

(1) Number of pages 46
(2) Date of repair 12.6.86
(3) Initials of the Referencer lamb ✓

TAMIL NADU ARCHIVES

GOVERNMENT OF TAMIL NADU

PUBLIC WORKS

DEPARTMENT

G.O. No.	1.W.	Press.
B.P. No.		Misc.
Dated	2.1.1878	197-

Not to be folded or roughly handled

GOVERNMENT OF MADRAS.
PUBLIC WORKS DEPARTMENT.

2nd January 1878, No. 1 W.

Buildings and Roads
Civil Works.

Read the following papers:—

No. 1.

MEMORANDUM.

No. 1,944.

The Superintending Engineer, Chingleput, is requested to report whether the Cortilliar bridge is now completed with the exception of the roadway, also whether the buckled-plates have been tarred or painted by the Contractor, Mr. Maylor.

2. According to the specification all the iron-work is to have two coats of paint, but it does not appear that the Contractor is bound to do anything more towards preparing the plates for the reception of gravel.

3. The Chief Engineer is of opinion that merely tarring or painting the buckled-plates will not fit them for receiving the layer of gravel of which the road is to consist, but that it will be necessary to place a mixture of asphalt and sand, or asphalt, sand and pebbles, between the plates and the gravel. It is to be regretted that this was not fully considered while the bridge was in progress so that there might be no delay in forming the roadway and opening the bridge for traffic.

4. The matter having been referred to the Chief Engineer, he requests the Superintending Engineer, Chingleput, will send him a sketch with dimensions showing the form of the buckled-plates.

14th July 1877.
To the Superintending Engineer, Chingleput.

(Signed)

E. A. FOORD, Colonel, R.E.,
Chief Engineer, P.W.D.

No. 1-A.

MEMORANDUM.

No. 1,986.

G.O., No. 16 W, dated 6th June 1877, Public Works Department.

The Chief Engineer requests the Superintending Engineer, of Chingleput will be so good as to report what action he has taken in reference to the Proceedings of Government in the Financial Department, communicated with the order above quoted.

18th July 1877.

(Signed)

E. A. FOORD, Colonel, R.E.,
Chief Engineer, P.W.D.

To the Superintending Engineer, Chingleput.

No. 1-B.

From Colonel F. J. MOBERLY, R.E., Superintending Engineer, Chingleput, to the Chief Engineer, Public Works Department, dated St. Thomas Mount, 20th July 1877, No. 1,491.

In reply to your No. 1,986, of 18th instant, I have the honor to report that I have arranged with the General Superintendent, of Works Workshops and Stores, that he should send a competent person to examine the bolts and rivets of the

Cortilliar bridge as soon as the iron-work is completely laid, of which I expect to hear shortly from Mr. Maylor, when the whole work will be inspected and compared with plan and specification.

2. The spaces between centres of ordinary piers is 57' 3", the girders are 57' $\frac{1}{2}$ " long and with rivet heads 57' $\frac{1}{4}$ ", leaving $1\frac{1}{4}$ " inch for expansion; theoretically $\frac{3}{4}$ ths of an inch for a difference of temperature of 90° is enough, so that there appears ample room. The bridge has been carefully watched through the past hot weather when the heat of the sun was greatest, and I am informed the rivet heads have never touched; the centre of each girder is not very exactly in the centre of the span and consequently the spaces between rivet heads is not equal.

MEMORANDUM.

No. 1-C.

No. 2,101.

THE Chief Engineer has to acknowledge the receipt of a buckled-plate forwarded by Mr. Wiffen, the Assistant Engineer of the Sirulur Range, but he has not received from the Superintending Engineer, Chingleput, any reply to his memorandum of the 14th July, No. 1,944.

(Signed) E. A. FOORD, Colonel, R.E.,
Chief Engineer, P.W.D.

31st July 1877.
To the Superintending Engineer, Chingleput.

No. 1-D. From Colonel F. J. MOBERLY, R.E., Superintending Engineer, Chingleput, to the Chief Engineer, Public Works Department, dated St. Thomas' Mount, 4th August 1877, No. 1,705.

