

(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. | 625  | Press |
| B.P. No. |      | Mis.  |
| 598-599  |      |       |
| Dated    | 27-2 | 1873. |

Not to be folded or roughly handled

No. 598. Read the following letter from the Officiating Superintending Engineer, 7th Division, to the Secretary to Government, Public Works Department, dated Coimbatore, 31st August 1872, No. 126 :—

I REGRET to have to report, for the information of Government, that during the monsoon of this year, on the dates noted below, the following bridges in Malabar and Canara have been destroyed or damaged.

2. On the 18th of July, Mr. Overseer Arbuthnot, then in charge of the Calicut Range, reported that the double trussed timber bridge of two bays over the Erinjee Todoo, on the Carcoor Ghaut and Calicut Road, was destroyed on the 15th of July, and promised a detailed report which, having been relieved of the charge of the range, he has not submitted. Mr. Arbuthnot, however, on the 20th of June submitted an estimate for the repairs of this bridge, amounting to Rupees 870, which estimate was merely for re-planking the bridge, nothing was noted for repairs of trusses, and further reported that, when he inspected it on the 27th June, he "found it was rather old, but did not think it would come down so soon." The Range Officer, Captain Wood, R.E., however, in his report, states that he found some of the timber of the truss quite rotten, and that any one who had casually inspected the bridge six months before, might have anticipated the accident that has taken place, which is attributed to the end of one of the tie-beams of the trusses having given way on account of rottenness, and carried the whole structure with it; and yet Mr. Arbuthnot, a month before, submitted an estimate for its repair, without noting the condition of the trusses; this careless Overseer is, I regret to say, at present under suspension, pending inquiry into certain irregularities reported by his Range Officer.

3. In my letter No. 204, dated the 20th December 1871, I noted that when I inspected the bridge, which I see by my diary was on the 15th of November, its left abutment was so seriously cracked that I feared it would be necessary to re-build it. The trusses however, though of jungle-wood, appeared sound enough then; the Range Officer recommends a safer and better site for the bridge when it is re-constructed, for which I have called for an estimate, arrangements having been made in the meantime for the coffee season traffic of 1872-73.

4. Captain Wood, in his report, further notes that he doubts the stability of the central pier of the Cheroopoyah Bridge, which, in my letter above quoted, I reported to be intact; the Range Officer states he considers the laterite masonry to be of doubtful quality, and that there was the appearance of a slight crack for a distance of about five feet, vertically from the top of the north-west corner of the pier; and that some of the masonry appeared more open than the average; and, again, that a small crack had been noticed by the Overseer at the north-east corner of the pier which however was under water when he inspected it. Under these circumstances, as it is intended to span this river with iron girders, I have pointed out to the Range Officer the advisability of the central pier being re-built of brick-in-chunam, with a cut-stone cut-water, and I have issued instructions accordingly. The brick abutments of this bridge are reported by the Range Officer to be good.

5. The Pootoor Range Officer reports from South Canara that, on the 11th of July, the Auckul bridge of four arches, on the Vitla and Manjeshwar Road, was

*on the 15th of July, and*

*Proceedings of the Madras Government, Public Works Department,  
27th February 1873.*

entirely destroyed; the timber platform of the Adkatalla bridge, consisting of five bays, on the road between Villa and Hosur was swept away, and that half the arch of an old masonry bridge of one arch on the road between Maany and Oopinangady fell, and that two other minor bridges, between Serady and Oopinangady, were damaged seriously.

