Public Works (1897) Department.

Permit for Everbeth

G.O., No. 206-206 A

DATED 27th March 97

1/9/1897

[Despatch Abstract.]

"33. Famine Relief". Approving the preliminary issue of the budget estimate for — for 97-98 and directing that the same be forwarded to the Govt of India.

"33. Famine Relief". Forwarding Bos: approving the preliminary issue of the budget estimate for — for 97-98.

150 copies with 8 copies for the Bengal Govt
50 copies do.
60/2 copies with the Govt of India

13/97

Indexed 13/97

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.

Government {1897} of Madras.

PUBLIC WORKS.

Recd. } 1897. *Enclosures*

Regd. } *Spare copies*

G.O., No. 206 I., 1st March 1897.

MARCH.

"33. Famine Relief"

Approving the Preliminary issue of the Budget estimates for — for 1897-98 and directing that the proceedings be forwarded to the Government of India.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper :—

Telephone from the Assistant Secretary to Government, Financial Department, to the Under Secretary to Government, Public Works Department, Irrigation Branch, dated 18th February 1897.

Provision of 1·93 lakh for Irrigation works under 33. Famine Relief sanctioned.

No. 42 I.

Note by the Chief Engineer for Irrigation.

With reference to paragraph 25 of the note embodied in Proceedings of Madras Government, No. 125 I., dated 9th February 1897, the accompanying Preliminary issue of the Budget estimates of the Irrigation Branch, Public Works Department, under "33. Famine Relief" for 1897–98, embodying the Revised estimate for 1896–97, is submitted to Government.

2. The special assignment of Rs. 1,93,000 sanctioned for 1897–98 by the Financial Department has been distributed as shown below :—

Ganjám Division.

Protective Works, Irrigation.

	Rs.	Rs.
Rushikulya project	80,000	
Major Works (Working Expenses).		
Rushikulya project	3,000	
		83,000
Minor Works and Navigation.		
Ganjám Division	85,000	
Cuddapah „	10,000	
Kurnool „	5,000	
Bellary „	10,000	
Reserve	70,000	
		1,80,000
		2,63,000
Deduct value of work expected to be done on the Rushikulya project as intimated by the Superintending Engineer, I Circle, in his telegram, dated 14th February 1897, and eventually to be recorded under the ordinary head of account in accordance with rule (iii), paragraph 104, chapter IX, Volume I, Public Works Department Code		70,000
Net grant ...		1,93,000

3. The Superintending Engineer, I Circle, should forward a schedule showing the distribution by component works of the sum of Rs. 80,000 provided for the Rushikulya project for incorporation in Part II of the Final issue of the Budget estimates, and that officer and the Superintending Engineer, III Circle, should report the distribution between original works and repairs of the other grants assigned to divisions.

(Signed) W. HUGHES,
Chief Engineer for Irrigation.

23rd February 1897.

ORDER—No. 206 I., dated 1st March 1897.

The Budget estimates, Preliminary issue, for "33. Famine Relief" for 1897–98, are approved and will be forwarded to the Government of India.

[Here enter No. $\frac{206}{A}$ I., dated 1st March 1897.]

(True Extract.)

Under Secretary to Government,
Irrigation Branch.

To the Chief Engineer for Irrigation.
„ Superintending Engineer, I Circle.
„ „ „ III „
„ Examiner, Public Works Accounts.

Exd. T. K. Narayana Aiyangar.

PRELIMINARY ISSUE.

Public Works Department.

BUDGET ESTIMATE

OF

REVENUE AND EXPENDITURE

UNDER

33. FAMINE RELIEF

IN THE

MADRAS PRESIDENCY

FOR THE YEAR

1897-98.

MADRAS,
1st March 1897.

(Signed) W. HUGHES,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

CONTENTS.

