Public Works (1897) Department.

G.O., No. 834 R

DATED 16th Oct 97

22/10/97
10/10/97

80/4

[Despatch Abstract.]

Diversion of the Koduru river, sanction accorded to the estimate of Rs. 19,427 for the — at $\frac{107}{10-11}$ miles, N.W. line, Madras Railway.

21/10/97

[P.W. 26. 1,000—20-11-96.]

Indexed. 21/10/97

BACK PAPERS.

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

FURTHER PAPERS.

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

RAILWAY.

Government (1897) of Madras.

PUBLIC WORKS.

Recd.	1897.	*Enclosures*
Regd.		*Spare copies*

G.O., No. 834 R., 16th October 1897.

OCTOBER.

Diversion of the Koduru River

Sanction accorded to the estimate of Rs. 19,427 for the — at 107/10-11 miles, North-west line, Madras Railway.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Railway.

Read the following papers :—

From the Acting Agent and Manager, Madras Railway, to the Consulting Engineer for Railways, dated Madras, 17th April 1897, No. E. 629/383.

I have the honour to forward herewith, in duplicate, an estimate with plans, Nos. 868-A (Mis.) and 868-B (Mis.), for the proposed diversion of the Koduru river at 107 miles, North-west line, and to request that the sanction of Government may be conveyed to me for the required outlay, Rs. 47,828, chargeable to Capital.

2. In explanation of the necessity for the work, the Acting Chief Engineer writes :—

> The present course of this river above the Koduru bridge is very tortuous, as the accompanying plan shows, and threatens the railway embankment at 107/6 miles, where it comes very close to it; the stream at the bridge instead of being axial, tends to run parallel to the railway and so takes the piers in flank.
>
> I have gone over the ground in company with the Deputy Consulting Engineer, Mr. Scovell, and after careful consideration as to what had best be done, I have come to the conclusion that the only satisfactory method of dealing with this river is to divert its course as shown, so as to lead the stream fairly through the bridge, and at the same time prevent it from breaching the railway at 107/6 miles.

3. As the work is of an urgent nature, I request that the sanction of Government to its being put in hand may be communicated to me in anticipation of the Board's approval which will be applied for by the next mail.

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

From the Joint Secretary to Government, Public Works Department, Railway Branch, to the Agent and Manager, Madras Railway, dated 14th May 1897, No. 2494 C.

In reply to your letter, No. E. 629/383, dated the 17th April 1897, I have the honour to enclose, for your information, a note by the Consulting Engineer on the subject of the proposed diversion of the Koduru river, near mile 107 of the North-west line.

2. Subject to the cost of the diversion, altered in our detail as suggested by the Consulting Engineer being covered by the estimate of Rs. 47,828, I am directed to sanction that estimate and to convey to you the permission of Government to go on with the work, in anticipation of your Board's approval.

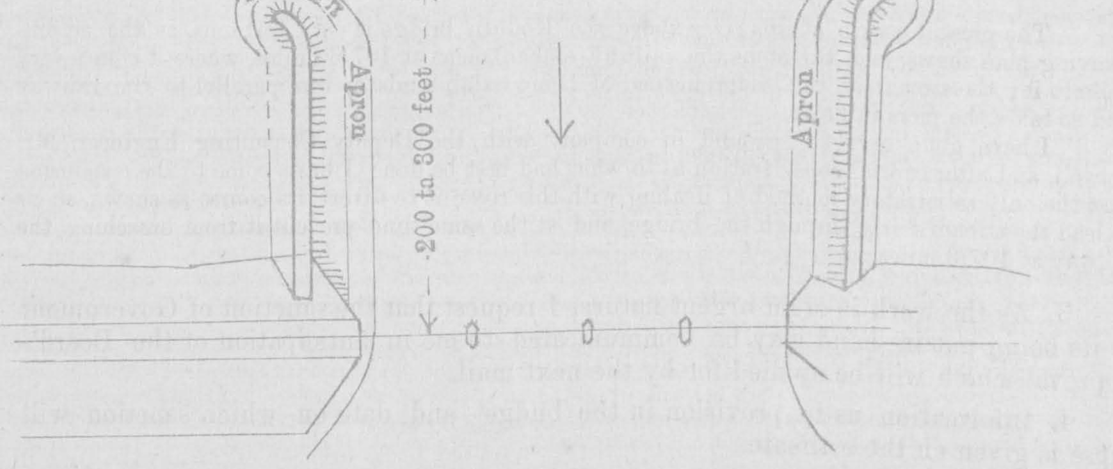
3. As regards the incidence of the cost of the work I am directed to remark as follows: It seems probable that, as originally constructed by Capital, the line must have been considered to be safe and secure and the waterway sufficient; and that it is only due to the gradual erosion of its banks by the river during the long period since its construction, that the line has now come to be in danger. Had the erosion been prevented during all these years, the cost would have been borne by Revenue. It follows, therefore, that the cost of the measures now proposed to be taken must be borne by Revenue.

4. I am desired to suggest, for your Chief Engineer's consideration, that it is more than probable that the danger of erosion at 107/6 would cease and the river again recede to a safe distance in a season or two, if the pair of training embankments referred to in the Consulting Engineer's note were alone constructed and efficiently constructed.