IN reply to your No. 2,101, of 31st ultimo, I have the honor to observe that the Range Officer's report that he had sent you a buckled-plate for inspection reached me only on the 30th ultimo.

2. The last girder is not yet raised to position so far as I am informed, as there was a difficulty in getting bricks to complete the abutment; no part of it has been painted, as all rivets and bolts are to be examined in detail by an expert from the Public Works Workshops.

3. In my own justification I beg to observe that the contract for the bridge was prepared by the Local Fund Board, and signed at an extraordinary meeting.

No. 1-E. From the same Officer, dated St. Thomas' Mount, 31st August 1877, No. 2,123.

I SHALL be greatly obliged by your informing me whether in G.O., No. 244 W, of 30th August, it is intended that I should advise the Local Fund Board to lay asphalt on the buckled-plates of the Cortilliar bridge, or not; in your memorandum No. 2,102, of 31st July, you have stated that it is necessary.

2. There is, I think, some mistake in copying the Note by His Grace the Governor, but I read it as generally supporting my idea that asphalt would not be used in England; the last sentence pointing to some exceptional case, but I cannot follow the sentence as sent to me.

MEMORANDUM.

No. 1-F.

No. 2,609.

LETTER from the Superintendent Engineer, Chingleput, No. 2,123, dated 31st August 1877.

The Chief Engineer recommended that asphalt concrete should be placed over the iron-work of the Cortilliar bridge, and that the gravel road-way should be laid on the asphalt concrete.

2. The Superintending Engineer will now be guided by the Note of His Grace the Governor, which suggests the use of ordinary concrete over the buckled-plates. The words "arrived at," in the Superintending Engineer's copy of the Note, should apparently be "aimed at." The concrete should be mixed and applied carefully, and it will be advisable to make a trial of the concrete on a portion of the bridge before laying it over the whole bridge.

7th September 1877. (Signed) E. A. FOORD, Colonel, R.E.,
Chief Engineer, P.W.D.

To the Superintending Engineer, Chingleput.

No. 1-G. From Colonel P. O'CONNELL, R.E., Superintending Engineer, Chingleput, to the Chief Engineer, Public Works Department, dated St. Thomas' Mount, 15th December 1877, No. 3,848.

LEARNING from the correspondence on the subject that the iron-work of the Cortilliar bridge was finished and had been examined both by Colonel Moberly and by an experienced foreman from the Madras Workshops, but had not been tested by weights being placed on it in order to prove that its strength was equal to that intended to be given to it when designed, I requested Lieutenant Wiffen, the Officer in charge of No. 1 Range, to ascertain from Mr. Maylor the Contractor if he were willing to test the bridge. Mr. Maylor, in a letter written from Beypoor to Mr. Wiffen, while remarking that the contract bond did not stipulate that he was to test the bridge, and that none of the bridges erected by him in this country had been tested in the manner proposed, expressed his readiness to test the bridge rather than give occasion for dissatisfaction. He also named the day on which he would leave Beypoor, but suggested that the material for the roadway should be filled in first, as in its existing condition the surface of the bridge was too uneven to admit of loaded carts being moved over it.

2. This was the general tenor of Mr. Maylor's note to Mr. Wiffen, which was returned to Mr. Wiffen at his request as it was not quite entirely official.

3. I requested Mr. Wiffen to telegraph to Mr. Maylor to postpone his visit to the bridge until the roadway had been laid, and visited the bridge in company with Mr. Wiffen on the 4th December. I found that, as described in Mr. Wiffen's letter, No. 1,343, dated 8th December, there had been laid over one span of the bridge about $3\frac{1}{8}$ inches of concrete and $4\frac{1}{2}$ inches in depth of gravel. Making a total maximum depth of $7\frac{3}{8}$ of material, but as the centre of each buckle-plate rises $2\frac{1}{4}$ inches above its edges, the average thickness of the material is probably not more than $6\frac{3}{4}$ inches, whereas the specification drawn up by Mr. Maylor himself merely asserts "that the superstructure is calculated to safely carry a distributed load of 112 lbs. to the superficial foot in addition to its own weight and a mean thickness of 4 inches of asphalt and road metal."

