

(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.	2225	(Ry)	Press
B.P. No.			Mis-
Dated	23-8-		1876.

Not to be folded or roughly handled

No 528 Read the following letter from Lieutenant-Colonel J H. M SHAW-STEWART, R E, Consulting Engineer for Railways, to Major-General G W WALKER, R E, Secretary to Government, Public Works Department, dated Madras, 15th August 1876, No 409 —

I HAVE the honor to acknowledge receipt of the Proceedings of Government, under date the 4th and 5th instant, Nos 2,007 and 2,014 In accordance with the instructions therein conveyed I have placed myself in communication with the Superintendent of the Madras Harbour Works and with the officials of the Madras and South Indian Railways The points brought forward in the Proceedings of Government under acknowledgment were fully discussed at meetings held upon the 11th and 14th instant, and I have now the honor to submit the following report.

2 The quantity of stone required daily for the Harbour Works is understood to be 1,500 tons for the rubble banks (half of this being required for the north pier and half for the south pier) and 500 tons for the concrete blocks The intention of the Harbour authorities is to obtain the material for the rubble banks from Ambatoor and that for the concrete blocks from Chinnamapett. There seems to be no doubt that the supply of 500 tons daily from Chinnamapett could be regularly maintained

3 As regards the supply of laterite from Ambatoor, the question seems to divide itself into three parts —

(1) The quarrying of 1,500 tons daily and loading that quantity on to the Madras Railway trucks

(2) The conveyance of the above quantity from Ambatoor to Madras by rail

(3) The unloading of the trucks at the Harbour Works

4 The first point is the one with regard to which there is most doubt, but the opinion generally expressed by those present at the meeting was that, with improved arrangements for bringing the laterite from the quarries to the loading platforms, the daily quantity of 1,500 tons might be maintained It was agreed that a catch-siding should be constructed to keep run-away trucks off the Madras Railway Company's line, also that an additional loading platform should be constructed, the accommodation being provided by making a loop-line near the present platform, which would also enable the locomotives to run round their trains and get away sooner than is at present possible

5 With regard to the second point, there is no doubt as to the power of the Madras Railway Company to convey 1,500 tons daily from Ambatoor to Madras With this object the supply of wagons must be increased At present 100 wagons are available for the work, and of this number twenty are generally under repair The Traffic Manager is of opinion that 250 wagons are required in addition to those now available Each wagon carries from 8 to 9 tons, and forty wagons form a train Five trains would, therefore, be required daily to bring in the stipulated quantity of 1,500 tons Allowing 20 per cent. of the stock to be under repair, it appears to me that the number named by the Traffic Manager is somewhat in excess of requirements It is, however, certain that additional wagons are necessary, and, in anticipation of the approval of Government, I have authorized the provision of 100 to be undertaken immediately With regard to the engine-power, the Locomotive Superintendent entertained no doubt as to his being able to run five trains daily from Ambatoor to Madras.

6 The question of running the laterite in tipping wagons was brought forward by the Superintendent of the Harbour Works, who urged that much time and expense would be saved if this course could be adopted. The Railway authorities however objected, and in my opinion rightly, to allow any of the tipping wagons of which the designs were produced to run upon their main line. It was arranged, in order to do away if possible with the objections to the present arrangements, that wagons opening at the end should be tried. The Locomotive Superintendent undertook to prepare some wagons for trial as soon as possible. It was thought that by this means the stone might be delivered out of the Madras Railway Company's wagons at the head of the pier without having to be transferred into the small tipping wagons. It was also agreed that, if Mr Thorowgood could design a tipping wagon free from objection on the score of safety to the traffic on the main line, a trial should be given to it.

7 The question of the mode of access for the material trains to the north and south piers was brought forward, but the Superintendent of the Harbour Works was not of opinion that any change was necessary and that there would be no objections to the material trains for both piers coming through the concrete yard as at present.

8 With regard to the third point, namely, the unloading at the Harbour Works, Mr Thorowgood did not seem to have any doubt as to his being able to arrange for the regular and speedy unloading of 1,500 tons daily.