		PAGE
ABSTRACT BUDGET ESTIMATE OF REVENUE	... ...	*Nil.*
ABSTRACT BUDGET ESTIMATE OF EXPENDITURE	... ...	2
DETAILS OF THE BUDGET ESTIMATE OF EXPENDITURE—		
PART I.—Arranged by Projects	... ...	3
,, IV.—Detail of the Budget Estimate for Establishment	... ...	*Nil.*
,, VI.—Detail of Estimate of Suspense Balances	... ...	*Nil.*

GOVERNMENT OF MADRAS.

REVENUE.

Abstract Budget Estimate of Revenue expected in the Madras Presidency for the year from 1st April 1897 to 31st March 1898—Nil.

33. FAMINE RELIEF. MADRAS PRESIDENCY.

GOVERNMENT OF MADRAS.

CHARGES.

Abstract Budget Estimate of Expenditure in the Madras Presidency for the year from 1st April 1897 to 31st March 1898.

	Reference to Detailed Estimate.	Actual Outlay, 1895-96.	Budget Estimate, 1896-97.	Revised Estimate, 1896-97.	Budget Estimate, 1897-98.
	PAGES.	Rs.	Rs.	Rs.	Rs.
PROVINCIAL.					
33. FAMINE RELIEF.					
Works	...	...	...	21,200	2,63,000
Deduct—value of work expected to be done on the Rushikulya project, a revenue-producing work, and eventually to be recorded under the ordinary head of account	...	...	...	...	70,000
Net Grant under 33. Famine Relief ...	...	...	...	21,200	1,93,000

GOVERNMENT OF MADRAS.

CHARGES.

Part I.

Details of the Budget Estimate of Expenditure in the Madras Presidency for the year 1897-98, arranged by Projects and Objects of Work.

	Amount of Sanctioned Estimate.	Actual Outlay to end of 1895-96.	Budget Estimate, 1896-97.	Probable Outlay during 1896-97 (Revised Estimate).	Budget Estimate, 1897-98.	Remarks and References.
PROVINCIAL.	Rs.	Rs.	Rs.	Rs.	Rs.	
33. FAMINE RELIEF.						
Protective Works—Irrigation.						
Rushikulya Project	...	...	...	...	80,000	Estimates under preparation.
Major Works (Working Expenses).						
Rushikulya Project	...	...	...	...	3,000	
Minor Works and Navigation.						
Minor Works for which neither Capital nor Revenue Accounts are kept, P.W.D.	...	...	...	21,200	1,75,000	
Minor Works, Revenue Department.	...	...	...	...	5,000	
Total ...	...	...	...	21,200	1,80,000	
Grand Total ...	...	...	...	21,200	2,63,000	
Deduct—value of work expected to be done on the Rushikulya Project, a revenue-producing work, and eventually to be recorded under the ordinary head of account.	...	...	...	...	70,000	
Net Grant under 33. Famine Relief.	...	...	...	21,200	1,93,000	

33. FAMINE RELIEF. MADRAS PRESIDENCY.

GOVERNMENT OF MADRAS.

CHARGES.

Part IV.

Detail of the Budget Estimate for Establishment in the Madras Presidency for the year 1897–98 —Nil.

PROVINCIAL—MINOR WORKS AND NAVIGATION. MADRAS PRESIDENCY.

GOVERNMENT OF MADRAS.

CHARGES.

Part VI.

Abstract of the Probable Increase or Decrease in the Suspense Accounts of Irrigation Minor Works in the Madras Presidency for the year 1897–98—Nil.

10.

TELEPHONE

From,

The Asst: Secretary to Govt:

Financial Deptt:

To,

The Under Secretary to Govt:

P.W.D. Irrign: Branch.

Provision of 1.93 lakhs for --- Irrigation Works under 33 Famine Relief sanctioned.

18.2.97

26-2-97

No 2065 & 2062 a/1.3.97 Budget Estimate Preliminary issue for 33 Famine Relief for 97-98.

H.

A Emergent.

Print very emergent.

PUBLIC WORKS DEPARTMENT,

IRRIGATION BRANCH.

PROCEEDINGS OF THE MADRAS GOVERNMENT.

