(1) Number of pages 26

(2) Date of repair 10/99 30

(3) Initials of the Referencer

MADRAS RECORD OFFICE.

Government of Madras.

Public works DEPARTMENT.

G.O. No. 3098-99 Press Mis.

136-38

Dated 8. 12 1871.

Not to be folded or roughly handled

No. 136. Read the following Endorsement of the Acting Consulting Engineer for Railways, dated Madras, 16th November 1871, No. 501:—

From the Agent and Manager of the Carnatic Railway Company, to the Acting Consulting Engineer for Railways, dated Madras, 15th November 1871, No. 257.

I HAVE the honour to submit, herewith, a copy of letter from the Chief Engineer, requesting to be furnished with further explanations and information with reference to the dimensions laid down in G. O., No. 2,624, for Indian narrow gauge Railway works, and to solicit as early a reply as may be convenient to the several points referred to therein, in order that the designs may be completed and submitted for approval with the least possible delay.

2. I take this opportunity to mention that the Board are especially anxious that the Government should grant permission for the indents for bridge materials to be sent home as early as circumstances will admit, without waiting for the completion of the whole of the working survey, and I am to impress upon you the importance of this course being sanctioned, the Company's Consulting Engineer in London having reported in his letter, dated 4th October last (copy enclosed for your information), that, in the present state of the market, an unusual length of time is required in the preparation of materials of all kinds.

From the Chief Engineer, to the Agent and Manager of the Carnatic Railway Company, dated Madras, 11th November 1871, No. 900.

WITH reference to the G. O., No. 2,624, which was forwarded with your endorsement of the 18th October last, I beg leave to request that you obtain for me, through the proper channel, information on some particulars, with a view to enable me to pursue the preparation of the plans of the line, structures, etc., on the surveys now nearly completed.

2. In the preamble of the letter to the Government of Madras, (No. 1,807-R., of the 25th September, forming part of the abovenamed G. O.,) and in the heading of the memorandum, the word "provisional" is applied to the dimensions there given, which would appear to imply that a certain amount of discretion would be permitted to the Engineers of Railways such as this. I will, therefore, proceed as far as may be in the preparation of the designs I propose to submit to Government in order to prevent delay, pending the receipt of definite instructions on the several points to which I am about to allude.

3. All the dimensions given in the G. O. are in metres or in decimal parts of a metre, the reduction of which to feet and inches makes small divisions of an inch. In the event of no departure from exact dimensions being permissible, I would like to inquire whether it will be necessary for me to submit my plans, estimates, and calculations for the consideration of Government, using the metre as the standard of measurement. I am quite of the opinion that decimal notation is the most convenient for calculations of all kinds; but it will be sufficiently obvious that yards and feet must be used in all dealings and intercourse between my department and Native Maistries, workmen, and Contractors, such being the units of measurements used in the country and the only ones which they understand. With petty Contractors especially, I think it important that dimensions and measurements on which they are to be paid should be clearly understood, in order to avoid dissatisfaction or any suspicion of bad faith in the settlement of accounts. For these reasons if it is required to use the metre for dimensions and calculations, for submission to Government, a duplicate set of plans, etc., will be necessary to work from.

4. *Item No.* 1.—*Minimum width of formation in bank* 11 *feet* 9·7 *inches.* I infer from this that any width over the minimum is not opposed to the instructions of Government, and, from my experience, I am of opinion that 11 feet 9·7 inches is quite insufficient, on many grounds, for the width of banks for our railway.

First, because there is not sufficient space clear of the trains for watchmen and workmen to stand. Item 27 of the former list of dimensions (communicated with G. O., No. 574,) gives 8 feet 6 inches as maximum width of extreme projection of engine or vehicle; with such a width for the train there would be but 1 foot 5·8 inches for men to stand upon, and I am inclined to think there would be great danger of serious accidents without more standing room.

Secondly.—There is but 10·8 inches of berm on the edge of the bank outside the ballast; this is so little that during rainy weather repairs would be needed continually over the whole length of line, otherwise the least washing away of the edge of the embankment would lead directly to the ballast being washed down, and possibly to the rails being made unsafe.

