

Public Works (1893) Department.

RAILWAY BRANCH.

G.O., No. 286-7. R

DATED 10th February

[Despatch Abstract.]

Permanent Way materials.

Adoption on the Madras Ry of the new type of bull-headed 78" rail etc, approved, and the transmission to the Board, of indent no 683 for — as reduced to Rs 2,28,465, sanctioned.

Copy of Pres: approving of the adoption on the Madras Railway of the new type of bull-headed 78" rail etc and sanctioning the transmission to the Board, of indent no 683 for — as reduced to Rs 2,28,465.

BACK PAPERS.

G.O.	No.	Department.	Date.	G.O.	No.	Department.	Date.
	2267	R	13-9-92				
	2993	R	12-12-92				

FURTHER PAPERS.

G.O.	No.	Department.	Date.	G.O.	No.	Department.	Date.

10TH FEBRUARY 1893, No. 256 R., PUBLIC WORKS.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Railway.

Read the following paper :—

From the Agent and Manager, Madras Railway Company, to the Consulting Engineer for Railways, dated Madras, 31st January 1893, No. I-83/63.

In reply to the first para. of your letter No. 1100 A., dated 14th December 1892, I have the honour to quote the following remarks of the Company's Chief Engineer :—

"The Consulting Engineer to the Government of India, State Railways, in his note, dated the 26th October 1892, appears to have overlooked the essential point aimed at in designing the new type of rail proposed, viz., to devise a rail of first rate modern section which could be used for renewals in the existing pot-sleepers now laid on 998 miles of main line and sidings of the Madras Railway, and be also suitable for use on new lines with the best form of sleepers procurable.

It is impossible to design a double-headed rail with flat fishing angles, and a head heavier than that of the existing 75 lb rail, which will fit the jaws of the existing Madras Railway pot-sleepers, so that a 78 lb. double-headed rail as proposed by the Consulting Engineer to the Government of India for Railways, could not be made use of for renewals.

As pointed out in Mr. Stoney's report, dated the 28th June 1892, some 23 miles of rails require to be renewed annually to about 3 miles of sleepers, so that it is essentially necessary to have a rail which shall fit the pot-sleepers now in use.

I regret being unable to offer an opinion on the merits of the Denham Olphert's plate sleepers, not having had any opportunity of seeing them in use."

ABSTRACT.

Madras Railway.

Engineering store and workshop account Dr.
Balance at 30th November 1892, Rs. 9,47,258-9-9.

INDENT of stores required by Engineering Department.

Indent No.		RS.	A.	P.
683	Bull-headed steel rails cast-iron pot-sleepers wrought iron tie bars, gibs, cotters, &c., for renewals and general use on the line ...	2,28,465	0	0

Budget, 1892-93.

Provision for stores from England ...	13,34,400	0	0
Already charged including this indent ...	12,32,479	5	2
Balance available ...	1,01,920	10	10
Estimated Amount ...	2,28,465	0	0

Submitted for the approval and sanction of Government.

(Signed) L. S. MOSS,
Agent and Manager.

INDENT of stores required by the Engineering Department to be delivered at Madras.

Description of articles.	Stock in hand at date of indent.	Stock already indented for, but yet received.	Consumption during previous 12 months.	Now indented for.		Remarks.
				Quantity.	Approximate value.	
Eight thousand (8,000) bull-headed steel rails, each 30 feet long, weighing 78 lb. to the yard, as per drawing accompanying.	..	..	..	No. 8,000	1,48,500	For renewals and general use on the line.
Twenty thousand (20,000) Grover's patent cast-iron pot-sleepers, as per drawing accompanying.	..	..	..	No. 20,000	45,230	
Ten thousand (10,000) wrought iron tie bars for above sleepers.	..	..	..	No. 10,000	16,625	
Seventy thousand (70,000) wrought iron cutters for above tie bars.	..	..	..	No. 70,000	2,917	
Fifty-five thousand (55,000) wrought iron gibs for above tie bars.	..	..	..	No. 55,000	800	
Sixteen thousand (16,000) wrought iron fish-plates for bull-headed rails as per tracing accompanying.	..	..	..	No. 16,000	8,333	
Thirty-two thousand (32,000) bolts and nuts, one inch diameter for above fish-plates with Grover's steel spring washers, complete.	..	..	..	No. 32,000	4,000	
Total ..	..	..	..	..	2,28,465	

Certified that the surplus stores lists of all the other Guaranteed Railway Companies, have been carefully scrutinized, and the stores are not suitable by reason of there being none of the description required.

(Signed) L. S. MOSS,
10th August 1892. Agent and Manager.

(Signed) H. R. P. CARTER,
Chief Engineer.

Examined with the Railway Company's books and checked with the surplus stores lists of all the Guaranteed Railway Companies.

(Signed) J. LIGHTFOOT,
Government Examiner of Railway Accounts.

No. 61.

Endorsement by the Consulting Engineer for Railways, dated Madras, 4th February 1893.