Public Works (1897) Department

Current No: 2143

Under date the
Rec'd 1-3-97
Enclos: one

Read the following

Principle budget estimate

Telephone from the Asst Secretary to
Govt. Financial Dept. d/ 18 Feb/97
No 42. I d/ 23-2-97)

Note by the Chief
Engr for Irrigation
with reference
to para 25 of the
Note embodied in P.W.D.
No. 125 I, d/ 9th Feb/97.
the accompanying
preliminary issue of
the budget estimates
of the Irrigation Branch,
P.W.D., under "33.
Famine Relief" for
1897-98, embodying the
revised estimate for
1896-97, is submitted
to Govt.

Issue

D. I 27/2/97

BR
26-2-97

Pub 3-1
2143/97

2. The special assignment of Rs 193,000 sanctioned for 1897-98 by the Financial Dept has been distributed as shown below:-

	Rs.	Rs.
Ganjam Dist-		
Protective works, Irigation		
Rushikulya Project. .	80,000	
Major works (Working Expenses).		
Rushikulya Project. .	3,000	
		83,000
Minor works & Navigation		
Ganjam Dist	85,000	
Cuddapah "	10,000	
Kurnool "	5,000	
Bellary "	10,000	
Reserve	70,000	
		180,000
		263,000
Deduct value of work expected to be done on the Rushikulya Project as intimated by the Supdg Engr, 1st Circle, in his telegram, dy 14 Feb 97, & eventually to be recorded under the ordinary head of account in accordance with rule III para 104, Chapter IX, Vol I, P. W D Code . .		70,000
Net Grant		193,000

3. The Supdg Engr, 1st Circle should forward a schedule showing Redistribution by component works of the sum of Rs 80,000 provided for the Rushikulya Project for incorporation in Part II of the final issue of the budget estimates & that office & the Supdg Engr, III Circle, should report the distribution between original works & repairs of the other grants assigned to divisions.

38

A.S.H 25.2.97

Order thereon No. 206 dy, 25 Feb 97

The budget estimates, preliminary issue, for "33. Famine Relief" for 1897-98, are approved & will be forwarded to the Govt of India.

Endorsement
No 206 dy 1-3-97
Forwarded.

W.H
23/2/97

7.E.9 1/3/97.
ICS 2/3/97

To the Chief Engr for I.
Supdtg Engr 1st Circle
Do III -
Ex Engr
The printed issued
Silver gently.

E. I. Form No. 1—500—3-12-96.

22-2-97 H.E. 24/2-R 26/2

1200/20.2.97

33. FAMINE RELIEF.

Correct & strike off
ICS 4/3/97

PRELIMINARY ISSUE.

Public Works Department.

BUDGET ESTIMATE

OF

REVENUE AND EXPENDITURE

UNDER

33. FAMINE RELIEF

IN THE

MADRAS PRESIDENCY

FOR THE YEAR

1897-98.

MADRAS, ~~February~~ 1897.
1st March

(Signed) W. HUGHES,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

CONTENTS.

	PAGE
ABSTRACT BUDGET ESTIMATE OF REVENUE	*Nil.*
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DETAILS OF THE BUDGET ESTIMATE OF EXPENDITURE—	
PART I.—Arranged by Projects	3
" IV.—Detail of the Budget Estimate for Establishment	*Nil.*
" VI.—Detail of Estimate of Suspense Balances	*Nil.*

33. FAMINE RELIEF. MADRAS PRESIDENCY.

GOVERNMENT OF MADRAS.

REVENUE.

Abstract Budget Estimate of Revenue expected in the Madras Presidency for the year from 1st April 1897 to 31st March 1898—Nil.

33. FAMINE RELIEF. MADRAS PRESIDENCY.

GOVERNMENT OF MADRAS.

CHARGES.

Abstract Budget Estimate of Expenditure in the Madras Presidency for the year from 1st April 1897 to 31st March 1898.