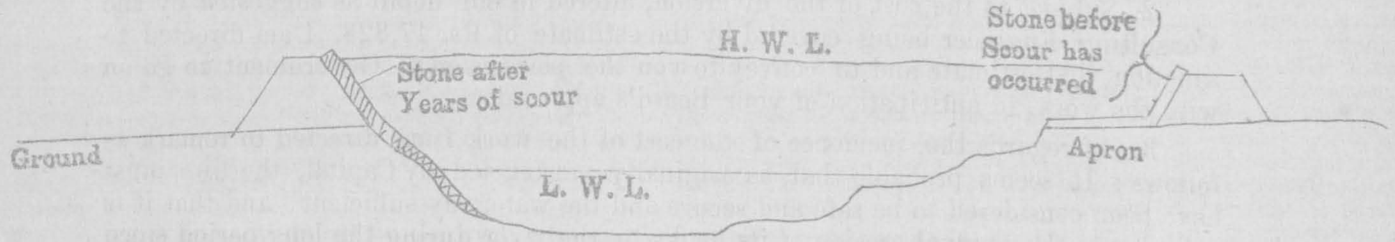
ENCLOSURE.

NOTE by the Consulting Engineer for Railways on the diversion of the Koduru river, near mile 107, North-west line, Madras Railway.

The diversion seems to be necessary. But I do not like one detail of the design. At the place where the diversion enters the bridge the water ought to pass through a pair of pitched bunds. I see that pitching for 600 feet has been allowed for on the right bank. So much on one bank seems unnecessary, and I would divide it into two, pitching 250 feet of both banks, and turning in and pitching the upstream end of both bunds. Pitching of this sort ought invariably to have an apron laid horizontally at foot of it, if the bed is of sand, in order that wherever the sand is cut away, the apron may drop down of itself and so, automatically as it were, pitch its slope as deep down as the river ever cuts. The following is a suitable shape for such training banks:—



A bridge opening so provided discharges better than without the bunds, because there is an absence of cross currents and dead water which result from the water trying to get in at the sides near the abutments. The cross section of such bunds will be like this—



5th May 1897. (Signed) F. J. E. SPRING,
Consulting Engineer.

From the Acting Agent and Manager, Madras Railway, to the Joint Secretary to Government, Public Works Department, Railway Branch, Ootacamund, dated Madras, 28th May 1897, No. E. 629/5654.

I have the honour to acknowledge the receipt of your letter, No. 2494 C., dated 14th May 1897, forwarding a note by the Consulting Engineer for Railways on the proposed diversion of the Koduru river at 107/10–11 miles, North-west line.

2. With reference to certain modifications advocated in the design of the protective works, I beg to enclose a copy of a letter from the Company's Acting Chief Engineer in which he deals with this subject, and also submits some further observations in regard to the allocation of the cost of this diversion.

3. I shall therefore feel much obliged if you will be so good as to reconsider this subject in the light of the explanation now offered by the Acting Chief Engineer. I desire to add that the Chief Auditor is also of the opinion that the cost is a legitimate charge to Capital, and I fully support the view held by these officers.

Enclosure.

From the Acting Chief Engineer, Madras Railway, to the Acting Agent and Manager, Madras Railway, dated Madras, 27th May 1897, No. C. 7906/756.

[Your endorsement No. E. 629 of 18th instant, on letter, No. 2494 C. of 14th idem, from the Joint Secretary, Public Works Department, Railway Branch, Madras.]

I beg to inform you that I concur with the Consulting Engineer in thinking that a pair of pitched bunds 250 feet in length on the upstream side of the Koduru bridge would be preferable to a revetment 600 feet in length on the right bank only, but I do not think that a pair of such bunds would suffice, without any further training of the river approach, to protect the Koduru bridge against damage from heavy floods such as occurred in November 1896. I may also point out that the river bed being composed of stones and boulders, the apron in front of the revetment will not be necessary as it would have been in the case of a river with a sandy bed.

2. In his letter under notice, the Consulting Engineer remarks that the estimate should be debited to Revenue, because "it is only due to the gradual erosion of its banks by the river during the long period since its construction, that the line has now come to be in danger." I am unable to find any evidence either in our plans or from enquiries made on the spot to support such an assumption, and I may say that, although it is possible some slight erosion of the banks may have occurred during the past thirty years, our plans show clearly that the river has neither shifted its bed nor changed its direction of flow relative to the railway to any material extent during that period.

3. The sharp bend at 107/6 miles where heavy scour occurred in the great flood of November 1896 and where the line is now threatened, is shown on our plans to have existed at the time the original survey for the North-west line was made.

4. From his remarks, I gather that the Consulting Engineer is under the impression that this scour was the chief reason for the proposals for the training of the river put forward by Mr. Stoney in the plans and estimates now under reference. This, however, is not so, the main object of the training works proposed by Mr. Stoney being the protection of the Koduru bridge from a repetition of the damage occasioned by the flood of last November.

5. It is very evident that the Engineers who constructed the North-west line were not aware that the Koduru river was liable to violent floods of the nature of that which occurred at the end of 1896 as, had they been in possession of such information, they would not have permitted the river to occupy such a tortuous course immediately above the bridge, but would have taken steps, at the time the line was constructed, to divert the river into a straight channel as was done at several other rivers on the North-west line.

6. As a result of the failure to train the river through a straight channel when the line was constructed, the bridge was damaged last year, one pier and one abutment being thrown down, and the retaining wall on the right bank partly destroyed; and I may say that, in my opinion, no minor protective works to prevent erosion of the river banks would have saved the bridge; indeed, the revetment above the bridge which was built in cement, was torn out and thrown into the river.

