Public Works (1896) Department.

G.O., No. 283/284, I

DATED 24-3-96

[Despatch Abstract.]

Channel: Estimate of Rs 2,960 for excavating Atsanta minor branch channel from 5 miles 7 furlongs, 460 feet of Atsanta channel, Bank canal, Godavari Western delta, sanctioned –

The above forwarded to the Government of India.

[P.W. M.
[illegible]]

BACK PAPERS.

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

FURTHER PAPERS.

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

IRRIGATION.
ACCOUNT.

Govt. of {1896} Madras.
PUBLIC WORKS.

Dated March, 24th.

Recd. *Encl.*

G.O. No. 283 I., 24th Mar. 1896.

MARCH.

Channel

Estimate of Rs. 1,960 for excavating Atsanta minor branch channel from 5 miles 7 furlongs 460 feet of Atsanta channel, Bank canal, Gódávari Western delta, sanctioned.

No. 283 I., 24TH MARCH 1896.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper:—

From A. H. GARRETT, Esq., Executive Engineer, in charge I Circle, to the Chief Engineer for Irrigation, dated Waltair, 17th February 1896, No. 2639 G.D.

I have the honour to submit herewith, for sanction, plan and estimate amounting to Rs. 1,800 under "Capital Account" for excavating Atsanta minor branch channel from 5 miles 7 furlongs 460 feet of Atsanta channel, Bank canal, in the Gódávari Western division.

2. The channel will irrigate 85 acres of land now waste and will improve the present irrigation of 65 acres more in Atsanta village as explained in the report accompanying the estimate.

3. The work is classed as remunerative.

4. The work will be completed before the close of the next official year.

ENCLOSURES.

REPORT to accompany the estimate for excavating Atsanta Minor branch of Atsanta channel, amounting to Rs. 1,800.

This channel will irrigate 85 acres of land now waste and will improve the present irrigation of 65 more acres in Atsanta village. The direct return will therefore be Rs. 425.

The estimate was previously sanctioned but cancelled by the then Superintending Engineer in his No. 1619 G.D. of 27th October 1892, on the representation of the then Executive Engineer that the compensation was high, that it was not advisable to increase wet irrigation and that other works were then more urgent. As the direct return will be 23 per cent. and the reasons then given do not now hold good, it is recommended that the estimate be sanctioned.

(Signed) J. E. PAUL,
Executive Engineer.

Estimate Form—Abstract—Classified.

Sub-head.	Names of works.	Amount of estimate for individual works.	Total of sub-heads.	Total for each canal or distributary.	Total of each main head.
1	2	3	4	5	6
	CAPITAL EXPENDITURE NOT CHARGED TO REVENUE. 49. *Irrigation.* Gódávari Delta System. Western Section. Open Capital Account. Bank Canal. Atsanta Channel. 3. Distributaries. Atsanta Minor Branch Channel. Remunerative Work. I. Works.	RS.	RS.	RS.	RS.
2. Land	(1) Compensation for land	1,120	1,120		
4. Earthwork ..	(2) Excavating channel	575	575		
5. Miscellaneous ..	(3) Demarcation stones	105	105		
	Total, I. Works	..		1,800	
	II. Establishment ..	..	..	156	
	III. Tools and Plant ..	..	..	4	
	Total estimate ..	..	..	1,960	

17th February 1896.

(Signed) A. H. GARRETT,
Executive Engineer, in charge I Circle.

ORDER—No. 283 I., dated 24th March 1896.

The estimate, amounting to Rs. 1,960, for excavating Atsanta minor branch channel from 5 miles 7 furlongs 460 feet of Atsanta channel, Bank canal, Gódávari Western delta, is sanctioned.

2. This sanction is registered as No. 218 I. of 1895-96 and will expire on 31st March 1898.

3. Ordered that a copy of these Proceedings be forwarded to the Government of India for information.

[Here enter No. 284 I., dated 24th March 1896.]

(True Extract.)

Under Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
„ Superintending Engineer, I Circle, with six enclosures.
„ Examiner, Public Works Accounts.
„ Revenue Department.

Exd. T. K. Narayana Aiyangar.
Spare Copies

IRRIGATION.
ACCOUNT.

Govt. of {1896} Madras.

PUBLIC WORKS.

Dated March, 24th.

Recd. *Encl.*

G.O. Nos. 283, 284 I., 24th Mar. 1896.

MARCH.

Channel

Forwarding Proceedings sanctioning an estimate of Rs. 1,960 for excavating Atsanta minor branch channel from 5 miles 7 furlongs 460 feet of Atsanta channel, Bank canal, Gódávari Western delta.

No. 283 I., 24TH MARCH 1896.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper:—

From A. H. GARRETT, Esq., Executive Engineer, in charge I Circle, to the Chief Engineer for Irrigation, dated Waltair, 17th February 1896, No. 2639 G.D.

I have the honour to submit herewith, for sanction, plan and estimate amounting to Rs. 1,800 under "Capital Account" for excavating Atsanta minor branch channel from 5 miles 7 furlongs 460 feet of Atsanta channel, Bank canal, in the Gódávari Western division.

2. The channel will irrigate 85 acres of land now waste and will improve the present irrigation of 65 acres more in Atsanta village as explained in the report accompanying the estimate.

3. The work is classed as remunerative.

4. The work will be completed before the close of the next official year.

ENCLOSURES.

REPORT to accompany the estimate for excavating Atsanta Minor branch of Atsanta channel, amounting to Rs. 1,800.

This channel will irrigate 85 acres of land now waste and will improve the present irrigation of 65 more acres in Atsanta village. The direct return will therefore be Rs. 425.

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(Signed) J. E. PAUL,
Executive Engineer.

Estimate Form—Abstract—Classified.

