in Madras. The other descriptions of Crucibles referred to in my letter are:

1st Common country made Crucibles which have proved much more expensive in use than the Patent Plumbago Crucibles.

2nd Crucibles made up in our Shops from the material of the old and broken Plumbago Crucibles.

6. To prevent further delay might I beg you to forward the Indent above to the Board with the request that such items as have been

remained may receive early attention.

Yours faithfully
(Sd) W. Bowlow Wright
Loco. Superintendent

True Copy

(Sd) [illegible]
Agent & Manager.

P. Dr. 2553/73.

Railway Department. CONSULTING ENGINEER'S OFFICE,

No. 20

From

LIEUT.-COLONEL J. H. M. SHAW STEWART, R.E.,

Consulting Engineer for Railways,

To

COLONEL G. W. WALKER, R.E.,

Secretary to Government,

Public Works Department,

Fort Saint George.

SIR,

I have the honour to submit for the sanction of the Government of India the accompanying indent (in duplicate) on the Board of Directors of the Madras Railway Company for stores required for the Locomotive department the approximate cost being Rs 31,770.

I beg to enclose two letters from the Locomotive Superintendent explaining the necessity for the stores and the

No 625 d/ 14 Dec. 1872
No 10 d/ 10 Jany 1873

the extreme urgency with which they are required.

I have in anticipation of the approval of Government — communicated sanction to that part of the indent relating to Crank axles at an estimated cost of £12,000.

As the copper rods and crucibles are also urgently required, I beg that the Government of India may be requested to communicate early sanction to the enclosed indent.

I have the honour to be.
Sir
Your most Obedient Servant
W. Mansfield
Lt Col. R.E.
Con. Engineer for Railways

Madras
14 January 1873

P. W. 1873 Ltrs

RAILWAY DEPARTMENT

1872.

From No. 253.

The Consulting Engineer
for Railways,

To

The Secretary to Government,
P. W. Department,
Fort Saint George.

Dated 14th January 1873.
Recd. 15th

No. 20

Encs: 3.

Submitting
for sanction indents
on Board of Directors
of Madras Railway
for stores required
for the Loco: Dept.
With Ltr & Order

Sir,

I have the honor to forward herewith Indent No. 380 on the Board of Directors of the Madras Railway Company for the early sanction of the Govt. of India.

2. The Indent is for Rs. 3,81,000 and is required for the Loco: Dept. of the Railway.

3. I have the honor to be Sir, Your most obedient servant,

Consulting Engineer for Railways.

Cl. 253

Govt. of {1873} Madras.

PUBLIC WORKS.

To The Consulting Engr for Railways

From The Secretary to the Govt of India

Dated

Read. Encl. 2

G. O. 5th Feby 1873. No 380 381.

Nos. 93-94 95

Indent. Papers orders

Forward for sanction an Indent for Stores required for the Madras Railways.

in letter from the Secretary to Govt forwarding an Indent for Stores required for the Madras Railway.