7. It therefore seems very necessary to divert the river as proposed by Mr. Stoney, and the work being an entirely new one is, in my opinion, chargeable to Capital under chapter I, section B, paragraph 2 (*d*) (i), of Manual of Special Orders published by the office of the Examiner, Railway Accounts, Madras.

I may add that there is a precedent for such allocation in the estimate for the training works of the Nagari river which was debited to Capital account.

From the Consulting Engineer for Railways, to the Agent and Manager, Madras Railway, dated 3rd June 1897, No. 1855.

In the light of the explanation afforded in your Chief Engineer's letter which accompanied your letter, No. 5654, dated the 28th May 1897, I agree with you that the cost of diverting the Koduru river at mile 107/10–11 is fairly a capital debit.

As, however, I said in my note which accompanied my No. 2494 C., dated the 14th May 1897, I do not like the way in which it is proposed to engineer the diversion. The two leading or training bunds well pitched, and with their upstream bends strongly pitched at back as well as front, are in all such cases most valuable in passing the water straight through the bridge and in securing a cushion of dead or currentless water alongside the railway embankment. Given these, very much less pitching is necessary elsewhere, except just at bends. A new sketch and estimate is therefore necessary. A length of 150 to 200 feet ought, I think, to amply suffice for each of the leading bunds.

From the Acting Agent and Manager, Madras Railway, to the Consulting Engineer for Railways, dated Madras, 16th August 1897, No. E. 629/790.

With reference to your letter, No. 1855 of the 3rd June last, I have the honour to forward herewith, in duplicate, a revised plan * and estimate for the diversion of the Koduru river at 107/10–11 miles, North-west line, and to request that the sanction of Government may be conveyed to me for the required outlay (Rs. 52,397) chargeable to Capital.

* No. 868-E (Mis.).

2. You will remember that the matter was discussed on the recent inspection of the North-west line, and the modifications of the original design which were then considered necessary have been made in the revised plan herewith sent.

3. The Board approved of the proposed work in paragraph 12 of their letter, No. 957, dated 18th June 1897, an extract of which is enclosed for your information.

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

5. The revised estimate will be submitted to the Board as it exceeds the amount already sanctioned, but I request that you will sanction the work being commenced subject to the Board's approval.

Enclosure.

Extract from a letter from the Secretary, Madras Railway Company, London, dated 18th June 1897, No. 957.

Diversion of Koduru river.

12. A copy of your letter to the Government Consulting Engineer, dated 17th April 1897, referred to in paragraph 7 of No. 2308, was duly forwarded to Mr. Hayter, together with the plans and estimate, amounting to Rs. 47,828, chargeable to Capital, for the proposed diversion of the Koduru river at 107 miles, North-west line. I am now directed to transmit, herewith, copy of his reply, dated 9th instant, in which he expresses the opinion that the Board should, for the reasons stated, agree to the diversion being made. I am therefore to convey to you the Board's approval of the work being carried out. They observe from paragraph 13 of No. 2310 that the necessary sanction of Government has been obtained.

They notice that the Consulting Engineer in his letter No. 2494 C., dated 14th May, contends that the work should be charged to Revenue. The Board think, however, that the present case is similar to that which is described in paragraph 5 of the Secretary of State Sir Charles Wood's letter to the Governor-General in Council, dated the 9th March 1864, and that the cost should be provided from Capital.

From the Consulting Engineer for Railways, to the Agent and Manager, Madras Railway, dated 1st September 1897, No. 2824.

As the estimate which accompanied your letter, No. E. 629/790, dated the 16th August 1897, is such a heavy one, it is worth considering whether it would not be better to omit the whole of the proposed excavation and banks between the points which I have marked on your tracing, herewith returned as E and F, and to insert a small bridge, say 2 × 40, at or near point G with short training bunds as sketched. The training bund at C D is unnecessarily long, and might end at or near H being carried along the edge of the river bank however, instead of projecting out into it as shown.

2. During a recent inspection of the East Coast Railway, I noticed how admirably this type of short training bund had acted since a large number of them were made three or four years ago. It is usually unnecessary to do anything to a river above them, as currentless water is invariably found along the railway bank at the back of them.

3. You had better submit separate estimates for the proposed new bridge and for the alterations near the old one.

From the Acting Agent and Manager, Madras Railway, to the Consulting Engineer for Railways, dated Madras, 24th September 1897, No. E. 629/928.

With reference to your letter No. 2824, dated 1st September 1897, I have the honour to return the original tracing sent with your letter, together with two additional tracings, marked plan A and plan B, regarding which full explanations are furnished in the accompanying copy of a letter from the Acting Chief Engineer. A detailed estimate for plan A, amounting to Rs. 19,427, is also enclosed.

2. Attention is invited to the opinion expressed by the Acting Chief Engineer as to the doubtful advantage to be gained by the insertion of the proposed double 40-feet opening at 107/6 miles, and that it would probably result in the flooding of, and damage to, the lands on the east side of the railway, in which case heavy compensation would be demanded from the Company. If, however, after consideration of the views now expressed by the Acting Chief Engineer, you still wish an estimate prepared for this alternative, I will arrange for this to be submitted.

ENCLOSURE.

From the Acting Chief Engineer, Madras Railway, to the Acting Agent and Manager, Madras Railway, dated 17th September 1897, No. C./1377.