4. As a protection to the iron portion of the roadway of the bridge the concrete used is a failure, as water finds its way through it and drips slowly between the joints of the iron into the river below. This concrete, though as well made as the materials used, viz. lime, soorkee, sand and clean laterite, admit, is doubtless inferior to one containing Portland cement. I am by no means sure that even that would not be inferior to a roadway of asphalt and gravel, the elasticity of the former material rendering it better fitted than concrete to fill in a space bounded by iron-plates, and subjected to a constant change of form as the bridge bends and recovers itself on the passage of loaded carts, cattle or elephants. I should prefer having the bridge laid with the 4 inches of material mentioned in the specification, and then having it tested either by Mr. Maylor or at the expense of Government in the presence of any of the Engineers of the Madras or Great Southern of India Railways whose attention has lately been given to testing iron bridges.

5. I shall be glad to receive the orders of Government on this question as early as possible.

From Lieutenant G. E. WIFFEN, Assistant Engineer, Simlur Division, Chingleput District, to the Superintending Engineer, Chingleput, dated Simlur, 8th December 1877, No. 1,343.

In obedience to your orders in your No. 2,733, dated 11th October 1877, and with reference to Chief Engineer's Memorandum, No. 2,609, dated 7th September 1877, which accompanied your letter above quoted, I have the honor to inform you that I have put down the concrete as therein required to a depth of $3\frac{1}{8}$ inches as ordered, the camber of the buckle-plates is $2\frac{1}{8}$ inches and allowing 1 inch of concrete over the buckle-plates gives the $3\frac{1}{8}$ inches. Over this I have placed $4\frac{1}{2}$ inches of metal and gravel, making a total depth of $7\frac{3}{8}$ inches. The specification states "that the superstructure is calculated to safely carry a distributed load of 112 lbs. to the superficial foot in addition to its own weight and a mean thickness of 4 inches of *asphalte and road metal*," therefore I beg to bring to your notice that if we put a mean thickness of $7\frac{3}{8}$ inches, we are not carrying out the rules of the specification, as we are laying $3\frac{3}{8}$ inches more on the bridge than contracted for. I have also to bring to your notice that the concrete was put down now nearly one month since, and covered with road metal. On testing the same on the 4th instant I found that the water was percolating very freely through both metal and concrete, and dripping from the under portion of the buckle-plates, showing clearly that although the concrete was of the best to be made, the late rains had so percolated into the mass, as to show plainly that it is not impervious to the water which will always stand on the bridge after rain; on testing with three bandies, each loaded with 250 bricks and drawn by eight men to each bandy, from 8-30 A.M. until 3 P.M., I found that the concrete had cracked considerably from the bending of the plates on the load gaining over, and the return of the plates to their proper form after the load was removed. The deflection in the centre on the above load being put in the centre was $\frac{3}{8}$ ths of an inch. Immediately the load was removed, the bay recovered itself to its former position. The load would be about 9,866 pounds in the whole, that is 44 cubic feet of bricks 124 lbs. per cubic foot = 5,456, weight of three bandies at 350 lbs. each = 1,050, 24 men average weight at 140 lbs. each = 3,360, making the total as above.

I beg to request you will inform me as soon as possible if I am to go on with the concrete work and road metal, or am I to put down asphalte and road metal as per specification.

No. 2. ORDER THREON, 2nd January 1878, No. 1 W.

THE Government are of opinion that the asphalte concrete recommended in the 3rd paragraph of the Chief Engineer's Memorandum of the 14th July 1877, No. 1,944, should now be employed, the gravel roadway being laid upon it; and that the bridge should be tested with its full intended safe working load of 112 lbs. per foot.

2. The Superintending Engineer will put himself into communication with the Consulting Engineer for Railways, and request him to arrange for a Railway Engineer being present at the testing of the bridge, the date of which Colonel O'Connell will fix after reference to Mr. Maylor and the President of the Local Fund Board.

(True Extract.)

Colonel, R.E.,
Secretary to Government, P.W.D.

To the Superintending Engineer, Chingleput.
„ Consulting Engineer for Railways.
„ Financial Department.