Sub-head.	Names of works.	Amount of estimate for individual works.	Total of sub-heads.	Total for each canal or distributary.	Total of each main head.
1	2	3	4	5	6
		RS.	RS.	RS.	RS.
	Capital Expenditure not Charged to Revenue. 49. *Irrigation.* Gódávari Delta System. Western Section. Open Capital Account. Bank Canal. Atsanta Channel. 3. Distributaries. Atsanta Minor Branch Channel. Remunerative Work. I. Works.				
2. Land	(1) Compensation for land	1,120	1,120		
4. Earthwork ..	(2) Excavating channel	575	575		
5. Miscellaneous ..	(3) Demarcation stones	105	105		
	Total, I. Works	..		1,800	
	II. Establishment ..	..	..	156	
	III. Tools and Plant ..	..	..	4	
	Total estimate ..	..	..	1,960	

(Signed) A. H. GARRETT,
Executive Engineer, in charge I Circle.

17th February 1896.

ORDER—No. 283 I., dated 24th March 1896.

The estimate, amounting to Rs. 1,960, for excavating Atsanta minor branch channel from 5 miles 7 furlongs 460 feet of Atsanta channel, Bank canal, Gódávari Western delta, is sanctioned.

2. This sanction is registered as No. 218 I. of 1895-96 and will expire on 31st March 1898.

3. Ordered that a copy of these Proceedings be forwarded to the Government of India for information.

[Here enter No. 284 I., dated 24th March 1896.]

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Colonel, R.E.,
Secretary to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, I Circle, with six enclosures.
" Examiner, Public Works Accounts.
" Revenue Department.

ENDORSEMENT—No. 284 I., dated 24th March 1896.

Forwarded.

(By order.)

Colonel, R.E.,
Secretary to Govt., P.W.D.,
Irrigation Branch.

Exd. T. K. Narayana Aiyangar.
Spare Copies

A.

No. 283. I d/24th March/96

PUBLIC WORKS DEPARTMENT,
IRRIGATION BRANCH.

PROCEEDINGS OF THE MADRAS GOVERNMENT.

UNDER date the

READ the following

From Supdg Engr 1st Circle, No. 2639 G.D. d/ 17 Feb/96

Print with Rebo classified abstract estimate

Appd.
A.I.H.
21.3.96

The estimate, amtg to Rs 1,960, for excavating Atsanta minor branch channel from 5 miles, 7 furlongs 460 feet of Atsanta channel, Bank Canal, Godavari Western Delta, is sanctioned.

2. This sanction is registered as No. 218. I of 1895-96 & will expire on 31 March/98.

3. Ordered that a copy of these Procs be forwarded to the Govt of India for information.

(Endorsement H.E. No. 284. I. d/ 24 March/96) forwarded.

I
10/4/96

To
The Chief Engr for I.
Supdg Engr 1st Circle with 6 enclos.
Ex. P.W.A.
Rev. Dept.

9/3

Recd
11/3

Exd
15/4

9/3

No.
1

Estimate for excavating Atsanta minor branch channel, Godavari Western Delta

7.E.D.
23/3

Issue

Recd
24/3

"9"

23.3.96

14-3-96

E. I. Form No. 1—500—14-5-95

H.S. 20/

Index No 3

Report to accompany the Estimate for Excavating Atsanta Minor branch ~~Channel~~ of Atsanta channel amounting to Rs ~~1020~~ 1800.

This channel will irrigate 85 acres of land now waste and will improve the present irrigation of 65 more acres in Atsanta village. The direct return will therefore be Rs 425.

The Estimate was previously sanctioned but cancelled by the then Superintending Engineer in his No. 1619 G.D of 27.10.92 on the representation of the then Executive Engineer that the Compensation was high, that it was not advisable to increase wet irrigation and that other works were then more urgent. As the direct return will be 23% and the reasons then

given do not now hold good
it is recommended that the
Estimate be sanctioned.

H Paul

Executive Engineer

3 = FEB. 96

CHIEF ENGINEER
FOR IRRIGATION.
26 FEB. 96
No. 30

Ov. 29/1.

3/2

7 - FEB. 96
SUPERINTENDING ENGINEER, FIRST CIRCLE

Engineer in ch 1st Circle.

Dated 17th February 1896.

P.W.E.6
2698/96

H.E. 20/3R23/3

ESTIMATE FORM—Abstract—Classified.

Sub-head.	Names of Works.	Amount of Estimate for individual Works.	Total of Sub-heads.	Total for each Canal or Distributary.	Total of each Main head.	Remarks.
1	2	3	4	5	6	7
	Capital expenditure not charge to Revenue 49 Irrigation Godavari Delta System Western Section Open Capital account Bank Canal Atsanta Channel 3 Distributaries Atsanta minor branch Channel Remunerative Work. I Works					
2. Land	(1) Compensation for land	1120				
			1120			
4. Earth work	(2) Excavating Channel	575				
			575			
5. Miscellaneous	3. Demarcation Stones	105				
			105			
	Total I Works			1800		
	II Establishment			456		
	III Tools & Plant			4		
	Total Estimate			1960		
9-1-l	24-2-l	5	5	5	5	

Sanctioned in G.O. No. 283 I. Dt 24-3-96

and registered as No. 218 I of 1895-96

Station Camp

Dated 17 February 96

2,000—15-5-95.

16-2-96

6/3/96

Executive Engineer in Charge
1st Circle

CHIEF ENGINEER
FOR IRRIGATION
20 FEB. 96
No. 30 G.D.

(E. No. 126.)

First CIRCLE.

DIVISION—*Godavari Western*

DISTRICT *Godavari*

ESTIMATE FORM—Abstract—Classified.

To accompany the Detailed Estimate No.
of 1895-96 for* *Excavating Atsanta minor branch channel*

Remunerative Work.

P.W.E.1
2698/96

* Here enter the Name and Description of work in full.

No. *2639 G.D.* *Pres./*

FROM *A. H. Garrett Esq*
Executive ~~SUPERINTENDING~~ ENGINEER *in ch:*
FIRST CIRCLE,

Enclosures. 8 TO

THE CHIEF ENGINEER
FOR IRRIGATION,

Waltair ~~DOWLAISHWERAM~~, *17 February* 1896.

SIR,

I have the honor to submit herewith for sanction plan & estimate amounting to Rs 1800 under "Capital account" for excavating Atsanta Minor branch channel from 5 Miles 7 fur: 460 ft of Atsanta Channel Bank Canal in the Godavari Western Dn.

