Public Works (1896) Department.

RAILWAY BRANCH.

G.O., No. 132 . R

DATED 17th February

[Despatch Abstract.]

Bridge. — Estimate of Rs 10,766 for converting the 30th feet arch — at 168/10 miles, Bangalore branch, Madras Railway, into a girders opening, sanctioned as a special work and with remarks.

[P. W. 26. / 1,000—11-8-99.]

Indexed.

BACK PAPERS.

G.O.	No.	Department.	Date.	G.O.	No.	Department.	Date.

FURTHER PAPERS.

G.O.	No.	Department.	Date.	G.O.	No.	Department.	Date.

No. 132 R., 17th February 1896.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Railway.

Read the following paper :—

From the Agent and Manager, Madras Railway, dated 16th December 1895, No. 8599/1103.

Order—No. 132 R., dated 17th February 1896.

The estimate, amounting to Rs. 10,766, chargeable in the proportion of Rs. 7,829 to Capital and Rs. 2,937 to Revenue for converting the 30 feet arch bridge at 168/10 miles, Bangalore Branch, into a girder opening, is sanctioned as a special work. Provision should be made for the contemplated expenditure during the current financial year of Rs. 2,700 under cash and Rs. 1,500 under stores in the revised estimate for 1895-96.

2. This sanction has been registered as No. 37 R. of 1895-96.

(True Extract.)

Under Secy. to Govt., P.W.D.,
Railway Branch.

To the Agent and Manager, Madras Railway.
„ Examiner, Railway Accounts.

Exd. T. K. Narayana Aiyangar.
Spare Copies

RAILWAY.

Govt. of {1896} Madras.

PUBLIC WORKS.

Dated February, 17th.

Recd. *Encl.*

G.O. No. 132 R., 17th Feb. 1896.

FEBRUARY.

Bridge

Estimate of Rs. 10,766 for converting the 30 feet arch — at 168/10 miles, Bangalore Branch, Madras Railway, into a girder opening, sanctioned as a special work and with remarks.

8599
6658

Madras Railway Company
Agent and Manager's Office
Madras 15th July 1895.

From

The Offg: Agent and Manager
Madras Railway

To

The Chief Engineer of Mysore
Bangalore
(Through the First Asst: Resident
of Mysore)

Sir,

I have the honor to acknowledge the receipt of your letter No: 164 of 29th April 1895, and to state that your suggestion that the existing waterway in the railway should be enlarged by doubling the present 30 feet arch does not commend itself to this Company.

2. The Company's Offg Chief Engineer, however, is of opinion that it is practicable to convert the 30 feet arch into a girder opening with a view to secure a greater headway and thus increase the waterway in the railway from 533 to 720 square feet. The estimated cost of this work is Rs 10,766 but it is open to question whether this increased headway is absolutely necessary but if so, whether this Company can be equitably called upon to incur this outlay.

3. The subject was referred to the Offg: Chief Engineer, and the following extracts

extracts from his reply are quoted for your information:-

"In August 1869 a heavy flood, due to the bursting of tanks, passed through this bridge, and carried away the end of the wing wall, it had not then a floor and curtain walls, which were subsequently added by the undersigned. On the 13th of August 1892, the Vatigal tank just above this bridge burst and the large volume of water thus suddenly liberated rose above the bank top at this bridge, cutting this away for a length of 300 feet and depth of 6 feet, the bridge being uninjured.

After this flood a special survey was made of the catchment area of the tanks above this and other bridge, and the area of this one was computed at 9.88 square miles as against 11 square miles reckoned by the Chief Engineer, Mysore, who further assumes that 3/4" per hour may run off this area = 5280 cubic feet a second.

This for 9.88 miles would give $\frac{9.88}{11}$ of 5280 = 4742 cubic feet a second", which the bridge would discharge with a mean velocity of 9 feet a second.

