M.R.O. 1—77,006—8-6-37.

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MADRAS RECORD OFFICE.

Government of Madras.

DEPARTMENT.

G.O. No. Press Mis.

Dated 18 .

Not to be folded or roughly handled

Proceedings of the Madras Government, Public Works Department, 19th September 1870.

No. 328. Read the following letter from the Acting Consulting Engineer for the Irrigation and Canal Company, to the Secretary to Government, Public Works Department, dated Madras, 25th August 1870, No. 53 :—

I HAVE the honour to submit the plans and estimates noted at foot, together with the explanatory correspondence as per margin, connected with the distribution scheme under the 5th Section of the Company's Main Canal, or from the 61st to the 72nd mile.

From	Agent,	dated	30th May	1870,	No. 229.
To	,,	,,	6th June	,,	,, 65.
From	,,	,,	20th June	,,	,, 267.
To	,,	,,	24th June	,,	,, 89.
From	,,	,,	15th July	,,	,, 307.

2. The direction of the several channels, as well as the position of each masonry work, is shown on the general plan, and the particulars of these works are as follow:—

	Miles.	Chains.
Main Channels	2	63
Secondary do.	9	15
Minor do.	14	14½
Total...	26	12½

3. The masonry works are—

4 Sluices.	18 Weirs.
3 Aqueducts.	2 Bridges.
4 Culverts.	15 Road crossings.

The estimated cost is—

	Rs.	A.	P.
For Earthwork, Main, Secondary, and Minor Channels	8,652	10	0
For Subsidiary Channels or the immediate delivery of water to the fields for 9,516½ acres, at 8 Annas each...	4,758	4	0
Contingencies, including store and store charges, 10 per cent.	1,339	2	0
Masonry works	5,800	0	0
Total...	20,550	0	0

or Rupees 2-2-7 per acre, a moderate amount.

4. In forwarding these estimates the Chief Engineer has omitted to notice the sanction of Rupees 4,000 for distribution under the 5th Section, part of 10,000 Rupees granted in Government Order, No. 1,307, 10th June 1862, and which must be deducted from the present estimates until it is shown that the amount was duly and properly expended on other works for the same scheme. The amount for which sanction is now required is, therefore, Rupees 16,550.

The rates are as follow:—

Excavating channels, 4 to 8 and 9 cubic yards per rupee.
Rubble masonry, Rupees 4 to 4-4-0 per cubic yard.
Arch-work, ,, 7-0-0 per ,, ,,
Cut-stone, ,, 6-0-0 per ,, ,,

all liberal and ample.

5. The discharge of the channels, on which their dimensions and all other calculations are based, is according to Beardmore's formula $V = \cdot 9166\sqrt{2f \times H.M.D.}$ and the project generally appears carefully got up. I would, therefore, have promptly submitted it for sanction, after having had some serious clerical discrepancies between the drawings and the estimates corrected, had I not noticed that the minor channels generally were designed to discharge the uniform quantity of two cubic yards per hour per acre; and that the principle proposed by Major Mullins, in paragraph 5 of his letter, printed with Government Order, No. 2,882, 10th September 1868, and approved of by Government, had been lost sight of, or was completely ignored. I was consequently obliged to refer the matter more than once, and the result is that the Company's professional officer appears to consider so large a provision of carrying capacity in channels unnecessary, and calculated to lead to waste of water. The Chief Engineer, in reply to my remarks on the distribution works in the 4th Section, says, "that he does not think the extra provision of area in the channels is required, as they are generally estimated at about half full, and might at all events be tried as they are even where the water-supply is in excess of the arable land commanded; and that the additional cost of carrying out the works on the principle advocated by Major Mullins, in the 4th and 5th Sections distribution, would amount to about Rupees 3,000, or 2 Annas 6 Pies an acre;" and in another communication he said, "I do not see how the Company will "prevent great waste of water if the channels be made needlessly large."

