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MADRAS RECORD OFFICE.

Government of Madras.

Public Works DEPARTMENT.

G.O. No. 770.

Press
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254-255

Dated

11-3-

1870.

Not to be folded or roughly handled

*Proceedings of the Madras Government, Public Works Department,
11th March 1870.*

No. 254. Read the following letter from Colonel J. CARPENDALE, R. E., Acting Consulting Engineer for the Madras Irrigation and Canal Company, to the Secretary to Government, Public Works Department, dated Madras, 14th February 1870, No. 137 :—

In my letter, No. 62, of 28th August 1869, I reported that the Jootoor Anicut on the river *Caulee* had been breached by a rapid rise of the river, the work not having sufficient stability to resist the pressure of the water. I have now the honour to submit the correspondence as per margin regarding the revised design on which it is proposed to

re-construct the anicut, accompanied by plan and estimate.

2. The chief features of the new design are—1st, re-placing the ruined anicut, which was 14 feet 6 inches high, $6\frac{1}{2}$ feet broad at base, and 5 feet broad at top, by one of the same height, which shall be 9 feet 6 inches broad at bottom and 6 feet at top, and which will be substantially built.

2ndly.—A diverting channel and wall, the object of which is to prevent the sand which will be brought down the river when in flood from accumulating in front of the head-sluice and at the entrance to the regulating lock, as the only silt which will pass over the diverting wall is what will be held in suspension in the water.

3rdly.—The protection of the ends of the canal banks *where* they meet the diversion channel out of the vagú by masonry head-walls in preference to revetments to withstand the heavy scour in the channel.

3. The estimate amounts to Rupees 23,570, and is made up of the following items :—

	RS.	A.	P.
Body-wall of anicut	12,387	8	0
Diversion channel, and wall and masonry heads to banks	8,181	15	1
Revetment to slopes of banks	611	1	9
Other items	1,281	6	0
Contingencies	2,248	1	2
Total...	24,710	0	0
Deduct value of old materials	1,140	0	0
	23,570	0	0

The rates in the estimate are—

	RS.	A.	P.	
Rubble masonry	4	8	0	cubic yard.
Second-class facing dressed stone, 18 inches thick	10	0	0	"
Third-class facing dressed stone, 11 inches thick	7	0	0	"
Coping	20	0	0	"
Shale excavation and lime-stone shingle	0	8	0	"
Excavation of vagú and diversion channel	1	0	0	per 6 cubic yards.

These rates are decidedly very high, and more than the Chief Engineer named as sufficient; but as the Executive Engineer affirms that from his experience at Jootoor they are not more than enough, especially as he is tied to time for the completion of the work, I do not propose that they should be reduced.

4. The construction of the anicut has been begun; and, as the foundations are stated to have been carried down to good hard rock, and the flooring of the water-cushion as now exposed is found to be quite uninjured, the design appears to me well adapted for the circumstances of the case, and I solicit the sanction of Government to the work being carried out at a cost of Rupees 23,570, the amount previously sanctioned in Government Order, No. 1,162, of 9th April 1869, for the anicut and head-works being Rupees 44,830, of which more than 12,000 was for the anicut.

From the Executive Engineer, to the Chief Engineer of the Madras Irrigation and Canal Company, dated Aylor, 17th November 1869, No. 253.

REFERRING to your 131 of 27th September returning the estimate and plans for the re-construction of the Jootoor Anicut and other head-works for re-consideration, I have now the honour to forward a carefully-revised estimate, and to furnish those sections which I omitted to send with my No. 152 of 17th September last.

2. With regard to the estimate you will observe that, though I have reduced some of my rates, they are still higher than those you have named as sufficient; but I am certain from experience at Jootoor that the latter are too low, especially as one being so closely tied for time renders it impossible that we can stick out for minimum rates.

3. I omitted to mention, but now beg to draw your attention to the section of the proposed new anicut body wall, which, being one foot thicker than the one at Rajoly, is, therefore, amply strong enough for Jootoor. On the above tracing are also shown details of the facing stone proposed, and a section of the diversion wall. You do not say whether you approve of the masonry heads to the banks. I strongly recommend that they be built at once.

4. Their section is the same as the diversion wall.

5. I have placed on the general tracing a cross section of the new flood-bank and another across navigation channel between lock and entrance to canal; but this latter is scarcely necessary as the whole channel is sanctioned, and a longitudinal section of it is already on the general plan of head-works, to which the plan of alterations or rather additions now forwarded should be applied and said alterations plotted on.