Submitted to Government for the information of the Government of India with reference to G.O., No. 2993 R., dated 12th December 1892.

2. The opinion of the Consulting Engineer to the Government of India for State Railways, on the type of permanent-way materials to be adopted on the Madras Railway, embodied in his note, dated the 26th October 1892, was forwarded to the Agent and Manager, Madras Railway, for consideration.

3. The Agent now submits the views of the Chief Engineer, Madras Railway, from which it will be seen that the essential object in designing the new type of rail proposed, was to have a rail of first rate modern section which could be used for renewals in the existing pot-sleepers now laid on 993 miles of main line and sidings of the Madras Railway, and also be suitable for use on new lines with the best form of sleepers procurable. Some 28 miles of rail require to be renewed annually to about 3 miles of sleepers, so that it is most essential to have a rail which will fit the pot-sleepers now in use and a 78 lb. double-headed rail as proposed by the Consulting Engineer to the Government of India for Railways, could not be made use of for renewals.

4. The proposal to use on the Madras Railway the Denham Olphert's sleeper has since been discussed with the undersigned, and after due consideration, its adoption for the reasons given above is obviously inadvisable.

5. For these reasons, it is requested that the original proposals made by the Agent, may be approved, and that sanction may be accorded to the adoption of the new type of bull-headed rail, fish-plate, and pot-sleeper proposed to be used on the Madras Railway.

6. An indent, amounting to Rs. 77,084, for a lakh of fish-plates required for the 75 lb. double-headed rails now in the road, and for two lakhs of bolts and nuts, having since been separately sanctioned on the strength of the approval of the Consulting Engineer for Railways to the Government of India, to this description of fish-plate, these items have been eliminated from indent No. 683 submitted with endorsement No. 663, dated 5th September 1892, and it is requested that sanction may be accorded to obtain from home the balance of the stores included therein.

ORDER—dated 10th February 1893, No. 286 R., Public Works.

Under the circumstances explained, the adoption on the Madras Railway of the new type of the bull-headed 78 lb. rail, fish-plate and pot-sleeper, is approved, and sanction is accorded to the transmission to the Board, of indent No. 683 as reduced to Rs. 2,28,465 by the elimination of a lakh of fish-plates, and two lakhs of bolts and nuts, for which a separate indent, amounting to Rs. 77,084, has already been sanctioned.

2. A copy of these Proceedings will be forwarded for the information of the Government of India, with reference to its letter, dated 3rd December 1892, No 436 R.S.

[Here enter No. 287 R., Public Works, dated 10th February 1893.]

(True Extract.)

Major, B.E.,
Offg. Under-Secy. to Govt., P.W.D.,
Railway Branch.

To the Consulting Engineer for Railways.
" Examiner of Railway Accounts.

Exd G. A. Lewis.
Spare Copies

RAILWAY.

Gobt. of {1893} Madras.
PUBLIC WORKS.

Dated February, 10th.

Recd.

Encl.

G.O., 10th Feb. 1893, No. 286 R.

FEBRUARY.

Permanent-way Materials

Adoption on the Madras Railway of the new type of bull-headed 73 lb. rail, &c., approved, and the transmission to the Board, of indent No. 683 for — as reduced to Rs. 2,28,465, sanctioned.

10TH FEBRUARY 1893, No. 286 R., PUBLIC WORKS.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Railway.

Read the following paper :—

From the Agent and Manager, Madras Railway Company, to the Consulting Engineer for Railways, dated Madras, 31st January 1893, No. I-83/63.

In reply to the first para. of your letter No. 1100 A., dated 14th December 1892, I have the honour to quote the following remarks of the Company's Chief Engineer :—

"The Consulting Engineer to the Government of India, State Railways, in his note, dated the 26th October 1892, appears to have overlooked the essential point aimed at in designing the new type of rail proposed, viz., to devise a rail of first rate modern section which could be used for renewals in the existing pot-sleepers now laid on 998 miles of main line and sidings of the Madras Railway, and be also suitable for use on new lines with the best form of sleepers procurable.

It is impossible to design a double-headed rail with flat fishing angles, and a head heavier than that of the existing 75 lb. rail, which will fit the jaws of the existing Madras Railway pot-sleepers, so that a 78 lb. double-headed rail as proposed by the Consulting Engineer to the Government of India for Railways, could not be made use of for renewals.

As pointed out in Mr. Stoney's report, dated the 28th June 1892, some 23 miles of rails require to be renewed annually to about 3 miles of sleepers, so that it is essentially necessary to have a rail which shall fit the pot-sleepers now in use.

I regret being unable to offer an opinion on the merits of the Denham Olphert's plate sleepers, not having had any opportunity of seeing them in use."

ABSTRACT.

Madras Railway.

: Engineering store and workshop account Dr.
Balance at 30th November 1892, Rs. 9,47,258-9-9.

INDENT of stores required by Engineering Department.