6. The Auckul bridge I inspected last year; all but its parapets had been completed, and the work seemed to me to be sound and good. The bridge, consisting of 4-30 feet bays, was built of laterite-in-chunam, at a cost of Rupees 10,813-10-1; it was commenced in 1868 and finished in 1869 by Mr. Sub-Engineer Fernandez; it stood three monsoons and showed no signs of decay; according to all the information that could be gathered at the time of its being designed and constructed ample water-way was provided for, i. e., 8 feet between the highest known flood and the crown of the arches, but the bridge was as monsoon of 1871, however, on the occurrence of a very heavy fall of rain, the river rose to within 4 feet of the crown of the arches, but the bridge was as sound as a bell after it; the water-way, however, being deemed insufficient, an estimate was submitted in October 1871 for adding additional water-way on the northern approach to the bridge, which estimate was not provided with funds by the Local Fund Board, none being available. On the occasion of the destruction of the bridge rain is said to have fallen incessantly for five days, and all the rivers in the vicinity of Auckul in extraordinary flood, overflowing their banks and inundating the country for days. At the bridge site the river is reported to have risen to within two feet of the crown of the arches; and the Range Officer believes the cause of the accident is due to the bed of the river, which is sandy, having been scoured out, and the foundations having sunk, the bridge collapsed. This however, at the present time, the state of the river prevents being confirmed; as soon as the Range Officer's report on the state of the foundations is received it will be submitted to Government.

7. The bridge situated on the road between Maany and Oopinangady is an elliptical arch of 24 feet span, with abutments 2 feet high; at first half the arch fell, and the remainder being cracked and split in all directions, will probably follow it. It was constructed in 1860, but its exact cost is not traceable in the records of the Range Office. The Range Officer attributes the fall of the bridge to the bad quality of the materials, but adds no good material is obtainable at any reasonable distance in its vicinity; I have, therefore, directed that the estimate for its re-construction shall provide for a timber platform bridge, since no good stones for archwork are to be had.

8. The Adkatalla bridge, consisting of five bays of 30 feet, with sttedrut timber superstructure; the river having risen 5 feet over the top of the piers, the whole of the timber road-way was swept away; the piers, so far as the state of the river will at present allow of the Range Officers judging, are reported to be intact. The southern abutment has sunk however, and the northern one is said to have sustained some damage. The bridge was commenced in 1866 and completed and opened for traffic in 1868; it cost Rupees 8,473-9-6, and was built by Mr. Sub-Engineer Fernandez. The highest floods during its construction and for two subsequent years did not reach higher than two-thirds the height of the piers; during

*Proceedings of the Madras Government, Public Works Department,  
27th February 1873.*

1871, after a fall of 5½ inches of rain, it is noted that the river rose to very nearly the top of the piers. Of such a flood as that which destroyed the bridge after a fall of seven inches of rain there is no record. In its re-construction I have directed that provision be made for the extra requisite height, and that the approaches be kept at their present level to provide for extra water-way, should such ever be needed. The traffic on this road being very heavy, the estimate will be submitted to Local Fund Board as early as possible.

The exact damage sustained by the other bridges noted cannot at present, the Range Officer states, be ascertained, in consequence of the rivers being full. Not wishing to delay the submission of this report any longer, all further particulars will be reported as soon as I am in a position to do so.

No. 599. ORDER THEREON, 27th February 1873, No. 625.

**CIVIL WORKS, No. 37.**

This report, which has not hitherto been disposed of pending further report of similar monsoon damages, will now

be recorded for information of the Local Fund Circles concerned with the following remarks:—

*Erinjee Todoo Bridge, Malabar.*—The destruction of this bridge seems to have nothing to do with the monsoon, and should have been reported separately from the rest. It is attributed solely to the use of bad and probably unseasoned jungle-wood in its trusses. The Inspecting Engineer for Communications will scrutinize future bridge plans involving the use of timber, and adopt measures for insuring that seasoned wood is used for all trusses. And where the use of unseasoned timber is admissible for securing a free circulation of air, and shelter from the sun, and rain. Also that the use of all jungle-wood, but of certain select kinds, be absolutely prohibited.

*Cheroopoyah Bridge.*—Plans and estimates for building or renewing bridges of such dimensions as this should be carefully scrutinized in the office of the Inspecting Engineer before they are submitted for the sanction of Government.