Exd. S. T. Austin.

Spare Copies

BUILDINGS AND ROADS
CIVIL WORKS.

Govt. of (1878) Honduras.
PUBLIC WORKS.

THE SUPERINTENDING ENGINEER,
CHINOLEUP,
Honduras.

Dated January 2nd.

To

At

Per

G. G. 2nd January 1878, No. 1 W.

JANUARY.

No. 1 W.

Chief Eng. Charge District.
Persons liable for looking this

PUBLIC WORKS DEPARTMENT.

Letter from the Superint., Chinoleup, No 3846
dated 15th Decr. 1877

FOR ORDERS.

Yes
I am in receipt of
the accompanying
letter with the
bridge with the
intended safe working
11 1/2 feet
11 1/2 feet

In submitting
the accompanying paper
for the orders of His Grace
the Governor the Chief
Engineer begs to note that
he adheres to his former
recommendation that
asphalt concrete of
the requisite thickness
should be used.

20th Decr 77

E A Smith C.E.
Chief Engr Secy to Govt and

W. A. Smith

P
N^o 1944 of 14th July/77

Memorandum.

The, Superintending Engineer, Chingleput, is requested to report whether the Cortellian Bridge is now completed with the exception of the roadway, also whether the buckled plates have been tarred or painted by the Contractor Mr. Maylor.

2. According to the specification all the iron work is to have two coats of paint, but it does not appear that the Contractor is bound to do anything more towards preparing the plates for the reception of gravel.

3. The Chief Engineer is of opinion that a merely tarring or painting the buckled plates will not fit them for receiving the layer of gravel of which the road is to consist but that it will be necessary to place a mixture of asphalt and sand or asphalt sand and pebbles between the plates

plates and the gravel. It is to be regretted that this was not fully considered while the bridge was in progress so that there might be no delay in forming the roadway and opening the bridge for traffic.

4. The matter having been referred to the Chief Engineer, he requests the Supg: Engineer Chingleput will send him a sketch with dimensions showing the form of the buckled plates.

Sd/- E. A. Hoord Colonel R.E.

Chief Engr: P.W.D.

To
The Supg: Engineer Chingleput.

No 1986 of 1877 July 1877

Memorandum

G.O. No 16 W dated 6 June 1877 P.W.D.

The Chief Engineer requests the Superintending Engineer of Chingleput will be so good as to report what action he has taken in reference to the Proceedings of Government in the Financial Department communicated with the order above quoted.

Sd/- E. A. Hoord Colonel R.E.

Chief Engineer P.W.D.

To
The Superintending Engineer Chingleput.

No. 1491

Chingleput Superintending Engineer's Office,
Saint Thomas' Mount. 20 July 1877

From

THE SUPERINTENDING ENGINEER,

Chingleput.

To

The Chief Engineer,
Public Works Department

Sir,

In reply to your No. 1986 of 18th inst.
I have the honor to report that I have
arranged with the General Super-
intendent P. W. M. and Stores that he should
send a competent person to examine
all the bolts and rivets of the Antea
bridge as soon as the iron work is
completely laid; of which I expect
to hear shortly from Mr. Maylor,
when the whole work will be in-
spected and compared with plan
and specification.

2. The spaces between centres of
ordinary girders is 57' 3". the girders are
57' 0 $\frac{1}{2}$ " long and with rivet heads 57' 1 $\frac{1}{2}$ "
leaving 1 $\frac{1}{4}$ " inch for expansion. theoretic-
ally, $\frac{2}{5}$ " inch for a difference of tempera-
-ture of 90° is enough. so that there

Memo No 1986

1/8
appears ample room. The bridge
has been carefully watched through
the past hot weather when the heat
of the sun was greatest and I
am informed the rivet heads have
never touched. the centre of ^{each} the girders
is not very exactly in the centre of
the span and consequently the
spaces between rivet heads is not
equal.

I have the honor to be
Sir

Your most obedt servant

J. M. Roberts

Colonel M. C.

Superintendent Chief Dept

From the Sup: Engineer
Chingfut D.C.