2. The Channel will irrigate 85 acres of land now waste and will improve the present irrigation of 65 acres more in Atsanta village as explained in the report accompanying the estimate.

3. The work is classed as Remunerative.

4. The work will be completed before the close of the next official year.

I have the honor to be,
Sir,
your most obedient servt

Ex Engineer in ch: 1st Circle

Ex. 2072

P. W. S.E.I. 1 500—31·7·94 269

FROM A. H Garrett Esqr.
SUPERINTENDING ENGINEER
FIRST CIRCLE.

Encls: (2 plan
Recd 17-3-

TO
THE CHIEF ENGINEER
FOR IRRIGATION.

CHIEF ENGINEER
FOR IRRIGATION.
28 FEB. 96
3012

DATED 17th
DESPATCHED 25th } February 1896.
RECEIVED

NO. 2639 (G.I).

ENCLOSURES, 8.

SUBJECT.

Atsanta Minor branch Channel — Submits an Estimate of Rs. 1800/- for excavating the — for sanction

H.E. 20/3R23/3

No. 285 I., 24th March 1896.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.

Read—the following paper :—

From Major W. L. C. BADDELEY, R.E., Superintending Engineer, II Circle, to the Chief Engineer for Irrigation, dated 15th February 1896, No. 2379 K.S.

In reference to G.O. No. 37 I., dated 15th January 1896, I have the honour to forward the statement and sketch-map promised in Mr. Smith's report No. 3210, dated 28th October 1895, together with a report by that officer.

2. Mr. Pereira is now investigating the feasibility of making a cut from the Budameru into the Kistna, with the object of diverting a portion of the floods in the former river.

3. Mr. Smith is investigating the Tammileru from the bifurcation above Ellore with a view to ascertaining what steps are necessary to mitigate the damage caused by floods.

4. I have inspected the Tammileru and the Ellore canal with Mr. Smith, but this report will be confined to the measures that I think necessary to prevent serious damage again occurring to the canal. The questions relating to the Budameru and Tammileru will be reported upon separately in due course and the subject of lowering the level of the Collair lake will probably require very careful examination and a long series of observations. It is impossible at present to offer any opinion upon this extremely difficult question.

5. Turning now to the Ellore canal, it will be observed that the East Coast Railway intend to provide a good deal of additional water-way in their railway bank, viz., 1,560 feet additional water-way by means of bridges and 2,000 feet of cause-way. On our part we propose to provide 3,190 feet additional inlets and 1,279 feet additional outlets.

The outlets having a partially clear overfall have more discharging capacity than the inlets, and the length of inlets hitherto provided for the canal were insufficient in proportion to the lengths of outlets.

It is not possible to suggest any simpler or more effective way of dealing with the heavy floods that cross the canal, but still the cost will be heavy, viz., about Rs. 61,764, of which Rs. 41,825 is for repairing flood damages, the estimates for which will be passed by me, and Rs. 19,939 for improvements, the estimates for which will be submitted to you for sanction.

The following documents accompany this report :—

One sketch-map of the canal and railway.
One report by Mr. Smith.
One statement of water-ways.
Two statements of approximate estimates classified under repairs and improvements.

Enclosures.

From C. A. SMITH, Esq., Executive Engineer, Kistna Eastern Division, to the Superintending Engineer, II Circle, dated 28th January 1896, No. 4473.

In continuation of my No. 3210, dated 28th October 1895, I have the honour to forward a sketch-map to a scale of 2 inches to a mile showing the relative positions of the breaches and water-ways existing and proposed on the East Coast Railway and the Ellore canal and also a comparative statement of the water-ways. It will be seen from the statement of water-ways printed with G.O., No. 446 I. of 25th May 1891, that the present outlets of the Ellore canal are rather more than sufficient for the discharge from the catchment areas calculated from Ryves' formula with a co-efficient of 450, but it will also be seen that the discharging capacity of the outlets is in many cases considerably in excess of that of the inlets.

2. It is therefore proposed to increase the lengths of inlets and provide a few additional outlets in places where the experience of the floods of 1892 and 1895 has shown them to be desirable.

3. The flood discharge of 1895 was of course altogether abnornal and it would hardly be possible, without very heavy expenditure, to make the canal absolutely safe against such a flood. It is however believed that with the additional water-ways now proposed the risk of breaches will be very small.

4. The proposals now made are as follows :—

Budameru basin affecting canal from 7 miles 0 chains to 12 miles 60 chains.—As the question of diverting the Budameru is under consideration, nothing is proposed except that the right bank from 8 miles 3 furlongs to 8 miles 6 furlongs which has been considerably damaged will be restored only to a level of 2½ feet above F.S.L. and 3 feet top width. Instead of 3½ feet above F.S.L. and 6 feet top width, so that it may breach in extraordinary floods and avoid danger to the banks near Kesarapally aqueduct where they are higher and breaches are more troublesome to close.

Catchment basin affecting canal from 15 miles 60 chains to 19 miles 10 chains.—The arrangements here are sufficient except opposite Atkur escape at 19 miles 1 furlong, where it is proposed to put in an inlet 200 feet long.

Catchment basin affecting canal from 19 miles 70 chains to 25 miles 50 chains.—At 19 miles 7 furlongs an inlet 100 feet long is required to pass the surplus from Pottipad tank for which there is at present no provision. At 21 miles 2 furlongs there are a masonry inlet and outlet 70 feet and 79 feet long respectively. These were closed some few years ago apparently because it was not thought worth while to raise their crests.

It is now proposed to re-open them and raise their crests to F.S.L., so as to relieve the Ampapuram under-tunnel which is insufficient at times of heavy rain and was badly breached this year.

At 22 miles 5½ furlongs the existing masonry inlet to be extended from 80 feet to 400 feet and the old outlet now closed to be re-opened its crest raised to F.S.L. and the length increased from 150 feet to 250 feet.

At 25 miles 1 furlong or a little below Narasannapalem escape an inlet 200 feet long. Drainage water collects here and the bank was breached both in 1892 and 1895.