	Reference to Detailed Estimate.	Actual Outlay, 1895-96.	Budget Estimate, 1896-97.	Revised Estimate, 1896-97.	Budget Estimate, 1897-98.
	PAGES.	Rs.	Rs.	Rs.	Rs.
PROVINCIAL.					
33. Famine Relief.					
Works	...	...	...	21,200	2,63,000
Deduct—value of work expected to be done on the Rushikulya project, a revenue-producing work, and eventually to be recorded under the ordinary head of account	...	...	...	...	70,000
Net Grant under 33. Famine Relief ...	...	...	...	21,200	1,93,000

GOVERNMENT OF MADRAS.

CHARGES.

Part I.

Details of the Budget Estimate of Expenditure in the Madras Presidency for the year 1897–98, *arranged by Projects and Objects of Work.*

	Amount of Sanctioned Estimate.	Actual Outlay to end of 1895–96.	Budget Estimate, 1896–97.	Probable Outlay during 1896–97 (Revised Estimate).	Budget Estimate, 1897–98.	Remarks and References.
	Rs.	Rs.	Rs.	Rs.	Rs.	
PROVINCIAL.						
33. FAMINE RELIEF.						
Protective Works—Irrigation.	...	...	...	...	80,000	Estimates under preparation.
Rushikulya Project	...	...	...	...	...	
Major Works (Working Expenses).						
Rushikulya Project	...	...	...	...	3,000	
Minor Works and Navigation.						
Minor Works for which neither Capital nor Revenue Accounts are kept, P.W.D.	...	...	...	21,200	1,75,000	
Minor Works, Revenue Department.	...	...	...	...	5,000	
Total ...	...	...	...	21,200	1,80,000	
Grand Total ...	...	...	...	21,200	2,63,000	
Deduct—value of work expected to be done on the Rushikulya Project, a revenue-producing work, and eventually to be recorded under the ordinary head of account.	...	...	...	...	70,000	
Net Grant under 33. Famine Relief.	...	...	...	21,200	1,93,000	

MADRAS PRESIDENCY.

33. FAMINE RELIEF.

GOVERNMENT OF MADRAS.

CHARGES.

Part IV.

Detail of the Budget Estimate for Establishment in the Madras Presidency for the year 1897-98
—Nil.

MADRAS PRESIDENCY.

PROVINCIAL—MINOR WORKS AND NAVIGATION.

GOVERNMENT OF MADRAS.

CHARGES.

Part VI.

Abstract of the Probable Increase or Decrease in the Suspense Accounts of Irrigation Minor Works in the Madras Presidency for the year 1897-98—Nil.

CHIEF ENGINEER
FOR IRRIGATION.
1897
No. 939

IRRIGATION.
ACCOUNT.

Government {1897} of Madras.

PUBLIC WORKS.

Recd. } 1897. *Enclosures*

Regd. } *Spare copies*

G.O., No. 125 I., 9th February 1897.

FEBRUARY.

Budget Estimates

The preliminary issue of the — for "Major Works" and "Minor Works and Navigation" for 1897–98, embodying the revised estimates for 1896–97 as drawn up by the Chief Engineer for Irrigation, approved with remarks and ordered to be forwarded to the Government of India.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following paper:—

Note by the Chief Engineer for Irrigation.

The accompanying preliminary issue of the budget estimates of the Irrigation Branch, Public Works Department, under Imperial, Provincial and Local for 1897–98, embodying the revised estimates for 1896–97, works up to the Imperial grants provisionally sanctioned by the Government of India in its letter, No. 1 A.I., dated 7th January 1897, printed in Proceedings of Madras Government, No. 68 I., dated 20th idem, and to the Provincial and Local grants fixed in Proceedings of Madras Government, Nos. 890 and 30, Financial Department, dated 17th December 1896 and 14th January 1897, respectively, and Proceedings of Madras Government, No. 710, Revenue Department, dated 10th December 1896.