Indent No.		RS.	A.	P.
683	Bull-headed steel rails cast-iron pot-sleepers wrought iron tie bars, gibs, cotters, &c., for renewals and general use on the line ...	2,28,465	0	0
Budget, 1892-93.				
	Provision for stores from England ...	13,34,400	0	0
	Already charged including this indent ...	12,32,479	5	2
	Balance available ...	1,01,920	10	10
	Estimated Amount ...	2,28,465	0	0

Submitted for the approval and sanction of Government.

(Signed) L. S. MOSS,
Agent and Manager.

INDENT of stores required by the Engineering Department to be delivered at Madras.

(1) Description of articles.	Stock in hand at date of indent.	Stock already indented for, not yet received.	Consumption during previous 12 months.	Now indented for.		Remarks.
				Quantity.	Approximate value.	
Eight thousand (8,000) bull-headed steel rails, each 30 feet long, weighing 78 lb. to the yard, as per drawing accompanying.	..	..	..	No. 8,000	Rs. 1,48,500	For renewals and general use on the line.
Twenty thousand (20,000) tire's patent cast-iron pot-sleepers, as per drawing accompanying.	..	..	..	No. 20,000	49,230	
Ten thousand (10,000) wrought iron tie bars for above sleepers.	..	..	..	No. 10,000	15,625	
Seventy thousand (70,000) wrought iron cotter for above tie bars.	..	..	..	No. 70,000	2,917	
Fifty-five thousand (55,000) wrought iron gibs for above tie bars.	..	..	..	No. 55,000	860	
Sixteen thousand (16,000) wrought iron fish plates for bull-headed rails as per tracing accompanying.	..	..	..	No. 16,000	8,333	
Thirty-two thousand (32,000) bolts and nuts, one inch diameter for above fish-plates with Grover's steel spring washers, complete.	..	..	..	No. 32,000	4,000	
Total ..	..	..	..	..	2,28,465	

Certified that the surplus stores lists of all the other Guaranteed Railway Companies, have been carefully scrutinized, and the stores are not suitable by reason of there being none of the description required.

(Signed) L. S. MOSS,
10th August 1892. Agent and Manager.

(Signed) H. R. P. CARTER,
Chief Engineer.

Examined with the Railway Company's books and checked with the surplus stores lists of all the Guaranteed Railway Companies.

(Signed) J. LIGHTFOOT,
Government Examiner of Railway Accounts.

No. 61.

Endorsement by the Consulting Engineer for Railways, dated Madras, 4th February 1893.

Submitted to Government for the information of the Government of India with reference to G.O., No. 2993 R., dated 12th December 1892.

2. The opinion of the Consulting Engineer to the Government of India for State Railways, on the type of permanent-way materials to be adopted on the Madras Railway, embodied in his note, dated the 26th October 1892, was forwarded to the Agent and Manager, Madras Railway, for consideration.

3. The Agent now submits the views of the Chief Engineer, Madras Railway, from which it will be seen that the essential object in designing the new type of rail proposed, was to have a rail of first rate modern section which could be used for renewals in the existing pot-sleepers now laid on 993 miles of main line and sidings of the Madras Railway, and also be suitable for use on new lines with the best form of sleepers procurable. Some 28 miles of rail require to be renewed annually to about 3 miles of sleepers, so that it is most essential to have a rail which will fit the pot-sleepers now in use and a 78 lb. double-headed rail as proposed by the Consulting Engineer to the Government of India for Railways, could not be made use of for renewals.

4. The proposal to use on the Madras Railway the Denham Olphert's sleeper has since been discussed with the undersigned, and after due consideration, its adoption for the reasons given above is obviously inadvisable.

5. For these reasons, it is requested that the original proposals made by the Agent, may be approved, and that sanction may be accorded to the adoption of the new type of bull-headed rail, fish-plate, and pot-sleeper proposed to be used on the Madras Railway.

6. An indent, amounting to Rs. 77,084, for a lakh of fish-plates required for the 75 lb. double-headed rails now in the road, and for two lakhs of bolts and nuts, having since been separately sanctioned on the strength of the approval of the Consulting Engineer for Railways to the Government of India, to this description of fish-plate, these items have been eliminated from indent No. 683 submitted with endorsement No. 663, dated 5th September 1892, and it is requested that sanction may be accorded to obtain from homo the balance of the stores included therein.

ORDER—dated 10th February 1893, No. 286 R., Public Works.

Under the circumstances explained, the adoption on the Madras Railway of the new type of the bull-headed 78 lb. rail, fish-plate and pot-sleeper, is approved, and sanction is accorded to the transmission to the Board, of indent No. 683 as reduced to Rs. 2,28,465 by the elimination of a lakh of fish-plates, and two lakhs of bolts and nuts, for which a separate indent, amounting to Rs. 77,084, has already been sanctioned.

2. A copy of these Proceedings will be forwarded for the information of the Government of India, with reference to its letter, dated 3rd December 1892, No 436 R.S.

[Here enter No. 287 R., Public Works, dated 10th February 1893.]

(True Extract.)

(Signed) F. B. WALKER,
Offg. Joint Secy. to Govt., P.W.D.,
Railway Branch.