[Your No. E. 629/A. 9391 of 3rd current.]

I beg to inform you that I am still of opinion that the general plan for diverting the course of the Koduru river above our bridge prepared by Mr. E. W. Stoney and approved by Mr. Harrison Hayter should be adhered to, subject to the modifications in the details of the Protective works suggested by the Consulting Engineer for Railways.

2. If, however, Government is not prepared to sanction the expenditure of the large sum which the diversion of the river would involve, I would propose that we should make the bridge as secure as possible under the circumstances by constructing the training works shown in plan A attached, the estimate for which amounts to Rs. 19,427.

3. I beg to remark that I am unable to see what advantage is to be gained by the insertion of a double 40 feet opening at 107/6 miles as proposed in the Consulting Engineer's letter now under reference as it appears to me that such a bridge would in all probability lead to the flooding of, and damage to, lands on the east side of the railway for which heavy compensation might be demanded from the company. If the river is to be permitted to occupy its existing bed, then I think the line can be made quite safe at 107/6 miles by the small bund and boulder revetment P Q shown in plan A. With regard to the bund on the south side of the river, the land at S is practically on the same level as the river bed; whilst between R and P, the river has high and well defined banks, and as this river is subject to sudden floods when the water comes down in great rushes, I think it is better to tie the bund into the high ground at R.

4. I also prefer constructing the bund as shown on plan A instead of "along the edge of the river bank" as shown in plan B as in the latter case the water would be trained to strike the piers at an angle and the overturning of the fourth pier last year was due to its being taken in the flank. The bund as shown on plan A would tend to steady the water and bring it down parallel to the axes of the piers.

5. The estimate for carrying out plan A has been forwarded for allocation to the Chief Auditor who will in due course submit it to you for transmission to the Consulting Engineer for Railways, but I still think that the original and larger scheme is the safer method of dealing with this river.

ORDER—No. 834 R., dated 16th October 1897.

Sanction is accorded to the estimate for plan A, amounting to Rs. 19,427, chargeable to Capital, for the diversion of the Koduru river at 107/10–11 miles, North-west line.

2. This sanction has been registered as No. 24 R. of 1897–98.

(True Extract.)

(Signed) F. J. E. SPRING,
Offg. Joint Secy. to Govt.,
Railway Branch.

To the Consulting Engineer for Railways.
" Agent and Manager, Madras Railway.
" Examiner, Railway Accounts, Madras.

Exd. T. K. Narayana Aiyangar.

(A. & M. 1.) No. E629/383

SERIAL No. 2

MADRAS RAILWAY.

AGENT AND MANAGER'S OFFICE,

Madras, 17th April 1897.

Print

17

From

The Ag: Agent and Manager.
Madras Railway.

To

The Offg: Consulting Engineer for Railways.
Madras.

Sir,

I have the honor to forward herewith, in duplicate, an Estimate with plans No. 868 A (Mis.) and 868 B (Mis) for the proposed diversion of the Koduru River at 107 miles, North West Line, and to request that the sanction of Government may be conveyed to me for the required outlay, Rs 47,828, chargeable to Capital.

2. In explanation of the necessity for the work the Acting Chief Engineer writes:-

"The present course of this river above the Koduru Bridge is very tortuous, as the accompanying plan shows, "and threatens the Railway embankment at 107/6 miles, "where it comes very close to it, the stream at the Bridge "instead of being axial tends to run parallel to the "Railway, and so takes the piers in flank.

"I have gone over the ground in company with the Deputy

C. No. 1746
Recd. 21/

MADRAS RAILWAY.
From
The Agent and Manager.
To
The Consulting Engineer
for Railways.
No.
Dated
Read.

No. 2494 C of 24 May /97

SERIAL
No. 5

Form No. 4.

~~Office of the Consulting~~ Engineer for ~~Railways~~,

Madras, ______ 189 .

C/ X302

Prin

To From R

3P

AGENT AND MANAGER, M. R.

No. Reply No. , dated

Reminders.

No 1691 of 18/5/97
Copy to CR for information.

Despatched on 18/5/97
Subject.

Sir,

In reply to your letter No. E-629/383 dated the 17th April 97, I have the honour to enclose for your information a Note by the Consulting Engineer on the subject of the proposed division of the Podum River near mile 107 of the N.W. line.

2. Subject to the cost of the division, altered in one detail as suggested by the Con. Eng., being covered by the estimate of Rs. 47828 I am directed to sanction that estimate and to convey to you the permission of Government to go on with the work, in anticipation of your Board's approval.

3.- As regards the incidence of the cost of the work I am directed to remark as follows

"Deputy Consulting Engineer, Mr Scovell, and after
"careful consideration as to what had best be done
"I have come to the conclusion that the only satisfactory
"method of dealing with this river is to divert its course
"as shown, so as to lead the stream fairly through the
"bridge, and at the same time prevent it from breaching
"the Railway at $\frac{107}{6}$ miles".

3. As the work is of an urgent nature, I request that the sanction of Government to its being put in hand may be communicated to me in anticipation of the Boards' approval which will be applied for by the next mail.

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 obedient Servant,

for Ag Agent & Manager.

Enclos. one Estimate and 2 plans in duplicate.

W.A.