The calculations given in para: 5 of this office letter No. $\frac{6152}{1069}$ were made

made by Ryves Formula $D = C\sqrt{m^2}$. C being taken as 562 for areas between 15 and 100 miles of the sea.

If however the value of c 675 for limited areas near the hills, which is the proper one, for this case, be taken, the discharge will be 3105 cubic feet a second, which would give a mean velocity of 5·82 feet a second if the Bridge ran full.

Experience has shown that the Bridge safely passed the abnormal flood of 1892 without injury to it, and that these great floods have been caused solely by the bursting of Tanks, so that I consider this Bridge as it now is can safely carry all surplus rain fall discharged from the Vatigal Tank calingula, and that this Company can hardly be expected to provide Bridges with waterway contingent on the bursting of defective Tanks above them.

4. It would appear therefore that if the bund of the Vatigal tank be maintained in efficient repair the present 30 feet Arch in the Railway is ample for the accommodation of the drainage flowing through it. But if the Mysore Government

4.

Government contemplate any alterations in the present condition of the Vatigal tank by which the storage of water will be largely increased, thereby enhancing the risk to the railway in the event of the bund again failing, it is hoped that the Mysore Government will be prepared to bear the cost of any additional waterway in the railway required to meet this risk.

5. I shall feel much obliged if you will be so good as to favour me with your further views on this subject in the light of the observations now offered.

I have &c.
Sd/ Henry C. West.
Offg: Agent and Manager.

(True Copy)

Agent and Manager.

Enclo: No 1 to Ams No 1103
16-12-96

No 4062

Mysore P. W. Department
Central Office
Bangalore 6th August 1895

From

The Chief Engineer of Mysore
P. W. Department

To

The Agent and Manager.
Madras Railway

Through

The 1st Assistant to the Resident in Mysore

Sir,

In reply to your letter No 8599/658 dated 13th ultimo, stating that, if the bund of the Dattigal Tank be maintained in efficient repair, the present 30 feet arch in the Railway would be ample for the discharge of the drainage flowing from it, and requesting my further views on the subject in the light of the observations now offered, I have the honor to inform you that the catchment area of this Tank is shown by the Topo Survey Map to be 11·25 square miles (say 11 square miles) and as a run-off from this hilly catchment of 3/4" per hour may occur, not often but now and then, as it probably did in 1892 when there was something like

5"

5" or 6" of rain in 2½ hours, as reported one of the Officers at the Kolar Gold Fields, the Tank weir will discharge 5,280 Cft. per second, as already intimate If the Railway Engineers are satisfied t their bridge can pass this discharge, whi will require a velocity of 10' a second thro the area of the present opening they can leave the bridge as it is.

II But I must call special attentio to the fact that in this particular part of the District, short but severe storms of rain occasionally occur and the Tanks being as a rule small shallow ones, they can absorb but a small proportion of such sudden down pours. I cannot therefore but think, that however well we may maintain the Tank in this valley without altering their original capacities, there must be danger if the railway bridge is not enlarged.

No 3078 dated 9th August 1895. I have &c

Forwarded
Sd/ K. D. Erskine
1st Asst. Resident

Sd/ C. Bowen. Colonel
Chief Engineer of
Mysore
P.W. Department.

| True Copy |

Agent and Manager.

(No. I.)

No. ~~8599~~
1103

MADRAS RAILWAY.

AGENT AND MANAGER'S OFFICE,

Madras, 16th December 1895

From

The Agent and Manager.
Madras Railway

To

The Consulting Engineer for Railways.
Madras.

SIR,

I have the honor to forward herewith an estimate, with plan No. 28, for converting the 30' arch Bridge at 168/10 miles into a girder opening and to request that the sanction of Government may be conveyed to me for the required outlay Rs 10,766/- chargeable in the proportion of Rs 7,829 to Capital and Rs 2,937 to Revenue.