No. 1491

Dated 20th } July 1877
Rec^d

Cortlar bridge —
Reports that he has
arranged with General
Sup^r: P. M. Workshops
and Stores relative
to examining the
Iron work of the —
as soon as completed.

P

No. 21018/31st July 1877

Memo:

The Chief Engineer has to acknowledge
the receipt of a buckled plate forwarded
by Mr. Wiffen the Assistant Engineer of
the Sinaloa Range, but he has not received
from the Superintending Engineer Chingfut
any reply to his Memo: of the 14th July No.
1944

Sgt E. A. Hoord Coll R &
Chief Engr: P.W.D

To
The Supg: Engineer Chingfut

No. 1705

Chingleput Superintending Engineer's Office,
Saint Thomas' Mount, 4th Aug. 1877

From

THE SUPERINTENDING ENGINEER,

Chingleput.

To

The Chief Engineer,
Public Works Department.

SIR,

In reply to your No 2101 of 31st ultimo
I have the honor to observe that the
Range Officer's report that he had
sent you a hunkled plate for mis-
-position reached me only on the 30th
ultimo.

2. The last girder is not yet raised
to position so far as I am informed, as
there was a difficulty in getting bricks
to complete the abutment. No part of
it has been painted as all rivets and
bolts are to be examined in detail by an
expert from the P.W. Workshops.

3. In my own justification I
beg to observe that the contract for
the bridge was prepared by the Local
Fund Board and signed at an extra-
-ordinary meeting.

I have the honor to be

Sir

Your most obedt servant

Y^{rs} truly

Colonel R.E.

Super Engineer Ching Leput

From the Sup^r Engineer
Chingput Dt.

No. 1705

Dated 4th { Aug. 1877
Recd. }

Correlation Bridge
- Reports regarding
the.

Note by His Grace the Governor.

The tarred gravel spoken of
in the quotation from Engineer is
an ordinary mixture of gas, tar and
gravel, or cinders found useful
to keep the gravel from being
worn into holes and kicked over,
but is not intended in any way
to keep water out. Where that object
is arrived at as in crossing the
railways over thoroughfares a
coat of asphalt is carefully laid
over asphalised felt or other mate-
rial - with proper slopes - and
channels so laid under the road
concrete or metal.

(True copy)

Signed A. B. Grigg
Asst. Under Secretary
in charge.

(True Extract)

A. B. Grigg Col R.E.
Sup^r Engineer Chingput

No. 2/23.

Chingleput Superintending Engineer's Office,
Saint Thomas' Mount, 31st Aug 1877.

From

THE SUPERINTENDING ENGINEER,

Chingleput.

To

The Chief Engineer,
Public Works Department.

SIR,

Enclosures,
1 Extract
from the
by His Grace
the Governor.

I shall be greatly obliged by your informing me whether in G.O. No 244 W. of 30th August it is intended that I should advise the Coal Fund Board to lay asphalt on the buckled plates of the Corbaliar bridge or not. In your Memo No 2102 of 31st July you have stated that it is necessary.

2. There is I think some mistake in copying the note by His Grace the Governor; but I read it as generally supporting my idea that asphalt would not be used in England. The last sentence pointing to some exceptional case, but I cannot follow the sentence as sent to me.

J

24
I have the honor to be

Sir

Your most obedient servant

J. M. Smith

Colonel R. E.

Superintendent Chief Agent

Mis no 2 4477 of 30th Aug/77
C. & Co. no 1944 u 14th July/77
" - " 2102 - 3rd - " - "

Public Works Dept.

From

The Super Engineer
Chingleput.

No 2123.

Dated 31st August 1877

By enclosures - One.

Asphalte on the buckled
plates of the Corbular Bridge - Informs that
he should advise the
Local Fund Board
to lay — or not.

[Signature]
2.10.77

No 2609 of 7th Sept 1877

Letter from the Superintending
Engineer Chingleput No 2123 dated 31st
Augst 1877

The Chief Engineer recommended
that asphalte concrete should be placed
over the iron work of the Corbular Bridge
and that the gravel road way should be
laid on the asphalte concrete.