It seems probable that as originally constructed by Capital, the line must have been considered to be safe and secure and the waterway sufficient; and that it is only due to the gradual erosion of the banks of the river during the long period since its construction that the line has now come to be in danger. Had the erosion been prevented during all these years the cost would have been borne by revenue. It follows therefore that the cost of the measures now proposed to be taken must be borne by Revenue.

4. I am desired to suggest for your Chief Engineer's consideration that it is more than probable that the danger of erosion at 107/6 would cease and the river again recede to a safe distance in a season or two, if the pair of training embankments referred to in the Con. Engr's note were alone constructed and efficiently constructed.

I have &

FWS

5/5

Copy to C.R for information

Form No. 34.

RECEIVED IN THE SURVEY OFFICE
ON
11 NOV. 97
MADRAS

P. W. D., RAILWAY BRANCH

OFFICE OF THE CONSULTING ENGINEER FOR

Madras, 189

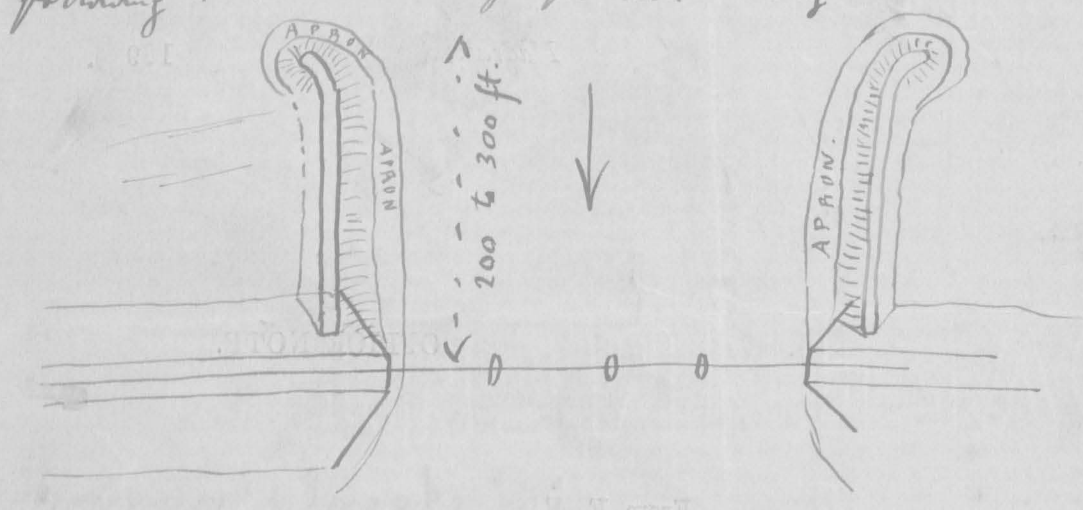
Print

OFFICE NOTE.

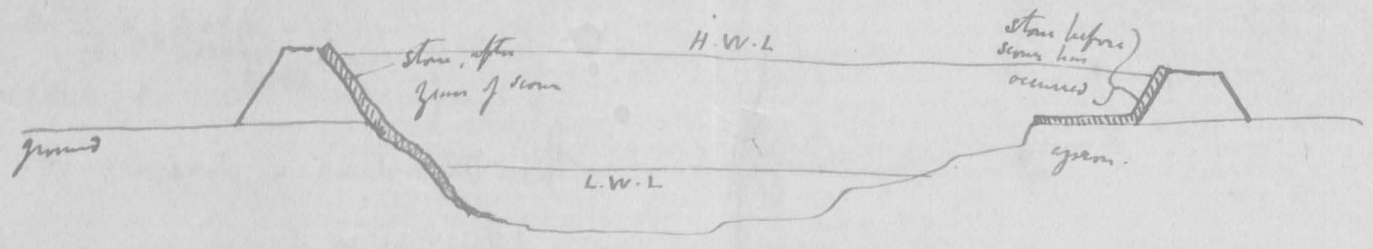
From E. R.

Madras Ry.
~~To~~ The Kunderu River Diversion
Mile 107 North West Line.

The diversion seems to be necessary. But I do not like one detail of the design. At the place where the diversion enters the bridge the water ought to pass through a pair of pitched bunds. I see that pitching for 600 feet has been allowed for on the right bank. So much on one bank seems unnecessary and I would divide it into two, pitching 250 feet of both banks, and turning in and pitching the up stream end of both bunds. Pitching of this sort ought invariably to have an apron laid horizontally in front of it, if the bed is of sand, in order that wherever the sand is cut away, the apron may drop down of itself and so, automatically as it were, pitch its slope as deep down as the river ever cuts. The following is a suitable shape for such training banks



The bridge opening so provided discharges better than without the bunds, because there is an absence of cross currents and dead water which result from the water trying to get in at the sides near the abutments. The cross section of such bunds will be like this.



F.J.E.S.
Ch. Engr.
5/5/97

Regd. No. 8/120

SERIAL
No. 6

Public Works (1897) Department.

CURRENT No. 5494

Order

From
The Agent & Manager
Madras Railway

No. E $\frac{629}{5654}$

Dated 28th May 1897
Received 4.6.97
Enclosures one
Spare copies

SUBJECT.

Proposed diversion of the Koduru River at $\frac{107}{10-11}$ miles N.W.L.

—

Furnishing with Ch. Engr's report in regard to the allocation of the cost of the —— & requesting to reconsider the subject in the light of the above report.

BACK PAPERS.

G.O.	No.	Department.	Date.