Ramileru basin from 27 miles 40 chains to 31 miles 0 chains.—At 27/4 an inlet 660 feet long to be built opposite the existing outlet to relieve the Perikeed under-tunnel round which the banks were very badly breached in 1895.

Just above 29/5 an inlet 330 feet long to be built and an outlet 200 feet long just below 29/5. This inlet was proposed after the 1892 flood, but was not carried out. This inlet and outlet are necessary to relieve the Totagudem under-tunnel at times of high floods.

At 30/5 the inlet to be increased from 50 feet to 330 feet, the outlet opposite being 960 feet long.

At 31/5 an inlet and outlet each 200 feet long to be built as the field levels are here suitable for the purpose and both banks were considerably damaged here in 1895.

Catchment basin affecting canal from 32 miles 29 chains to 37 miles 0 chains.—At 35/5 an inlet and outlet each 300 feet long to take the water from the proposed new railway bridge opposite this place and also the spill from Watlur drain which collects here. An inlet of 330 feet above 36/1 to relieve Watlur under-tunnel near which the banks were very badly breached in 1895.

At 36/7 an outlet 200 feet long and at 37/0 an inlet 200 feet long. These will also take the spill from Watlur drain and relieve Watlur under-tunnel.

At the West Tammileru escape it is proposed to raise the flood gates* above this year's flood level to build two masonry retaining walls to a length of 70 feet above the abutments to prevent the latter being turned as happened in 1895 and to provide strong fender piles on the upstream side to prevent the vents of the escape being blocked with trees as was the case in 1895.

Similar fender piles to be provided above the East Tammileru escape.

---

* This part of proposal has since been abandoned.

(Intld.) W. L. C. B.

5. In all the above proposals the lengths of inlets and outlets proposed must be regarded as more or less tentative as there is no means of calculating exactly what is required.

6. Wherever the ground levels permit these inlets and outlets have been placed at or near the places where the main banks have been washed away so as to save the cost of earthwork for restoring the banks and simplifying the position of the spoil earth from the excavation. Masonry retaining walls are provided for outlets, but for inlets only rough-stone dry packing is allowed.

7. A statement is enclosed showing the probable cost of the proposals for all of which estimates are prepared and will be forwarded as soon as they have been checked.

Statement showing the approximately estimated amount of expenditure for the proposed improvements to the Ellore Canal.

No.	Names of works.	Amount. RS.
1.	Fixing gauge in rear of West Tammileru	100
2.	Alterations to flood stop gates of West Tammileru escape ...	2,330
	Erecting flood walls on both sides of West Tammileru from old inlet wall to chambers	1,770
	Putting towpath bridge and fender piles above West Tammileru escape	3,710
3.	Inlet in 19 miles 10 chains	325
	Do. in 19 " 7 "	175
	Do. in 21 " 2 "	480
	Do. and outlet in 22 miles 5½ chains	1,090
	Do. in 25 miles 1 chain	370
	Do. in 27 " 4 chains	1,180
	Do. and outlet in 29 miles 5 chains	1,600
	Do. in 30 miles 5 chains	540
	Do. in 31 " 5 "	1,500
	Do. and outlet at 35 miles 5 chains	3,500
	Outlet at 36 miles 7 chains	1,185
	Inlet at 36 miles 7 "	435
	Total ...	20,290

Statement showing the approximately estimated amount of expenditure owing to floods on the Ellore Canal.

No.	Names of works.	Amount. RS.
1.	Closing breaches of Ellore Canal from 3rd to 40th mile ...	30,035
2.	Kesarapalli and Budameru aqueducts	92
	Watlur under-tunnel	130
	Packing revetment on four sides of Pedapad under-tunnel ...	1,220
	Do. do. Thotagadem under-tunnel ...	1,150
	Do. do. Watlur do. ...	1,370
	Do. do. Perikeed do. ...	900
3.	Cattle crossings	3,560
4.	Compensation	3,810
5.	Closing breaches in first to third reaches	302
6.	Watlur right-side channel culvert	155
	Total ...	42,724

STATEMENT showing the arrangements made for disposing of the drainage crossing the Ellore canal in the Kistna delta and their cost.