To the Consulting Engineer for Railways.
" Examiner of Railway Accounts.

ENDORSEMENT—dated 10th February 1893, No. 287 R., Public Works.

Forwarded.

(By Order.)

Offg. Joint-Secy. to Govt., P.W.D.,
Railway Branch.

Exd. G. A. Lewis.
Spare Copies

RAILWAY.

Govt. of {1893} Madras.
PUBLIC WORKS.

Dated February, 10th.

Recd.

Encl.

G.O., 10th Feb. 1893, Nos. 286,
287 R.

FEBRUARY.

Permanent-way
Materials

Forwarding copy of Proceedings approving of the adoption on the Madras Railway of the new type of bull-headed 78 lb. rail, &c., and sanctioning the transmission to the Board, of indent No. 683 for — as reduced to Rs. 2,29,465.

13TH SEPTEMBER 1892, No. 2216 R., PUBLIC WORKS.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Railway.

Read the following papers:—

From the Consulting Engineer for Railways, dated Madras, 5th September 1892, No. 683.

From the Agent and Manager, Madras Railway, to the Consulting Engineer for Railways, dated Madras, 19th August 1892, No. 703.

I have the honour to forward, herewith, in duplicate, indent No. 683 on the Board of Directors for permanent-way materials required for renewals of the line during 1893-94 and to request that you will be so good as to countersign and return the original authorising me to send it forward for compliance.

2. A copy of the Chief Engineer's letter, furnishing explanations of the several items of this indent, together with the statement referred to therein, is enclosed for your information.
- Not printed.

ENCLOSURE.

From the Chief Engineer, Madras Railway, to the Agent and Manager, Madras Railway, dated Madras, 10th August 1892, No. 180/894.

[Indent of permanent-way materials for the year 1893-94.]

I beg to forward an indent (five copies) on the Board for the supply of permanent-way required for renewals of the line during 1893-94 and desire to add the following explanations in regard to the items:—

(1) *Rails*.—As it has been decided to adopt 30-feet rails of bull-headed section for all future renewals, the quantity now indented for represents the balance requisite to make up our stock so as to retain one year's supply in hand. The section of this rail has been carefully considered and designed so that it will fit the jaws of the existing pot sleepers and it is requested that the Board will obtain the approval of the Company's Consulting Engineer in London to this section before complying with the indent.

(2) *Pot sleepers*.—These have also been designed with a jaw which will suit either the existing type of 75 lb. double-headed rail or the new bull-headed rail. After the careful series of experiments made by Mr. E. W. Stoney to test the relative strength of our existing type of pot sleepers, it is found that by adding metal, where it is most required, the design of the pot sleepers shown in the accompanying drawing has proved to be the strongest and it is considered that its weight, viz., 112 lb., will not be in excess of the requirements for our present improved type of road way and the heavy class of engines now running on the line. A pattern C.I. pot of this design will be forwarded to the Board for the approval of Messrs. Hawkshaw and Hayter.

(3) The tiebars, gibs and collars call for no special remark as they are precisely of the same description as that hitherto supplied.

(4) The large quantity (100,000 fish plates) of the latest type (as shown in the drawing) are required to replace the old pattern of fish plates at the joints of all steel rails already laid, as it is found that the latter are not sufficiently rigid and the ends of the steel rails are being damaged by the retention of these old pattern fish plates, which it is proposed to replace by large instalments every year.

(5) The 16,000 fish plates to be used for bull-headed rails are of different section (vide drawing) and will be required if the bull-headed rails now asked for are approved of and sent out.

(6) The 232,000 fish bolts and nuts are the full complement required for the total of both sections of fish plates indented for. It will be observed that, by making these bolts of the length shown in the drawing, they will suit both sections of fish plates and will admit also of the insertion of Grover's steel spring washers.

In conclusion, I enclose a statement showing the expenditure of permanent-way materials during the three years ending 1892-93.

Submitted to Government.

2. The Agent and Manager, Madras Railway, submits an indent on the Board of Directors for permanent-way materials required for renewals of the line during 1893-94, and, as the items comprised in it are, on the basis of previous indents unobjectionable in amount and value, it would, in the ordinary course, be approved for transmission to the Board, were it not that it contemplates a departure from the type of permanent-way hitherto adopted on the Madras Railway. The present application covers the proposal to adopt on the Madras Railway a bull-headed 78 lb. rail in lieu of the double-headed 75 lb. rail now in use as well as an alteration of the type of pot sleeper. It also comprises the provision of a special form of fish plate suited to the proposed bull-headed rail and includes a lakh of strong fish plates required for the 75 lb. double-headed rails now in the road.

3. The question as to the types of permanent-way to be adopted has recently been under the consideration of the Consulting Engineer in London, the Board of Directors and the Chief Engineer in Madras, and Mr. E. W. Stoney was specially deputed to deal with the subject here. The result of the investigations and experiments will be found embodied in the accompanying report with seven drawings as per list attached.