2 The Superintending Engineer will
now be guided by the vote of His Grace
the Governor which suggests the use of ordinary
concrete over the buckled plates. The
words "arrived at" in the Superintending
Engineers copy of the vote should apparently
be "aimed at" - The concrete should be
mixed and applied carefully and it will

will be advisable to make a trial of the
concrete on a portion of the bridge before
laying it over the whole bridge.

Sd/- E. A. Foord Coll. RE

Chief Engineer PWD

To
The Supg: Engr: Chingleput.

R 1343.

Similar Division
8th December 1877.

From

The Asst. Engineer
Similar Division Chingleput Dt.

To The Superintending Engineer
Chingleput

Sir,

In obedience to your orders in your
R 2733 dated 11th October 1877 and
with reference to Chief Engineer's Memo
R 2609 dated 7th September 1877 which
accompanied your letter above quoted,
I have the honor to inform you that I
have put down the concrete as therein
required to a depth of $3\frac{1}{8}$ " as ordered,
the camber of the buckle plates is $2\frac{1}{8}$ "
and allowing 1" of concrete over the
buckle plates gives the $3\frac{1}{8}$ " inches,
over this I have placed $4\frac{1}{2}$ " of metal
and gravel making a total depth
of $7\frac{9}{16}$ ". the specification states,
"that the superstructure is calculated
to safely carry a distributed load
of 112 lbs to the superficial foot in
addition to its own weight and

a mean thickness of 4" of asphalt and road metal, therefore I beg to bring to your notice that if we put a mean thickness of $7\frac{3}{16}$ inches, we are not carrying out the rules of the specification, as we are laying $3\frac{3}{16}$ more on the bridge than contemplated for, I have also to bring to your notice that the concrete was put down now nearly one month since, and covered with road metal. On testing the same on the 4th instant I found that the water was percolating very freely through both metal and concrete, and dripping from the under portion of the buckle plates, showing clearly, that although the concrete was of the best to be made, the late rains had so percolated into the mass, as to show plainly, that it is not impervious to the water which will always stand on the bridge after rain, on testing with three bandies each loaded with 250 bricks and drawn by 8 men to each bandy from 8.30 A.M. until 3 P.M. I found that the concrete had cracked considerably from the bending of the plates on the

load gaining over, and the return of the plates to their proper form, after the load was removed. The deflection in the centre on the above load being put in the centre was $\frac{5}{16}$ of an inch. Immediately the load was removed, the bed recovered itself to its former position, the load would be about 9866 Pounds in the whole that is 144 cubic feet of bricks 124 lbs per cubic foot = 5456 weight of 3 bandies at 350 lbs each = 1050, 24 men average weight at 140 lbs each = 3360. making the total as above.

I beg to request you will inform me as soon as possible if I am to go on with the concrete work and road metal, or am I to put down asphalt and road metal as per specification.

I have &c

Signed J. E. Phipps & Co
Civil Engineers

(True copy)

Respectfully
Super Engineer Chugchub

No. 3848

10
Chingleput Superintending Engineer's Office,
Saint Thomas' Mount, 15 Decr 1877

From

THE SUPERINTENDING ENGINEER,

Chingleput.

To

Colonel C. A. Ford R.E.

Chief Engineer

Public Works Department.

Sir,

Enc 1

Learning from the correspondence on the subject that the iron work of the Cortes-
= lier Bridge was finished and had been
examined both by Colonel Moberly
and by an experienced joiner from
the Madras Workshops, but had not
been tested by weights being placed
on it in order to prove that its strength
was equal to that intended to be given
to it when designed, I requested Lt.
Giffen, the Officer in charge of No. 1 Range
to ascertain from Mr. Maylor the con-
= tractor if he were willing to test the
bridge. Mr. Maylor in a letter written
from Beyoor to Mr. Giffen while
remarking that the contract bond
did not stipulate that he ^{was} to test
the bridge, and that none of the

bridges erected by him in this country, had been tested in the manner proposed, expressed his readiness to test the bridge rather than give occasion for dissatisfaction. He also named the day on which he would leave Beyoor but suggested that the material for the roadway, should be filled in first, as in its existing condition the surface of the bridge was too uneven to admit of loaded carts being moved over it.