FURTHER PAPERS.

G.O.	No.	Department.	Da

68

No C 7906/756.

Madras Railway Company
Chief Engineer's Office
Madras 27th May 1897

The Ag Agent and Manager.

5 38

Dear Sir,

Proposed diversion of Koduru River.

Your endorsement No E. 629 of 18th instant on letter No 2494 C of 14th idem from the Joint Secretary, P.W.D. Railway Branch Madras

I beg to inform you that I concur with the Consulting Engineer in thinking that a pair of pitched bunds 250 feet in length on the up stream side of the Koduru Bridge would be preferable to a revetment 600 feet in length on the right bank only, but I do not think that a pair of such bunds would suffice, without any further training of the River approach, to protect the Koduru Bridge against damage from heavy floods such as occurred in November 1896. I may also point out that the River bed being composed of stones and boulders, the apron in front of the revetment will not be necessary

BACK PAPERS.

FURTHER PAPERS.

(No. 12.) 6,000—14-11-85.

MADRAS RAILWAY.

From
The Agent and Manager.

To
The Consulting Engineer
for Railways.

Dated
No. 188
Recd.

688

necessary as it would have been in the case of a River with a sandy bed.

2. In his letter under notice, the Consulting Engineer remarks that the estimate should be debited to Revenue because "it is only due to the gradual erosion of its banks by the River during the long period since its construction, that the line has now come to be in danger". I am unable to find any evidence either in our plans or from enquiries made on the spot to support such an assumption and I may say that, although it is possible some slight erosion of the banks may have occurred during the past thirty years, our plans shew clearly that the river has neither shifted its bed nor changed its direction of flow relative to the Railway to any material extent during that period.

3. The sharp bend at 107/6 miles where heavy scour occurred in the great flood of November 1896 and where the line is now threatened, is shewn on our plans to have existed at the time the original survey for the North West Line was made.

4. From his remarks, I gather that the Consulting Engineer is under the impression that this scour was the chief

reaso

(No. 12) 5,000—14-11-88.

MADRAS RAILWAY.

From The Agent and Manager.

To The Consulting Engineer for Railways.

Dated 188

Recd.

No.

---

reason for the proposals for the training of the River put forward by Mr Stoney in the plans and estimates now under reference. This however is not so, the main object of the training works proposed by Mr Stoney being the protection of the Koduru Bridge from a repetition of the damage occasioned by the flood of last November.

5. It is very evident that the Engineers who constructed the North West Line were not aware that the Koduru River was liable to violent floods of the nature of that which occurred at the end of 1896 as, had they been in possession of such information, they would not have permitted the River to occupy such a tortuous course immediately above the Bridge but would have taken steps, at the time the line was constructed, to divert the river into a straight channel as was done at several other rivers on the North West Line.

6. As a result of the failure to train the River through a straight channel when the line was constructed the Bridge was damaged last year, one pier and one abutment being thrown down and the retaining wall on the right bank partly destroyed

(No. 12)
MADRAS RAILWAY.
5,000—14-11-85.
From The Agent and Manager.
To The Consulting Engineer for Railways.
Dated 188
Recd.
No.

-stroyed and I may say that, in my opinion, no minor protective works to prevent erosion of the river banks would have saved the Bridge indeed the revetment above the Bridge which was built in cement, was torn out and thrown into the River.

7. It therefore seems very necessary to divert the River as proposed by Mr Stoney and the work being an entirely new one is in my opinion chargeable to Capital under Chapter I. Section B, para 2(d) i of Manual of Special Orders published by the office of the Examiner, Railway Accounts, Madras.

I may add that there is a precedent for such allocation in the Estimate for the training works of the Nagari River which was debited to Capital Account.

Yours faithfully
(sd) H. J. Thompson
Ag Chief Engineer

(True Copy)

for Ag Agent & Manager

(No. 12.) 5,000—14-11-85.

MADRAS RAILWAY.

From
The Agent and Manager.

To
The Consulting Engineer
for Railways.

Dated 188

Recd. No.

P.W. E.I / 5494/97

(No. IV) No. E 629.

5654

MADRAS RAILWAY.

AGENT AND MANAGER'S OFFICE.

MADRAS, 28th May. 1897.

From
Ag
The Agent and Manager of the
Madras Railway Company.

To
The Offg: Joint Secretary,
Public Works Department,
Railway Branch.
Ootacamund.

SIR,

I have the honor to acknowledge the receipt of your letter No. 2494 C dated 14th May 1897, forwarding a Note by the Consulting Engineer for Railways on the proposed diversion of the Koduru River at $\frac{107}{10.11}$ Miles N.W. Line.

2. With reference to certain modifications advocated in the design of the protective works I beg to enclose a copy of a letter from the Company's Acting Chief Engineer in which he deals with this subject, and also submits some further observations in regard to the allocation of the cost of this diversion.

3. I shall therefore feel much obliged if you will be so good as to reconsider this subject in the light of the explanation now offered by the Ag: Chief Engineer. I desire to add that the Chief Auditor is also of the opinion that the cost is a legitimate charge to Capital, and I fully support the view held by these Officers.

I have the honor to be,
Sir,
Your most Obedient Servant,

Ag Agent & Manager.

EM
might conveniently be discussed on inspection?
HHT 31/5

SERIAL

118P

SERIAL No. 7

FORM No. 4.

OFFICE OF THE CONSULTING ENGINEER FOR RAILWAYS,
Madras, 3rd June 1897.