4. From the Chief Engineer's letter accompanying the indent, it will be observed that compliance with some of the items included in the indent is subject to the approval of the Consulting Engineer in London and it may perhaps be considered advisable to obtain the views of the Government of India on the types of permanent-way suggested. Personally I consider that the rail proposed is suitable as also is the pot, but I would have preferred a fish plate with 6 or preferably 5 fish bolts.

5. The subject of the weakness of the joints was noticed in the last half-yearly inspection report and orders are under issue calling for a programme and estimate for fishing all the new 75 lb. rails in the road with their proper heavy fish plates and bolts such as are included in the lakh now under indent.

6. To make the case complete the following extracts from correspondence in this office are given and a copy of the drawing accompanying the indent is attached:—

(a) Extract para. 8 from a letter from the Board of Directors, to the Agent and Manager, Madras Railway, No. 857, dated 13th November 1891.

(b) Extract para. 10 from a letter to the Board of Directors from the Agent and Manager, Madras Railway, No. 2019, dated 3rd August 1892, enclosing copy of a letter from the Chief Engineer, No. 833, dated 26th July 1892, giving cover to a report by Mr. Stoney, together with seven drawings.

(c) Extract para. 12 from report on the inspection of the Madras Railway for the first half of 1892 by Major W. V. Constable, R.E., Deputy Consulting Engineer for Railways, with order of Government thereon.

Extract para. 8 from a letter from the Board of Directors, to the Agent and Manager, Madras Railway, dated 13th November 1891, No. 857.

8. *Alterations and improvements in permanent-way.*—On the 30th ultimo, I informed you that the Consulting Engineer postponed reporting on indent No. 856 until he had seen Mr. Stoney as to suggested alterations and improvements in the permanent-way, and on the same date, I forwarded to you, for information and guidance, copies of two letters* from Mr. Hayter written after he had discussed the question with Mr. Stoney. I also forwarded the two drawings referred to and copy of a further

* Dated 29th September and 15th October.

letter from the Consulting Engineer, dated 27th October, reporting with reference to the communication addressed to you by the Chief Engineer on the subject of pot sleepers with and without an interior rib and suggesting that the Chief Engineer should in future indent for which of the two he would prefer after trial in the road, the point to be ascertained being whether the disadvantages (if any) of the pot sleeper with the rib surrounding the tie bar are such as to outweigh the manifest advantages it possesses.

EXTRACT para. 10 from a letter from the Agent and Manager, Madras Railway, to the Board of Directors, dated 3rd August 1892, No. 2049.

10. *Mr. Stoney's report on the permanent-way forwarded.*—Adverting to para. 8 of your No. 857, I forward, for the information of the Board, copy of a letter from the Chief Engineer, No. 833, dated 26th ultimo, giving cover to a report by Mr. Stoney on the recommendations of the Company's Consulting Engineer in London as to the types of permanent-way to be adopted for the Madras Railway. Mr. Carter expresses his concurrence with Mr. Stoney's views as to the types which offer on the whole the greatest advantages and suggests that, subject to the approval of the Consulting Engineer and the Board, they should be given effect to when complying with future indents. Two spare copies of Mr. Stoney's printed report are enclosed.

From the Chief Engineer, Madras Railway, to the Agent and Manager, Madras Railway, dated Madras, 26th July 1892, No. 833.

[Permanent-way materials.]

With reference to letters, dated 29th September, 15th October and 27th October 1891, from the Company's Consulting Engineer in London, I beg to advise you that, as Mr. E. W. Stoney, when last in London, had held some conversation with Mr. Hayter on the subject of improvements in the sections of rails, pot sleepers and fish plates, he was specially deputed to deal with the subject here and I enclose 4 printed

* Copy attached.

copies of his report,* in which the results of his investigations and carefully made experiments are embodied.

I shall feel obliged if you will forward them to the Board for transmission to Mr. Hayter.

2. At the same time, I wish to point out that it would be desirable to request the Board to adopt the recommendations contained in the report when complying with the indent for permanent-way materials which will be shortly despatched for the fulfilment of our requirements for the ensuing year.

3. In regard to this subject I am of opinion that all future supplies of rails should consist of those of bull-headed section, 30 feet long, and weighing 78 lb. per yard, as shown in drawing No. 2.

4. As to pot sleepers, I consider the pattern shown in drawing No. 6 to be the best as far as can be ascertained up to the present time and I would urge that special care be taken to retain the tapered jaw of the pot precisely as indicated in the drawing (which is almost identical with Sir John Hawkshaw's original drawing, dated 28th September 1867) and the jaw should be carefully gauged in future before the pot sleepers are sent out.

5. As to fish plates, the latest type sent out has proved to answer admirably for the double-headed iron and steel rails now in the road; but the outline of their section will require to be slightly modified in the case of those supplied for the bull-headed rails as shown in the drawing.

6. As Mr. Stoney's report furnishes all the necessary details, I have nothing further to add and trust that Mr. Hayter will be so good as to make any additional modifications as may commend themselves to him as desirable.

