M.R.O. 1—77,006—8-6-37.

(1) Number of pages 5

(2) Date of repair

(3) Initials of the Referencer

MADRAS RECORD OFFICE.

Government of Madras.

Public works DEPARTMENT.

G.O. No. 506 Press Mis.

254-56

Dated 12 - 2 1870.

Not to be folded or roughly handled

Read the following letters :—

No. 254. From Major J. F. FISCHER, R.E., Acting Superintending Engineer, 1st Division, to the Secretary to Government, Public Works Department, dated Dowlaishweram, 6th December 1869, No. 3,213.

I HAVE the honour to submit a plan, specification, and estimate, amounting to Rupees 20,000, for constructing a first-class lock at Itempudi on the Nursapur Canal. The existing Kutcha Lock at this place is in a bad state, and it is absolutely necessary to substitute a new one as soon as possible. I have, therefore, sent up this design for the approval of Government, and, as all the other locks on this line of canal except the one at Nursapur itself require to be renewed, the plan proposed for the one at Itempudi will do for the others as the lifts are the same.

One plan.
" estimate, with detail. } *
" specification.
" extract of a letter from the Executive Engineer, No. 3 Range, Godavery, No. 618, dated 25th November 1869.

2. The lock at Nursapur is a new one of the same dimensions as the one now submitted.

3. The Nursapur Canal itself requires nothing more being done to it since the repairs of this year were carried out. The whole volume of water it is proposed to convey by this canal was this season passed into it by the new calingulah at Perravalli and carried off by the canal with perfect ease and safety, so the original sectioning must be quite correct.

4. The design for the new work has been prepared according to the instructions conveyed to this office from time to time. In my own opinion it is unnecessarily large for the size of boats employed on our Delta Canals, and I quite concur with Captain Ryves in considering it will be very inexpedient and highly dangerous to have steamers running in these channels when the native craft are travelling on them in such numbers. As regards the passage of "steamers" at night on any of the canals, I think the practice should be prohibited by order of Government except on the greatest "emergency." One passenger boat run down by a steamer at night would probably cause the death of fifty to one hundred people.

5. As funds can be made available for all the locks required on this canal from the grant† for the extension of irrigation in the Western Delta, I trust the Government will be pleased to sanction these works in anticipation of the general project being submitted. Nothing further is required on this canal to perfect it but the construction of these five locks and some of their subsidiary masonry works of small importance, as the large calingulahs at the head at Perravalli and at Itempudi have been built for some time, so that it would merely create delay in the completion of this most important line of navigation to let it remain on hand for the general design for the whole delta, conveying as it does at present all the water required to be sent down to this part of the country.

† Rupees 58,600, (*vide* Budget Item No. 148, and G. O., No. 3,338, dated 16th October 1869.)

* By Banghy.

No. 9.

No. 255. NOTE BY THE ACTING CHIEF ENGINEER FOR IRRIGATION.

WITH this letter the Acting Superintending Engineer, 1st Division, forwards a plan and estimate, Rupees 20,000, for the construction of a lock at Itempudi on the Nursapur Canal in the Western Delta of the Godavery.

2. This canal is to be a first-class line of navigation, and improvements recently executed to it have enabled it to carry its full supply of water. At Nursapur a permanent lock has already been constructed, but the rest of the existing locks are Kutcha, and it is necessary to re-place them by permanent works as soon as possible. The dimensions (150 × 20) of the lock in the design now forwarded are those which have been fixed for first-class canals, and they correspond with those of the Nursapur Lock. It appears from Major Fischer's letter that the existing Itempudi Lock is that which is most immediately required to be re-placed, and I beg to recommend, therefore, that the estimate be sanctioned, and that the Superintending Engineer be authorized to proceed with the work from Loan Funds, under the authority given by the Government of India for the prosecution of the improvements of the Irrigation works of the Western Delta in anticipation of the submission of the complete estimates for the whole delta.

3. The lock design does not show any lifting gear for the sluice shutters, and Major Fischer should report what the intended arrangements are to be. If this detail be suitably provided for, the lock will be capable of being filled in 2½ minutes, which will do very well.

FORT SAINT GEORGE,
11*th January* 1870.

(Signed) J. MULLINS, Major, R.E.,
Acting Chief Engineer for Irrigation.

No. 256. ORDER THEREON, 12th February 1870, No. 506.

IRRIGATION, No. 12.