2. This was the general tenor of Mr. Maylor's note to Mr. Giffen, which was returned to Mr. Giffen at his request as it was not quite entirely official.

3. I requested Mr. Giffen to telegraph to Mr. Maylor to postpone his visit to the bridge until the roadway had been laid, and visited the bridge in company with Mr. Giffen on the 4th December. I found that, as described in Mr. Giffen's letter No. 1343 dated 8th December, there had been laid over one span of the bridge about $3\frac{1}{2}$ inches of concrete, and $4\frac{1}{2}$ inches in depth of gravel. Making a total maximum depth of $7\frac{1}{2}$ inches of material, but as the centre of each timber plate rises $2\frac{1}{2}$ inches

above its edges, the average thickness of the material is probably not more than $6\frac{3}{4}$ inches whereas the specification drawn up by Mr. Maylor himself, merely asserts "that the superstructure is calculated to safely carry a distributed load of 112 lbs. to the superficial foot in addition to its own weight and a mean thickness of 4 inches of asphaltic and road metal."

4. As a protection to the iron portion of the roadway of the bridge the concrete used is a failure, as water finds its way through it and drips slowly between the joints of the iron into the river below. This concrete though as well made as the materials used, viz. lime, soorkee sand and clean laterite admit, is doubtless inferior to one containing Portland Cement. I am by no means sure that even that would not be inferior to a roadway of asphalt and gravel, the elasticity of the former material rendering it better fitted than concrete to fill in a space bounded by iron plates, and subjected to a constant change of form as the bridge bends and recovers itself on the passage of loaded carts, cattle or

1/20

elephants. I should prefer having the
bridge laid with the 4 inches of material
mentioned in the specification and then
having it tested either by Mr. Maylor or
at the expense of Government in the presence
of any of the Engineers of the Madras
& Great Southern of India Railways whose
attention has lately been given to testing
iron bridges.

5. I shall be glad to receive the
orders of Government on this question
as early as possible.

I have the honor to be
Sir

Your most obedient servant

P. H. Arnell Colonel R.E.
Supt. Engineer Chingleput

Miss 30 Aug 1877 No 244 M.
 6 June " 16 M.
 31 May " 285 M.
 19 Dec 1876 151.
 25 Sep " 134.
 21 " " 123.
 15 Feb " 132.
 3 Feb 1875 298.

From

The Supd Engr^e
 Chingto

dated 15th
 P.D. } Dec 1877

No. 3848.

Enc 1.

Corstilla Bridge.
 Requesting order of
 Govt for testing - by
 weights

No 1 W 13 3848
 clocks

Public Works Department.

PROCEEDINGS OF THE MADRAS GOVERNMENT.

Under date the 2nd Jan'y 1878

Read the following:-

Chief Engineer's memo. No. 1944. Df 14th July '77.
 Do " 1986. Df 18th "
 Supd Engr. Chingto put : 1491. Df 20th "
 Chief Engineer's memo. 2101. Df 31st "
 Supd Engr. Chingto put : 1705. Df 4 Aug.
 Do " 2123. Df 31st "
 Chief Engineer's memo. 2609. Df 7th Sep.
 Supd Engr. Chingto put : 3848. Df 15th Dec.

The Government
 are of opinion that
 the asphalt concrete
 recommended in the
 3rd para of the Chief
 Engineer's memorandum
 of the 14th July 1877, No. 1944,
 should now be employed,
 the gravel roadway being
 laid upon it; and that
 the bridge should be
 tested with its full
 intended safe working
 load.

2/
22

load of 112 lbs. per foot.

The Supt. Engr. will —
put himself into com-
munication with the
~~Chief Engr. of the~~
~~the~~ ~~the~~ ~~the~~ ~~the~~
and re-
quest him ~~to~~ ~~be~~ ~~present~~
at the tes-
ting of the Bridge; the
date of which Colonel
O'Connell will fix after
reference to Mr. Maylor,
and the President of the
Local Fund Board.

10/5
29.12.77

S. E. Ching...
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Q. O., 2. Jan 1878, No. 111

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