

(1) Number of pages \_\_\_\_\_

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# MADRAS RECORD OFFICE.

## Government of Madras.

### Public Works DEPARTMENT.

|               |       |
|---------------|-------|
| G.O. No. 2352 | Press |
| 511-512       | Mis   |
| Dated 29.9.   | 1870. |

Not to be folded or roughly handled

*Sp*

*Proceedings of the Madras Government, Public Works Department,  
29th September 1870.*

No. 511. Read the following letter from the Acting Consulting Engineer, for the Madras Irrigation and Canal Company, to the Secretary to Government, Public Works Department, dated Madras, 30th August 1870, No. 55:—

9 Letters in original.  
6 Copies.  
2 Plans.  
9 Estimates.

From Agent, dated 22nd Jan. 1866, No. 536  
To " " 24th " " 344  
From " " 1st Feb. 1867, " 400  
To " " 5th " " 259  
From " " 6th Jan. 1869, " 369  
To " " 8th " " 250  
From " " 4th June " 130  
To " " 10th " " 91  
From " " 16th Dec. " 418  
To " " 11th Jan. 1870, " 284  
From " " 11th April " 155  
To " " 22nd April " 15  
From " " 21st May " 218  
To " " 7th June " 243  
" " " 20th July " 316

I HAVE the honour to submit the correspondence, as per margin, accompanied by revised estimates for the anicut and the other head-works at Soonkasala, including the cost of repairing certain damage and defective portions of the work, the whole amounting to Rupees 4,82,222, being an increase of Rs. 46,000 over the existing sanctions.

2. The amounts of the existing sanction for this work are as follow:—

|                                        | RS.        |
|----------------------------------------|------------|
| By G. O., No. 2,166, of 23rd Nov. 1861 | 1,25,000 ✓ |
| Do. " 507, of 21st Feb. 1865           | 1,84,650 ✓ |
| Do. " 1,289, of 12th May. "            | 37,180 ✓   |
| Do. " " " " "                          | 818 ✓      |
| Do. " " " " "                          | 144 ✓      |
| Do. " " " " "                          | 3,200 ×    |
| Do. " 1,748, of 23rd June "            | 59,300 ✓   |
| Do. " 3,157, of 21st Oct. "            | 1,360 ×    |
| Do. " 1,741, of 2nd June 1866          | 5,900 ✓    |
| Do. " 3,253, of 12th Oct. "            | 9,000 ✓    |
| Do. " 3,592, of 13th Nov. "            | 500 ×      |
| Do. " 458, of 18th Feb. 1867           | 5,000 ×    |
| Do. " 99, of 13th Jan. 1869            | 3,670 ×    |
| Do. " 955, of 22nd March "             | 500 ×      |
| Do. " 1,317, of 21st April "           |            |
| Total...                               | 4,36,222   |

3. The estimate now submitted being for Rupees 4,82,222, the increase is Rupees 46,000, which is made up as follows:—

|                                                                                                                                                      | RS.    | A. | P. |
|------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----|----|
| (1.) Excess expenditure over the amount sanctioned in Government Order, No. 458, of 18th February 1867, for the examination and repair of the anicut | 34     | 5  | 5  |
| (2.) Unsanctioned expenditure in constructing a dam across the river above the North Anicut breach                                                   | 2,726  | 4  | 2  |
| (2.) Do. do. in removing sand-core from North Anicut and filling in with concrete.                                                                   | 1,247  | 0  | 0  |
| (4.) Plant, stores, and proportion of the store charges                                                                                              | 46,839 | 0  | 0  |
| Total ...                                                                                                                                            | 50,896 | 9  | 7  |

From this increase there is to be deducted savings on sundry estimates, aggregat-

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ing to Rupees 4,896-9-7, leaving a net increase of Rupees 46,000, for which sanction is now asked.

