

- (1) பக்கங்களின் எண்ணிக்கை _____
 (2) புதுக்கித் திருப்பிய நாள் 14/10
 (3) ஆதாரங்குறிப்பவர் சுருக்கொப்பம் 10/10

தமிழ்நாடு ஆவணக் காப்பகம்.

தமிழ்நாடு அரசு

PWD துறை

(6)

அரசாணை எண். மு. கோப்புத் தாள் எண்.	3/16	அச்சகம் பலவகை
நாள் :	19-11-1891	198

மடிக்கவோ கண்டபடி கையாளவோ கூடாது

12 Sheet

ஆவண. கா-1-18,006-15-6-87.

12/10/12

3116
1

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Buildings and Roads.
Civil Works.

READ—the following paper:—

Inspection notes, Coonoor Ghât.

Kullar Bridge.—The bridge originally consisted of three spans of 25 feet with piers 7 feet in thickness. The construction is a very remarkable one, the superstructure of each bay being carried on two iron girders 16 inches deep, one at each side of the roadway, with eight longitudinal timbers about 9" $\times$ 12" between the girders, the cross beams and roadway resting on the timbers, so that if the latter do their duty the iron girders have nothing to carry but the handrails. In the span that is left the timbers have sagged so as to bring a considerable weight on the girders.

2. The right abutment and right pier of this bridge with the bay between them are still standing; the abutment is apparently quite uninjured, but whether the pier is so or not is not certain. No settlement is visible, nor has the superstructure above been disturbed; but from the way in which the ashlar facing has cracked off from the brick interior, I am disposed to think that some settlement has taken place. This cannot be ascertained for certain until the water has fallen sufficiently to allow the foundation to be examined; the point is not of such practical consequence as it is proposed to remove this pier.

3. The second pier has disappeared entirely, the right abutment is still standing but leaning very much forward, a position pointing to the existence of considerable scour along its front face. It is stated that the bank in rear of this abutment was breached by the flood, but this could not have caused the movement which has taken place in the abutment itself. Conductor Bragg states that after the fall of the right pier and superstructure he saw the abutment still erect, so that its fall is probably due to subsequent scour.

4. There seems little reason to doubt that the destruction of the bridge was due to the shortness of the spans which prevented the passage of large trees brought down by the flood and so caused an obstruction which brought down the pier, but whether the latter yielded to pressure from above or to scour from below cannot be determined till the foundations have been examined.

5. It is probable that the 75 feet of waterway which was provided would have been enough if it had been in a single span, but in the new bridge it will be safer to provide a hundred feet.

6. The Executive Engineer proposes to retain the existing 25 feet span and to add another span of 100 feet, but I cannot approve of this arrangement.

7. The only justification for adopting so large a span as a hundred feet is the necessity for avoiding intermediate piers, and this supreme advantage is abandoned by the retention of the existing pier. The extra length is not really wanted, and as stated above I am by no means satisfied that the existing pier is safe to build upon.

8. This pier and the superstructure belonging to it should be removed, the existing left abutment being retained and a new abutment constructed at 100 feet from it.

9. The breaching of the bank on the right flank has caused an apparent extension of the river bed, and the old abutment now stands in the middle of the stream. It will be necessary to construct a strong training wall from the new abutment to the head of the Odenturay channel which takes off a short distance above the bridge.

10. It has been suggested that the new bridge should be constructed about a quarter of a mile above the site of the present one; this site has some advantages, but I agree with Mr. Larminie that they are not sufficient to justify the inconvenience which will be caused by a diversion of the road.

11. *Barliyár Bridge*.—This bridge consisted of three spans of 16 feet with piers only 3 feet in thickness; the left abutment and both piers are entirely gone, the right abutment is standing but has been a good deal shaken.

12. The Executive Engineer proposes to rebuild the bridge with a single span of 80 feet, and this proposal is approved. The proper site for the new abutments has been selected. The site offers every facility for the construction of the abutments; care should be taken that they are properly benched into the rock, a precaution which appears to have been almost entirely neglected in the old bridge.

13. The upper wing wall of the left abutment should be carried up so as to underpin the mass of overhanging rock immediately above the bridge on this side.

14. The question of the width of the roadway to be allowed for these bridges requires consideration; in G.O., No. 2861 W. of 28th October 1891, it was decided that this width should be 9 feet, but further consideration of this point seems desirable. A 9 feet bridge in the middle of a first-class road appears inappropriate, and it is by no means certain that it may not lead to accidents. It is true that the traffic will be greatly reduced and the tonga traffic probably altogether abolished when the railway is opened, but in spite of this I cannot help thinking that it would be better to give a width of 15 feet to all the bridges. The extra cost as compared with a 9-foot roadway would be about Rs. 18,000 for the two bridges.

15. *Ghat road between Barliyár and Kullar Bridges*.—The damage to the road and to the minor bridges is very severe, but obstructions have been removed and temporary passages made where bridges have been destroyed, so that the ghat is passable for wheeled traffic except at one spot, which is the only one which requires special notice.

16. This place is at $7\frac{1}{2}$ miles from Mettupalaiyam; here there was a small bridge of 10 feet span which has been completely carried away, abutments and all.