2. The line at this mileage has been damaged on two occasions, once in 1869 and again in 1892 by the heavy floods combined with the bursting of tanks, and it is considered that the safety of the line will be ensured by increasing the waterway from 533 to 720 square feet.

The question of enlarging the waterway was first raised by

Agent & Manager's letter No. 6658 of 12.7.95
Chief Engineer, Mysore " 4062 of 6.8.95

Colonel Bowen, Chief Engineer of the Mysore Government and I enclose for your information copies of correspondence with him marginally noted.

3 It will be observed that no provision has been made in the Estimate for Diversion, for wear and tear of the materials (required for a length of 167 L. yds) which will be on the Line until the proposed opening is completed. In reference to this the Chief Engineer explains that as these materials will be in use for a short time only the depreciation will be immaterial and may therefore be disregarded.

4. Information as to provision in the Budget and date on which sanction will lapse is given on the estimate.

I have the honor to be
Sir,
Your most Obedt. Servant

Agent & Manager

Encl 4

of Rs 1500 under Stores, in the Revised Estim

C. No. 7142
Recd. 17/12/95

MADRAS RAILWAY.

From The Agent and Manager.

To The Consulting Engineer for Railways.

Dated 188

No.

Recd.

Letter to Am no 40
7-1-96

FORM No. 21.
500—8-6-89.

1

OFFICE OF THE CONSULTING ENGINEER FOR RAILWAYS,
Madras, ~~17th~~ 18 December 1895

EXAMINER RAILWAY ACCOUNTS, MADRAS
Sr. No. 590
19 DEC. 95

No. 4074

For Circle
17/12

OFFICE NOTE.

Letter from the Agent, + Manager, Madras Railway, No. 8599/1103, dated 16th December 1895, forwarded to the Examiner of Railway Accounts, for favour of check as to allocation and budget provision.

F. D. Fowler
for E. R.

17/12

EXAMINER'S REPLY.

21/12

The Estimate is correct as to allocation and requires the sanction of the Local Government, which may be accorded if the work is considered "special" as it was not entered in the Budget estimate of the Railway for the current year.

2. It is for E. R. to decide whether Rs 1400 charged to Revenue for masonry correctly represents the approximate value of the arch to be removed.

3. Funds are available from the grant for unsanctioned works Schedule B of Budget 95-96; but it is observed that no provision has been made, for the contemplated expenditure during the current of Rs 2700 under cash & of Rs 1500 under stores, in the Revised Estimate just

a rough estimate of the cost of doubling the existing 30 ft. arch and also of adding an additional 30' girder opening

6/1

6/1

Madras Railway Company,
Chief Engineer's Office,
Madras, 11th February 1896.

No. C/6152/175.

The Agent and Manager.

Dear Sir.

Single 30 feet arch at 168/10 miles Bangalore Branch.

With reference to your endorsement on Consulting Engineer's letter No. 40 of 7th January 1896. I beg to forward herewith the rough estimates called for.

(1). The original scheme provides for converting the existing arch into a girder and raising the gradient 2 feet. This can be economically carried out by temporarily diverting the line on the double line side of the arch and then dismantling the arch for half the width of the bridge. The estimated cost of this scheme, as already submitted, is Rupees 10,766/.

(2) The construction of an additional 30 feet arch as proposed by the Consulting Engineer will involve a very costly diversion as the line runs on a high bank. This scheme is estimated to cost Rupees 17,984/. including revetment of the toe of the embankment.

The

Madras Railway.

Bangalore Branch Line.

Comparative estimates of the Bridge at $\frac{168}{10}$ miles.