THE Government sanction the estimate, Rupees 20,000, for the construction of a permanent lock at Itempudi on the Nursapur Canal in the Western Delta of the Godavery, and they approve of the work being carried out from Loan Funds under the authority given by the Government of India in their Secretary's letter, No. 185-AI, dated 19th August 1869.

2. The Superintending Engineer's attention will be drawn to paragraph 2 of the note by the Acting Chief Engineer for Irrigation.

3. As it is not advisable that the permission of the Government of India to the prosecution of the works in the Western Delta, in anticipation of the sanction of the complete estimates, should be allowed to delay in any way the submission of the latter, Major Fischer will be requested to report at once when the revised estimates will be ready.

4. It does not appear to the Government to be necessary for the present to pass any orders regarding the use of steamers on the canals. There are as yet

none but Government steamers which can be worked so as not to interfere with the ordinary traffic: when private steamers commence to use the canals such rules will be framed as may then be most necessary.

(True Extract.)

Colonel, R. E.,
Secretary to Government.

To the Superintending Engineer, 1st Division.
,, Controller of Public Works Accounts.
,, Chief Engineer for Irrigation.
,, Revenue Department.

Supplies
18/3/70

Memorandum.

Requested for reference the undermentioned papers

Enclosures to Co. No 5069 of 12th Feby 1870

Office of the Chief Engr. for Irrigation, P. W. Department.
8th March 1870.

Dr. Hawtrey
Head Clerk.

To
The Registrar of the Post Office W.W.Lyle

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submission of
en the revised

or the present to
There are as yet

SUPERINTENDING ENGINEER'S OFFICE, 1ST DIVISION

DOWLAISHWARUM, 6th December 1869

No. 3213,

From

Major J. T. Dickens R.E.

I.G Superintending Engineer

1st Division

To

Colonel C. A. Orr R.E.

Secretary to Government D. P. W.

Madras

SIR,

I have the honor to submit a Plan, Specification and Estimate amounting to Rupees 20000 for constructing a 1st Class Lock at Nampidi on the Narsapur Canal. The existing Kuteha Lock at this place is in a bad state and it is absolutely necessary to substitute a new one as soon as possible. I have therefore sent up this design for the approval of Government and as all the other Locks on this line of Canal, except the one at Narsapur will require to be renewed the plan proposed for the one at Nampidi will do for the others as the sizes are the same.

2. The Lock at Narsapur is a new one of the same dimensions as the one now submitted.

3 The Narsapur Canal also requires

*By Bangley

Rs: 58600 Vide Budget Estimate No 147 and G.O. No 3335 dated 16th October 1869.

from the grant for the extension of Irrigation in the Western Delta South the Government will be pleased to sanction these works in anticipation of the general project being submitted, & nothing further is required on this Canal to perfect it but the construction of these 5 Locks and some of them subsidiary masonry works of small importance, as the large Calingalahs at the head of Perravalle and Atchellampille have been built for some time, so that it would literally create delay in the completion of this most important line of Irrigation to let it remain on hand for the general design for the whole Delta, consisting as it does at present all the water required to be sent down to this part of the Country.

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

Wm. H. Dickens Major RE.
Asstt. Engr. 1st Division

Irrigation Works

Irrigation Works since being done to the Estimate of this year have not been entered in the Abstract Volume Chapter II & Page 20 to comply the Main Canal was not known passed via it by the Pera Cattimullah or Perravalle and carried off to the Canal the Perravalle Road & by to the Eastward Locking Point at Cuddy Creek.

A Design for the Locks has been prepared according to the Instructions received to this Office from time to time & I am of opinion that it is necessary to keep an Officer constantly employed on the Delta Canals & Irrigation Works Captain Agnew is at present employed on this duty & he is a very competent & steady Officer & I beg to recommend that he may be allowed to have Steamers Launches at his command when the Station Creek [illegible] Boarding Establishment in such Numbers as regards the Number of Steamers" at present on each of the Canals I think the practice should be put a stop to by order of Government except on the occasion of "Emergency" One Passenger Boat was drawn by a Steamer at night would probably cause the death of 50 to 100 persons.

As Launches can be maintained for all the Locks required on this Canal for

Rs: 58600 Vide Budget Estimate No 147 and G.O. No 3335 dated 16th October 1869.

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As Launches can be maintained for all the Locks required on this Canal for

Godavery Completion Project

Western Delta Range.