Thirdly.—The constant attention and extra cost entailed upon the maintenance, by leaving such a narrow margin for wearing away, will more than over-balance any saving that could be effected in first cost by building banks of the small width; the saving on this line, where the cost of earthwork is such a small proportion of the expenditure, will be very insignificant. I would recommend a width of formation in banks of 15 feet on an average, as being more suitable on grounds of both safety and economy. I think that possibly 14 feet might be found sufficient in some parts of the country where turf can be made to grow, while in others 16 feet may be necessary where the material proves to be bad, or the slopes cannot be protected. In continuing the preparation of my plans, therefore, I propose, subject to approval of the Government, to estimate for an average of 15 feet, and build the banks slightly wider or less as the nature of material may require.

Item 7 *and the note thereto.*—I have been engaged in preparing designs for bridges, but they are not of the exact dimensions given. I wish now to have it ascertained whether the submission of designs for Government approval is expected from me, or whether the note (*d*) relating to type girders, applies to this Railway as well as to those being built by the State. I think our Directors will look to me for an expression of opinion on the designs with a view to avoid undue responsibility; I would request you, therefore, to apply for copies of the drawings if type girders are to be supplied for our works.

Items 11, 12, *etc.*, refer to wooden sleepers, of which dimensions are given; it is not clear from this that the use of iron sleepers is prohibited, and I propose to recommend for our line the adoption of them in preference. The pattern approved of by our Directors is that known as "DeBergue's patent," and which I have found by trial here to be much superior to our wooden sleepers as regards the cost of ordinary maintenance, irrespective of the question of comparative endurance. From late quotations of prices received from England, it appears that these sleepers can be delivered here at nearly the same first cost as my estimate would be for the best quality of wooden sleepers. I think, therefore, that there can be little doubt as to the iron being most economical.

Item No. 8.—The use of iron sleepers will necessarily influence the quantity of ballast, and I am of opinion that a greater depth beneath the sleepers than six inches would be advisable if iron sleepers be adopted.

From CHARLES D. FOX, Esq., to M. R. SCOTT, Esq., Secretary, dated 6, Delahay Street, Westminster, London, S. W., 4th October 1871.

REFERRING to the communication from the Chief Engineer, in which he informs us that the Government Engineers require complete working surveys to be submitted for the whole of the line before authorizing any indents to be sent home for materials, I feel bound to point out, both in the interest of the Company and the Government, that the completion of the line will in a great measure

depend upon the completion of the large bridges over the rivers. It would, therefore, appear important that the indents for those works should be at once remitted, which, so soon as the crossing is fixed, could readily be done without in any way interferring with the other parts of the line.

2. In the present state of the market an unusual length of time is required for the preparation of materials of all kinds, and it might be well that the officers of the Company in India should know this to prevent any disappointment when the indents are sent home.

SUBMITTED for the orders of the Government.

The Agent of the Carnatic Railway applies, at the instance of the Consulting Engineer to the Company in England, for permission to send home indents for the materials of iron bridges, without waiting for the completion of the working surveys.

As, however, the project cannot receive sanction till the working surveys and designs of bridges have been approved, I am informing the Agent that the orders of Government are most distinctly prohibitory of any expenditure being incurred except on previously sanctioned estimate.

2. The Chief Engineer asks information regarding the table of dimensions given by the Government of India for Indian narrow gauge Railways :—

In G. O., No. 2,624, dated 14th October 1871.

1*st.*—Whether the word "provisional" allows any discretion in the preparation of designs.

2*nd.*—Whether the metre is to be used as the standard of measurement and dimensions calculated to decimals of inches.

3*rd.*—Whether it is necessary to adopt the spans of girder bridges entered in the table, and not to design bridges except for the type girders.

3. On the first point, the Chief Engineer states his opinion that the "minimum width of formations in bank," namely, 11 feet 9·7 inches, is altogether insufficient, and recommends an average width of 15 feet.