List of tracings of the drawings referred to in Mr. Stoney's report.

Plan No.

Description of drawings.

- 1 Drawing showing the different-shaped pot jaws now in use on the Madras Railway compared with that shown in Mr. Hawkshaw's drawing of the 28th September 1867.
- 2 Drawing showing bull-headed rail designed by Mr. Stoney for future use on the Madras Railway both for renewals and new lines.

- | Plan No. | Description of drawings. |
|----------|--|
| 3 | Drawing showing improved forms of rails, pot jaws and keys designed by E. W. Stoney for use on the Madras Railway. |
| 4 | Drawing showing the arrangements of pot sleepers for 20 and 30 feet rails. |
| 5 | Drawing showing the experiments on the strength of Madras Railway Company pots; diagram showing lines of fracture, &c. |
| 6 | Drawing showing alterations proposed by Mr. Stoney for strengthening Mr. Hayter's pot with chamber round tiebar (full size). |
| 7 | Drawing showing alterations proposed by Mr. Stoney for strengthening Great Indian Peninsula pct (full size). |

EXTRACT para. 12 from report on the inspection of the Madras Railway for the first half of 1892, with order of Government thereon.

12. *Steel rails—North-West and South-West Lines.*—The following table for the half-year ended the 31st March 1892 shows the number of miles of 75 lb. double-headed steel rails laid and the number of miles of each fished with new pattern steel fish plates with four 1-inch bolts and with old type iron fish plates and four $\frac{1}{2}$ -inch bolts:—

Divisions.	Steel rails fished with new type fish plates.			Steel rails fished with old type fish plates.		
	NO.	CHS.	FT.	NO.	CHS.	FT.
First division, North-West Line	3	30	65	51	20	11
Second " " "	0	0	0	26	20	0
First " " South-West "	4	43	30	102	31	64
Second " " " "	5	49	0	31	50	0
Third " " " "	2	75	4	36	34	29
Fourth " " " "	3	25	0	28	72	32
Total ..	18	54	33	274	70	4

The following remarks were made by the Acting Deputy Chief Engineer on his inspection for the half-year ended the 31st March 1892:—"I would recommend considering the advisability of replacing all the old pattern fish plates now in use on steel rails with new type fish plates fitted with 1" bolts so as to save wear at the joints as much as possible and thus prevent as far as practicable the necessity for renewing steel rails worn at the joints long before other portions of them had worn sufficiently to need removal." I fully endorse these views and would recommend that immediate action be taken to prevent the joints being further damaged. Personally I consider the new fish plates with 4 bolts only to be none too strong and scarcely up to the standard of joints on other lines, but they are much stronger than the old plates and I believe it will be true economy to the road to fish the new rails at once with the plates and bolts designed for them. It was a mistake not to have got out the proper complement of plates and bolts when the new rails were ordered. The cost of replacements recommended is estimated by the Acting Deputy Chief Engineer to be about as follows:—

	RS.	A.	P.
New type fish plates with bolts and Grover's washers, cost per mile	863	8	0
Less value of old fish plates with bolts to be removed from the line	250	4	0
Net cost per mile	613	4	0
Which for 77½ miles on North-West Line amount to	47,526	14	0
And for 197 miles on South-West Line	1,20,810	4	0
Total	1,68,337	2	0

This is a heavy expenditure to incur, but it is better to meet it at once than to postpone the evil day; 100,000 pairs of new fish plates with one inch bolts have just been indented for.

Order thereon.

Paragraph 12.—The Government approves of the proposal herein made of fishing all the new 75 lb. rails in the road with their heavy fish plates and bolts. A programme and estimate for the work should be submitted.

ORDER—dated 13th September 1892, No. 2216 R., Public Works.

Ordered that the Government of India be addressed.

(Here enter No. 2217 R., Public Works, dated 13th September 1892.)

(True Extract.)

Major, R.E.,
Offg. Under-Secy. to Govt., P.W.D.,
Railway Branch.

To the Consulting Engineer for Railways.

Exd. A. D. Xavier.
Spare Copies

RAILWAY.

Govt. of {1892} Madras.

PUBLIC WORKS.

Dated September, 13th.

Recd.

Encl.

G.O., 13th Sept. 1892, No. 2216 R.

SEPTEMBER.

Permanent-way Materials

Ordered that the Government of India be addressed regarding the indent for — required for renewals of the line during 1893-94, Madras Railway.

13TH SEPTEMBER 1892, No. 2217 R., PUBLIC WORKS.

PUBLIC WORKS DEPARTMENT.

Railway.

LETTER—from

F. B. WALKER, Esq.,

Offg. Joint Secretary to the Government of Madras,

Public Works Department,

Railway Branch,

To

THE SECRETARY TO THE GOVERNMENT OF INDIA,

PUBLIC WORKS DEPARTMENT.

SIR,

I am directed to forward, herewith, copy of Proceedings of this Government, No. 2216 R., dated 13th September 1892, on an indent submitted by the Agent and Manager, Madras Railway, for permanent-way materials required for renewals of the line during 1893-94.