Description of work		Quantity	Rate		Amount		
Proposed 30 ft Girder opening in lieu of 30 ft arch and raising line. Sent for Sanction to Agent & Manager on 9th December 1895.							
Masonry	Cft	4,000	Per 100	35-0-0	1,400	.	.
Bed Stone	"	24	Each	1-0-0	24	.	.
Teak timber	"	84	"	4-4-0	357	.	.
Dog bolts	No:	56	"	-12-6	43	12	.
Chairs	"	28	"	0-6-6	11	6	.
Trenails	"	56	"	-1-7	5	8	8
Cost of 35 feet Girder					1,361	.	.
Strengthening do					775	.	.
Fixing up do					50	.	.
Laying Permanent way	Lyds	12	Each	1-8-0	18	.	.
Removing do	"	12	"	-4-0	3	.	.
do existing arch					350	.	.
Removing and refixing tank Staging & tank					150	.	.
Carriage of materials	Tons	10	Each	3-4-6	32	13	.
Contingencies					229	8	4
				Rs	4,811	.	.
Cost of Raising line				—	1,705	.	.
" Diversion				—	750	.	.
" Pitching Bank				—	3,500	.	.
			Total		10,766	.	.

Chief Engineer's Office,
11th February 1896.

Description of work		Quantity	Rate		Amount		
Additional 30 ft Arch							
Removing existing masonry	cft	7,607	7/-1-	℘ 100 cft	532	7	10
Excavation	"	8,399	19/-1-	℘ 1,000 cft	159	9	4
Removing Bank	"	71,136	7/-1-	"	497	15	3
Masonry	"	13,283	35/-1-	℘ 100 cft	4,649	.	10
Archwork	"	1,600	75/-/-	"	1,200	.	.
Ballasting	"	3,840	19/-1-	℘ 1000 cft	72	15	4
Mango wood Centering	No:	5	173/-1-	Each	865	.	.
Carriage of materials	Tons	8	3/4/6	"	26	4	.
Contingencies					400	11	5
				Rs	8404	.	.
Cost of Diversion				—	6,080	.	.
" Pitching Bank				—	3,500	.	.
			Total	Rs	17,984	.	.

Agent & Manager.

Description of work	
Additional 30 ft Girder opening to the existing Arch.	
Removing existing masonry	Cft
Excavation	"
Removing Bank	"
Masonry	"
Bed Stones	"
Teak timber	"
Dog bolts	No:
Chairs	"
Trenails	"
Cost of 35 ft Girder	
Strengthening do	
Fixing up do	
Laying Permanent way	Lyds
Removing do	"
Carriage of materials	Tons
Contingencies	

Cost of
"

Henry C

Chief Engin

2

No. C/6152/175.

Madras Railway Company,
Chief Engineer's Office,
Madras, 11th February 1896.

The Agent and Manager.

Dear Sir.

Single 30 feet arch at 168/10 miles Bangalore Branch.

With reference to your endorsement on Consulting Engineer's letter No. 40 of 7th January 1896. I beg to forward herewith the rough estimates called for.

(1). The original scheme provides for converting the existing arch into a girder and raising the gradient 2 feet. This can be economically carried out by temporarily diverting the line on the double line side of the arch and then dismantling the arch for half the width of the bridge. The estimated cost of this scheme, as already submitted, is Rupees 10,766/.

(2) The construction of an additional 30 feet arch as proposed by the Consulting Engineer will involve a very costly diversion, as the line runs on a high bank. This scheme is estimated to cost Rupees 17,984/. including revetment of the Toe of the embankment.

The

(3) The other alternative of adding a 30 feet girder opening to the existing arch - also proposed by the Consulting Engineer - will entail a similar diversion as in scheme (2) and the cost of the work is estimated at Rupees 16,679/- including revetment of the slope of the bank.

2. In all three projects the revetment of the slope of the bank is retained, as it will be necessary. In the opinion of this Office the original scheme (1) appears to afford sufficient waterway, and, if the Mysore Government be urged to keep the tank in efficient repair, it is considered that the outlay of Rupees 10,766/- is as much as the Company should be called upon to incur to secure the safety of the line.

Yours faithfully
(Sd) Henry C. West,
Chief Engineer

/True copy/

Agent & Manager.