Position at which the drainage crosses the canal.	Area of drainage basin, square miles.	Maximum flood discharge in cubic feet per second, 450⅔ miles.	Description of cross drainage works.	Outlet.						Total capacity of discharge in cubic feet per second.	Inlet, length.	Cost.		Miles of bridges on railway.	Description of bridges.	Discharge capacity.	Remarks
				Weirs.			Aqueduct or under-tunnels.										
				Length.	Depth of discharge over crest.	Capacity in cubic feet per second.	Area of waterway in square feet.	Head available.	Capacity in cubic feet per second.			Actual cost of works to date.	Estimated further cost of other works.				
M. CH.														M. F. FT.	S. L.		
7 0	540	30,000	Inlet	..	..	..	..	..	..	..	5,280	1,000	..	0 4 213	1 20 feet girder.	..	Canal banks cut down to 1 foot above F.S.L.
7 0			Outlet	5,280	1	13,090	..	..	..	13,090	..	1,000	..	1 3 229	8 40 ,,	..	
7 30			Escape (formerly Ryves' canal old head sluice) 3 vents, 6′×6″ each.	18	11·07	960	..	..	..	960	..	1,755	..	3 5 150	1 12 ,,	..	
7 50			Budameru aqueduct	..	..	..	515	4	5,330	6,550	..	19,000	1,030	4 7 86	1 12 ,,	..	
..			Do. over side walls	130	2	1,220	..	..	..					5 2 0	30 10 feet arches.	..	
10 70			Kesarapalli aqueduct	..	..	..	636	4	6,360	8,300	..	40,135	..	6 5 262	3 40 feet girder.	..	
..			Do. over side walls	160	2	1,940	..	..	..	..	..	..	..	7 3 305	1 12 ,,	..	
12 60			Do. under-tunnel	..	..	..	26·14	4	260	260	..	2,430	..	8 2 200	3 40 ,,	..	
..			....	..	..	..	..	..	..	..	..	..	..	8 7 54	1 12 ,,	..	
..			....	..	..	..	..	..	..	..	..	..	..	8 7 54	30 10 feet arches.	..	
..			....	..	..	..	..	..	..	..	..	..	..	9 4 425	1 12 feet girder.	..	
..			....	..	..	..	..	..	..	..	..	..	..	10 0 569	1 12 ,,	..	
..			....	..	..	..	..	..	..	..	..	..	..	10 5 560	3 40 ,,	..	
			Total ..	..	..	..	..	..	..	29,160	..	..	..	..	..		
15 60	13	2,500	Inlet	..	..	..	..	..	..	..	450	683	..	12 7 280	1 20 feet girder.	..	
15 63			Buddavaram escape, 4 vents of 4′ 6″×5′ 3″ each.	18	10·35	1,000	..	..	..	1,000	..	2,100	..	13 1 219	1 12 ,,	..	
17			Avatapalli under-tunnel	..	..	..	21·4	4	214	214	..	2,400	..	14 4 410	2 20 ,,	..	
18 33			Atkur under-tunnel	..	..	..	9·5	4	95	95	..	2,120	..	16 4 446	3 20 ,,	..	
19 10			Inlet	..	..	..	..	..	..	..	200	..	325	..	..	..	
19 10			Atkur escape, 4 vents of 4′ 6″× 5′ 3″ each.	18	9·75	1,000	..	..	..	1,000	..	2,248	..	..	..	..	
			Total ..	..	..	..	..	..	..	2,309	..	..	..	..	..		
19 70	65	7,272	Inlet	..	..	..	..	..	..	..	100	..	175	17 11 38	1 12 feet girder.	..	
20 17½			Pattipad escape, 4 vents of 8′×4′—6″ each.	32	8·49	1,200	..	..	..	1,200	..	2,512	..	17 5 81	1 20 ,,	..	
21 15			Ampapuram under-tunnel	..	..	..	28·8	4	288	288	..	2,400	..	18 7 153	2 20 ,,	..	
			Existing.														
21 20			Inlet and outlet, restoring	79	2	395	..	..	..	395	70	..	480	19 0 467	3 20 ,,	..	
22 50½			Extending the existing inlet and outlet.	150 to 250	2	1,250	..	..	..	1,250	80 to 400	..	1,090	19 7 300	2 20 ,, Proposed 200 feet of additional water-way.	..	
22 53			Inlet	..	..	..	..	..	..	..	100	248	..	..	..	..	
22 70			Inlet	..	..	..	..	..	..	..	1,000	1,754	..	21 1 560	1 20 feet girder.	..	
22 70			Outlet	1,100	2	5,500	..	..	..	5,500	..	4,386	..	21 3 103	2 20 ,,	..	
23 10			Veeravalli under tunnel, 3 vents of 5′ 6″ × 5′ 3″ each.	..	..	..	86·3	4	863	863	..	5,400	..	22 3 145	1 12 ,,	..	
24 60			Inlet	16·50	8·16	..	..	..	..	..	135	335	..	23 0 0	In 23rd mile, where breached, a new bridge of 5·20 feet.	..	
24 60			Narasannapalem escape, 8 vents of 8′ × 4′ 6″ each.	..	..	2,400	..	..	..	2,400	..	5,111	..	..	..	..	
25 10			Inlet	..	..	..	..	..	..	..	200	..	370	..	..	..	
25 50			Narasannapalem under-tunnel, 6′ × 3′ 6″.	..	..	..	18·0	4	180	180	..	2,500	..	..	..	..	
			Total ..	..	..	..	..	..	..	12,076	..	..	..	..	..	..	
26 10	9	1,950	Inlet	..	..	..	..	..	..	..	70	400	..	24 3 60	1 20 feet girder.	..	
26 10			Outlet	100	2	500	..	..	..	500	..	800	..	..	..	..	
			Total ..	..	..	..	..	..	..	500	..	..	..	..	..	..	
27 40	135	11,800	Perikeed outlet	960	2	4,800	..	..	..	4,800	..	3,820	..	26 3 120	1 20 feet girder.	..	
27 40			Inlet	..	..	..	..	..	..	..	660	..	1,180	26 4 500	4 40 ,,	..	
27 65			Perikeed under-tunnel, 2 vents of 10′ × 3′ 6″ each.	..	..	..	5·75	4	575	575	..	3,400	..	..	To be increased to 9·40 feet, 20·10 feet arches, near Kalapanu 20·00 feet causeway proposed.	..	
27 69			Inlet	..	..	..	..	..	..	..	240	225	..	26 5 0	..	..	
27 69			Outlet	240	2	1,200	..	..	..	1,200	..	1,200	..	..	..	..	
29 50			Inlet	..	..	..	..	..	..	..	330	..	..	..	..	..	
29 50			Outlet	200	2	1,000	..	..	..	1,000	..	..	1.600	..	..	..	
29 66			Thotagudem under-tunnel, 2 vents of 10′ × 3′ 6″ each.	..	..	..	57·5	4	5·75	575	..	3,500	..	27 4 190	2 20 feet girder.	..	
30 50			Inlet increased from 50 feet to 330 feet.	..	..	..	..	..	..	..	330	..	540	28 4 260	2 12 ,,	..	
30 50			Outlet	960	2	4,800	..	..	..	4,800	..	4,443	..	..	..	..	
31			Inlet	..	..	..	..	..	..	..	500	1,222	..	..	..	..	
..			Outlet	500	2	2,500	..	..	..	2,500	..	2,284	..	..	..	..	
31 5			Inlet	..	..	..	..	..	..	..	200	..	1,500	..	..	..	
31 5			Outlet	200	2	1,000	..	..	..	1,000	..	..	..	..	..	..	
			Total ..	..	..	..	..	..	..	16,450	..	..	..	..	..	..	
32 29	45	5,700	Inlet, 72 feet long	..	..	..	..	..	..	..	72	..	..	29 1 655	1 20 feet girder.	..	
32 29			Outlet*	48	2	500	..	..	..	500	..	703	..	30 5 321	5 20 ,,	..	
32 30			Inlet	..	..	..	..	..	..	..	300	536	..	..	The abutment destroyed to be increased to 10 spans of 20 feet.	..	*Altered into an escape of 4 vents of 9′ 6″ × 4′ each.
32 30			Outlet	500	2	2,500	..	..	..	2,500	..	2,385	..	32 5 220	3 20 feet girder.	..	
33 41			Pedapad under-tunnel, 3 vents of 10′ × 3′ 6″ span.	..	..	..	75·8	4	760	760	..	4,850	..	33 1 440	5 20 ,,	..	