In the former list of dimensions given by the Government of India for Railways on the narrow gauge, the formation width is set down simply at 12 feet;

In G. O., No. 872, dated 23rd March 1871.

but as in the second table the *minimum* width only is entered, it would appear that the width of formation may be decided on the ground according to the nature of the country through which the line runs.

The Chief Engineer also raises the question whether wooden sleepers are necessarily to be used, as no mention is made of iron in the table. In both the lists of dimensions for narrow gauge Railways, wooden sleepers only are given, and the minimum depth of ballast under the wooden sleepers is specified, so that there is no restriction against what may be considered a suitable depth of ballast.

As to the Chief Engineer's surmises, however, that iron sleepers can be obtained at nearly the same first cost as wooden sleepers, and that they will prove the most economical, I am asking for the data on which this opinion is founded; for, in the estimates for the extension of the Great Southern of India Railway, Mr. Logan provides wooden sleepers on the score of economy, *vide* paragraph 10 of my letter, No. 439, of the 11th October 1871.

4. On the second point the Chief Engineer explains that, in altering the standard of measurement, he will be obliged to make duplicate sets of plans and estimates—the one set for the Government, the other for real use—as he could not carry out the works practically except on the measurements familiar to the people.

I can only ask for instructions on this subject. If the change is optional, I need hardly say it will not be carried out.

5. As regards the third point, the instructions of the Government of India are that the provisional standard dimensions according to the table are to be followed; and the Chief Engineer asks for copies of the drawings of the type girders, if they are necessarily to be adopted. Mr. Dibblee also states that he is proceeding with his own designs on which he was engaged before the orders for the standard dimensions were received.

(Signed) H. L. PRENDERGAST, Major, R.E.,
Acting Consulting Engineer for Railways.

No. 137.

ORDER THEREON, 8th December 1871, No. 3,098.

RAILWAY, No. 23.

ORDERED that the Government of India be addressed on the subject of these papers.

2. The data which the Chief Engineer of the Carnatic Railway has been requested to submit in support of his opinion as to the superiority of iron over wooden sleepers should, on receipt, be laid before Government.

(Here enter No. 3,099, dated 8th December 1871.)

(True Extract.)

Colonel, R.E.,
Secretary to Government.

To the Acting Consulting Engineer for Railways.

Exd. S. T. Augustin.

PUBLIC WORKS DEPARTMENT,
FORT ST. GEORGE, 8*th December* 1871.

No. 138.

No. 3,099.

To

THE SECRETARY TO THE GOVERNMENT OF INDIA,
PUBLIC WORKS DEPARTMENT.

RAILWAY, No. 24.

SIR,—Adverting to your letter of the 25th September 1871, No. 1,807-R., I am directed by the Right Honourable the Governor in Council to forward, for the orders of the Government of India, the accompanying papers in which the Chief Engineer of the Carnatic Railway Company requests specific instructions on certain points in connection with the table of provisional standard dimensions circulated with your letter above quoted for adoption in the construction of Indian Narrow Gauge Railways.

2. The Agent of the Company also requests that, looking to the delay which may be expected in the preparation of materials in the home market and to the fact that upon the arrangements made for the construction of bridges the early completion of a line of Railway must in a great measure depend, sanction may be accorded for sending home indents for bridge materials in anticipation of the submission of the working surveys. The Consulting Engineer has, however, intimated to the Agent that the orders of the Government of India prohibit expenditure otherwise than on sanctioned estimates.

3. With reference to the Chief Engineer's remarks on the superiority of iron over wooden sleepers, the Consulting Engineer has called for the data upon which this opinion is based, and the information will, on receipt, be submitted, if necessary, to the Government of India.

I have the honour to be,
Sir,
Your most obedient servant,

Colonel, R.E.,
Secretary to Government.

Exd. S. T. Augustin.

having

CARNATIC RAILWAY CO., (LIMITED.)

AGENT AND MANAGER'S OFFICE,

MADRAS, 15th November 1871.

No. 257

FROM

I. J. Fisher Esqr

AGENT AND MANAGER, CARNATIC RAILWAY CO.,
Madras.

TO

Major H. L. Prendergast. R.E.