4. The savings consist solely of sums short spent on amounts sanctioned from time to time for the repair of the damaged portions, and for strengthening to the anicut, and they are as follow:—

|                                                                           |       |    |    |
|---------------------------------------------------------------------------|-------|----|----|
| (1.) Saving on sanction given in G. O., No. 1,289,<br>dated 12th May 1865 | RS.   | A. | P. |
| ... ..                                                                    | 1,029 | 6  | 1  |
| (2.) Do. do. in G. O., No. 1,748, dated 23rd June 1865.                   | 385   | 1  | 4  |
| (3.) Do. do. in „ „ „ 1,741, „ 2nd „ 1866.                                | 1,360 | 0  | 0  |
| (4.) Do. do. in „ „ „ 3,253, „ 12th Oct. „                                | 794   | 6  | 4  |
| (5.) Do. do. in „ „ „ 3,592, „ 13th Nov. „                                | 753   | 5  | 2  |
| (6.) Do. do. in „ „ „ 99, „ 13th Jan. 1869,                               | 574   | 6  | 8  |
| Total...                                                                  | 4,896 | 9  | 7  |

5. Out of the four items of increases shown above, the first, Rupees 34-5-5, for expenditure in excess of sanction for the examination and repair of the anicut, was fully anticipated by the Consulting Engineer in submitting the estimate for the sanction of Government, and does not require further mention. The second, Rupees 2,726-4-2, for expenditure in the construction of a dam across the river, the Chief Engineer states was owing to his not having been able to provide for it in the final estimate, sanctioned in Government Order, No. 99, dated 13th January 1869, for the repair of the breach of 1868, as the water in the river at the time when estimate was prepared was too much to admit of the final determination of the best means of excluding it. The third item, Rupees 1,247, for removing sand-core, etc., the Chief Engineer remarks is for additional works proposed by the Consulting Engineer, and ordered by Government (G. O., No. 99, of 13th January 1869,) when sanctioning the repair estimate mentioned above.

6. With regard to the fourth and last item of increase, namely, Rs. 46,889, for plant, stores, and proportion of store charges, I regret that, notwithstanding a voluminous correspondence which has taken place between this office and the Agent over a protracted period of more than four years, no satisfactory explanation on this matter has been afforded; but from the replies\* of the Company's officers to my letter No. 284, of the 11th January last, all that can be gathered is

\* Agent, No. 155, of 11th April 1870.  
„ „ 218, of 21st May „  
„ „ 243, of 7th June „  
accompanying.

that the sum in question is composed of Rupees 31,607-4-11 for stores, plant, etc., plus Rupees 1,424-11-11 for further estimated charges of the same kind, and Rupees 9,745-2-7 for excess expenditure on the anicut works, together with Rupees 4,111-12-7 for expenditure on works yet remaining to be done. The cost of sluice shutters, etc., was charged in the accounts “to stores, plant, etc.,” instead of to the sanctioned estimate of the head and under-sluices, and so the unexpended balance under this sanction is Rupees 13,856-15-2, which is deducted from the total

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expenditure on stores, plant, etc., and that amount consequently reduced to Rupees 31,607-4-11\* as shown above; but from the Chief Engineer's letter No. 778,† of the 14th May, it appears that the actual cost of the sluice shutters was Rupees 17,312-3-5, and so the excess thereon was Rupees 3,455-7-3, or about 25 per cent., which the Chief Engineer states was owing to unforeseen expenses, such as splicing the under-sluice shutter shafts, and providing the crab and tackle used in opening and shutting them.

7. As regards the item of stores, plant, etc., Rupees 31,607-4-11, referred to above, Mr. Latham states that the sanctioned estimate provided only for the depreciation of stores, and not for their prime or original cost, and that the expenditure for stores with all charges seems to be moderate; but from the list that accompanied the Agent's No. 248, of the 7th June last, enclosed, it will be seen that only the depreciation of the general plants, such as machinery, etc., was intended as required by the Rule 46† to be charged to works, and the portion of this charge to be borne by the anicut,