Statement showing the arrangements made for disposing of the drainage crossing the Ellore canal in the Kistna delta and their cost—*cont.*

Position at which the drainage crosses the canal.	Area of drainage basin, square miles.	Maximum flood discharge in cubic feet per second, 460⅔ miles	Description of cross drainage works.	Outlet.						Total capacity of discharge in cubic feet per second.	Inlet, length.	Cost.		Miles of bridges on railway.	Description of bridges.	Discharge capacity.	Remarks
				Weirs.			Aqueduct or under-tunnels.										
				Length.	Depth of discharge over crest.	Capacity in cubic feet per second.	Area of water way in square feet.	Head available.	Capacity in cubic feet per second.			Actual cost of works to date.	Estimated further cost of other works.				
34 40	45	5,700	**Inlet of 300 feet**	..	..	..	..	..	..	..	300	636	..	33 2 640	5 20 feet girder.	..	
34 40			Outlet	500	2	2,500	..	..	..	2,500	..	2,303	..	33 5 120	5 20 ”	..	
35 50			Inlet	..	..	..	..	..	..	..	500	3,500	..			..	
35 50			Outlet	400	..	2,000	..	..	..	2,000	..		..	..	..	..	
36 28			Watlur under-tunnel, 5 vents of 10′ × 4′ 6″ each.	..	..	..	176·4	4	1,764	1,764	..	6,600	..	..	..	..	
36 70			**Outlet**	**200**	**2**	**1,000**	..	..	..	**1,000**	..	..	**1,185**	..	..	..	
..			**Inlet**	..	..	..	..	..	..	..	**200**	..	**435**	..	..	..	
			Total ..	..	..	..	..	..	..	11,024	..	..	..	..	..		
37 40	367	23,200	West Tammileru escape formerly an aqueduct, 12 vents of 16′ × 11′ 6″ each with 2 shutters to each.	192	7·60	10,135	..	..	..	10,135	..	63,081	..	34 4 340	6 40 feet girder.	..	
39 34			Jalipudi under-tunnel, 1 vent, 3′ × 3″.	..	..	..	8	4	80	80	..	2,100	..	36 3 240	1 12 ”	..	
39 52			Powerpett under-tunnel, 2 vents of 3′ 6″ × 3′ 6″ each.	..	..	..	30	2′ 6″	200	200	..	..	5,060	..	..	..	
40 20			East Tammileru outlet, 8 vents of 20 feet each, now called Chataparru outlet.	160	2	1,500	..	..	..	8,512	..	25,403	..	37 0 110	4 40 ”	..	
..			East Tammileru escape, 11 vents of 7′ 6″ each.	82·50	8·68	7,012											
			Total ..	..	..	..	..	..	..	18,927	..	..	..	..	..		5,908
			Grand Total ..	..	..	..	..	..	..	90,446	..	..	..	..	..		

Note.—Proposed additional waterways printed in block type.

24th February 1896.

(Signed) W. M. ELLIS, Capt., R.E.,
for Suptg. Engr., II Circle.

No. 52 I.

Submitted to Government.

2. The tanks in the Kistna district affecting the East Coast Railway are mostly private tank, and the question of their repairs is dealt with in G.O. No. 501 W., dated 10th February 1896. The Superintending Engineer, II Circle, should, in communication with the Collectors concerned, see that all Government tanks affecting the line are put in order without delay.

3. The waterway proposed by the Railway authorities is 3,560′ against 3,190′ of proposed inlets to the Ellore canal. The latter is considered sufficient.

4. The Superintending Engineer, I Circle, has not yet submitted the report called for in G.O. No. 37 I., dated 15th January 1896, but the railway in the Gódávari district east of Ellore was very little affected.

(Signed) R. R. E. DRAKE-BROCKMAN, Col., R.E.,
Chief Engineer for Irrigation.

27th February 1896.

Order—No. 285 I., dated 24th March 1896.

Communicated to the officers concerned for information.

2. The attention of the Superintending Engineer, II Circle, is drawn to the latter part of paragraph 2 of the endorsement by the Chief Engineer for Irrigation.

(True Extract.)

Under Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Consulting Engineer for Railways.
„ the Chief Engineer for Irrigation.
„ Superintending Engineers, I and II Circles.
„ the Revenue Department.

Exd. Md. Pahilvan.
Spare Copies

IRRIGATION.

Govt. of {1896} Madras.

PUBLIC WORKS.

Dated March, 24th.

Recd. Encl.

G.O. No. 285 I., 24th Mar. 1896.

MARCH.

Tanks

Note by the Chief Engineer for Irrigation relative to the repair of — affecting the East Coast Railway in the Kistna district, communicated to the officers concerned.

No. 2379 KS

Supg Engineer's Office,
2nd Circle,
15th February 1896.

From

Major W. L. C. Baddeley R.E.
Supg Engineer
2nd Circle

To

The Chief Engineer,
For Irrigation,
Madras.

Encls. 5

Drawing sent separately

Sir

In reference to G.O. No 37 I dd 15th January 1896 I have the honour to forward the Statement and Sketch map promised in Mr Smith's report No 3210 dd 28th Octr: 1895 together with a report by that officer.

2. Mr Pereira is now investigating the feasibility of making a cut from the Budameru into the Kistna, with the object of diverting a portion of the floods in the former river.

3. Mr Smith is investigating the Tammileru from the bifurcation above Ellore with a view to ascertaining what steps are necessary to mitigate the damage caused by floods.