Ag:- CONSULTING ENGINEER FOR RAILWAYS,
Madras.

SIR,

I have the honor to submit herewith a Copy of letter from the Chief Engineer requesting to be furnished with further explanations and information with reference to the dimensions laid down in G. O. No. 2624 for Indian narrow guage Railway works, and to solicit as early a reply as may be convenient to the several points referred to therein in order that the designs may be completed & submitted for approval with the least possible delay..

2. I take this opportunity to mention that the Board are especially anxious that the Govt. should grant permission for the Indents for Bridge materials to be sent home as early as circumstances will admit without waiting for the completion of the whole of the working Survey and I am to impress upon you the importance of this course being sanctioned, the Co's Consulting Engineer in London having

having reported in his letter dated 4th October last/ Copy enclosed for your information/ that in the present state of the Market an unusual length of time is required in the preparation of materials of all kinds.

I have the honor to be.
Sir.
Your most Obedt. Servt.

Jos. T. Fisher
Agent & Manager

From
The Agent and Manager
CARNATIC RAILWAY COMPANY
(Limited)
MADRAS

To
The Consulting Engineer
for Railways

DATED 5th Oct. 1871
RECD. 15th "

No. 2550

Requesting information for the Indian Government Bridge Returns may be sent to England without waiting till the whole of the Bridges is completed.

5

6 Delahay Street Westminster
London 4th October 1871.
S. W.

Carnatic Railway.

My dear Sir.

Referring to the communication from the Chief Engineer in which he informs us that the Government Engineers require complete working surveys to be submitted for the whole of the line before authorizing any Indents to be sent home for materials I feel bound to point out both in the interests of the Company and the Government that the completion of the line will in a great measure depend, upon the completion of the large bridges over the Rivers. It would therefore appear important that the indents for those works should be at once remitted, which, so soon as the crossing is fixed could readily be done without in any way interfering with the other parts of the line.

In the present state of the Market an unusual length of time is required for the preparation of materials of all kinds, and it might be well that the Officers of the Company in India should know this to prevent any disappointment when the indents are sent home.

Yours faithfully
/s/ Charles Douglas Fox.

M. R. Scott Esqre.

/A True Copy
/s/ M. R. Scott
Secy.

/A True Copy of a Copy

Jos. T. Fisher
Agent & Manager

5

No. 501

Submitted for the orders of the Government.

The Agent of the Carnatic Railway applies, at the instance of the Consulting Engineer to the Company in England, for permission to send Home indents for the materials of Iron bridges, without waiting for the completion of the working Surveys.

As however the project cannot receive sanction, till the working Surveys and designs of bridges have been approved; I am informing the Agent that the orders of Government are most distinctly prohibitory of

of any expenditure being incurred except on previously sanctioned estimate.

2 The Chief Engineer asks information regarding the Table of dimensions now given by the Government of India for Indian narrow gauge Railways

1st whether the word "provisional" allows any deviation in the preparation of designs.

2nd whether the metre is to be used as the standard of measurement and dimensions calculated to decimals of inches.

3rd whether it is necessary to adopt the spans of girder bridges entered in the Table, and not to design bridges except for the type girders.

Lr G.C. No 2624 of 14th October 1871.

3 On the 1st point, the Chief Engineer states, his opinion, that the "minimum width of formation in bank" Viz 11 feet 9.7 inches, is altogether insufficient; and recommends an average width of 15 feet.

In the former list of dimensions given by the Government of India for Railways on the narrow gauge, the formation width is set down simply at 12 feet; but as on the 2nd Table the minimum width only, is ordered, it would appear that the width of formation may be decided on the ground according to

in L.G. No 872 of 23 March 1871.

to the nature of the country through which the line runs.

The Chief Engineer also raises the question, whether wooden sleepers are necessarily be used, as no mention is made of iron in the Table. In both the lists of dimensions for narrow gauge railways, wooden sleepers only are given; and the minimum depths of ballast under the wooden sleepers is specified, so that there is no restriction against what may be considered a suitable depth of ballast.