as given in that list, is only Rupees 18,904-10-6. Many of the other articles of store issued to the anicut works are such as should be met from the rates allowed for the execution of works independent of any special provision in sanctioned estimates; working tools and sundry articles which were so essentially necessary for the execution of works ought to have been met from the funds provided for construction in the original and supplemental sanctioned estimates. It, therefore, follows that the last supplemental estimate, sanctioned in Government Order, No. 507, of 21st February 1865, should have included suitable provisions for all stores; if it did not no explanation has been furnished of the omission. If, on the other hand, the rates in this estimate did make such provision, and if the cost of all the stores consumed upon the works has not been charged to the work, no satisfactory explanation has been furnished. It is, however, clear that there must have been an excess expenditure on the work to the extent of Rupees 31,607-4-11 for stores.

8. The value of work remaining to be done is comparatively very trifling, namely, Rupees 4,111-12-7.

9. The Agent's No. 218, of the 21st May 1870, in the correspondence referred to in this letter, forwards for sanction two estimates with drawings for repairs required this season to the apron of the head-sluice and its side and retaining walls, amounting to Rupees 1,440 and 1,460, respectively, accompanied by a letter No. 778, of the 14th May 1870, from the Chief Engineer in which it is mentioned, in reference to the apron of the head-sluice, “that the former mode of random pitching in chunam has generally stood, but not so much as to inspire confidence in that class of pitching, stones have come out of the face of the apron below “three or four of the central sluices, and that the south half of the lower edge of “the apron has given way probably by the scouring out of the tough clay adjacent “to the apron forming a hole into which the apron has settled. It is, I think, all “important to make really secure any parts which have failed at all, and I, therefore,

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" recommend his proposal to renew the parts where any failure has appeared by  
" laying a pavement of rectangular Kurnool slabs 5 inches thick and of 4 square feet  
" area each, laid on concrete 18 inches thick. Holes in the bed below the apron  
" will be filled with dry stone and covered with 18 inches of concrete. The total  
" cost is estimated at Rupees 1,440. The apron has had as severe trials as it can  
" ever be put to, unless a sudden accident occur when the canal is empty and  
" river high. The sluices have been opened as fast as the screws would open them  
" when the river was high and canal empty.

" The retaining walls below the head-sluice were substituted for dry rubble  
" (which did not bear the action of the sluices in conformity to G. O., No. 2,022,  
" of 25th June 1868,) and were completed in supposed conformity thereto in the  
" same season for Rupees 4,019-15-3, being an excess of about 2½ per cent. over  
" the estimate of Rupees 3,930-6-7; a portion of these walls began to give way when  
" water was admitted, and Rupees 247-3-9 was spent in protecting and relieving  
" them, so far successfully that no accident occurred beyond a slight movement  
" forward of the weak portions, when the water was suddenly lowered. I now ask  
" for Rupees 988 for re-building the portions which have settled and carrying the  
" foundations down to rock. The total expenditure requiring sanction is, therefore,  
" Rupees 1,324-12-5. The cause of the failure was sufficiently accounted for in  
" that the foundations were not carried down to rock at first, but, by an error of  
" the Engineer in charge, were laid above the level of the canal bed."

|                                                                                                                                           |          |
|-------------------------------------------------------------------------------------------------------------------------------------------|----------|
|                                                                                                                                           | RS.      |
| Total amount of the revised estimate now submitted ... ..                                                                                 | 4,82,222 |
| Deduct former sanctions, as per paragraph 2 above ... ..                                                                                  | 4,36,222 |
| Additional amount requiring sanction for the anicut and<br>head-works, as per paragraph 3 above ... ..                                    | 46,000   |
| Add new estimate for repairing apron of head-sluice and the<br>side walls of canal adjoining, as described in paragraph 9<br>above ... .. | 2,900    |
| Total increased sanction now applied for ... ..                                                                                           | 48,900   |

No. 512. ORDER THEREON, 29th September 1870, No. 2,352.