4. I have inspected the Tammileru and the Ellore Canal with Mr Smith, but this report will be confined

to

to the measures that I think necessary to prevent serious damage again occuring to the Canal.
The questions relating to the Budameru and Sammileru will be reported upon separately in due course and the subject of lowering the level of the Collair lake will probably require very careful examination and a long series of observations. It is impossible at present to offer any opinion upon this extremely difficult question.

5. Turning now to the Ellore Canal, it will be observed that the East Coast Railway intend to provide a good deal of additional water way in their Railway bank, viz, 1560' additional water way by means of bridges and 2000' of Causeway. On our part we propose to provide 3190' additional inlets and 1279' additional outlets.

The outlets having a partially clear outfall have more discharging capacity than the inlets and the length of inlets hitherto provided for the Canal were insufficient in proportion to the lengths of outlets.

It

It is not possible to suggest any simpler or more effective way of dealing with the heavy floods that cross the Canal but still the cost will be heavy, viz, about Rs 61,764 of which Rs 41,825 is for repairing flood damages, the estimates for which will be passed by me and Rs 19,939 for improvements the estimates for which will be submitted to you for sanction.

The following documents accompany~~ing~~ this report

× Sent separately

×1 Sketch map of the Canal & Ry.
1 Report by Mr Smith.
1 Statement of water ways.
2 Statements of approximate Estimates classified under repairs & improvements.

I have the honour to be,
Sir,
Your most obt. Servt.

(Sd) Ellis Exe Engr.
for Supg Engineer
2nd Circle

CHIEF ENGINEER
FOR IRRIGATION.
17 FEB 96
No. 32Ks

From

The Supg Engineer
2nd Circle.

To

The Chief Engineer
For Irrign.
Madras.

No 2379 K.S. Enclo 5
Dated 15th Febry 1896.

Ellore Canal.
Forwards with remarks
for the report on the
damages to the — with
Certain Statements &c.

PWS!
20 681/96

From

The Executive Engineer
Kistna Eastern Division

No. 4473
28-1-96

To

The Superintending Engineer
2nd Circle

Enclosures.
1 Sketch map
1 Statement of waterworks
1 Do of approximate value of proposals.

× Sent to E.E. with this office No. 44C of 3-11-95.
⊕ printed in G.O. No. 37-I, 15/1/96

Sir,

In Continuation of my No. 3210/28-10-95 I have the honor to forward a sketch map to a scale of 2 inches to a mile showing the relative positions of the breaches and water ways existing and proposed on the East Coast Railway and the Ellore Canal and also a Comparative Statement of the water ways. It will be seen from the statement of waterways printed with G.O. No. 446 I of 25th May 1891 that the present outlets of the Ellore Canal are rather more than sufficient for the discharge from the catchment areas calculated from Ryves formula with a coefficient of 450. but it will also be seen that the discharging capacity of the outlets is in many cases considerably in excess of that of the Inlets.

2. It is therefore proposed to increase the lengths of Inlets and provide a few additional outlets in places where the experience of the floods of 1892 & 1895 has

shown there to be desirable.

3. The flood discharge of 1895 was of course altogether abnormal and it would hardly be possible without very heavy expenditure to make the canal absolutely safe against such a flood. It is however believed that with the additional waterways now proposed the risk of breaches will be very small.

4. The proposals now made are as follows.

Budameru Basin, affecting Canal from 7 miles 0 chains to 12 miles 60 chains.

As the question of div~~iding~~erting the Budameru is under consideration nothing is proposed except that the Right bank from 8 miles 3 furlongs to 8 miles 6 furlongs which has been considerably damaged will be restored only to a level of 2½ feet above F.S.L. and 3 feet top width. Instead of 3½ feet above F.S.L. and 6 feet top width so that it may breach in extraordinary floods and avoid danger to the banks near Kesarapally Aqueduct where they are higher and breaches are more troublesome to close.

Catchment Basin affecting Canal from 15 miles 60 chains to 19 miles 10 chains.

The arrangements here are sufficient except opposite Atkur Escape at 19 miles 1 furlong

where it is proposed to put in an inlet 200 feet long.

Catchment Basin affecting Canal from 19-70 to 25-50.

At 19 miles 7 furlongs an inlet 100 feet long is required to pass the surplus from 5 Pottipad Tank for which there is at present to no provision. At 21 miles 2 furlongs there are a masonary inlet and outlet 70 ft and 79 feet long respectively. These were closed some few years ago apparently because it was not thought worth while to raise their crests.

It is now proposed to re-open them and raise their crests to F.S.L so as to relieve the Ampapuram Under Tunnel which is insufficient at times of heavy rain and was badly breached this year.

At 22 miles 5½ furlongs the existing masonary inlet to be extended from 80 feet to 400 feet and the old outlet now closed to be re-opened its crest raised to F.S.L and the length increased from 150 feet to 250 feet.

At 25 miles 1 furlong or a little below Narasannapalem Escape an inlet 200 ft long.

Drainage water collects here and the bank was breached both in 1892 and 1895.

Ramileru Basin from 27 miles 40 chains to 31 miles 0 chains.

At 27/4 an inlet 660 feet long to be built opposite the existing outlet to relieve the Perikeed Under Tunnel ~~from~~ round which the banks were very badly breached in 1895.

Just above 29/5 an inlet 330 ft long to be built and an outlet 200 feet long ~~just~~ below 29/5. This inlet was proposed after the 1892 flood but was not carried out. This inlet and outlet are necessary to relieve the Totagudem Under Tunnel at times of high floods.

At 30/5 the inlet to be increased from 50 feet to 330 ft the outlet opposite being 960 feet long.

At 31/5 an inlet and outlet each 200 feet long to be built as the field levels are here suitable for the purpose and both banks were considerably damaged here in 1895.

Catchment Basin affecting Canal from 32-29 to 37-0.

At 35/5 an inlet and outlet each

each 300 feet long to take the water from the proposed new Railway bridge opposite this place and also the spill from Watlur Drain which collects here. An inlet of 330 feet above 36/1 to relieve Watlur Under Tunnel near which the banks were very badly breached in 1895.