17. No temporary crossing is practicable at this point except with an expenditure of time and money fully as great as is required for the permanent work, and all that can be done is to push on the latter as rapidly as possible. It is proposed to substitute a 27-foot span for the original one of 10 feet, and for this purpose the girders from the uninjured span of the Kullar bridge can be used. The construction of the abutments is proceeding as fast as possible, but it is not likely that the place will be available for traffic before the middle of December.

18. It is this place and not the Barliyár or Kullar river which is the true obstacle to the restoration of tonga traffic; it is useless to make temporary passages across the latter rivers at present, as such passages are always liable to be damaged by floods, and if a break has to occur it is better that it should be at Kullar, where there is plenty of room, than in the 8th mile where there is no space for animals and vehicles to halt.

19. Cart traffic is now being carried on by temporary crossings over the two rivers and by the old ghat between them.

20. I had no idea until this inspection how severe the damage to the ghat had been; I doubt whether it will be made good for less than Rs. 60,000 if the bridges be built with 9 feet roadways, or Rs. 80,000 if with 15 feet roadways. Very great credit is due to Mr. Larminie and to Conductor Bragg for the work which has already been done.

12th November 1891.

(Signed)

J. PENNYCUICK, Colonel, R.E.,
Chief Engineer, P.W.D.

ORDER—dated 19th November 1891, No. 3116 W., Public Works.

The Government concurs in the views expressed by the Chief Engineer as regards the restoration of the Barliyár and Kullar bridges; the necessary estimates will be prepared with the least possible delay, provision being made for a roadway 15 feet wide instead of 9 feet as ordered in para. 4 of G.O., No. 2861 W. of 28th October 1891.

(True Extract.)

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

To the Superintending Engineer, IV Circle.
„ Consulting Engineer for Railways.
„ Local and Municipal Department.

Exd. C. A. Munisawmy.
Spare Copies

BUILDINGS AND ROADS
CIVIL WORKS.

Govt. of {1891} Madras.
PUBLIC WORKS.

Dated November, 19th.

Recd.

Encl.

G.O., 19th Nov. 1891, No. 3116 W.

NOVEMBER.

Coonoor Ghat

Passing orders on inspection notes by the
Chief Engineer, Public Works Department,
on the —.

I. W. Department.

Inspection notes - Coonoor Ghat. 1P

Kullar Bridge. 3/16/3

The bridge originally consisted of three spans of twenty five feet with piers seven feet in thickness. The construction is a very remarkable one the superstructure of each bay being carried on two iron girders sixteen inches deep, one at each side of the roadway, with eight longitudinal timbers about 9" x 12" between the girders, the cross beams and roadway resting on the timbers so that if the latter do their duty the iron girders have nothing to carry but the handrails. In the span that is left the timbers have sagged so as to bring a considerable weight on the girders.

2. The right abutment and

and right pier of this bridge with the bay between them are still standing; the abutment is apparently quite uninjured, but whether the pier is so or not is not certain. No settlement is visible, nor has the superstructure above been disturbed, but from the way in which the asphalt facing has cracked off from the brick interior,

I am disposed to think that some settlement has taken place. This cannot be ascertained for certain until the water has fallen sufficient to allow the foundation to be examined. The point is not of such practical consequence as it is proposed to remove this pier.

3. The second pier has disappeared entirely. The right abutment is still standing but leaning very much forward, a position pointing to the existence of considerable scour along its front face. It is stated that the bank

3/16/4

in rear of this abutment was breached by the flood, but this could not have caused the movement which has taken place in the abutment itself. Conductor Bragg states that after the fall of the right pier and superstructure he saw the abutment still ^{erect} ~~erect~~, so that its fall is probably due to subsequent scour.

4. There seems little reason to doubt that the destruction of the bridge was due to the shortness of the spans which prevented the passage of large trees brought down by the flood, and so caused an obstruction which brought down the pier, but whether the latter yielded to pressure from above or to scour from below cannot be determined till the foundations have been

been examined.

5 It is probable that the seventy five feet of waterway which was provided would have been enough if it had been in a single span, but in the ^{new} bridge it will be safer to provide a hundred feet.

6. The Executive Engineer proposes to retain the existing twenty five feet span and to add another span of one hundred feet, but I cannot approve of this arrangement.

7. The only justification for adopting so large a span as a hundred feet is the necessity for avoiding intermediate piers, and this supreme advantage is abandoned by the retention of the existing pier. The extra length is not really wanted, and as stated above I am by no means satisfied that

the

3/16/11

the existing pier is safe to build upon. 3/16/11
8. This pier and the superstructure belonging to it should be removed the existing left abutment being retained, and a new abutment constructed at one hundred feet from it.

9. The breaching of the bank on the right flank has caused an apparent extension of the river bed, and the old abutment now stands in the middle of the stream. It will be necessary to construct a strong training wall from the new abutment to the head of the Odentun channel which takes off a short distance above the bridge.

10. It has been suggested that the new bridge should be constructed about a quarter of a mile above the site of the present one. This site has some advantages, but I agree.

with Mr. Lammie that they are not sufficient to justify the inconvenience which will be caused by a diversion of the road.