6. The Executive Engineer also remarked "that all the channels in the 5th Section have been estimated with banks 1 foot 6 inches above water level, and everywhere the discharge can be further increased by adding to the depth, by which the discharge required by the Consulting Engineer would be easily obtained, and that any additional sanction for earthworks would not be required."

7. Without, therefore, concurring in the above opinions, it seems to me that the estimates as they now stand might be sanctioned, and the channels dug of the dimensions proposed by the Company's Engineers, on the distinct understanding that where masonry works for the passage of irrigation water occur they shall be constructed capable of discharging the maximum quantity of water according to the table in Major Mullins' letter; for it is improbable that anything approaching the full acreage commanded will be irrigated for a considerable time to come, and the enlargement of the channels by deepening them will be equally feasible at any time, and might, I think, be deferred until proved to be really necessary.

One general plan.
Two masonry drawings.
One tabular statement.
" detail estimate of earthwork.
" do. do. of masonry.
" abstract do. of earthwork.
" do. do. of masonry.
" do. do. of earth and masonry.

No. 329. ORDER THEREON, 19th September 1870, No. 2,256.

IRRIGATION, No. 18.

WITH this letter the Consulting Engineer for the Madras Irrigation and Canal Company submits estimates of Rupees 20,550 for the distribution works connected with the 5th Section of the Main Canal, and states that, after deducting from the estimates the sum of Rupees 4,000 being the cost of similar works already approved for that section, the net amount requiring sanction is Rupees 16,550. Colonel Carpendale considers that the estimated cost of distribution, namely, Rupees 2-2-7 per acre is moderate, and he adds that the scheme generally appears to have been carefully prepared.

2. Under these explanations, and agreeably to the recommendation of the Consulting Engineer, His Excellency the Governor in Council sanctions the estimates on the distinct understanding that the masonry works referred to in paragraph 7 shall be constructed in the manner therein indicated.

(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.

Exd. E. C. Shunker.

Govt. of {1870} Madras.

To **PUBLIC WORKS.**

THE CONSULTING ENGINEER FOR
THE MADRAS IRRIGATION AND
CANAL COMPANY.
&c., &c., &c.

Dated September, 1870.

Recd. *Encl.*

G. O. 7th September 1870, No. 2,276.

SEPTEMBER.

Nos. 328-329

Distribution works.—The estimate of Rupees 16,550 for the distribution works connected with the 5th Section of the Madras Irrigation and Canal Company's Main Canal, sanctioned with remarks.

Consulting Engineer
Irrigation and Canal Co
Madras 25 August 1

No. 53.

Sir,

Colonel J. Carpendale, R.E.
Act. Consulting Engineer I.&C.C.

To

The Secretary to Government
Department of Public Wor

Sir,

I have the honor to submit the
Plans and Estimates noted at foot,
together with the explanatory corres-
pondence as per margin, connected
with the distribution scheme under
the fifth Section of the Company's
Main Canal or from the 61 to the
72 Miles.

2. The direction of the several Channels
as well as the position of each Masonry
work, is shown on the General Plan,
and the particulars of these works
are as follow.

Main Channels	2 Miles	63 Chains	
Secondary	— "	9 "	15 "
Minor	— "	14 "	14½ "
Total	26 "	12½ "	

The

calculated

From Govt. 30 March/70 No. 229
To — " 16 June/70 No. 65
From — " 26 June/70 No. 267
To — " 24 June/70 No. 89
From — " 15 July/70 No. 907.

3. The Masonry works are

1 Sluices
3 Aqueducts
1 Culverts
18 Weirs
2 Bridges
15 Road Crossings

The Estimated Cost is :-

For Earthwork, Main, Secondary and Minor Channels Rs 8652-10-0
For subsidiary Channels or the immediate delivery of the water to the fields for 9516½ acres at 8 Annas each — 4758-4-0
Contingencies including Stores and Stone Charges 10 P. Cent — 1339-2-0
Masonry works — 5800-0-0

Rupees 20550-0-0 or Rupees 2-2- per acre a moderate amount.