Narsapur Canal.

Abstract Estimate for constructing a 1st Class Lock with Iron Girder bridge over tail bay at Item 5 of Chamber 150 x 20.

Quantity	Particulars	Rate	Per	Amount	Total
2649 7/12	C.ft of Concrete	10 "	100 c.ft	2649 11 2	
48,784	D° of Rubble	16 8 "	"	8049 5 9	
162.8	D° of Cut stone floor	45 " "	"	732 9 7	
2.684	D° of Cut stone Sunken floor	52 8 "	"	1409 1 7	
11.62	D° of Arch work in brick	20 " "	"	292 6 5	
303	D° of Brick in Chunam	16 " "	"	48 7 8	
794	Sq. feet of Plastering 1st Coat	3 1/2 "	"	27 12 8	
90	Sq. ft. Cement work	2 6	Sq. ft	14 1 "	
6,427 1/2	Sq. feet of Dressing face joints	10 " "	100 c.ft	642 12 10	
1580	C.ft of Rough stone apron	8 8 "	"	134 4 10	
1358	D° of Rough stone revetment	9 " "	"	122 3 6	
1012	D° of Gravelling	4 " "	"	41 10 10	
378 7/8	D° of Teak wood	3 8 "	C.ft	1326 1 "	
1468	lbs of Wrought Iron	" 3 "	lbs	275 4 "	
650	lbs of Cast Iron	" 1 8	lbs	67 11 4	
3287 5/6	lbs 2. Iron Girders	" 3 2	"	650 11 6	
5 1/2	Sqrs of Painting D°	6 4 "	Sqrs	32 13 "	
	Carried Over			16508 2 2 1651 6 15 10	

Estimate for Lock with Iron Girder bridge over tail bay at Item 5 of Chamber 150 x 20.

Godavery Project

Western Delta Range.

Narsapur Canal.

Abstract Estimate for constructing a 1st Class Lock with Iron Girder bridge over tail bay at Item 5 of Chamber 150 x 20.

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Godavery Project

Western Delta Range.

Narsapur Canal.

Abstract Estimate for constructing a 1st Class Lock with Iron Girder bridge over tail bay at Item 5 of Chamber 150 x 20.

C. 152 Jany 1870 R. Bdy

No 2574

Dated 12th July 1870

Approved for Sanction and Allowance of Exploration and Estimate amounting to Rs 16508-2-2 Sixteen thousand five hundred and eight Rupees two annas two pies only Cuddapah Godavery Division

Superintending Engineer

Godavery Project

Western Delta Range.

Narsapur Canal.

Abstract Estimate for constructing a 1st Class Lock with Iron Girder bridge over tail bay at Item 5 of Chamber 150 x 20.

Estimate for Lock with Iron Girder bridge over tail bay at Item 5 of Chamber 150 x 20.

Godavery Project

Western Delta Range.

Narsapur Canal.

Abstract Estimate for constructing a 1st Class Lock with Iron Girder bridge over tail bay at Item 5 of Chamber 150 x 20.

C. 15th Jany 1870 R. Bd Feby

Brought Over ... 1651 15 10

Excavating and filling in ... 12 50

including New Channel ...

Piling ...

Making Bank & Approaches ... 600 ...

... 2.50 ...

1864 15 10

Superintendence and Sundries ... 1388 2

Total Rupees 20,000 ...

Rupees

25th November 1869

Leo Rundall
Executive Engineer Nos (Rang)

Lieut. L. Fischer Major R.E.
Ag. Superintg Engineer
1st Division.

13

P.W. 163/70
P.W. 5109/69

Enclosure in a letter No. 3213 dated 6th December 1869 from the Ag. Superintending Engineer 1st Division to the Secretary to Govt D.P.W. Madras.

Extract of a letter from the Executive Engineer in charge of the No 3 or Western Delta Range, addressed to the Superintending Engineer 1st Division No 618 dated 25th November 1869.

× × ×

All the new Locks on the Muruapier Canal, with the exception of the Tidal Lock at Mogaltee, being of the same lift, this design will serve for all but as Bridges have already been constructed across the main Canal, immediately below the Martair and Palcole Locks there will be a saving of the cost of Bridge and of the extra length of walls to carry it at those two places.

× × ×

(Signed) J. W. Rundall
Exe Engineer

True Extract

Wm. Richmond Major RE.
Asst Engineer 1st Div.