Burke's Bridge

11. This bridge consisted of three spans of sixteen feet with piers only three feet in thickness; the left abutment and both piers are entirely gone, the right abutment is standing but has been a good deal shaken.

12. The Executive Engineer proposes to rebuild the bridge with a single span of eighty feet, and this proposal is approved. The proper site for the new abutments has been selected. The site offers every facility for the construction of the abutments; care should be taken that they are properly benched into the rock, a precaution which appears to have been almost entirely neglected in

in the old bridge.

13. The upper wing wall of the left abutment should be carried up so as to underpin the mass of overhanging rock immediately above the bridge on this side.

14. The question of the width of the roadway to be allowed for these bridges requires consideration.

From the original of this order I understood the decision to have been just the other way.

U.S.
13 Nov.

I quite agree.
U.S.

in G.O. No. 2861 W of 28th October 1891 it was decided that this width should be nine feet, but further consideration of this point seems desirable. A nine feet bridge in the middle of a first class road appears inappropriate, and it is by no means certain that it may not lead to accidents. It is true that the traffic will be greatly reduced, and the heavy traffic probably altogether abolished when the railway is opened, but in spite of this

I cannot help thinking that it would be better to give a width of fifteen feet to all the bridges. The extra cost as compared with a nine foot roadway would be about £ 18,000 for the two bridges.

Chat Road between
Burhas and Kullas Bridges.

15 The damage to the road and to the minor bridges is very severe, but obstructions have been removed, and temporary passages made where bridges have been destroyed, so that the ghaat is passable for wheeled traffic except at one spot, which is the only one which requires special notice.

16 This place is at $\frac{1}{2}$ miles from Mettapalaiyan; here there was a small bridge, ten feet span which has been completely carried away, abutments and all.

No

3/16/7

17. No temporary crosser practicable at this point except with an expenditure of time and money fully as great as is required for the permanent work, and all that can be done is to push on the latter as rapidly as possible. It is proposed to substitute a 27 foot span for the original one of ten feet, and for this purpose the girders from the uninjured span of the Kullas bridge can be used. The construction of the abutments is proceeding as fast as possible, but it is not likely that the place will be available for traffic before the middle of December.

18. It is this place and not the Burhas or Kullas river which is the true obstacle to the restoration of tonga traffic; it is useless to make temporary pass across the latter in

and, as such pass-
es are always liable
to be damaged by
floods, and if a break
has to ~~take~~^{occur} it is better
that it should be at
Kullas where there is
plenty of room than in
the eighth mile where there
is no space for animals
and vehicles to halt.

19 Cart traffic is now
being carried on by
temporary crossings over
the two rivers and by
the old ghat between them

20. I had no idea until
this inspection how
severe the damage
to the ghat had been.
I doubt whether it will
be made good for less
than £6,000 if the
bridges be built with
nine feet roadways, or
£8,000 if with fifteen
feet roadways. Very
great credit is due
to Mr. Lammie and
to Conductor Bragg for
the

the work which has
already been done.

J. R. B. - J.
Col. R. B.
Chief Engineer P.W.D.

3/16/8

XV 1/8

Read the following:—

Inspection notes of the Coonoor ghaut by
the Chief Engineer, P. W. Department, dated 12th
November 1891.

3/16
9

FOR ORDERS.

Remember the original of
Co. 28 Oct.

I don't understand the
decision then conveyed. My
impression is that we voted
against the 9 feet bridges
which I fully agreed with
him. The widths ought
certainly to be enough to let
vehicles pass on the bridges
and 9 feet is not too much

Instructions are
specially requested
with regard to the
width of the roadway
of the bridges mentioned
in para. 14.

S
W. 12.11

Also
13 Nov.

No. 2861 W. 27-10-91
- 4739 C. 27-10-91
- 4640 C. 23-10-91

for
13 Nov.

and if made more than
nine feet it should be
not less than fifteen.
I am strongly in favor
of the latter width.
The former for a bridge
100 feet long is in
my opinion absolutely
unsafe.

S

W. 14.11

The Hon Mr. J. H. Gardiner
F.C.S. I.

No 3116 W of 19th Nov/91

PUBLIC WORKS DEPARTMENT.

PROCEEDINGS OF THE MADRAS GOVERNMENT.

3/16
11
Read the following

Inspection notes of the Coonoor ghaut by the
Chief Engineer, P.W. Department, dated 12 November
1891.

The Govt. concurs
in the views expressed
by the Chief Engineer
as regards the restoration
of the Durbar and
Kullas bridges; the
necessary estimates will
be prepared with the
least possible delay,
provision being made
for a roadway fifteen
feet wide instead of
nine feet as ordered

in para 4 of G.O. No.
2861 W of 28 October 1891.

To the S.E. IV Circle
C. E. for Railways
Local and Mun. Dept.

S 19.11

SS

Coast. & 1891

PUBLIC WORKS.

19/4/91

19. xi. 91 3116 W.

Coroner's Chatt

(12)

Passing orders
on inspection
notes by the
Chief Engineer
P. W. D. on the —

6/11

19/11 5-5 PM

17/11

17/11