Enclo. 1 to E Rs e No. 668 of 96

Amis No. 123 dt 12-2-96

(A. & M. I.)

No. 8599
123

Coll 13/2

MADRAS RAILWAY.

AGENT AND MANAGER'S OFFICE,

Madras, 12th February 1896.

From

The *Agent and Manager,*
M. R. Coy.

To

The *Consulting Engineer for Railways,*
Madras.

SIR,

In compliance with the request contained in your letter No. 40 of the 7th ultimo, I have the honour to forward herewith a copy of the Chief Engineer's letter No. C/$\frac{6152}{175}$ of the 11th Instant together with the rough estimates referred to therein furnishing the information called for by you in connection with the conversion of the 30' arch Bridge at $\frac{168}{10}$ miles Bangalore Branch into a girder opening.

do Perhaps the statement alone would be sufficient will you please note. HWt. 13/2

I have the honour to be,
Sir,
Your most obedt. Servant,

Amis S.W.B.
Agent & Manager.

Enc/2.

reasons given sufficient way.

S. No. 668
Recd. 13/2/96

123

In compliance with the request contained in your letter No. 62 of the 7th instant I have the honour to forward herewith a copy of the Chief Engineer's letter No. [illegible] of the 11th instant together with the [illegible] referred to therein regarding the proposal made by you in connection with the conversion of the [illegible] Bridge at [illegible] Bangalore Branch into a public opening.

I have the honour to be
Sir
Your most obedient Servant

Form No. 34.

P. W. D., RAILWAY BRANCH.

OFFICE OF THE CONSULTING ENGINEER FOR RAILWAY.

Madras, 189 .

OFFICE NOTE.

From ~~E.~~ R. D1

To

The following note was made by me on inspection

Mile 168/10. 30 ft arch bridge –

The bank across a deep narrow valley at this mileage was topped last monsoon owing to the bursting of a tank just above the Rly.

The waterway at present is 533 sq ft.

According to the R.S. calculation ~~at 6 ft~~ the discharge from the drainage area at 6 ft per sec requires 520 sq ft.

The Mysore test say that 528 sq ft is required for a vel of 10 ft per sec or 880 sq ft at 6 ft per sec.

By converting the arch into a girder the waterway will be increased to 720 sq ft

But not till water rises above opening

This bridge has always ~~stood~~ hitherto given sufficient way.

ordinary drainage-discharge.

If it is considered that the rise is to provide for the contingency of the bank bursting, the arch ~~it~~ should be increased. But if not. I think revetting the bank will suffice.

CRW. 14/2

EM I think revetting should suffice

FWT. 14/2

The estimate of 10,766/- for converting the arch into a girder opening may be sanctioned - revise [illegible]

FWE 15/2 96

AR.

draft Sanction & G.O. See CRs [illegible]

FWT. 15/2

132R

(R.) Form No. 3.

No 132 R. dated 17.2.96

PUBLIC WORKS DEPARTMENT,

RAILWAY BRANCH.

A/-

PROCEEDINGS OF THE MADRAS GOVERNMENT.

READ the following

Letter from the Agent & Manager Madras Ry } H.E. No. 8599/1103 of 16 Decr 1895

The estimate amounting to Rs 10,766, chargeable in the proportion of Rs 7,829 to Capital and Rs 2,937 to Revenue for converting the 30' arch bridge at 168/10 miles, Bangalore Branch, into a girder opening is sanctioned as a special work. Provision ~~being~~ should be made for the contemplated expenditure during the current financial year of Rs 2700 under Cash & Rs 1,500 under Stores in the revised estimate

for

for 1895-96.

2. This sanction has been registered as No 37. R of 1895-96.

Ind

17/2

R

Mr Key

Bridge at $\frac{168}{10}$ B.B.

A/-

No 132 R. dated 17.2.96

DESPATCHED
23 FEB 96

To
The Agent & Manager Madras Ry
— w. [illegible]

Despd in Ind
17/2/96