RR 1/3/20

RR 1/3/20

Estimate attd

Rs 3213 attd 5 Hands 3/6
Hamilton Cutty Lyle 2/
Williams Hickey 2/
Smith N.W. Works

Specification for General Design of New Locks for Narrations Canals. 17

General Dimensions. The width between Quoins to be 20', and the length of Lock from Lift wall of upper sill to mitre of lower sill to be 150'. The height of lift wall to be 4'-6", the height of front walls to be 7'-6" and of Chamber walls 12'-0".

Foundations. The upper sill, side and Chamber & Culvert walls to be founded on 3'-0" of Concrete. The Concrete to be of good gravel clean of all mud, or broken stone, 3 parts of gravel to 1 part of mixed mortar, thoroughly worked together and rammed till solid. Above the Concrete the Concrete the foundations to be of good rubble masonry.

Side and Chamber walls. The side and Chamber walls to be of Coursed Rubble the stone to be laid on its own bed, and the Courses evenly laid throughout.

Wings. The wings of upper sill to extend for a length of 31'-0" from Centre line of Lock; the lower wings to extend for a length of 36'-0" on each side measured from Centre line of Lock.

Quoins. All Quoins to side walls to be of dressed stone and rounded.

Hollow Quoins. To be truly dressed to a

templates and to be of picked hand stones.

Sills. The mitre and Heel post stones to be not less than 24 cubic feet each when cut and fixed the sill stones to be picked hand stones truly worked and laid as directions.

Culvert. The Lock to be provided with a Culvert on each side, both at upper and lower sill. The Culvert to be 2'-0" wide; the size of opening from Channel to be 2'-0" x 3'-0" and the openings into and from Chamber to be 3' at upper and 3' at lower sill each 2' x 2'-0" with semicircular arch. The Culvert to be arched with brick, thickness of arch being 1'-1½ except below Bridge abutments where thickness is to be 1'-6". The Culvert is proposed to have 2 Sluices into Channel below, and to have a rear apron 10' x 11'-0" x 1'-0" of cut stone founded on 1'-6" of Concrete and 1'-6" of Rubble.

Coping. The side and Chamber walls to have a cut stone coping 1'-0" thick.

Bridge. The lower side walls to be prolonged for a length of 36'-0" from mitre of lower sill, and a Bridge 13'-0" wide to be erected over tail bay. The head way to be 11'-0". The Bridge to be carried by two wrought Iron plate Girders 1'-6" in depth fixed 7'-6" apart each girder calculated for an ordinary weight of ½ Ton per foot run, and breaking weight of 2½ Tons per foot run. Planking of teakwood 2" thick to be carried on teak joists; each 3"x6" fixed 3'-0" apart Grating to be 4" thick.

Gates. The gates to be of seasoned teakwood free from stakes and flaws, to be framed as shewn in the Drawings, planking to be of teak 2¼" thick and rabbetted, all wrought from straps to be 2" x ½" on both sides to the dimensions shewn on drawings to be fixed in Coping and run with lead.

No 3 or Western Delta
Range Office Narrapur
25th November 1869.

Jno Rundall
Executive Engineer
No 3 Range. G. D.

Wm H Lecken Major RE
Acting Superintending Engr
1st Division

Godavery District

Western Delta

Specification for general design of New Locks for Narsapur Canal

Godavery Completion Project. 21

Western Delta Range.

Detailed Estimate of Quantities for constructing a 1st Class Lock with Trunk girder bridge and tail bay at Item 5 on the Narsapur Canal

Chamber 150'X20'

Description	No	L	B	D	Contents
Skimpudy Lock					
Concrete under foundation					
Front return walls	10	05	9	2	345
Floor between side walls at upper sill	15	62	0	1	465
Side Culvert apts. Do	14	61	0	2	1218
Do side walls at upper sill	34	045	0	1	4590
Chamber walls and Floor	101	035	0	1	10605
Side Culvert and side walls at Lower sill	26	045	0	1	3510
Do Do at tail bay	34	643	0	1	4450
Wings of the Bridge at Do	12	08	0	2	576
Apron of the side Culvert at tail bay	8	97	0	2	367
	9	618	0	1	370
				Total C. ft.	26497
Rubble Foundations					
Front return walls	10	03	9	2	187
Floor between side walls at upper sill	14	620	0	2	725
Side Culverts ap at Do	14	612	0	2	870
Do side walls ap at upper sill	32	043	0	2	3440
Chamber walls and Floor	103	035	0	2	8497
Side Culvert and side walls ap at S. sill	24	043	0	2	2580
Do Do at tail bay	34	641	0	2	3536
				Carried Over	19836

Enclosures as
letter No 2213/1 dated
6th December 1866 from
the Superintending Engineer
1st Division to the
Secretary to Govt PWD
Revenue.