2. The budget estimates of receipts and expenditure for 1897–98 compare with the revised estimates for 1896–97 and the actuals of 1895–96 as shown below:—

	Budget estimate, 1897–98.	Revised estimate, 1896–97.	Budget estimate, 1896–97.	Actuals, 1895–96.
IMPERIAL.	Rs.	Rs.	Rs.	Rs.
Receipts.				
XXIX. Major works—				
Direct receipts	2,93,000	2,93,000	2,78,000	2,98,302
Portion of land revenue due to irrigation ..	67,63,000	63,68,000	67,28,000	58,26,126
Total ..	70,56,000	66,61,000	70,06,000	61,24,428
Expenditure.				
35. Protective Works, Irrigation	1 69,500	1,89,000	1,89,000	2,26,477
42. Major Works (Working Expenses)	13,70,000	15,69,500	12,80,000	13,16,103
49. Capital Expenditure not charged to Revenue ..	9,50,000	8,16,500	9,41,000	13,37,363
Total ..	24,89,500	25,75,000	24,10,000	28,79,943
PROVINCIAL.				
Receipts.				
XXX. Minor Works and Navigation—				
Direct receipts	1,60,000	1,60,000	1,70,000	1,55,840
EXPENDITURE.				
43. Minor Works and Navigation	30,50,000	37,80,800	38,95,000	31,82,954
33. Famine Relief	..	21,200	..	..
Total ..	30,50,000	38,02,000	38,95,000	31,82,954
LOCAL IRRIGATION CESS FUND.				
Expenditure.				
43. Minor Works and Navigation	9,500	12,444	8,000	27,415
Total .. { Receipts ..	72,16,000	68,21,000	71,76,000	62,80,268
Total .. { Expenditure ..	55,49,000	63,89,444	63,13,000	60,90,312

3. *Major works—Direct receipts.*—The current year's revised estimate is Rs. 15,000 more than the budget estimate, the former being based on the actuals of the previous year which exceeded the budget estimate of the current year. No increase is anticipated over the current year's revised estimate in the budget estimate for the ensuing year.

4. *Major works—Portion of Land Revenue due to Irrigation.*—The current year's revised estimate is Rs. 3,60,000 less than the budget estimate. The decrease occurs chiefly under the Gódávari delta system in consequence of the damages caused by floods, while under the Sangám anicut system irrigation has not extended to the extent anticipated. The budget estimate for next year is Rs. 3,95,000 more than the current year's revised estimate, the increase being chiefly due to the special remissions expected to be granted in the current year on account of damages caused by floods in the Gódávari delta system.

5. 35. *Protective Works, Irrigation.*—The current year's budget and revised estimates under this head are the same, but the ensuing year's budget expenditure is Rs. 19,500 less than the current year's revised estimate, the Government of India having provisionally assigned only Rs. 1,69,500. It is most probable that this amount will have to be augmented during the course of the year.

6. 42. *Major Works—Working expenses.*—The current year's revised estimate is Rs. 2,89,500 more than the budget estimate. The increase represents the additional grants sanctioned by the Government of India in its telegrams marginally noted for the Gódávari, Kistna and Cauvery delta and the Srívaikuntam anicut systems.

No. 65 A.I., printed in P.M.G., No. $\frac{739}{A}$ I., dated 28th August 1896.
No. 89 A.I., printed in P.M.G., No. 1021 I., dated 1st December 1896.
No. 100 A.I., printed in P.M.G., No. 33 I., dated 8th January 1897.
No. 3 A.I., printed in P.M.G., No. 99 I., dated 23rd January 1897.

In the schedule of demands printed in Proceedings of Madras Government No. 1051 I., dated 15th December 1896, Rs. 15,24,000 were applied for for expenditure during 1897–98, but only Rs. 13,70,000 having been sanctioned by the Government of India, the grants proposed for the Gódávari, Kistna and Cauvery delta systems and the Kurnool-Cuddapah Canal have been curtailed. It is apprehended that the reduction of grants will seriously affect the programme of work intended to be carried out in these systems. The Superintending Engineer, II Circle, in his endorsement, No. 2821 K.N., dated 8th January 1897, has already represented the necessity for supplementing the grants originally proposed by him for the Kistna delta system by Rs. 27,000 or Rs. 33,210 including the charge for establishment, the amount being absolutely required in the Kistna Northern division for working out the balances of several estimates prepared after the recent floods and for revetting the nose of the lock entrance at Bezwada.