9 Although from the above remarks it seems probable that the daily supply required for the Harbour Works could be maintained upon the Madras Railway, I am of opinion that it would be well to call in the assistance of the South Indian Railway and to make use of that line also in order to avoid difficulties which might possibly arise from being dependent upon one line alone. I understand that this is also Mr Thorowgood's opinion. I have inspected, in company with that gentleman, the various available quarries on the South Indian Railway. These will doubtless be fully reported on by Mr Thorowgood, and it is sufficient here to note that the points from which supplies of suitable material appeared to be most readily procurable were the following —

(1) The Palaveram Hills to the east of the Railway close to the line, 12 miles from Madras

(2) A small low range of rocky hills to the west of the Railway close to the line, about 15 miles from Madras

(3) The Vundaloor Hill to the east of the Railway close to the line, about 19 miles from Madras

(4) A range of low hills to the east of the Railway close to the line, about 24 miles from Madras

10 From a cursory inspection of these sites it did not appear probable that any of them would be able to compete with Ambatoor laterite. The trouble in obtaining the material would without doubt be greater, while the distance by rail would also be longer. But it seemed probable that a supply of material suitable for the concrete blocks would be obtained from some of the above-named sites more cheaply than from Chinnampett, the distance being greatly in favor of the former. Upon this point Mr. Thorowgood will doubtless report.

11 The distances from Madras of the various quarry sites, as given above in paragraph 9, are measured from what was originally intended to be the terminus of the Railway near the Penitentiary. For the present the line has been stopped at what was intended to be the goods terminus, about $\frac{3}{4}$ mile short of the Penitentiary site. The Harbour south pier is distant about $1\frac{3}{4}$ miles from the Penitentiary, so that, in order to bring material by rail to the pier, a gap of $2\frac{1}{2}$ miles would have to be bridged. If the material is also to be conveyed to the concrete yard, communication must be maintained for a further distance of about 1,000 yards. Including the necessary sidings there would probably be not less than 4 miles of rails to be laid.

12 It has been suggested that the existing line of tramway might be utilized in bringing stone from the line of the South Indian Railway to the Harbour Works. The tramway line is about $\frac{1}{2}$ mile distant from the present terminus of the South Indian Railway, so that, if it could be made use of, the additional line to be laid down, inclusive of sidings, would probably not exceed one mile.

13 There are, however, what appear to be insuperable objections to the use of the tramway for the purpose. The principal objections may be briefly stated as follows —

(1) The groove in the tramway rails is insufficient in breadth and depth to admit the tire flange of the South Indian rolling stock. In the engine wheels the flange is $1\frac{1}{8}$ inch in depth, and in the other rolling stock $\frac{7}{8}$ inch, whereas the groove in the tramway rails is only $\frac{5}{8}$ inch in depth.

(2) The permanent way of the tramway is not calculated to sustain the South Indian wheel weight of three tons.

(3) The curves in the tramway are far too sharp to be worked by the South Indian rolling stock. Some of these curves have a radius of 140 feet, and the tramway cars, with a wheel base of 6 feet, are not unfrequently derailed when passing over them.

(4) The Hospital Bridge is not suited for the passage of heavy trains drawn by locomotives, and the steep gradients of approach upon either side would add greatly to the cost of conveying material to the Harbour Works.

14 These reasons, to which others might be added, seem to shut out all possibility of utilising the tramway for the conveyance of stone in the South Indian Railway Company's trains. The use of animal power, instead of locomotives, has been suggested, but it does not seem that this would remove the difficulties. Every stone wagon would require at least two horses, so that sixty horses would be required for a train of thirty wagons. The cost of maintaining such an establishment of horses, the slow rate at which stone could be thus conveyed between the Railway terminus and the Harbour Works, and the obstruction which must be caused to the ordinary traffic on the public roads seem to show that steam-power can alone be used.

15 An extension of the South Indian Railway to the beach quite independent of the tramway could be easily made, and does not appear liable to any serious objection. I have given careful consideration to the question in communication with the Acting Chief Engineer of the South Indian Railway, and the course suggested for the extension is shown on the accompanying tracing.