*Auckul and Adkatalla Bridges.*—The destruction of these bridges being clearly attributable to deficient water-way, and possibly to doubtful foundations in the case of the former, the attention of the Inspecting Engineer is called to the subject of paragraph 3 of G. O., No. 2,427 of 15th October 1872, relative to the Vellaur Bridge in South Arcot. It is most difficult to ascertain with precision the highest flood levels of rivers in wild countries opened out for the first time by new roads, such as those on which these structures occurred, the sites chosen being possibly remote from observation. It is the more necessary therefore that careful surveys and levels and river sections should be insisted on to accompany bridge plans. And where the rivers flow through a heavily wooded country, extra height should be given, to timber superstructures especially, to clear them of drift wood.

*Bridge in Maany Road.*—Where laterite cannot be obtained of first rate quality it should only be used in semi-circular arches of less than 30 feet diameter, and

*on the 15th of July, and previous*

Proceedings of the Madras Government, Public Works Department,  
27th February 1873.

great care should be taken to cover over such arches with concrete or other material to secure them against percolation of moisture.

(True Extract.)

Colonel, R.E.,  
Secretary to Government.

To the Inspecting Engineer for Ports and Communications.  
„ District Engineer, Malabar.  
„ „ „ South Canara.  
„ Financial Department.

No 126 Supy Engineer's Office,  
7<sup>th</sup> Division  
Cumbatore 31<sup>st</sup> August '72

From, The Supy Engineer,  
7<sup>th</sup> Division  
To, The Secretary to Government,  
D W Madras

Sir,  
I regret to have to report,  
for the information of Government,  
that, during the monsoon of  
this year, on the dates noted  
below, the following bridges  
in Malabar and Canara, have  
been destroyed or damaged -  
2 On the 18<sup>th</sup> of July, Mr Overman  
Arbuthnot, then in charge of the  
Calicut Range, reported that  
the double trussed timber bridge  
of two bays, over the bridge  
Pudoo, on the Carevor Ghaut  
and Calicut Road, was destroyed  
on the 15<sup>th</sup> of July, and promised

a detailed report which,  
having been relieved of the  
charge of the Range, he has  
not submitted; Mr Arbuthnot,  
however, on the 20<sup>th</sup> of June,  
submitted an Estimate for  
the repairs of this bridge, ac-  
counting to \$870, which  
Estimate was merely for  
replanking the bridge, nothing  
was noted for repairs of  
trusses, and further reported  
that, when he inspected it  
on the 27<sup>th</sup> June he found  
"it was rather old, but did  
not think it would come  
down so soon." The Range  
Officer, Captain Wood R.E.  
however, in his report, states  
that he found some of the  
timber of the truss quite  
rotten

rotten, and that any <sup>one</sup> ~~man~~,  
who had casually inspected  
the bridge 6 months before,  
might have anticipated  
the accident that has taken  
place, which is attributed  
to the end of one of the tie-  
beams of the trusses having  
given way on account of  
rottenness, and carried the whole  
structure with it; and yet  
Mr Arbuthnot, a month before,  
submitted an Estimate for  
its repair, without noting the  
Condition of the trusses; this  
Careless Oversight is I regret  
to say, at present under sus-  
pension, pending inquiry  
into certain irregularities,  
reported by his Range Officer.  
3 In my letter No 204, dated <sup>the</sup>

the 20<sup>th</sup> December 1871, I noted that, when I inspected the bridge which, I see by my diary, was on the 15<sup>th</sup> of Nov<sup>r</sup>, its left abutment was so seriously cracked, that I feared it would be necessary to rebuild it. The trusses however, though of pine wood, appeared sound enough then; the Range Officer recommends a safer & better site for the bridge when it is reconstructed, for which I have called for an estimate, arrangements to having been made in the meantime, for the coffee season traffic of 1872-73. Captain Wood, in his report, further notes that he doubts the stability of the central pier

pier of the Cherokeepoyn bridge, which, in my letter above quoted, I reported to be intact; the Range Officer states, he considers the laterite masonry to be of doubtful quality, and that there was the appearance of a slight crack, for a distance of about 5 feet, vertically from the top of the North west corner of the pier; and that some of the masonry appeared more open than the average; and, again, that a small crack had been noticed by the Overseer, at the North East corner of the pier, which, however, was under water, when he inspected it. Under these circumstances