**IRRIGATION, No. 28.**

|                                         |  |
|-----------------------------------------|--|
| G. O., No. 2,166, dated 23rd Nov. 1861. |  |
| " " 507, " 21st Feb. 1865.              |  |
| " " 1,289, " 12th May "                 |  |
| " " 1,748, " 23rd June "                |  |
| " " 3,157, " 21st Oct. "                |  |
| " " 1,741, " 2nd June 1866.             |  |
| " " 3,253, " 12th Oct. "                |  |
| " " 3,592, " 13th Nov. "                |  |
| " " 458, " 18th Feb. 1867.              |  |
| " " 99, " 13th Jan. 1869.               |  |
| " " 955, " 22nd March "                 |  |
| " " 1,317, " 21st April "               |  |

In the Proceedings of Government marginally noted sanction was accorded to estimates, amounting in the aggregate to Rupees 4,36,222, for the anicut and head-works at Soonkasala on the Madras Irrigation and Canal Company's Canal.

2. With his letter above recorded the Acting Consulting Engineer submits a further revised estimate of Rupees 4,82,222, exhibiting an excess of Rupees 46,000, or about 11 per cent. upon the total of the sanctioned amounts.

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29th September 1870.*

3. This excess is made up of the following items:—

|                                                                                                                                                   | RS.    | A. | P. |
|---------------------------------------------------------------------------------------------------------------------------------------------------|--------|----|----|
| (1.) Excess expenditure over the amount sanctioned in G. O., No. 458, of the 18th February 1867, for the examination and repair of the anicut ... | 34     | 5  | 5  |
| (2.) Unsanctioned expenditure in constructing a dam across the river above the North Anicut breach. ...                                           | 2,726  | 4  | 2  |
| (3.) Do. do. in removing sand-core from North Anicut and filling in with concrete ... ..                                                          | 1,247  | 0  | 0  |
| (4.) Plant, stores, and proportion of store charges ...                                                                                           | 46,889 | 0  | 0  |
|                                                                                                                                                   | 50,896 | 9  | 7  |
| Deduct savings...                                                                                                                                 | 4,896  | 9  | 7  |
| Balance...                                                                                                                                        | 46,000 | 0  | 0  |

4. The expenditure entered as Item 2 is due, it is stated, to the Chief Engineer being unable at the time the estimate for the repair of the breach in the north bank of the Soonkasala Anicut was sanctioned\* to determine the cost of con-

\* G. O., No. 99, dated 13th January 1869. structing the dam now estimated for, owing to the height of the water in the river; the expenditure set down as Item 3 is for work ordered by Government when sanctioning the repair estimate last mentioned; and, of the excess of Rupees 46,889, entered as Item 4, the Acting Consulting Engineer states that no satisfactory explanation has been afforded by the Company's officers notwithstanding the repeated inquiries made by his office during the past four years. All the light that can be thrown on the matter is that the amount is composed of various estimated charges on account of plant and stores, excess expenditure on the anicut works, and a sum of Rupees 4,111-12-7 for outlay on works not yet finished.

5. While according sanction to the revised estimate now submitted, His Excellency in Council must remark, with reference to the last item of increase, that the arrangements under which the anicut works have been carried out are far from satisfactory, and he can but express a hope that there will be no further occasion for irregularities of the nature of that now reported being brought to the notice of Government.

6. The Acting Consulting Engineer also submits for sanction an estimate of Rupees 2,900 for repairing the apron of the head-sluice, with its side and retaining walls. It would appear that this expenditure is rendered necessary by the imperfect mode of construction adopted in the first instance.

7. The measures that will now be taken by the Company's officers for ensuring the stability of these works under the sanction herein accorded will, the Government hope, effectually remedy all unsoundness of original construction.  
(True Extract.)

Colonel, R.E.,

Secretary to Government.

To the Acting Consulting Engineer for the Madras Irrigation and Canal Company.  
do.  
do.  
Agent and Manager for  
Exd. E. C. Shunker.

Enclosures  
 9 letters in orig.  
 6 copies  
 2 Plans  
 9 Estimates  
 26

Consulting Engineer's Office  
 Irrigation and Canal Co.  
 Madras 30<sup>th</sup> August 1870.