7. The provisional grant of Rs. 13,70,000 for next year is distributed as shown below:—

	Extensions and improvements.	Maintenance and repairs.	Establishment.			Tools and plant.	Total.
			23 per cent. on expenditure.	10 per cent. on direct revenue.	6 per cent. on irrigation revenue.		
1	2	3	4	5	6	7	8
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Productive—							
Gódávari delta	21,000	1,96,435	49,665	11,100	1,62,300	39,500	4,80,000
Kistna ,, ...	19,000	2,81,024	68,776	5,360	1,50,840	50,000	5,75,000
Pennér anicut	— 1,103	10,140	2,078	70	8,820	— 5	20,000
Sangam ,, ...	3,630	18,116	5,002	60	10,200	— 8	37,000
Kurnool-Cuddapah Canal	8,000	60,732	15,808	980	7,080	1,600	94,200

—	Extensions and improvements.	Maintenance and repairs.	Establishment. 23 per cent. on expenditure.	Establishment. 10 per cent. on direct revenue.	Establishment. 6 per cent. on irrigation revenue.	Tools and plant.	Total.
1	2	3	4	5	6	7	8
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Barur tank	..	1,447	333	..	720	..	2,500
Cauvery delta	17,000	— 39,503	— 5,330	250	51,366	1,217	25,000
Srivaikuntam anicut	1,954	14,792	3,852	120	6,360	— 78	27,000
Periyar project	..	65,000	5,750	..	..	250	71,000
Protective.							
Rushikulya project	..	30,000	6,900	150	..	1,250	38,300
Total ..	69,481	6,38,183	1,52,834	18,090	3,97,686	93,726	13,70,000

8. The amount provided for extensions and improvements to the Pennér anicut system and that for maintenance and repairs to the Cauvery delta system are Rs. 1,103 and Rs. 39,503, respectively, less than the old maintenance charges provided for under "43. Minor Works and Navigation."

9. The subjoined statement shows the amounts applied for and those provided under extensions and improvements, maintenance and repairs and tools and plant for each division for 1897–98 :—

Systems.	Divisions.	Extensions and improvements. Amount applied for.	Extensions and improvements. Amount provided.	Maintenance and repairs. Amount applied for.	Maintenance and repairs. Amount provided.	Tools and plant. Amount applied for.	Tools and plant. Amount provided.
1	2	3	4	5	6	7	8
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Gódávari delta ..	Productive—						
	Eastern	8,000	8,000	77,300	60,000	31,500	31,500
	Central	3,000	3,000	65,000	55,000	3,000	3,000
	Western	10,000	10,000	1,02,500	81,435	5,000	5,000
	Total ..	21,000	21,000	2,44,800	1,96,435	39,500	39,500
Kistna delta ..	Eastern	16,000	16,000	1,62,100	1,32,000	5,500	5,500
	Northern	..	..	* 43,000	35,000	40,500	40,500
	Western	3,000	3,000	1,35,000	1,14,024	4,000	4,000
	Total ..	19,000	19,000	3,40,100	2,81,024	50,000	50,000
Pénner anicut ..	Nellore	2,500	2,461	24,000	24,000	..	..
	Deduct old Maintenance charges	3,564	3,564	13,860	13,860	5	5
	Net Total ..	— 1,064	— 1,103	10,140	10,140	— 5	— 5
Sangam anicut ..	Nellore	4,500	3,975	30,000	30,000	50	49
	Deduct old Maintenance charges	345	345	11,884	11,884	57	57
	Net Total ..	4,155	3,630	18,116	18,116	— 7	— 8
Kurnool-Cuddapah Canal.	Kurnool	12,000	8,000	65,000	60,732	1,600	1,600
Barur tank ..	Salem	..	..	1,500	1,447	..	..
Cauvery delta ..	Tanjore	12,000	12,000	45,000	39,831	2,500	2,500
	Negapatam	4,000	4,000	20,000	17,500	300	300
	Trichinopoly	1,000	1,000	10,000	8,800	20	20
	Total ..	17,000	17,000	75,000	66,131	2,820	2,820
	Deduct old maintenance charges	..	..	1,05,634	1,05,634	1,603	1,603
	Net Total ..	17,000	17,000	— 30,634	— 39,503	1,217	1,217