R.R. 11/3/67
R.R. 27/3/67

Brought forward						1983 6. 2
Wings of the Bridge at tail bay	13	06.	02.	6	2	390
	5	9 5.	02.	6	2	193. 9
Apron of Side Culverts at Do	9	6 11.	0	2	6 2	522. 6
Front return walls	11.	02.	9	12.	02	726
Left wall	20.	08.	3	4.	6 1	742. 6
Do of Side Culverts	2.	04.	6	4.	02	72
Face wall of Do	4.	6 4.	05.	0	2	180
Side walls at upper Sill	29.	04.	6	12.	02	3132
Chamber walls at small vents of Culverts	15.	9 4.	0	12.	02	1512
Chamber walls	106.	04.	3	12.	02	10812
Do Do at small vents of Culverts	7.	04.	0	12.	02	672
Side walls at Lower Sill	34.	04.	6	12.	02	3672
Do and Bridge abutments at tail bay	15.	04.	6	7.	02	945
	11	3 4.	0	11.	6 2	1311
Side walls of Side Culverts including backing at upper Sill	18.	03.	6	10.	02	1260
	27	03.	9	7.	02	1417. 6
Cross wall of Do	2.	03.	6	8.	32	115. 6
Backing to arch of Do	17.	02.	0	1.	1½ 2	76. 6
	26.	6 2.	0	2.	1½ 2	225. 3
Side walls of Side Culverts including backing at Lower Sill	22.	03.	9	7.	02	1155
	34.	3 3.	6	6.	32	1475. 11 ¼
Backing to Do	16.	02.	0	2.	1½ 2	136
	18.	02.	0	2.	1½ 2	153
	18	3 2.	0	1.	7½ 2	118. 7. 6
Short wings of the Bridge	5.	03.	9	5.	92	215. 7. 6
	8.	6 2.	7½	7.	32	323. 6. 3/8
Long wings of the Lower Culverts	6.	03.	9	13.	02	585. 0. 0
Do Do beyond Culverts	13.	6 3.	6	19.	32	1819. 1. 5/8
	7.	32.	9	19.	32	767. 7 5/8
Facing around Culvert Shutter at lower Sill	4.	6 2.	0	3.	92	67. 6
	5.	02.	3	5.	02	112. 6
						54765. 8. 3

					Deduct	54765 - 8 - 3. 5443. 2. 3
					Total C. feet	5506 - 6 - 4½ 5459. 2. 3
						48834 - 7 - 12/2 48784. 11

Particulars of deductions from Rubble

Gate recesses	12.	01.	08.	02	192	
	12.	01.	012.	6 2	300	
	37.	6 1.	1½	1. 34	210. 11. 3	
Spaces occupied by the haunches of the Culvert arch	34.	01.	1½	1. 34	191. 3	
	18.	6 1.	6	1. 7½ 4	180. 4. 6	
Small Vents of Side Culverts thro Side walls of Lock	4.	32.	02.	812	272	
Arch over Small Vents thro Side walls of Lock	4.	35.	31.	1½ 12	301. 2. 7½	
				Total C. ft		1647. 9. 4½

Cut stone floors

Along the Side Culvert at upper Sill	38.	03.	01.	02	228. 0. 0
Do Do Lower Sill	17.	6 3.	01.	02	105. 0. 0
Floor of Vents of Culvert	3.	6 3.	01.	012	126. 0. 0
upper Sill	23.	06.	01.	61	207. 0. 0
Floor just below the upper Sill	20.	021.	61.	01	430. 0. 0
Inside of left wall	24.	02.	03.	01	144. 0. 0
Lower Sill	10.	021.	61.	01	215. 0. 0
In rear of Lower Culverts	10.	6 11.	00	92	173. 3
				Total C. feet		1628. 3