Circumstances, as it is intended  
to span this river with iron  
girders, I have pointed out to the  
Range Officer & the advisa-  
bility of the Central pier  
being built of brick - in  
Chunam, with a cut stone  
cut water, and I have issued  
instructions accordingly -  
The brick abutments of this  
bridge are reported by the  
Range Officer to be good -

5 The Pootoor Range Officer  
reports from South Gundarra  
that, on the 11<sup>th</sup> of July,  
the Luckul Bridge of 4 arches,  
on the Villa and Mangishwar  
Road, was entirely destroyed;  
the timber platform of the  
Adkatalla bridge consisting  
of 5 bays, on the road between  
Villa

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swept away; and that half  
the arch of an old masonry  
bridge of one arch on the  
road between Maany and  
Dopinangdy fell, and that  
two other minor bridges  
between Secradz & Dopinangdy  
were damaged seriously -  
6 The Luckul bridge I  
inspected last year, all  
but its parapets had been  
completed, and the work  
seemed to me to be sound  
and good - The bridge consisting  
of 4.30 feet bays, was built  
of laterite in Chunam, at a  
cost of Rs 10,813-10-1; it was  
commenced in 1868, and  
finished in 1869 by Mr. J. B.  
Ingrain

Engineer Fernandez; it stood  
3 seasons and showed no  
signs of decay; according to  
all the information that could  
be gathered, at the time of  
its being designed and  
constructed, ample waterway  
was provided for, is 8 feet  
between the highest known  
flood and the Crown of the  
Arches was given - During  
the monsoon of 1877, however,  
on the occurrence of a very  
heavy fall of rain, the river  
rose to within 4 feet of the  
Crown of the Arches, but  
the bridge was as sound  
as a bell after it; the water  
way, however, being deemed  
insufficient, an estimate was  
submitted

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submitted in October 1877,  
for adding additional waterway  
on the northern approach to the  
bridge, which estimate was  
not provided with funds  
by the Local Fund Board,  
none being available - On the  
occasion of the destruction  
of the bridge, rain is said to have  
fallen incessantly for 5 days,  
and all the rivers in the vicinity  
of Lucknow in extraordinary  
flood, overflowing their banks  
and inundating the country  
for days - At the bridge site,  
the river is reported to have  
risen to within two feet of the  
Crown of the Arches, and the  
Range Officer believes the  
cause of the accident, is due  
to the bed of the river, which  
is sandy, having been scoured  
out

out, and the foundations having  
sunk, the bridge collapsed.  
This however, at the present  
time, the state of the river,  
prevents being completed;  
as soon as the Range Officer  
report, on the state of the  
foundations, is received, it  
will be submitted to Govt.

7 The bridge situated on the  
road between Maany and  
Oopmangudy, is an elliptical  
Arch of 24' span with about  
2 feet high; at first  
half the arch fell, and the  
remains being cracked  
and split in all directions,  
will probably fall soon. It  
was constructed in 1850, but  
its exact cost is not traceable  
in records of the S. P. Office.

15X  
The Range Officer attributes  
the fall of the bridge to the bad  
quality of the materials, but  
adds no good material is  
obtainable at any reasonable  
distance, in its vicinity. I  
have, therefore, directed that  
the Estimate, for its recon-  
struction, shall provide  
for a timber platform  
bridge, since no good stones  
for arch work are to be had.  
8 The Adkatalla bridge,  
consisting of 5 bays, of 30 feet,  
with strutted timber Super-  
structure; the river having  
risen 5 feet over the top of  
the piers, the whole of the  
timber roadway was swept  
away; the piers so far as  
the state of the river will at  
present

present allow of the Range Officers judging, are reported to be intact. The Southern Abutment has sunk, however, and the Northern one is said to have sustained some damage. The bridge was commenced in 1866 and completed & opened for traffic in 1868; its cost \$8473.90, and was built by Mr. Sub Engineer Fernandez. The highest floods during its construction and for two subsequent years did not reach higher than  $\frac{2}{3}$  the height of the piers; during 1871 after a fall of  $5\frac{1}{2}$  inches of rain it is noted that, the river rose to very nearly the top of the piers of such