* Exclusive of Rs. 27,000 subsequently applied for.

Systems.	Divisions.	Extensions and improvements. Amount applied for.	Extensions and improvements. Amount provided.	Maintenance and repairs. Amount applied for.	Maintenance and repairs. Amount provided.	Tools and plant. Amount applied for.	Tools and plant. Amount provided.
1	2	3	4	5	6	7	8
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Srivaikuntam anicut.	Tinnevelly	2,000	2,306	20,000	20,000	..	..
	Deduct old maintenance charges	352	352	5,208	5,208	78	78
	Net Total ..	1,648	1,954	14,792	14,792	— 78	— 78
Periyár project ..	Madura	..	..	65,000	65,000	..	250
	Protective.						
Rushikuliya project.	Ganjám	..	..	30,000	30,000	1,250	1,250
	Grand Total ..	73,739	69,481	7,58,814	6,38,183	93,477	93,726

10. *Capital Expenditure not charged to Revenue*—49. *Irrigation.*—The current year's revised estimate is Rs. 1,24,500 less than the budget estimate. The decrease represents the surrender accepted by the Government of India in its letter, No. 71-A.I., dated 16th September 1896, printed in Proceedings of Madras Government, No. 787 I., dated 25th idem, and that reported in Proceedings of Madras Government, No. 109-A I., dated 29th January 1897.

11. The provisional grant of Rs. 9,50,000 sanctioned for next year is Rupees 1,33,500 more than the current year's revised estimate and is distributed as shown below :—

Projects.	Divisions.	Land.	Works.	Establishment.	Tools and plant.	Total.
		Rs.	Rs.	Rs.	Rs.	Rs.
Gódávari delta ..	Eastern	..	680	..	..	..
	Central	..	2,185	..	..	..
	Western	..	1,200	..	..	..
	Total ..	..	4,065	935	..	5,000
Kistna delta ..	Eastern	20,000	83,260	..	5,000	..
	Northern	..	28,400	..	50,600	..
	Western	16,500	1,79,316	..	..	..
	Total ..	36,500	2,90,976	66,924	55,600	4,50,000
Kalingaroyan channel.	Coimbatore	..	80,081	18,419	1,500	1,00,000
Cauvery delta ..	Tanjore	..	1,16,260	26,740	..	1,43,000
Srivaikuntam anicut ..	Tinnevelly	..	1,626	374	..	2,000
Periyár project ..	Madura	..	2,02,439	46,561	1,000	2,50,000
	Total ..	36,500	6,95,447	1,59,953	58,100	9,50,000

In the schedule of demands printed in Proceedings of Madras Government, No. 1051 I., dated 15th December 1896, Rs. 12,47,000 were applied for for expenditure during 1897–98, but the provisional assignment sanctioned by the Government of India being Rs. 2,97,000 less, no amount has been allotted for the Pennér anicut system and the grants originally proposed for the other systems have been reduced in accordance with G.O., No. 68 I, dated 20th January 1897. The grant for the Gódávari system will have to be increased within the course of the year by transfer from the grants for other systems. Superintending Engineers concerned should submit, as soon as possible, revised schedules showing the distribution by component works of the reduced grants for incorporation in Part II of the final issue of the budget estimates.