As to the Chief Engineer's surmise however, that iron sleepers can be obtained at nearly the same first cost as wooden sleepers, and that they will prove the most economical. I am asking for later data on which the opinion is founded, for in the estimates for the extension of the Great Southern of India Railway Mr Rogers provided wooden sleepers on the score of economy, vide para 10 of my letter No 433 of the 11th October 1871.

On the second point the Chief Engineer says that in altering the standard of measurement, he will be obliged to make duplicate sets of plans and estimates, the one set for the Government the other for local use; as he could not carry out the works practicably except on the measurements

measurements familiar to the people.

I can only ask for instructions on this subject if the change is optional, I need hardly say, it will not be carried out.

5 In regard to the 3rd point, the instructions of the Government of India are, that the principal Standard dimensions according to the Table, are to be followed; and the Chief Engineers asked for copies of the drawings of the type girders, if they are necessarily to be adopted. Mr Dibblee also states that he is proceeding with his own designs, on which

which he was engaged before the orders for the Standard dimensions were received.

Madras 16th November 1851

Lieutenant, Major RE

Sg: Lieut: Engrs for RE

To

The Secretary to Govermt Public Works Department Fort Saint George

No 3098 Public Works Office
Proceedings of the Madras Govt
Read the following

From
Secy to Govt
(No. 1050 of 16th March 1871)
For Railways

Ordered that the
Guarantee of Indian
be advertised on the
subjects of which
the Statutes which
the Civil Engineers of
the Carnatic Railway
has been requested to
furnish an opinion as to the
desirability of [illegible] over
Railways

No 1871 Department
Public Works Office
Madras No 5492.
The Secretary to Govt
for Railways

Sir
I am directed by the Secretary to Govt
P W Department
to forward herewith
Dated 16th March 1871
Received 17th ditto

No 501
Enclosures
Submitting
for orders letter
No 257 dated 15th March 1871 with
enclosures from Civil Engineer
Regarding formation
of Junction
Railways

No 3098 - 8 Dec 71.

Rec 25th March for Pp 593-594
" 14 Oct — 242-243

No 136
28th June 1871 P. 28

on receipt, be laid before
Government.

To The Chief Engr
for Railways
Madras 9/12/71.

Forwarded. Sd

To
The Secretary to the
Government of India.

Sir,

Adverting to your
letter of the 25th September
1871 No 1807 P, I am directed
by the Right Honorable
the Governor in Council
to forward for the orders
of the Government of
India the accompanying
papers in which the
Chief Engineer of the
Carnatic Railway Company
requests specific instructions
on

On 5 sheets R. 28

on certain points in con-
-nection with the table
of provisional standard
dimensions circulated
with your letter above
quoted for adoption
in the construction of
Indian Narrow Guage
Railways.

The Agent of the
Company also requests
that, looking to the delay
which may be effected
in the preparation of
materials in the home
market and to the
fact that upon the
arrangements made
for the construction of
bridges, the early completion
of

of a line of Railways must in a great measure depend, sanction may be accorded for sending home indents for Bridge materials in anticipation of the submission of the Working surveys. The Consulting Engineer has however intimated to the Agent that the orders of the Government of India prohibit expenditure otherwise than on sanctioned Estimates.

With reference to the Chief Engineer's remarks on the superiority of iron over wooden sleepers the Consulting Engineer has

has called for the data upon which this opinion is based, and the information will, on receipt, be submitted, if necessary, to the Government of India.

No. 24

Recd 9/12/71 with 7 Encls & Gov. 3098 of 1871.

C/o. 5492.

Govt of {1871} Madras.

PUBLIC WORKS.

20 Chief Secretary Govt. Madras
to Chief Secretary Govt.
of India

Date[illegible]

Rec'd.

G. O. 8th Decr. No. 3098 dated 19.

Nos. 136-137 & 138

Regretting inability to
give certain Counts in con-
nection with the previous
Standard Specimens for-
warded in the con-
tinuation of Indian Corn
Gauge Rpts.

Civil Corn gauge Pattern.

Differing orders on Corn-
cobs leading the
Provincial Standard Di-
mensions to be followed in
the construction of Indian
Corn gauge Rpts.