To

9P

AGENT AND MANAGER, M. R.

Print

No. 1855 Reply No. 790, dated 16-8-97

Reminders.

Despatched on 3/6/97

Subject.

pl 179

SIR,

In the light of the explanation afforded in your Chief Engineer's letter which accompanied your letter No. 5654 dated the 28th May. 97. I agree with you that the cost of diverting the Kodurru river at Mile $\frac{107}{10-11}$ is fairly a capital debit.

As however I said in my Note which accompanied my No. 2494-C. dated the 14th May 97. I do not like the way in which it is proposed to engineer the diversion. The two leading, or training, bunds, well pitched and with their upstream heads strongly pitched at back as well as front, ~~top stream heads~~, are in all such cases most valuable in guiding the water straight through the bridge and i securing a cushion of dead or currentless water alongside the railway embankment. Given these, very much less pitching is necessary elsewhere except just at bends. A new sketch and estimate is therefore necessary. A length of 150 to 200 ft ~~in length~~ ought I think to be amply ~~long~~ suffic for each of the leading bunds.

I have &c

31/5/97.

31/5

SERIAL

1158

Extract from a letter from the Secretary,
M. R. Co. London, No. 957 d/ 18-6-97.

Diversion of Koduru river.

12. A copy of your letter to the Government Consulting Engineer, dated 17th April, 1897, referred to in para. 7 of No. 2,308, was duly forwarded to Mr. Hayter, together with the plans and estimate, amounting to Rs. 47,828, chargeable to Capital, for the proposed diversion of the Koduru river at 107 miles N. W. Line. I am now directed to transmit herewith copy of his reply, dated 9th instant., in which he expresses the opinion that the Board should, for the reasons stated, agree to the diversion being made; I am therefore to convey to you the Board's approval of the work being carried out. They observe from para. 13 of No. 2,310 that the necessary sanction of Government has been obtained.

They notice that the Consulting Engineer in his letter 2,494 C., dated 14th May, contends that the work should be charged to Revenue. The Board think, however, that the present case is similar to that which is described in para. 5 of the Secretary of State, Sir Charles Wood's, letter to the Governor General in Council, dated the 9th March, 1864, and that the cost should be provided from Capital.

(True Extract)

Henry C. Walsh

Ag: Agent & Manager.

The Offg: Consulting Engineer

---

was discussed on the recent

N.W. Line and the modifications of the original design which were then considered necessary have been made in the revised plan herewith sen

3. The Board approved of the propos work in para. 12 of their letter No. 957 dated 18th June 1897, an extract of which is enclosed for your information.

4. Information as to provision in

the

ENC. No. 3 TO E. R's C. No. 3586 OF 1897.
LETTER No. 790 d 16. 8. 97
FROM

SERIAL
No. 11

Form N

…FOR RAILWAYS,

E629

790 2

10 P

the Budget and date on which sanction will lapse is given on the Estimate.

5. The revised Estimate will be submitted to the Board as it exceeds the amount already sanctioned, but I request that you will sanction the work being commenced subject to the Board's approval.

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

(5 Enclo:)

Ag: Agent & Manager.

Enc. No. 3 to E. Ch. C. No. 3585 of 189
Letter No. 7

C. No. 3585
Recd. 17/8/97

2

the Budget and date on which an will lapse is given on the Estimate.

3. The revised Estimate will be submitted to the Board as it exceeds the amount already sanctioned, but I request that you will sanction the work being commenced subject to the Board's approval.

I have the honour to be,
Sir,
Your most obedient servant,
Agent & Manager.

MADRAS RAILWAY.

From
The Agent and Manager.

To
The Consulting Engineer
for Railways.

(3 Encls.)

No.
Dated
Recd.

SERIAL
No. 11

Form No. 9.

Office of the Consulting Engineer for Railways,
Madras, 1st September 1897.

To

12 P

AGENT AND MANAGER, M. R.

No. 2824 Reply No. 928, dated 24-9-97

Reminders.

8 No 9

1/9/97

(Enclo - one tracing).

Subject.

Sir,

As the estimate which accompanies your letter No. $\frac{E.629}{770}$ dated the 16th Aug 97 is such a heavy one, it is worth considering whether it would not be better to omit the whole of the proposed excavation and banks between the points which I have marked on your tracing, herewith returned. — E. and F. and to insert a small bridge. Say 2 x 40 at or near point G. with short training bunds as sketched. The training bund at C.D. is unnecessarily long, and right end at or near H. being carried along the edge of the river bank however instead of projecting out into it as shown.

2.. During a recent inspection of the

ENC. NO. 3

E.C.Ry. I noticed how admirably this type of short training bund had acted since ~~[illegible]~~ a large number of them were made three or four years ago. It is usually unnecessary to do anything to a river above them as currentless water is invariably found along the railway bank at the back of them.

3.- You had better submit separate estimates for the proposed new bridge and for the alterations near the old one.

I have &c.

F.J.S.

30/8/97

Madras Railway Company,
Chief Engineer's Office,
Madras. 17th September, 1897.

No.C/1377.

2

1488

The Ag: Agent and Manager.

Dear Sir,

Koduru River.

Your No. E 629 / A 9391 of 3rd Current.