*No 1

From the present Egmore terminus, the line would run along the route originally proposed, as far as the Penitentiary, it would then be carried across Cochrane's canal and along the bank of the

*Proceedings of the Madras Government, Public Works Department,
23rd August 1876 No 2,225*

Coom to the south of the General Hospital, and, curving round to the north-west, would follow the route indicated on the tracing by a dotted red line. The union between the Railway terminus and the beach would thus be effected without any interference with private property, without disfiguring the public grounds through which it would pass, and with only such inconvenience to the public as would be caused by closing the gates across the thoroughfares for a few hours during each day.

16 The extension could be constructed at a minimum of cost. No land would have to be bought, no earthwork would be required, the rails could be laid on the existing surface of the ground and ballasted with sand from the beach. The only expense beyond the laying of the rails would be the construction of a bridge across Cochrane's Canal and the erection of gates at the level-crossings.

17 It would also be necessary to provide rolling stock specially for the traffic, and, if the construction of the extension is determined on, it would be advisable to accord sanction as soon as possible for the construction of the necessary number of wagons, which must be decided in communication with the Superintendent of the Harbour Works. The permanent way required for the extension and the materials for the bridge over Cochrane's Canal would possibly have to be obtained from England.

No. 529

ORDER THERLON, 23rd August 1876, No 2,225

RAILWAY, No 59

THE Governor in Council, after hearing Mr Thorowgood's views on the Harbour Works, is of opinion that the connection by a temporary roadway, on the line indicated, of the South Indian Railway and the South Surf Bank and Harbour Works will be of much use in hastening the completion of the Harbour, and that it is desirable it should be effected at once, a temporary bridge being made over the Cochrane's Canal near its junction with the Coom.

2 Inquiries will be at once made of the South Indian, Madras, and of other Companies as to whether sufficient rails and fastenings can be obtained in India and the prices to effect this object, for which it is not necessary that the material should be new as the speed will be slow.

3 Tenders should be invited for sleepers of such timber as can be obtained at the least cost and which will be likely to endure four years.

(True Extract)

(Signed) G. W. WALKER, Major-General, R E,
Secretary to Government

To the Consulting Engineer for Railways

- „ Superintendent of the Madras Harbour Works
- „ Financial Department
- „ Marine Department
- „ District Engineer, Presidency

Exd J W Fischer
Spare Copies

RAILWAY DEPARTMENT.

CONSULTING ENGINEER'S OFFICE,

Madras, 15th August 1876

No. 409

From

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

Consulting Engineer for Railways,

To

MAJOR-GENERAL G. W. WALKER, R E,

Secretary to Government,

Public Works Department,

Fort Saint George

SIR,

I have the honour to acknowledge receipt of the Proceedings of Government under date the 4th and 5th instant, Nos 2007 and 2014. In accordance with the instructions thereon conveyed, I have placed myself in communication with the Superintendent Madras Harbour Works, and with the officials of the Madras and

Public Works
No 29

India Office, London
27th July 1876

My Lord Duke,

In reply to
your Grace's letter
of the 13th ultimo,
No 33, I have to
inform you that,
as therein requested,
arrangements have
been made for the
payment in this
country, of ten pounds.
(£10)

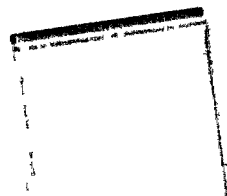
His Excellency,
The Right Honorable,
The Governor in Council
Fort St George.

1500 tons daily, and loading
that quantity on to the Madras
Railway trucks.

(2). The conveyance of the
above quantity from
Machaloor to Madras by
rail.

(3). The unloading of the trucks
at the Harbour works.

4. The first point
is the one with regard to which
there is most doubt; but the
opinion generally expressed
by those present at the meeting
was that, with improved arrange-
ments for bringing the laterite



from the quarries to the loading
platforms, the daily quantity of
1500 tons might be maintained.

It was agreed that a catch
siding should be constructed,
to keep run-away trucks off
the Madras Railway Company's
line; also that an additional
loading platform should be
constructed, the accommodation
being provided by making a
loop line near the present
platform, which would also
enable the locomotives to run
round their trains, and get
away sooner than is at present

possible.