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a flood as that which destroyed the bridge, after a fall of inches of rain there is no record. In its reconstruction I have directed that provision be made for the extra requisite height, and that the approaches be kept at their present level to provide for extra waterway, should such ever be needed. The traffic on this road being very heavy, the estimate will be submitted to Local Land Board as early as possible.

The exact damage sustained by the other bridges noted, cannot at present, the Range Officer states, be ascertained, in consequence

No 15 April 72 No 179 Mis  
15 Sept 251-264

P. No 872 Report.  
By Mr. J. J. 4288.  
The Superintending  
Engineer.

To the Secretary to Govt.  
P.W.  
Madras

No 126

Dated 31<sup>st</sup> August 1871  
Received 3<sup>rd</sup> September 1871

Reports that certain  
Bridges in Malabar  
and Canara have  
been destroyed or  
damaged during  
the monsoon of this  
year.

No 625 27<sup>th</sup> Feb 72

No 598

Copy sent to  
the Local Fund Circle

No 625 P.H.D.

Proceedings of the Madras Govt.  
Read the following.

From

The Superintending  
Engineer. } (H.E. No 1268 31<sup>st</sup>  
7<sup>th</sup> Dec 72) Aug 72

M.S.E.

This report, which  
has not hitherto been  
disposed of, pending fur-  
ther report of similar  
Monsoon Damages, -  
will now be recorded  
for information of the  
Local Fund Circles con-  
cerned, with the following  
remarks.

Erinjee Todoo  
Bridge

Bridge - Malabar.

The destruction of this Bridge seems to have nothing to do with the Monsoon, and should have been reported separately from the rest. It is attributed solely to the use of bad and probably unseasoned Jungle wood in its Trusses. The Inspecting Engineer for Communications will scrutinize future Bridge Plans involving the use of Timber; and adopt measures for insuring that seasoned wood is used for all Trusses. And where the use of unseasoned timber is admissible for

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for securing a free circulation of air, and shelter from the sun, and rain - also that the use of all jungle-wood, but of certain select kinds, be absolutely prohibited.

### Cheroopoyah Bridge

Plans and Estimates for building or repairing bridges of such dimensions as this should be carefully scrutinized in the Office of the Inspecting Engineer before they are submitted for the sanction of Government.

Anaghab.

Anagkul and Adka.  
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The destruction of these bridges being clearly attributable to deficient waterways, and possibly to doubtful foundations in the case of the former, the attention of the Inspecting Engineer is called to the subject of para of G.O. No of rela-  
-tive to the Vellam Bridge in South Arcot. It is most difficult to ascertain with precision the highest floods level of rivers in wild countries opened out for the first time by

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Bridge in Mauney Road.  
Where Laterite cannot

be obtained of first rate  
quality it should only  
be used in semicircular  
arches of less than 30 feet  
diameter; and great care  
should be taken to cover  
over such arches with  
concrete or other material  
to secure them against  
percolation of moisture.

G.M.W.

To the Insp. S. Engineer for  
Port & Canal  
at Engineer's Clubhouse  
South Canal  
at Fort. Def.

Dec/23/73

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Damages to  
Porter's Building  
in the  
Campana -

9-12-15-17

No 4288

Govt. of 1873

PUBLIC WORKS.

To The Inspecting Engineer  
for Ports and  
Communications

Date

Recd.

Encl.

G. O. 1873, No. 1

No. 598 1/2 1879

Public Works. Being  
a letter from the  
Inspector of the P.W. Re-  
specting the damages  
incurred to certain  
works during the late  
hurricane.