Cut stone Sluices

Round Sluices of side walls	1.	62.	67.	02	157. 6
	2.	31.	67.	02	47. 3
Groove Stones of Side Culvert Shutter	2.	31.	6 12.	04	162. 0. 0
	76.	04.	6 2.	078	243. 0. 0
Sluices of Small Vents	1.	63.	6 2.	04	42. 0. 0
	9.	61.	6 2.	02	57. 0. 0
Hollow Sluices	8.	01.	67.	02	168. 0. 0
	8.	01.	611.	02	264. 0. 0
Carried over					1140. 9. 0

Brought forward					1140. 9—0
Bases for side Culverts	3.	64.	01.	02	28— .
Bond & Levels of side walls at Lower Sill	2.	62.	012.	02	120— .
Do to side Culverts at Do	4.	62.	03.	04	36— .
Coping to front return walls	4.	64.	01.	02	36— .
Coping to Sides walls	44.	04.	61.	02	396— .
Do to Chamber walls	108.	02.	61.	02	594— .
Do to side walls	38.	04.	61.	02	348— .
Bed and Sides of Girders	3.	32.	62.	64.	81. 3—
					2774—0
Deduct					90. 0—0
Total C. fet					2684—0—0

Particulars of deductions from Cutstone Levies

Gate recesses	12.	01.	01.	04	48— .
	15.	01.	01.	02	30— .
	6.	01.	01.	02	12— .
Total C. fet					90— .

Arch work in brick

Arch over Side Culverts	38.	65.	31.	1½ 2	454. 9. ⅜
Do Do Small Vents thro Side walls of Lock	34.	65.	31.	1½ 2	407. 6. ⅜
	18.	65.	4½ 1.	6 2	298. 3. ¼
	4.	35.	31.	1½ 12	301. 4. ⅝
Total C. fet					1461. 10. ⅛

Brick in Cheeses

Parapets	7.	31.	33.	02	54. 4. 6
Pedestals	29.	61.	33.	02	221. 8— .
	1.	61.	63.	04	27. 0— 6
Total C. fet					302. 7. 6

Plastering

Sides and Ends of parapets	8.	63.	0	4	102— .
	31.	03.	0	4	372— .
Carried over					474— .

Brought over					474— .
Tops and Sides of parapets	14.	61.	3	2	36. 3— .
	37.	01.	3	2	92. 6— .
Do of small Vents	4.	33.	9	12	191. 3— .
			Total S. fet		794— .
Cornice work					(illegible)
Reveals of Cornice					90— .
Dressing face joints					
Front return walls	11.	07.	0	2	154— .
Side walls at upper Sill	16.	07.	0	2	1224— .
Chamber walls	172.	011.	0	2	3784— .
Bridge abutments over side walls	16.	67.	6	2	247— 6
	8.	07.	6	2	120— .
Wings	12.	619.	3	2	481— .
	11.	07.	0	4	308— .
	26.	64.	1½	4	437. 3— .
Side walls of side Culverts	16.	04.	1½	4	264. 9. 0
	34.	03.	0	4	408— 0
Total Superfet					6427— 6

Rough Stone Apron

Apron below	9.	620.	02.	01	3801— .
	15.	020.	02.	01	1200— .
Total C. fet					1580— .

Rough Stone Revetments

Side Walls above	12.	08.	01.	62	288— .
Do Do below	20.	010.	02.	02	800— .
Side Walls to approaches of Bridge	15.	06.	01.	62	270— .
Total C. fet					1358— .

Gravelling

Over Bridges and approaches	66.	013.	00.	4½ 1	321. 9— .
	45.	016.	00.	62	720. 0— .
Total C. fet					1041. 9— .

54745. 2. 3

Wood work

Bridge

Joists long	18	60	30	6 4	9	3	
D° short	14	60	30	6 5	9	0	9
N and rail posts	3	90	40	3 4	4	4	6
N and rails	19	60	40	3 2	3	3	
Guard D°	19	00	5½	0 3 2	2	9	8
Struts	3	90	12	0 3 8	2	6	
Planking	23	0	13	00 21	49	10	
Bottom to keep grain in flat-form	21	00	30	2 2	1	9	