4 In forwarding these Estimates the Chief Engineer has omitted to notice the sanction of Rupees 4,000 for distribution under the 5th Section part of 10,000 Rupees granted in Government Order No 1307 10th June 1862, and which must be deducted from the present Estimates under it is shown that the Amount was properly expended on other works for the same Scheme. The Amount for which sanction is now required is Rupees 16,550-0-0.

The rates are as follow.

Excavating Channels 4 to 8 and 9 Cubic yards per pole
Rubble Masonry Rs 4-0-0 to 4-4-0 a Cubic yard
Arch work — 7-0-0 — do —
Cut Stone — 6-0-0 — do —

all liberal and ample.

5 The discharges of the Channels on which their dimensions and all other calculations are based is according to Beardmore's formula $V = 91.66 \sqrt{2 \cdot 5} \times H^{\frac{1}{2}} M^{\frac{1}{2}}$ and the project generally appears carefully got up. I would therefore have promptly submitted it for sanction after having had some serious clerical discrepancies between the drawings and the Estimates corrected, had I not noticed that the Minor Channels generally were designed to discharge the uniform quantity of two Cubic yards per hour per Acre, and that the principle proposed by Major Mullins in paragraph five of his letter printed with Government Order No 2882 10th September 1868 and approved of by Government had been lost sight of or was completely ignored. I was consequently obliged to refer the matter more than once and the result is that the Company's Professional Officer appears to consider so large a provision of carrying Capacity in Channels unnecessary and calculated

3

calculated to lead towards the [illegible] water.

The Chief Engineer in reply to my remarks on the distribution works in the 4th Section says, that he does not think the extra provision of Area in the Channels is required, as they are generally estimated at a depth half full and might at all events be tried as they are, even where the water supply is in excess of the demand, and that the additional cost of carrying out the works on the principles advocated by Major Thullier in the fourth and fifth Sections distributions would amount to about Rupees 3,000 or 2 annas 6 pice an acre, and in another communication he said "I should agree to waste of water if the Channels were made needlessly large".

6. The Executive Engineer also remarked "that all the Channels in the fifth Section have been calculated with banks 6 ft above water level and everywhere the discharge can be further increased by adding to the depth by which the discharge required by the Consulting Engineer would be easily obtained, and that any additional Excavation for Earthwork would not be required."

Without

7. Without therefore concurring in the above opinions, it seems to me that the estimates as they now stand should be sanctioned and the Channels dug of the dimensions proposed by the Company's Engineers, on the distinct understanding that where Masonry works for the passage of Irrigation water occur, they shall be constructed capable of discharging the maximum quantity of water according to the table in Major Thullier's letter, for it is improbable that any thing approaching the full Acreage commanded will be irrigated for a considerable time to come, and the enlargement of the Channels by deepening them will be equally feasible at any time, and might I think be deferred until proved to be really necessary.

1 General Plan
2 Masonry Drawings
1 Tabular Statement
1 Detail Estimate of Earthwork
1 —— do —— do —— of Masonry.
1 Abstract —— do —— of Earthwork
1 —— do —— do —— of Masonry.
1 —— do —— do —— of Earth & Masonry.

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

C.O.B.C.

Consulting Engineer
C & OC

No 12 Rly
No 2250 11=

Proceedings of the Madras Govt:

Read the following ::

From the Engineer for the Madras Ry No 53 dd 25th Augt 70

Recd

Initd this letter the Superintending Engineer for the Madras Irrigation and Canal Company submits estimate of Rs 20,550 for the distribution work to be executed with the 5th section of the Irwin Canal, and states that after deducting from the estimate the value of Rs 4,000 being the cost of similar work already approved for that section

Acts 28th Augt 1871 Rs 9.

No 2250 dd 19th Octr 70.

Submits for sanction Plans & Estimate for distributaries Nos 31 & 32 to be executed in the 5th Section Main Canal. ——

Acts 28

Submits for sanction Plans & Estimate for distributaries Nos 31 & 32 to be executed in the 5th Section Main Canal. ——

Ce- Ry.

Under Secretary to Govt: P.W.D.