No. 55.  
 From

Colonel J. Carpendale R.E.  
 Acting Consulting Eng<sup>r</sup> for S.P.C.C.

To  
 Colonel C. S. Orr R.E.  
 Secretary to Government S.P.W.

I have the honor to submit the correspondence as per margin accompanied by revised estimates for the Ancient, and the other head works, at Soukavala including the cost of repairing certain damage and defective portions of the work, the whole amounting to Rupees 4,82,222 being an increase of Rupees 46,000 over the existing sanction.

|      |                             |         |
|------|-----------------------------|---------|
| From | Gentl dated 22 January 1866 | No 536. |
| To   | 24                          | 344.    |
| From | 1 February 1867             | 400.    |
| To   | 5                           | 259.    |
| From | 6 January 1869              | 389.    |
| To   | 8                           | 250.    |
| From | 4 June                      | 130.    |
| To   | 10                          | 91.     |
| From | 16 December                 | 418.    |
| To   | 11 January 1870             | 284.    |
| From | 17 April                    | 155.    |
| To   | 22                          | 15.     |
| From | 21 May                      | 218.    |
| To   | 7 June                      | 243.    |
| From | 12 July                     | 316.    |

2. The amounts of the existing sanction for this work are as follow:-

|                                     |         |
|-------------------------------------|---------|
| By G.O. No 2166 of 23 November 1861 | 125,000 |
| 507 of 21 February 1865             | 184,650 |
| 1289 of 12 May 1865                 | 37,180  |
| " " " "                             | 818     |
| " " " "                             | 144     |
| 1748 of 23 June 1865                | 32,000  |
| 3157 of 21 October 1865             | 59,300  |
| 1741 of 2 June 1866                 | 1,360   |

By C. O. N<sup>o</sup> 3253 of 12<sup>th</sup> October 1866 — 5900 ✓  
 — 3592 of 13<sup>th</sup> November 1866 — 9000 ✓  
 — 458 of 18<sup>th</sup> February 1867 — 500 ✓  
 — 99 of 13<sup>th</sup> January 1869 — 5000 ✓  
 — 955 of 22<sup>nd</sup> March 1869 — 3670 ✓  
 — 1317 of 21<sup>st</sup> April 1869 — 500 ✓  
 Total — 136222

3. The estimate now submitted being for Rupees 1,82,222 the increase is Rupees 1,6000, which is made up as follows:—

1. Excess expenditure over the amount sanctioned in Government Order N<sup>o</sup> 458 of 18<sup>th</sup> February 1867 for the examination and repair of the Ancient — } 34-5-5
2. Unsanctioned expenditure in constructing a dam across the river above the North Ancient breach — } 2726-4-2
3. — in removing sand core from North Ancient and filling in with concrete — } 1247-0-0
4. Plant, Stores, and proportion of the store Charges — } 46889-0-0

Total Rupees — 50896-9-7

From this increase there is to be deducted savings on sundry estimates aggregating to Rupees 4896-9-7 leaving a net increase of Rupees 46000 for which sanction is now asked.

4. The savings consist solely of sums short spent on amounts sanctioned from time to time for the repair of the damaged portions, and for strengthening to the Ancient; and they are as follows:—

1. Saving on sanction given in C. O. N<sup>o</sup> 1289 dated 12<sup>th</sup> May 1865 Rupees } 1029-6-1
2. — in C. O. N<sup>o</sup> 1748 of 23<sup>rd</sup> June 65. 385-1-4

3. Saving on sanction given in C. O. N<sup>o</sup> 1741 dated 2<sup>nd</sup> June 1866 — } 1360-0-0  
 4. — in C. O. N<sup>o</sup> 3253 of 12<sup>th</sup> Oct<sup>r</sup> 66. 794-6-4  
 5. — 3592 of 13<sup>th</sup> Nov<sup>r</sup> 66. 753-5-2  
 6. — 99 of 13<sup>th</sup> Jan<sup>y</sup> 69. 574-6-8  
 Total — 4896-9-7

See his letter N<sup>o</sup> 15 printed in C. O. N<sup>o</sup> 458 of 18<sup>th</sup> Feb<sup>y</sup> 67.