2 Upper Culvert Shutters

Planking	2	60	2½	4 0 2	3	19	0
Stiles	9	60	40	4 4	4	2	8

2 Lower Culvert Shutters

Planking	2	60	2¼	5 0 2	4	18	9
Stiles	13	60	4½	0 4½ 4	7	7	1½

Upper Gates

N & D posts	9	90	90	9 2	10	11	7½
Mitre D°	9	60	90	9 2	10	8	9
Lower transverse beams	11	00	90	9 2	12	4	6
Upper and Centre D°	11	00	70	8 4	17	1	4
Struts	11	00	60	7 2	6	5	0
Planking including rabetting	11	30	2½	7 6 2	31	7	8½
Balance beams D°	14	60	10	0 10 2	20	1	8

Lower Gates

Rule posts	14	30	10	0 10 2	19	9	6
Mitre D°	14	00	10	0 10 2	19	5	4
Lower transverse beams	11	00	10	0 10 2	15	3	4
Upper and Centre D°	11	00	8	0 8 6	29	4	0
Struts	11	30	6	0 8 2	7	6	
Planking including rabetting	11	30	2½	12 0 2	50	7	6
Balance beams D°	16	00	10½	0 10½ 2	24	6	
Total C. f.					378	10	3

Wrought Iron work

Bridge

			Qty	at the	for feet
14	N Straps over hand rail posts 1½ × ¼ each 1. 9 long		24½		
8	D° over Struts 1½ × ¼ each 6 long		6		
			30½	1.25	38-12

4 Culvert Shutters

24	1 inch rods each 1. 6 long		36	2.7	97.20

Upper Gates

16	L Straps 2" × ½" each 2'-9" long		44		
8	L D° 2" × ½" each 2. 6" long		20		
2	N D° over balance beams 2" × ½" each 3' long		6		
			70	1.25	245.00
			62	1.5	207.70
62	¾" Bolts each 1 foot long		62	1.5	93.00
2	1¼" Round iron ties each 12. 3"		24½	4.0	98.00

Lower Gates

16	L Straps 2" × ½" each 2. 3 long		36		
16	L D° 2" × ½" each 2. 6" long		40		
2	N D° over balance beams 2" × ½" each 3. 6" long		7		
			83	3.35	278.05
			93½	1.5	139.87
86	¾" Bolts each 1. 1" long		93½	1.5	139.87
2	1¼" Round iron ties each 12. 3"		24½	4.10	98.00

2 Anchor plates for upper gates

2	Collar plates 2½ × ⅝" K 2. 3"		4.6	5.22	23.69
2	Straps 2¼" × ¾" × 3½ long		7.0	5.64	39.48
2	Cheek bars 4" × 1½ × 1'-1½ long		2.¼	20.00	45.00
4	Foot plates 1¼" × 1¼ × 6" long		2.	5.22	10.44
8	Rivets 1¼ths each				10.00
4	Anchor plates 1¼" × 1½ × 2. 9"		11.0	6.26	68.86

2 Anchor plates for Lower gates

4	Anchor plates 1¼" × 1½ × 3'. 1½		12.6	6.26	78.25
2	Collar plates 2½ × ⅝ × 2'. 6"		5.0	5.22	26.10
		Carried over			

Brought Over

2 Straps 2¼ × ¾ × 3¾ long — 7. 6 5. 64 — 42. 3

2 Cross bars 4" × 1½ × 1. 3 long — 2. 6 20. 00 — 50. 0

4 Foot plates 1¼ × 1½ × 18" ¼ long — 2. 9 5. 22 — 14. 3

8 Ridges 1¼ lbs Cast — 10. 0

Total lbs — 116 8. 2

Cast Iron Pintles for Gates

2 Sets of pintles for upper Gates — 2.50

2 Do — Do — for Lower Do — 4.00

Total lbs — 6.50

Wrought Iron Girders

Web

¼ Plate 2(6 × 1½) = 18 Sq feet 10 lbs each — 180

3/16 Do 2(6 × 1½) = 18 Do at 7.5 lbs Do — 135 315

Flanges

¼ Plates 4(3 × 1) = 12

¼ Do 4(6 × 1) = 24

¼ Do 2(6 × 1¼) = 15

¼ Do 2(1.6 × 1) = 3

54 Total Sq feet at 10 lbs each — 540 540

Cover plates to Web

¼ Plates 6(1⅙ × ½) = 3½ lbs — 35 35

Cover plates for Flanges

¼ Plates 4(1½ × 1½) = 6

¼ Do 4(1½ × 1¼) = 7½

13½ Total Do — 135 135

Angle Irons

51 Rivets 2(2" × 2" × ¼) = 102 at 4 lbs each — 408 408

Covers to Angle Irons

6 Rivets 2(1½ × 7½ × ¼) = 12 at 2.7 lbs — 32.4 32.4

Rivets

800 ½ Rivets at 1½ lbs per 10 Rivets — 120 120 0

For one Girder — 1585. 94

For other Girder — 1585. 4

Tie Rods between Girders

8 Tie rods ¾" diameter 9' 3" long 78.0

Wm Rundell 25/11/69 Total lbs for two Girders — 3287. 8

Godavery District.