2. As the indent provides for a departure from the type of permanent-way hitherto in use on the Madras Railway by the adoption of a bull-headed 78 lb. rail in lieu of the double-headed 75 lb. rail now in use as well as an alteration in the type of pot sleeper and a special form of fish plate to suit the bull-headed rail, I am to request the views of the Government of India on the proposals before the indent is disposed of in the ordinary course.

3. The question as to the type of permanent-way to be adopted on the Madras Railway has recently been under the consideration of the Consulting Engineer in London, the Board of Directors, and the Chief Engineer in Madras, and Mr. E. W. Stoney was specially deputed to deal with the subject here. The result of the investigations and experiments will be found embodied in the report accompanying the Proceedings.

I have the honour to be,

Sir,

Your most obedient servant,

Offg. Joint Secy. to Govt., P.W.D.,
Railway Branch.

OOTACAMUND,
13th September 1892.

Exd. A. D. Xavier.
Spare Copies

RAILWAY.

Govt. of {1892} Madras.
PUBLIC WORKS.

Dated September, 13th.

Recd.

Enc.

13th Sept. 1892, No. 2217 R.

SEPTEMBER.

Permanent-way Materials

Forwarding, with remarks, copy of Proceedings on an indent for — required for renewals of the line during 1893-94, Madras Railway.

No.436 R. S.

GOVERNMENT OF INDIA.
PUBLIC WORKS DEPARTMENT.
RAILWAY STORES.

To

THE JOINT SECRETARY TO THE GOVERNMENT OF MADRAS,
PUBLIC WORKS DEPARTMENT,
RAILWAY BRANCH.

Calcutta, the 3rd December 1892.

SIR,

I am directed to acknowledge the receipt of your letter No. 2217 R., dated the 13th September 1892, requesting the views of the Government of India on the proposals to depart from the type of permanent way hitherto in use on the Madras Railway by the adoption of a bull-headed 75lb rail, and a special form of fish-plate to suit the rail, and also by an alteration in the type of pot sleepers.

2. In reply, I am to forward, for the information and consideration of the Government of Madras, copy of a note by the Consulting Engineer to the Government of India for state railways, dated the 26th October 1892, on the subject.

I have the honour to be,

SIR,

Your most obedient servant,

J. A. T. *T. A. T.* M. INST. C. E.,

Under Secy. to the Govt. of India.

Document accompanying.

Copy of note by the Consulting Engineer to the Government of India for State Railways.

17/12/92

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Dated 8pte

Recd.

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Enclosure to Government of India, P. W. D., letter No. 436 R. S. of
3rd December 1892.

*Copy of a note, dated the 26th October 1892, by the Consulting Engineer to
the Government of India for State Railways, regarding type of perma-
nent-way materials to be adopted on the Madras Railway.*

Mr. Stoney's letter of the 28th June last shows that this indent has been carefully con- sidered, and the new 7½ lb rail and new design of pot sleeper are marked improvements on the new types. The new deep fish with four 1" holes, if 18" or 19" long, will in my view be prefer- able in every way to a longer plate with 6 holes. These long 6-hole plates have already given trouble on the East Indian Railway and elsewhere, and will have to be used with four bolts only. I am surprised that the Madras Railway proposes to perpetuate a pot sleeper with that everlasting trouble—the wooden key. The East Indian now use the Denham-Olpherts plate for all renewals of metal sleepers, and this carries the rail on the underside of the top table, makes a good road, does away with the wooden key, and allows both top and bottom table of the rail to be used. This plate also permits of rails of different sections and flanging angles being used, if the variation is not considerable. I would urge that the Chief Engineer, Madras Railway, should communicate with the East Indian Railway before committing his Company to the further use of the pot with wooden key. With the East Indian Railway plate a double headed 7½ lb rail could be used instead of the bull head.

12268

13
No 2993 R 3/12-12-92

13
Communicated
to the Consulting Engineer
for R. & S. for report
with reference to Prop.
No. 2216 R, dated 13th
September 1892.

W.S.R

12 12-12-92
S. (B.S.C.)

B.

No 2993 R 3/12-12-92

No 2216-7 R 4/13-7-92

The Company's Engineer
to the Government of India, State
Railways, in his note dated the
26th of October 1892 appears to
have overlooked the essential
point aimed at in designing
the new type of rail proposed,
viz. to devise a rail of first
rate

14. 12/12 R 14/12. W.S.C. 14/12

No. 183
63

MADRAS RAILWAY.

AGENT AND MANAGER'S OFFICE,

MADRAS, 31st Jan 1893

From

The Agent and Manager,
Madras Railway Company,

To

The Consulting Engineer for Railways.