5. Out of the 4 items of increases shown above the first Rupees 34-5-5 for expenditure in excess of sanction for the examination and repair of the Ancient was fully anticipated by the Consulting Engineer in submitting the estimate for the sanction of Government and does not require further mention. The second, Rupees 2726-4-2 for expenditure in the construction of a dam across the river, the Chief Engineer states was owing to his not having been able to provide for it in the final estimate sanctioned in Government Order N<sup>o</sup> 99 dated 13<sup>th</sup> January 1869 for the repair of the breach of 1868, as the water in the river at the time when estimate was prepared was too much to admit of the final determination of the best means of excluding it. The third item Rupees 1247 for removing sand core &c the Chief Engineer remarks is for additional works proposed by the Consulting Engineer and ordered by Government (C. O. N<sup>o</sup> 99 of 13<sup>th</sup> January 1869) when sanctioning the repair estimate mentioned above.

6. With regard to the 1<sup>st</sup> and last item of increase  
vizt. Rupees 46889 for Plant, stores, and proportion  
of store charges, I regret that notwithstanding  
a voluminous correspondence which has taken  
place between this Office and the Agent over  
a protracted period of more than 4 years no  
satisfactory explanation on this matter has  
been afforded, but from the replies of the  
Company's Officers to my letter No 284 of the  
11<sup>th</sup> January last, all that can be gathered is that  
the sum in question is composed of Rupees —  
31607-4-11 for stores, Plant &c plus Rupees —  
1424-11-11 for further estimated charges of the  
same kind, and Rupees 9745-2-7 for excess  
expenditure on the Ancient works, together  
with Rupees 4111-12-7 for expenditure on  
works yet remaining to be done. The cost of  
sluice shutters &c was charged in the accounts  
to stores Plant &c instead of to the sanctioned  
estimate of the head and under sluices, and so  
the unexpended balance under this sanction is  
Rupees 13856-15-2 which is deducted from the  
total expenditure on stores Plant &c and  
that amount consequently reduced to Rupees  
31607-4-11 as shown above but from the Chief  
Engineers letter No 778 of the 11<sup>th</sup> May it appears  
that the actual cost of the sluice shutters was  
Rupees 17312-3-5 and so the excess thereon was  
Rupees

Agents Rs 155 of 11<sup>th</sup>  
April 1870.  
— 218-21 May/70  
— 243-7 June/70  
accompanying

Sanctioned in  
G.O. No 783 of  
the 17<sup>th</sup> April/70.

Exclusive of Rs 11241  
for further charges &  
Rs 4111-12-7 for ex-  
penditure on works.

In Agents Rs 215 of  
21<sup>st</sup> May, 1870.

Rupees 3455-7-3 or about 25 per cent which the  
Chief Engineer states was owing to unforeseen  
expenses such as splicing the Under sluice shutter  
shafts, and providing the crab, and tackle used  
in opening and shutting them.  
7. As regards the item of stores, Plant &c  
Rupees 31607-4-11 referred to above Mr. Nathan  
states that the sanctioned estimate provided  
only for the depreciation of stores, and not  
for their prime or original cost, and that  
the expenditure for stores with all charges  
seems to be moderate; But from the list  
that accompanied the Agents No 248 of the  
7<sup>th</sup> June last, enclosed, it will be seen that  
only the depreciation of the general plants  
such as Machinery &c was intended as required  
by the Rule 4<sup>th</sup> to be charged to works, and the  
portion of this charge to be borne by the Ancient  
as given in that list is only Rupees 18904-10-6  
many of the other articles of store issued to the  
Ancient works are such as should be met from  
the rates allowed for the execution of works,  
independent of any special provision in sanc-  
tioned estimates, Working tools and sundry  
articles which were so essentially necessary for  
the execution of works ought to have been  
met from the funds provided for construction  
in