5. With regard to the second point, there is no doubt as to the power of the Madras Railway Company to convey 1500 tons daily from Ambaloor to Madras.

With this object, the supply of wagons must be increased. At present 100 wagons are available for the work, and of this number 20 are generally under repair.

The Traffic Manager is of opinion that 250 wagons are required in addition to ~~those~~ ^{now}

now available. Each wagon carries from 8 to 9 tons; and 40 wagons form a train.

25

Five trains would therefore be required daily, to bring in the stipulated quantity of 1500 tons. Allowing 20 per cent of the

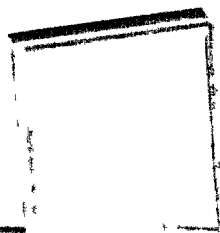
stock to be under repair, it appears to me that the number named by the Traffic Manager is somewhat in excess of requirements. It is however

certain that additional wagons are necessary; and, in anticipation of the approval of Government, I have authorized

the provision of 100 to be
undertaken immediately.

With regard to the engine house,
the Locomotive Superintendent
entertained no doubt as to his
being able to run five trains
daily from Auckland to Madras.
6.

The question of
running the laterite in
tipping wagons was brought
forward by the Superintendent
of the Harbour Works; who
urged that much time and
expense would be saved if
this course could be adopted.



5
The Railway Authorities
however objected, and in my
opinion rightly, to allow any
of the tipping wagons, of which
the designs were produced to
run upon their main line.

It was arranged, in order
to do away if possible with the
objections to the present arrange-
ments, that wagons opening
at the ends should be tried.

The Locomotive Superintendent
undertook to prepare some
wagons for trial as soon as
possible. It was thought

that, by this means, the stone
might be delivered out of
the Madras Railway Company's
wagons at the head of the
pier, without having to be
transferred into the small
tipping wagons. It was
also agreed that, if Mr.
Shorrocks could design a tipping
wagon free from objection on
the score of safety to the traffic
on the main line, a trial should
be given to it.

7. The question of
the mode of access for the material
trains

6
trains to the North and South
Piers was brought forward;
but the Superintendent of the
Harbour Works was not of
opinion that any change was
necessary, and that there would
be no objections to the material
trains for both Piers coming
through the Concrete Yard,
as at present.

8. With regard to
the third point, namely, the
unloading at the Harbour
Works, Mr. Shorrocks

did not seem to have any doubt
as to his being able to arrange
for the regular and speedy
unloading of 1500 tons daily.

9. Although from
the above remarks it seems
probable that the daily supply
required for the Harbour
Works could be maintained
upon the Madras Railway,
I am of opinion that it would
be well to call in the assistance
of the South Indian Railway,
and to make use of that line

also, in order to avoid diffi-
culties which might possibly
arise from being dependent
upon one line alone. I
understand that there is also
Mr. Thoroughgood's opinion.

I have inspected, in company
with that gentleman, the
various available quarries on
the South Indian Railway.

There will doubtless be fully
reported on by Mr. Thoroughgood,
and it is sufficient here to
note that the points from
which supplies of suitable

material appeared to be most readily procurable, were the following:-

(1) The Palavaram hills, to the East of the railway, close to the line; 12 miles from Madras.

(2) A small low range of rocky hills to the West of the railway, close to the line, about 15 miles from Madras.

(3) The Vundaloor hills, to the east of the railway, close to the line, about

19 miles from Madras.

(4) A range of low hills, to the east of the railway, close to the line, about

24 miles from Madras.

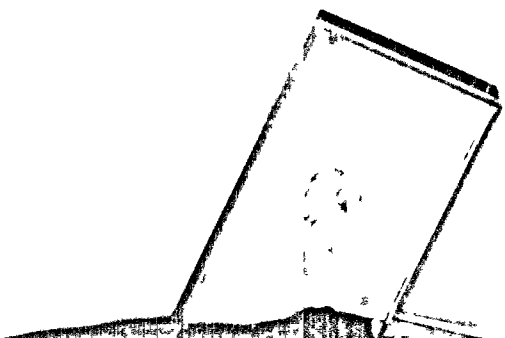
10. From a cursory inspection of these sites, it did not appear probable that any of them would be able to compete with Aribatam laterite. The trouble in obtaining the material would without doubt be greater; while the distance by rail would also be longer. But

it seemed probable that a
supply of material suitable
for the concrete blocks would
be obtained from some of the
above-named sites more cheaply
than from Chinnamapatti;
the distance being greatly in
favour of the former.