SIR,

In reply to the first
para of your letter No. 1100 dated 14th
December 1892, I have the honour
to quote the following remarks
of the Company's Chief Engineer:

The Consulting Engineer to
the Government of India, State
Railways, in his note dated the
26th of October 1892 appears to
have overlooked the essential
point aimed at in designing
the new type of rail proposed,
viz. to devise a rail of first
rate

rate modern section which could be used for renewals in the existing Pot sleepers now laid on 998 miles of main line and sidings of the Madras Railway, and be also suitable for use on new lines with the best form of sleepers procurable.

It is impossible to design a double headed rail with flat fishing angles, and a head heavier than that of the existing 75th rail, which will fit the jaws of the existing Madras Railway Pot sleepers, so that a 75th double headed rail as proposed by the Consulting Engineer to the Government of India for Railways could not be made use of for renewals.

As pointed out in Mr. Stone's report dated the 28th June 1892 some 28 miles of rails require

require to be renewed annually to about 3 miles of sleepers, so that it is essentially necessary to have a rail which shall fit the Pot sleepers now in use.

I regret being unable to offer an opinion on the merits of the Denham Alpher's Plate sleepers, not having had any opportunity of seeing them in use.

I have the honour to be,
Sir
Your most obedt Servt.

J. M. V. S.

Agent Manager

MADRAS RAILWAY.

From

The Agent and Manager,

M. R. Co.

To

The Consulting Engineer

for Railways,

Dated

1892

Per

No.

68

Form No. 2.

PUBLIC WORKS DEPARTMENT.

OFFICE OF CONSULTING ENGINEER FOR RAILWAYS,

Madras, 11th January 1893.

*Letter from the General Manager,
Madras Railway, 1st 1893 dated 1st 1893.*

MADRAS RAILWAY.

From

The Agent and Manager,

M. R. Co.,

To

The Consulting Engineer

for Railways

Date

1893

Ref.

No.

*Letter to Mr. No. 96
2293-*

*8/1
11/2/93*

No. 61

SUBMITTED

— to — Government for

*the information of the Govern-
ment of India with reference
to G.O. No. 2993 E, dated 12th
December 1892.*

*2 The opinion of the
Consulting Engineer to the
Government of India for State
Railways, on the type of per-
manent way material to be
adopted on the Madras Railway,
embodied in his note dated
the 26th October 1892, was
forwarded.*

forwarded to the Agent
and Manager, Madras
Railway, for consideration.

3. The Agent now submits
the views of the Chief Engineer,
Madras Railway, from
which it will be seen that
the essential object in
designing the new type of
rail, proposed, was to have
a rail of first rate modern
section which could be
used for renewals in the
existing foot sleepers now
laid on 998 miles of main
line and siding of the
Madras Railway, and also
be suitable for use on new
lines with the best form of
sleepers procurable. Some
25 miles of rail require to be
renewed annually, about

3 miles of sleepers, so that
it is most essential to have
a rail which will fit the foot
sleepers now in use and a
70 lb double headed rail as
proposed by the Consulting
Engineer to the Government
of India for Railways, can
not be made use of for
renewals.

3. The proposal to use
on the Madras Railway
the Danham Alpha sleeper
has since been discussed
with the undersigned, and
after due consideration,
its adoption for the reasons
given above is obviously
inadvisable.

4. For these reasons, it is
requested that the original
proposals made by the Agent
may

may be approved, and
that sanction may be
accorded to the adoption
of the new type of bull-
headed rail, fish-plate,
and foot sleeper proposed
to be used on the Madras
Railway.

5. An indent amounting
to Rs 77,004 for a lakh of
fish-plates required for
the 75th double-headed
track now in the road, in
and for two lakhs of bolts
and nuts, having since
been separately sanctioned
on the strength of the approval
of the Consulting Engineer
for Railways, to the Govern-
ment of India. To this des-
cription of fish-plate,
these items have been eli-
minated

eliminated from indent
N. 683 submitted with
endorsement N. 663 dated
5th September 1892, and it
is requested that sanction
may be accorded to obtain
from home the balance
of the stores included therein.

McComb
Major
Offg. Comd. Eng. & Ry.
48

From

THE CONSULTING ENGINEER

FOR RAILWAYS,

Mudras,

No. 61

Dated

Received

4th February 1892

No. 286 R 9 10 Feb 1893.

No. 576

Under the circumstances explained, the adoption on the Madras Railway, of the new type of bull-headed 78 lb rail, fish plate, & pole sleeper, is approved, and sanction is accorded to the transmission to the Board, of Indent No. 683 as reduced to Rs 2,28,465 by the elimination of a lakh of fish plates, and two lakhs of bolts and nuts, for which a separate indent amounting to Rs 77,084 has already been sanctioned.

2. A copy of these Proceedings will be forwarded for the information of the Govt of India with reference to its letter No. 436 R, of 3rd December 1892.

Subject.

Indent for Permanentway materials required for renewals of the line during 1893-94, Madras Railway.

No. 287 R 10 Feb 1893

No. 287 R 10 Feb 1893 For O.R.

Forwarded

To

E.R.

C.R.

No 2216-7R 4/13-9-92

- 2993R - 12-12-92

No. 7/2