in the original and supplemental sanctioned estimates. It therefore follows that the last supplemental estimate sanctioned in Government Order No. 507 of 21<sup>st</sup> February 1865 should have included suitable provisions for all stores if it did not; no explanation has been furnished of the omission. If on the other hand the rates in this estimate did make such provision, and if the cost of all the stores consumed upon the work has not been charged to the work; no satisfactory explanation has been furnished. It is however clear that there must have been an excess expenditure on the work to the extent of Rs. 31,607-4-11 for stores.

8. The value of work remaining to be done is comparatively very trifling namely Rs. 4,111-12-7.

9. The Agents No. 218 of the 21<sup>st</sup> May 1870 in the correspondence referred to in this letter forwards for sanction two estimates with drawings for repairs required this season to the apron of the head sluice and its side and retaining walls amounting to Rs. 14,400 and 14,600 respectively, accompanied by a letter No. 778 of the 14<sup>th</sup> May 1870 from the Chief Engineer in which it is mentioned in reference to

to the apron of the head sluice that the "farmer mode of random pitching" in Chunan has generally stood, but not so much as to inspire confidence in that class of pitching, stones have come out of the face of the apron below three or four of the Central sluices, and that the south half of the lower edge of the apron has given way probably by the scouring out of the tough clay adjacent to the apron, forming a hole into which the apron has settled. It is I think all important to make really secure any parts which have failed at all and I therefore recommend the proposal to repair the parts where any failure has appeared by laying a pavement of rectangular brownish slabs 5' thick and of 18" square feet area each, laid on concrete 18" thick. Holes in the bed below the apron will be filled with dry stone and covered with 18" of concrete. The total cost is estimated at Rs. 14,400. The apron has had as severe trials as if can ever be put to, unless a sudden accident occurs when the Canal is empty and river high. The sluices have been opened as fast as the screws would throw them when the river was high and Canal empty.

The retaining walls below the head sluice<sup>3</sup> were substituted for dry rubble (which

conformity to Government Order No. 2022  
of 25 June 1868 and were completed in  
supposed conformity thereto in the  
same season for Rupees 1,019-15-0 being  
an excess of about 2 1/4 per cent over the  
estimate of Rupees 980-6-7 a portion  
of these walls began to give way when  
water was admitted and Rupees 247-5-9  
was spent in protecting and relieving  
them so far successfully that no  
accident occurred beyond a slight  
movement forward of the weak  
portions, when the water was suddenly  
lowered. It was said for Rupees 988 for  
rebuilding the portions which have  
settled and carrying the foundations  
down to rock. The total expenditure  
requiring sanction is therefore Rupees  
1324-12-5. The cause of the failure  
was sufficiently accounted for in that  
the foundations were not carried  
down to rock at first, but by an  
error of the Engineer in charge  
were laid above the level of the  
Canal.

"Canal bed"

Total amount of the Revised Estimate  
now submitted 4,82,222

Deduct former sanction as per  
para 2 above 4,36,222

Additional amount requiring  
sanction for the Ancient and  
Head works as per para 3 above 46,000

Add new Estimate for repairs  
apron of Head sluice and the  
side walls of Canal adjoining  
as described in para 9 above 2,900

Total increased sanction now applied for 4,89,000

I have the honor to be,  
Sir,

Your most obedt. Servant  
Col. M. G.

W. H. M. S. D. S.  
Consulting Engineer  
J. & C. B.

Sept. 9  
No 2352

Proceedings of the Madras Government  
Under date the 29 September 1870.  
Pass the following  
From the Comd. Eng. for  
M. & C. Compy (N. E. 11.55 of 30 August 1870)

In the Pro. of Government  
marginally noted sanction was  
accorded to estimates, amounting  
in the aggregate to Rs 436,222 for  
the ancient and head works at  
Joonkasala on the M. S. of C.  
Canal.