Madras 25th Octr 1870

No 3480

The Engr Comr Engrs &c &c

Sir

I have the honor to forward herewith for the sanction of Government Estimate for Rs 20,550 for distributaries Nos 31 & 32 to be executed in the 5th Section Irwin Canal.

2. The estimate has been framed on the rates sanctioned for similar works in the 4th Section Irwin Canal, and after deducting from the total amount the value of Rs 4,000 being the cost of similar works already sanctioned for that section, the net amount required is Rs 16,550.

3. The Estimate is submitted in duplicate.

I have &c

(Sd) A. Cotton

Superintending Engineer

Madras Irrigation & Canal Co.

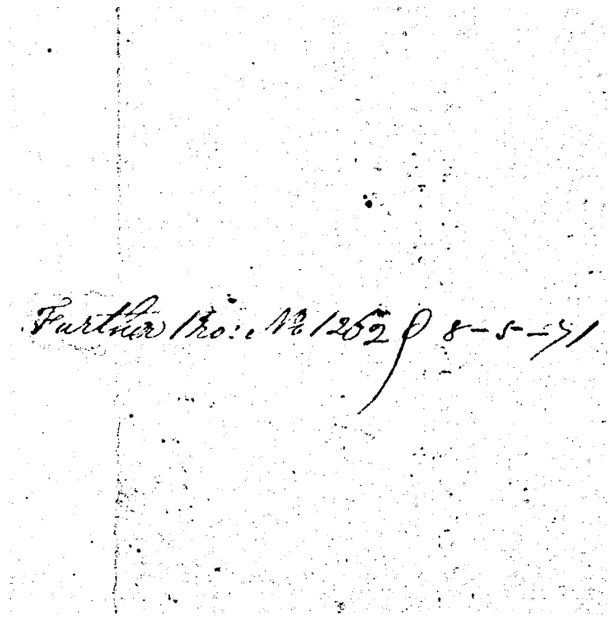
section, the net amount
requiring sanction is Rs.
16,550. Col. Carpendale
considers that the esti-
mated cost of distribution
viz; Rs 2-2-7 per acre
is moderate, and he adds
that the scheme generally
appears to have been
carefully prepared.

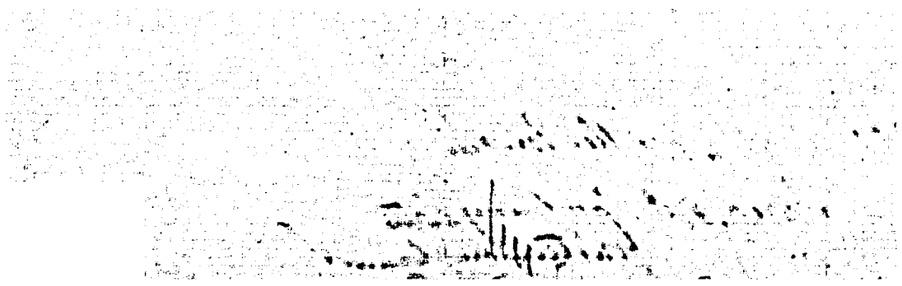
Under these explan-
ations, and agreeably
to the recommendation
of the Consg Engineer
His Excellency the Governor
in Council sanctions
the estimates on the dis-
tinct understanding
that the masonry works
referred to in para: 4
shall

shall be constructed, 13 ac.
the manner therein
indicated -

22
3

The Consg Engrs for the Bararee
Irrign & C. Company. Limited
Agent & Manager do do
Dated 20/9/70


Further Rec.: No 1252 8-5-71



C/o 3430

Govt. of Madras

PUBLIC WORKS.

To
The Consulting Engineer for
the Madras Irrigation
& Canal Comp.y

Dated 19 Sept.r 1856

Nos. 328-329

Distribution Works - Rs returned

R.s Rs: 16,550 for the distribution
Works connected with the
5th Section of the Madras
Main Canal,
Sanctioned with remarks.

Rec.d & Entd 2d Oct.r 56 Rec.d 7th