Western Delta Range

Narsapur Canal

Estimate for Constructing a 1st Class Lock with Iron Girder bridge over Inlet leaf at Stempudy;

No. 9.

Note by the Acting Chief Engineer for Irrigation

With this letter the Superintending Engineer 1st Division forwards a Plan and Estimate Rupees 20,000 for the construction of a lock at Stempudy on the Narsapur Canal in the Western Delta of the Godavery.

This Canal is to be a first class line of navigation and improvements recently executed to it have enabled it to carry its full supply of water. At Narsapur a permanent lock has already been constructed but the rest of the existing locks are kutcha and it is necessary to replace them by permanent works as soon as possible. The dimensions (150 × 20) of the lock in the design now forwarded are those which have been fixed for first class canals, and they correspond with those of the Narsapur lock. It appears from Major Fischer's letter that the existing Stempudy lock is that which is most immediately required to be replaced, and I beg to recommend therefore that the estimate be sanctioned

tioned and that the Superintending Engineer be authorized to proceed with the works from Loan funds under the authority given by the Government of India for the prosecution of the improvements of the irrigation works of the Western Delta in anticipation of the submission of the complete estimate for the whole Delta.

2. The locks design does not show any lifting gear for the sluice shutters, and Major Cotton should report what the intended arrangements are to be. If this detail be suitably provided for the locks will be capable of being filled in 2/3 minutes which will do very well.

Fort St George
11 January 1870

H. Williams Major R.E.
(Acting) Chief Engineer for Irrigation.

To

The Secretary to Government Pub. Dept.

P.W. Dept. 35

No 506

Proceedings of the Madras Govt
Under date the 12th Feby 1870
Read the following

From the Agt Chief Engr. 1st Dec (No. 3213 of 6th Dec 69)

From the Chief Engr for Irrigation – (No 87 11th Jan 70)

The Govt sanction the estimate, Rs 20,000, for the construction of a permanent lock at Ekamphudi in the Nursapur canal, in the Godavery delta of the Godavery and they approve of the work being carried out from Local funds under the authority given by the Govt of India in their Secretary's letter No 185 A.I. dated 19th August 1869.

2. The Supt Engineer's attention will be drawn to para 2 of the note by the acting Chief Engr for Irrigation.

N.

N/A.

N.C.

As

P.W. 1870 Dept
From (No 163)
The Acting Chief Engineer
for Irrigation-
To The Secretary to Govt
P.W. Dept
Dated 11th
Dispd 13th January 1870
Recd 14th

No 9. E. 3

Note on the estimate of Rs 20000 for constructing a 1st class lock at Ekamphudi on Nursapur Canal - Godavery District-

No 255

No 506 - 12 Feby 1870

C. 15 Jany 1870 R. 3rd Feby

3. As it is not advisable that the permission of the Govt of India to the proceedings of the marks in the Western Delta, in anticipation of the sanction of the complete estimates, should be allowed to delay in any way the submission of the latter, Major Fischer will be requested to report at once when the revised estimates will be ready.

4. It does not appear to the Govt to be necessary for the present to pass any orders regarding the use of steamers on the canals. There are as yet none but Govt steamers which can be marked so as

as not to interfere with the ordinary traffic: when private steamers commence to use the canals such rules will be framed as may then be most necessary.

Lee. 14/6/70

To the Supdg Engineer 1st Dn
" Sanitation
" Chief Engineer for Irrigation
" Revenue Secrett

Desp 15/2/71.

Cur 5799 K 163

Govt. of [1870] Madras.

PUBLIC WORKS.

To

The Superintending Engr.
1st Circle

Dated

Recd.

G. O., 12 July 1870, No. 506

Nos. 254-255 & 256

Subj. Papers relative to the construction of a permanent lock at Sengalpet on the Nursapur Canal in the Western Delta of the Godavery.

C. 12 Jany 1870 R 3rd Feb