6. I have also put on a longitudinal section of the diversion from which I have taken my quantities, the same answering to do so sufficiently accurately.

7. An amended masonry estimate to date is attached.

No. 1,046.

Copy forwarded to the Agent and Manager with a recommendation of the whole for Government sanction with plans and estimates.

KURNOOL,
30th November 1869.

(Signed) J. H. LATHAM,
Chief Engineer.

No. 407.

Forwarded to the Consulting Engineer for sanction with one General Plan of Head-works, General Abstract of 7th Section Masonry, and one Revised Estimate of Jootoor Anicut and works.

RAS,
Dec 1869.

(Signed) F. H. HENSLOWE,
Agent and Manager.

From Colonel J. CARPENDALE, R. E., Acting Consulting Engineer for the Madras Irrigation and Canal Company, to the Agent and Manager, dated Madras, 17th December 1869, No. 268.

I HAVE the honour to return the documents as per margin relating to the re-construction of the Jootoor Anicut, received with your No. 407 of the 9th instant, and to make the following observations.

One General Plan.
,, Abstract of Masonry.
,, Revised Estimate.

2. According to the drawing, the wall forming the water-cushion and the flooring of the water-cushion is shown as new work; but, as no mention is made of them in the estimate, I conclude the old work is to stand, and yet in the former plan, dated 13th February 1869, the flooring is shown to be 6 inches thick, and in the plan now submitted it is 1 foot. By the former plan extraordinary flood-level in the vagú was shown 15 feet above head-sluice sill, which is equivalent to 18 feet above under-sluice sill; and on the morning after the old anicut breached it was reported that the flood-level was 6 feet 6 inches over the crest of the anicut, which would be equivalent to 17-03 feet above the under-sluice sill. The water must have been at the same level in the vagú, and yet the plan now submitted shows the highest water-level in the vagú when the Caulee is full, to be only 7 feet above head-sluice sill, equivalent to 10 feet above the under-sluice sill. This also needs explanation.

3. I request you will have the goodness to obtain the Chief Engineer's explanation of the advantage of the diverting wall and channel, and his opinion as to the necessity for the same and for the head-walls to banks.

4. The expenditure now proposed to be incurred is in consequence of the failure of the old anicut, and I am prepared to recommend the re-construction of the work on the section and in the manner now proposed; but I do not comprehend how its stability will be in any way secured by the diversion channel and walls, or that there is any advantage or necessity for such work. I shall not be disposed without further information to recommend that portion of the project at an expenditure of between 8 and 9,000 rupees.

5. I hope the Chief Engineer will be able to reply to this without incurring the delay of referring to the District Officers, and I may add that, in laying the papers before Government, it is my intention to recommend that the foundations of the body-wall of the anicut shall be carried down through the shale until solid rock is reached; and that, if it is found that the flooring of the water-cushion is injured, it shall be removed and be re-placed by a much more substantial one of stone pitching.

From J. H. LATHAM, Esq., Chief Engineer, to the Agent and Manager of the Madras Irrigation and Canal Company, dated Kurnool, 1st February 1870, No. 167.

WITH reference to the Consulting Engineer's No. 268 of 17th December 1869, I have the honour to enclose copy of Mr. Ross' letter, No. 30, of 28th ultimo. The plans and estimates returned with your No. 3 of 4th January 1870, viz., one General Plan, one Abstract of Masonry, and one Revised Estimate are returned herewith, and I beg to draw your attention to the two notes inserted on the plan in red ink. The estimates remain unaltered.

From L. E. ROSS, Esq., to the Chief Engineer of the Madras Irrigation and Canal Company, dated Aylor, 28th January 1870, No. 30.

WITH reference to the points upon which the Consulting Engineer, in his No. 268 of 17th ultimo to Agent and Manager, (copy forwarded with your No. 21 of 13th instant), calls for information, I have the honour to explain—

1st.—That the old work of the water-cushion wall and the flooring of cushion of Jootoor Anicut is intended to stand as in the sanctioned design and as nearly all executed. Not tinting it in the last plan submitted as old work was an oversight.