1

I beg to inform you that I am still of opinion that the general plan for diverting the course of the Koduru River above our Bridge prepared by Mr. E. W. Stoney and approved by Mr. Harrison Hayter should be adhered to, subject to the modifications in the details of the Protective works suggested by the Consulting Engineer for Railways.

2. If however Government is not prepared to sanction the expenditure of the large sum which the diversion of the River would involve, I would propose that we should make the Bridge as secure as possible under the circumstances by constructing the training works shown in plan A attached, the Estimate for which amounts to Rs 19,427.

3. I beg to remark that I am unable to see what advantage is to be gained by the insertion of a double 40 feet opening at 107/6 Miles as proposed in the Consulting Engineer's letter now under reference as it appears to me that such a Bridge would in all probability lead to the flooding of, and damage to, lands on the East side of the Railway for which heavy compensation might be demanded from the Company. If the Rive is to be permitted to occupy its existing bed, then I think the line can be made quite safe at 107/6 Miles by the small bund and boulder revetmen

No 834 K dated 16/10/97

1588

P Q shown in Plan A. With regard to the bund on the South side of the River, the land at S is practically on the same level as the River Bed whilst between R & P the river has high and well defined banks and as this River is subject to sudden floods when the water comes down in great rushes, I think it is better to tie the bund into the high ground at R.

4. I also prefer constructing the bund as shown on Plan A instead of " along the edge of the River bank " as shewn in Plan B as in the latter case the water would be trained to strike the Piers at an angle and the overturning of the 4th pier last year was due to its being taken in the flank. The Bund as shown on Plan A would tend to steady the water and bring it down parallel to the axes of the Piers.

5. The Estimate for Carrying out Plan A has been forwarded for allocation to the Chief Auditor who will in due course submit it to you for transmission to the Consulting Engineer for Railways, but I still think that the original and larger scheme is the safer method of dealing with this River.

Yours faithfully,

(Signed) Harry G. Thompson.

Ag: Chief Engineer.

(True Copy)

Henry West

Ag: Agent and Manager.

West

8.V

ENC. No. 1 TO E. R's. C. No. 4204 OF 1897
LETTER No. 928 d/ 24-9-97
FROM Am

No 834 R dated 16/10/97

SERIAL
5,000—15-3-88.
No. 12

C. No. 4204
Recd. 27/9/97

(No. III.)
No. E 629.

928

MADRAS RAILWAY.

AGENT AND MANAGER'S OFFICE,

MADRAS, 24th September, 1897.

From

Print

Ag:
The Agent and Manager,
M. R. Co.,

CONSULTING ENGINEER FOR RAILWAYS
RECEIVED
27 SEP 1897
MADRAS.

To

13P

The Consulting Engineer for Railways.

SIR,

Madras.

SNo 11

With reference to your letter No. 2824, dated 1st September 1897, I have the honor to return the original tracing sent with your letter, together with two additional tracings marked Plan A and Plan B regarding which full explanations are furnished in the accompanying copy of a letter from the Ag: Chief Engineer. A detailed estimate for Plan A, amounting to Rupees 19427, is also enclosed.

2. Attention is invited to the opinion expressed by the Ag Chief Engineer as to the doubtful advantage to be gained by the insertion of the proposed double 40 feet opening at $\frac{107}{6}$ Miles, and that it would probably result in the flooding of, and damage to, the lands on the East side of the Railway, in which case heavy compensation would be demanded from the Company. If however, after consideration of the views now expressed by the Acting Chief Engineer you still wish an estimate prepared for this alternative, I will arrange for this to be submitted.

I have the honor to be,
Sir,
Your most Obedient Servant,

Ag: Agent and Manager.

SM
I don't see why any flooding should take place if a channel is dug to take the water away: however plan A seems fairly satisfactory if there is no danger of CR being outflanked

Encl.
1 Letter
1 Est^e
3 plans

Walls

29/9/97

D. Sanction Plan A. subject to proven alteration of which C.R. should note on.
7/10 2/10

O.1551

MADRAS RAILWAY.

From
The Agent and Manager,
M. R. Co.

To
The Consulting Engineer
for Railways.

Dated 189

Recd.

No.

No. 834 R dated 16/10/97

(R.) Form No. 3.

A

PUBLIC WORKS DEPARTMENT,
RAILWAY BRANCH.

PROCEEDINGS OF THE MADRAS GOVERNMENT.

16 P

READ the following

Print	Letter from the Agent & Manager M. R.	H. E. No. $\frac{E629}{383}$ of 17th April 1897
Print	" to the — " —	H. E. No. 2494 C of 14th May 1897
Print	" from — " —	H. E. No. $\frac{E629}{5654}$ of 28th — " —
Print	" to — " —	H. E. No. 1855 of 3rd June 1897
Print	" from — " —	H. E. No. $\frac{E629}{790}$ of 16th August 1897
Print	" to — " —	H. E. No. 2824 of 1st Sept. 1897
Print	" from — " —	H. E. No. $\frac{E629}{928}$ of 24th — " —

Sanction is accorded to the estimate for plan A amounting to Rs 19,427 chargeable to Capital for the diversion of the Koduru river @ $\frac{107}{10-11}$ miles N. W. L.

Print

2. This sanction has been registered as No. 24 R of 1877-98.

OS 635

Ms copy to AM ~~to be~~ sent 19/10/97

To
The Agent & Manager M. R. } D. P.
" Examiner P. W. Accounts
" Consulting Engineer for Railways }

GDR 12/10/97

DR
12-10-97

c