With his letter above  
recorded the Acting Consulting  
Engineer submits a further revised  
estimate of Rs 482,222 exhibiting  
an excess of Rs 46,000, or about 11 per  
cent upon the totals of the sanction-  
ed amounts.

This excess is made up  
of the following items.

1. Excess expenditure over the amount sanctioned in  
S.O. No 458 of the 18 Febry/67 for the examination  
and repair of the ancient Rs. A. P.  
34. 5. 5
2. Unsanctd. expenditure in constructing a dam across  
the river above the North Anicut Parach 2726. 4-2

- O. No 2166 of 23. Nov. /61
- 577. 21. Febry /65
- 1289. 12. May /65
- 1745. 23. June /65
- 3157. 21. Octr. /65
- 1721. 23. June /66
- 3253. 12. Octr. /66
- 3592. 23. Nov. /66
- 458. 18. Febry /67
- 99. 13. Janry /69
- 955. 22. March /69
- 1317. 21. April /69

N?

W. S. & Co. Secy. to Govt.  
12. Dec. 1870

24. 1870 Recd.  
From the Comd. Eng. for  
M. & C. Compy  
The Secretary to Govt.

Recd. 30 Aug. 1870  
No. 5. 1870

Enc. 25. 43

Submits revised estimate  
for the ancient works  
headworks at Joonkasala  
including cost of repairs  
certain damages for the  
ancient work amounting  
to Rs. 482,222.  
No 2352-29. 26. 1870

Sept 11  
No 2352-29. 26. 1870

3. Unsanctioned expenditure in removing sand core from North Anicut and filling in with concrete - } 1247. --

4. Plant, Stores and proportion of store charges - 46889. --

Deduct Savings - Rs 50896-9-7

Balance - 4896-9-7

The expenditure entered as item 2 is due, it is stated, to the Chief Engineer being unable at the time the estimate for the repair of the breach in the north bank of the Sankasa-lu anicut was sanctioned to determine the cost of constructing the dam now estimated for, owing to the height of the water in the river, the expenditure set down as item 3. is for work ordered by Govt. when sanctioning the repair estimate last mentioned; and, of the excess of Rs 46889 entered as item 4, the Consulting Engineer states that no satisfactory explanation has been afforded by the Company's Officers notwithstanding the

4.0.1899 dated 18.12.19

The repeated inquiries made by his Office during the past four years. All the light that can be thrown on the matter is that the amount is composed of various estimated charges on account of Plant and stores, excess expenditure on the anicut works, and a sum of Rs 4,111-12-7 for outlay on works not yet finished.

While according sanction to the revised estimate ~~from submitted above mentioned~~ His Excellency and Council must remark, with reference to the fact item of increase, that the arrangements under which the anicut works have been carried out are far from satisfactory, and he can but express a hope that there will be no further occasion for irregularities of the nature of that now reported, being brought to the notice of Government.

The Actg. Comdg. Engr. also

also submits for sanction an estimate of Rs 2900 for repairing the apron of the head sluice with its sides and retaining walls. It would appear that this expenditure is rendered necessary by the imperfect mode of construction adopted in the first instance.

The measures that will now be taken by the Company's Officers for ensuring the stability of these works under the sanction previously accorded will, the port hope, effectually remedy all unsoundness of original construction.

*[Signature]*

21  
3

The Actg. Secy. Engg. for  
M. S. C. with 43 Rupees  
Agent & Manager - do -  
Desp<sup>d</sup> 1/10/70

12/12/70 Rs. 22

CP 349<sup>3</sup>

Govt. of (1878) Madras.  
PUBLIC WORKS.

The Actg. Consulting Engg.  
for the Madras Irrigation  
and Canal Company

29 Sept. 2352.

No. 511/512

Ancient & head works at  
Sankasala - The revised  
estimate Rs. 7,82,222  
for the Ancient & head  
works at Sankasala  
in the Madras Irrigation  
Company's Canal, sanctioned  
with remarks.