*Proceedings of the Madras Government, Public Works Department,
11th March 1870.*

The flooring of cushion was shown in the new plan as 12 inches thick as it was thought probable that, on being able to make a thorough examination, the 6-inch flooring would be so much injured as to necessitate the laying of new and heavier flooring or pitching. Making provision for this was, however, overlooked in the estimate (new).

2nd.—The old plan showed the water-levels correctly figured, the height of extraordinary floods being given as 1 foot higher than where it rose to on the 17th June 1869.

The section of ragú shown in the new plan last submitted was discovered to be worthless when forwarded to me, and I regret that the tracing of it on the plan sent to you escaped my notice.

3rd.—As to the advantages of the diverting channel and wall. The former I should say was absolutely necessary to prevent silt from accumulating in front of the head-sluices and the entrance to the regulating lock. The diversion wall and head-walls I have already advocated being built at once, for no doubt a saving would be effected by adopting revetment instead of masonry; it would be insignificant as the heavy scour in the channel would probably be the cause of frequent repairs unless the revetment were built so carefully as to raise its cost nearly to that of sound masonry.

4th.—With reference to the last paragraph of Colonel Carpendale's, you are aware that the foundations of the new anicut have been carried down to good hard rock; and, as to the cushion flooring that now exposed is found quite uninjured.

No. 63.

Copy forwarded to the Consulting Engineer with reference to his No. 268, dated 17th December 1869.

2. The undermentioned plan and estimate are enclosed:—

One General Plan.

„ Abstract of Masonry.

„ Revised Estimate.

MADRAS,
10th February 1870.

(Signed) C. A. BADHAM,
Acting Agent and Manager.

No. 255.

ORDER THEREON, 11th March 1870, No. 770.

IRRIGATION, No. 19.

* No. 1,162, dated 9th April 1869.

„ 3,077 „ 21st September 1869.

and Canal Company's Main Canal. (Those estimates included a sum of Rupees 54,830 for the construction of an anicut and head-works across the Caulee River at Jootoor, and of this amount about Rupees 12,000 were for the anicut itself. Shortly after its completion the anicut was destroyed, and, in reporting on the subject, the Consulting Engineer intimated that, as the Chief Engineer of the Company proposed to re-place the ruined structure by a new anicut of sufficient stability, he had requested the latter to furnish him with the design. This Colonel Carpendale now submits with an estimate of Rupees 23,570, and, in paragraph 2 of his letter above recorded, he details the difference between the present design and that on which the anicut was originally built. Colonel Carpendale states that, in his opinion, the design as now submitted seems suitable, and that the work has already been commenced.

In the Proceedings* of Government as per margin sanction was accorded to estimates amounting in the aggregate to Rupees 3,70,449 for masonry works in the 7th Section of the Madras Irrigation

*Enclosures.
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*Consulting Engineer's Office
Irrigation and Canal Company
Madras, 11th February 1870*

*1137
J. C. 1110*

*Proceedings of the Madras Government, Public Works Department,
11th March 1870.*

2. Concurring with the Consulting Engineer, His Excellency the Governor in Council sanctions the estimate of Rupees 23,570.

(True Extract.)

Colonel, R. E.,
Secretary to Government.

To the Consulting Engineer for the Madras Irrigation and Canal Company.
„ Agent and Manager for do. do.

are: 1st replacing the ruined Anicut which was 14 feet 6 inches high, 6 1/2 feet broad at base, and 5 feet broad at top, by one of the same height, which shall be 9 feet 6 inches broad at bottom, and 6 feet at top, and which will be substantially built.

2^{ndly} A diverting channel and wall, the object of which is to prevent the sand which will be brought down the river when in flood from accumulating

*Proceedings of the Madras Government, Public Works Department,
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4th.—With reference to the last paragraph of Colonel Carpendale's, you are aware that the foundations of the new anicut have been carried down to good hard rock; and, as to the cushion flooring that now exposed is found quite uninjured.

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Copy forwarded to the Consulting Engineer with reference to his No. 268, dated 17th December 1869.

2. The undermentioned plan and estimate are enclosed:—

One General Plan.

„ Abstract of Masonry.

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Colonel, R. E.,
Secretary to Government.

To the Consulting Engineer for the Madras Irrigation and Canal Company.
„ Agent and Manager for do. do. *

Enclosures.
2 Letters in orig. from Agent
1 Copy of do
1 Plan
1 Estimate

Consulting Engineer's Office
Irrigation Canal Company
Madras, 14th February 1870.