Upon this point Mr. Sharpe =
= good well? doubtless report.
11.

The distances from
Madras of the various quarry
sites, as given above in para-
= graph 9, are measured from
what was originally intended

to be the terminus of the railway,
near the Penitentiary. For
the present, the line has been
stopped at what was intended
to be the Goods terminus,
about $\frac{3}{4}$ mile short of the
Penitentiary site. The
Harbour South Pier is distant
about $1\frac{3}{4}$ miles from the
Penitentiary; so that, in order
to bring material by rail
to the Pier, a gap of $2\frac{1}{2}$ miles
would have to be bridged.
If the material is also to be
conveyed to the Concrete Yard



communication must be maintained for a further distance of about 1000 yards. Including the necessary sidings, there would probably be not less than 4 miles of rails to be laid.

12. It has been suggested that the existing line of tramway might be utilised in bringing stone from the line of the South Indian Railway to the Harbour Works. The tramway line is about $\frac{1}{2}$ mile distant from

10
from the present terminus of the South Indian Railway; so that, if it could be made use of, the additional line to be laid down, inclusive of sidings, would probably not exceed 1 mile.

13. There are however what appear to be insuperable objections to the use of the tramway for the purpose. The principal objections may be briefly stated as follows:-

(1) The groove in the tramway rails is insufficient

in breadth and depth
to admit the tire flange
of the South Indian
rolling stock. In the
engine wheels, the flange
is $1\frac{1}{8}$ inch in depth,
and in the other rolling
stock $\frac{7}{8}$ inch; whereas
the groove in the tramway
rails is only $\frac{5}{8}$ inch in
depth.

(2) The permanent
way of the tramway is
not calculated to sustain

11
The South Indian wheel
weight of 3 tons.
(3) The curves in the
tramway are far too
sharp to be worked
by the South Indian
rolling stock. Some
of these curves have
a radius of 140 feet.
and the tramway cars
with a wheel base of
6 feet, are not un-
frequently derailed
when passing over them.
(4) The Hospital

Bridge is not suited
for the passage of heavy
trains drawn by locomotives;
and the steep gradients
of approach upon either
side would add greatly
to the cost of conveying
material to the Harbour
Works.

14. These reasons,
to which others might be
added, seem to shut out
all possibility of utilizing
the tramway for the conveyance
of stone in the South Indian
Railway

15. 16
Ref. Company's trains. The use
of animal power, instead
of locomotives, has been suggested;
but it does not seem that
this would remove the diffi-
culties. Every stone wagon
would require at least two
horses; so that sixty horses
would be required for a train
of 30 wagons. The cost of
maintaining such an estab-
lishment of horses, the
slow rate at which stone
could be thus conveyed between
the Railway terminus and the
Harbour Works, and the

obstruction which must be
caused to the ordinary traffic
on the public roads, - seem
to show that steam power can
alone be used.

15. An extension of
the South Indian Railway to
the beach, quite independent
of the tramway, could be easily
made, and does not appear
liable to any serious objection.
I have given careful consideration
to the question, in communication
with the Acting Chief Engineer
of the South Indian Railway,

No 1

13
and the course suggested for
the extension is shown on the
accompanying tracing.
From the present Egmore
terminus, the line would run
along the route originally
proposed, as far as the Pen-
tenting; it would then
be carried across Cochrane's
Canal, and along the bank
of the Cooum to the South of
the General Hospital; and,
curving round to the North-
West, would follow the route
indicated on the tracing by a

dotted red line. The union
between the Railway terminus
and the Beach would thus
be effected without any
interference with private
property, without disfiguring
the public grounds through
which it would pass, and
with only such inconvenience
to the public as would be caused
by closing the gates across
the thoroughfares for a few
hours during each day.