At 36/7 an outlet 200 feet long and at 37/0 an inlet 200 feet long. These will also take the spill from Watlur Drain and relieve Watlur Under Tunnel.

At the West Tammileru Escape it is proposed to raise the flood gates × above this year's flood level to build two masonry retaining walls to a length of 70 feet above the abutments to prevent the latter being turned as happened in 1895 and to provide strong fender piles on the upstream side to prevent the vents of the escape being blocked with trees as was the case in 1895.

× this part of proposal has since been abandoned. [illegible]

Similar fender piles to be provided above the East Tammileru Escape.

5. In all the above proposals the lengths of inlets and outlets proposed must be regarded as more or less tentative as there is no means of calculating exactly what is required.

6 Wherever the ground levels permit these inlets and outlets have been placed at or near the places where the main banks have been washed away so as to save the cost of earthwork for restoring the banks and simplifying the deposition of the spoil earth from the excavation. Masonry retaining walls are provided for outlets but for inlets only roughstone dry packing is allowed.

7 A statement is enclosed showing the probable cost of the proposals for all of which estimates are prepared and will be forwarded as soon as they have been checked.

I have the honour to be
Sir
Your most obedient Servant
A Smith
22/1
Executive Engineer
Kistna Eastern Divn

GINEER
GATION
17 FEB. 96
32K/4

KK 20/1/96
2068/56

Statement showing the approximately estimated amount of expenditure owing to floods on the Ellore Canal

No	Names of works	Amount Rs	Remarks
1	Closing breaches of Ellore Canal from 3rd to 40th miles	30,035	7.80
2	Kesarapalli & Budameru Aqueducts — " —	92	
	Wutlur under Tunnel	130	
	Packing revetment on four sides of Pedapad under Tunnel	1220	
	do Chotagudem do	1150	
	do Wutlur do	1370	
	do Perikid do	900	
3	Cattle Crossings	3.560	
4	Compensation	3.810	
5	Closing breaches in 1st, to 3rd Reaches	302	
6	Wutlur Right Side Channel Culvert — " —	155	
	Total	42724	

(Signed)
14/11 Exe Engineer
for Supg Engr II Circle

CHIEF ENGINEER
FOR IRRIGATION.
17 FEB 96
32ks/2

Rc. C. 3
2568/96

Statement showing the approximately estimated amount of expenditure for the proposed improvements to the Ellore Canal

Number	Names of works	Amount Rs	Remarks.
1	Fixing gauge in rear of West Tammileru	100	
2	Alterations to flood stop gates of West Tammileru Escape	2330	
	Erecting flood walls on both sides of West Tammileru from old Inlet wall to Chambers	1770	
	Putting towpath bridge and fender piles above West Tammileru Escape	3,710	
3	Inlet in $\frac{19}{10ch}$ miles	325	
	do $\frac{19}{7}$ "	175	
	do $\frac{21}{2}$ "	480	
	do & outlet $\frac{22}{5\frac{1}{2}}$ "	1,090	
	do 25/1 "	370	
	do $\frac{27}{4}$ "	1,180	
	do & outlet $\frac{29}{5}$	1,600	
	do $\frac{30}{5}$ m	540	
	do $\frac{31}{5}$ "	1500	
	do & Outlet at $\frac{35}{5}$	3,500	
	Outlet at $\frac{36}{7}$	1185	
	Inlet at do	435	
	Total	20,290	

Approved

J. M. Ellis
Exe Engineer
for Supg Engr. II Circle.
11/2

CHIEF ENGINEER
FOR IRRIGATION.
17 FEB. 96
No. 32ks/3

Ow. r. 4/2568/96

Public Works Department,
Irrigation Branch.

No. 285. I d/24 March/96.

A

PROCEEDINGS OF THE MADRAS GOVERNMENT.

Under date the

Read the following

160

Print with Encls

Letter from the Suptg Engineer 2nd Circle (H.E.No 2379.K.S. dated 15th February 1896)

No 52 I d/ 27. 2 96

Submitted to Government.

2 The tanks in the Kistna District affecting the East Coast Railway are mostly private tanks and the question of their repairs is dealt with in G.O.No 501.W dated 10th February 1896. The Superintending Engineer, Second Circle, should, in communication with the Collectors concerned, seethat all Govt tanks affecting the line are put in order without delay.

× What is being done in this connection?

W

The Superintending Engineers of 1st & 2nd Circles, have been requested to report one or two glaring instances in which the owners of private tanks failed to keep their tanks in repair and caused damage to the Railway with a view to proceeding thereon in the manner laid down in Madras Act No. IV of 1886.

4/3

Rneads 5/3

W 3 Mar

7/3/96

13/3/96

3 The waterway proposed by the Railway authorities is 3560' against 3190' of proposed inlets to the Ellore Canal. The latter is considered sufficient.

4 The Superintending Engineer, First Circle has not yet submitted the report called for in G.O.No 37.I.dated 15th January 1896 but the railway in the Godavari district east of Ellore was very little affected.

ORDER THEREON.

Communicated to the officers concerned for information.

The

4

2 The attention of the Superintending Engineer, Second Circle, is drawn to the latter part of para 2 of the endorsement by the Chief Engineer for Irrigation.

27/2

25/2

DESPATCHED
10 APR. 96

To,

The Consulting Engineer for Railways
The Chiel Engineer for Irrigation
The Suptg Engineers 1st and 2nd Circles
The Revenue Department.

E. I. Form No 1—1,000—27-11-96.

25-2-96

No. 3149 of 1-4-82 ✓
" 10389 " 8-12-85 ✓
" 4469 " 25-5-91 ✓
" 501 W " 10-2-96 ✓
" 379 " 15-1-96 ✓

P. W. CURRENT No. 2068

To,

His Excellency the Governor

& Circ

Encls 7 6 (Plans)
Recd: 25.2.96

Tanks affecting the East Coast railway in the Kistna District damaged by the late floods to be put in order.

Circ

To H.E.

14/3

13.3.96

Issue

Recd

23.3.96

13/3

H.E. 2/3 R 4/3
6/3 R 13/3
H.E. 20/3.
R 20/3

18