N^o 137.

Sir,
Colonel A. Carpenter, C.E.
Agent in charge of the
The Secretary to Government
Department of Pub. Works.

In my letter N^o 62 of 28th August 1869
I reported that the Sootor Ament on the river
Canal had been breached by a rapid rise of
the river, the work not having sufficient sta-
bility to resist the pressure of the water.
I have now the honor to submit the corres-

From Agent N^o 407 -
9th Dec 1869.
To - Do N^o 268 - 1st Dec 1869.
From - Do N^o 63 - 10th Feb 1870.
- provide as per margin regarding the revised
design, on which it is proposed to reconstruct
the Ament, accompanied by Plan and Estimate.

2. The chief features of the new design
are: 1st replacing the ruined Ament which
was 14 feet 6 inches high, 6 1/2 feet broad at base,
and 5 feet broad at top, by one of the same
height, which shall be 9 feet 6 inches broad
at bottom, and 6 feet at top, and which will
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2^{ndly} A diverting channel and wall, the object
of which is to prevent the sand which will
be brought down the river when in flood from
accumulating

accumulating in front of the head sluice and at the entrance to the regulating lock, as the only outlet which will pass over the diving wall is what will be left in suspension in the water.

3rd The protection of the ends of the Canal banks where they meet the diversion channel out of the race by masonry head walls in preference to erectments to withstand the heavy scour in the channel.

3. The estimate amounts to Rupees 23,570 and is made up of the following items:-

Body wall of Sluice	Rs. 12,387.8.0
Diversion channel and wall and masonry heads to bank	Rs. 8,181.15.1
Reinforcement & slopes of bank	Rs. 611.1.9
Contingencies & other items	Rs. 1,281.6.0
~~Bedget value of materials~~	~~Rs. 24,710.0.0~~
~~The rates in the estimate are:~~	~~Rs. 23,570.0.0~~

Rubble masonry	Rs. 4.8.0	Cut & yard
2 nd class facing dressed stone	Rs. 10.0.0	" "
3 rd " " " 18" thick	Rs. 7.0.0	" "
Coping	Rs. 20.0.0	" "
Shale & gravel and lime	Rs. 8.0.0	" "
Excavation of race and diversion channel	Rs. 1.0.0	per C.C. ft.

These rates are decidedly very high, and more than the Chief Engineer named as sufficient, but as the

the Executive Engineer affirms that from his experience at Coopers they are not more than enough, especially as he is tied & time for the completion of the work, I do not propose that they should be reduced.

4. The construction of the Sluice has been begun, and as the foundations are stated to have been carried down to good hard rock, and the flooring of the water cushion as now proposed is found to be quite uninjured, the design appears to me well adapted for the circumstances of the case, and I solicit the sanction of Government to the work being carried out at a cost of Rupees 23,570 the amount previously sanctioned in Government Order No. 1162 of 9th April 1869 for the Sluice and Head works being Rupees 54,830 of which more than 12,000 was for the Sluice.

I have the honor to be,
Your most obedient servant,
J. G. M. D. C. Co. Ltd.
The Engineer & Co. Company.

W. H. B.

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P. W. Department

N^o 770

Proceedings of the Madras Government.

Under date the 11th March 70.

Read the following.

From The Ag. Consulting Engs
for Irrigation & C. Company
H.E. N^o 137 of 14th February 70

No 1162 of 9th April 69
" 3077 " 21st Sept "

N^o
A. A.
W. L.

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as per margin sanction
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Irrigation and Canal Com-
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24th Feb 1870 A.D. 2011

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Concurring with the
Consulting Engineer His
Excellency the Gov^r in

(18)

E. W. Litchfield
No 1807 1870

Further ^{to} pay \$1.50

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The Congress I. & C. Company, Inc.
" Agents & Managers do do.

Rec'd 15/3/30.

C. 91st July 1970 M. 28

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PUBLIC WORKS.

The Consulting Engrs.
for the Madras Irrigation
and Canal Company

Dated

Recd.

Encl.

9. 11. March 1900. No. 770

Nos. 264-265

Sooloor Ainnak (No. 166) Esti-
-mate of Rs 23,570 for the recon-
-struction of the Sooloor Ainnak
on the 7th Section of the Coimbatore
Canal, sanctioned.