16. The extension
could be constructed at a
minimum

14
minimum of cost. No land
would have to be bought;
no earthwork would be required,
the rails could be laid on the
existing surface of the ground,
and ballasted with sand
from the beach. The only
expenses beyond the laying
of the rails would be the
construction of a bridge
across Cochran's Canal,
and the erection of gates
at the level crossings.

17. It would also
be necessary to provide

rolling-stock especially for the
traffic; and if the construction
of the extension is determined
on, it would be advisable
to accord sanction as soon
as possible for the construction
of the necessary number of
wagons, which must be
decided in communication
with the Superintendent of
the Harbours Works.

The permanent way required
for the extension, and the
materials for the bridge

15
but Cochrane's Canal would
possibly
have to be obtained from
England.

I have the honour to be
Sir,

Your most obt servant

Wm. M. M. M.
Lt Col. R. E.

(ours: Eng^d for Railways)

Ed. 15th Aug 1876 No 1492
4 Aug 76. 2004
5 Aug — 2014.

P.W.D.
254376
No 120

PUBLIC WORKS DEPARTMENT.

Letter from the Consulting Engineer for
Railways No 409 of 15th August 1876

FOR ORDERS

Chas. Walter Major Genl R.E.
Secretary to Govt P.W.D.

The Govt (after hearing Mr
Thompson's views on the Har-
den is of opinion that the
connection by a temporary road
on the line indicated of the
S. Indian N.W. the South-
West & Har-mer works will be
of much use in hastening
the completion of the Har-mer
that it is desirable it should
be effected at once - a

22/8.

RAILWAY DEPARTMENT.

From

The Consulting Engineer

for Railways,

To

The Secretary to Government,

P. W. Department,
Fort Saint George

Dated

15th August 1876

Received

No

409

Secretary to Govt

for Railways

Chas. Walter

Major Genl R.E.

Secretary to Govt

Recd for 2525/8/76
Cir. 18. 7776 - 23.8.76
D.L. Sent 26 Aug

No 520

No 2225
 PROCEEDINGS of the MADRAS GOVERNMENT.
 UNDER date the 23rd Aug 1906
 READ the following

From the Comptroller for
 Railways 3 H.E. No 409 of 15 Aug 1906

The Governor in Council after hearing Mr. Thoroughgood's views on the Harbour Works is of opinion that the connection by a temporary roadway, on the line indicated, of the South Indian Railway and the South Pier bank and harbour works, will be of much use in hastening the completion of the Harbour, and that it is desirable it should be effected at once; a

Temporary Bridge being made over the Coom Vannu leaving to Porharani Canal -

That Enquiries ^{will} be at once made of the S.I. Madras & of other Companies as to whether sufficient nails & fastenings can be obtained in India & the prices - to effect this object in which it is ~~understanding~~ ^{understanding} that the material should be new - as the speed will be slow -
~~slender~~ Tenders should be invited for sleepers of such timber as can be obtained at the least cost & which will be likely to endure ~~say~~ 4² years
 B.C. 19/8

be likely to endure
four years

Temporary bridge being
made over the Cochrane's
Canal near its junction
with the loom.

Inquiries will be
at once made of the
South Indian, Madras
and of other companies
as to whether sufficient
rails and fastenings
can be obtained in
India and the prices,
to effect this object for
which it is not neces-
sary that the material
should be new, as the
speed will be slow.

Tenders should be
invited for sleepers of
such timber as can be
obtained at the least
cost and which will

64

C. A. for Rep 1.21
Supt. to W. H. W. 3
T. A. be 12
Manning Sep 17
Presidency 17

Dec 1/9/0

6/30



Subj. No. 116701 J. J. J. J.

PUBLIC WORKS.

The Com. Eng. J. J. J. J.
Urgent

To: 1

To: 1

To: 1

To: 1

G. O. 20th Sept 1900, No. 2225

No. 528 - 524

Site for the Madras
Harbour Works

Resolving order as letter
from the Com. Eng. J. J. J. J.
submitting a report on
the question of carrying

Subj. No. 116701
Urgent