12. The following statement compares the probable "direct" capital outlay to end of 1897–98 with the sanctioned estimates for the projects for which funds have been provided and for which the construction estimates have not yet been closed :—

Projects.	Sanctioned estimate.	Outlay to end of 1895-96.	Revised estimate, 1896-97.	Budget estimate, 1897-98.	Total.	Balance of estimate.
	RS.	RS.	RS.	RS.	RS.	RS.
Kistna delta	1,39,19,784	1,13,76,820	5,95,042	4,50,000	1,24,21,862	14,97,922
Periyár project	84,71,000	80,85,047	67,600	2,50,000	84,02,647	68,353
Kalingaroyan channel	8,25,000	..	..	1,00,000	1,00,000	7,25,000
Total ..	2,32,15,784	1,94,61,867	6,62,642	8,00,000	2,09,24,509	22,91,275

In Proceedings of Madras Government, No. 1089 I., dated 23rd December 1896, the sanction of the Government of India has been solicited to the extension of the sanction accorded to the estimate for the improvements to the Kalingaroyen channel for a period of five years commencing from the 31st January 1896.

13. *Provincial Minor Works and Navigation—Direct Receipts.*—The current year's revised estimate is Rs. 10,000 less than the budget estimate, the former being based on the actuals of the previous year, which fell short of the budget estimate of the current year. No increase is anticipated over the current year's revised estimate in the budget estimate for the ensuing year.

14 *Provincial Minor Works and Navigation.*—The current year's revised estimate is Rs. 1,14,200 less than the budget estimate, owing chiefly to funds provided for the Cooum Improvements Scheme having been surrendered owing to the non-sanction of the work pending submission of an estimate for the work on modified lines. The ensuing year's budget estimate is Rs. 7,30,800 less than the revised estimate for the current year. The decrease is due to provision having been made for the execution of a smaller number of works than during the current year, owing to the prospect of heavy losses anticipated by the Financial Department under the principal heads of revenue accompanied by extensive outlay on famine relief.

15. The assignment of Rs. 30·50 lakhs which is Rs. 4·50 lakhs less than the amount applied for is distributed as shown below :—

Minor Works for which Capital and Revenue Accounts are kept—

	RS.	RS.
Capital account (see paragraph 16)	4,37,000	
Revenue do. (do. 17)	2,80,000	
		7,17,000
Minor Works for which neither Capital nor Revenue Accounts are kept, P.W.D.		
Old Maintenance Charges of Major and Minor Works for which Capital and Revenue Accounts are kept (see paragraph 18)	4,26,136	
Ordinary works (see paragraph 19)	8,30,864	
Tank restoration works (see paragraph 21)	4,88,000	
Minor works, Revenue Department (see paragraph 23)	35,000	
		17,80,000
Agricultural works (see paragraph 22)	5,53,000	
		5,53,000
Total ...		30,50,000

16. *Capital Account.*—The amount proposed for expenditure under this head compares with the sanctioned estimates as shown below :—

Projects.	Amount of sanctioned estimate.	Outlay to end of 1895-96.	Probable outlay during 1896-97.	Budget estimate, 1897-98.					Total outlay.	Balance of estimate.
				Works.	Land.	Establishment.	Tools and plant.	Total.		
	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.
Kurnool-Cuddapah canal ..	16,500	5,845	7,380	2,838	..	652	..	3,490	16,715	— 215
Munnyeru ..	3,38,000	1,44,566	1,59,900	81,000	..	18,630	400	1,00,030	4,04,496	— 36,496
Sagileru ..	3,61,000	2,68,171	1,10,700	40,000	..	9,200	..	49,200	4,38,071	— 77,071
Pálár anicut ..	20,06,790	19,51,936	9,840	11,024	5,150	2,536	..	18,710	19,80,486	26,304
Pelandorai anicut ..	90,440	2,401	32,273	42,951	..	9,879	..	52,830	87,504	2,936
Lower Coleroon anicut	3,65,710	47,397	1,11,165	89,707	..	20,633	..	1,10,340	2,68,902	96,808
Buckingham canal.	86,14,000	82,03,148	2,50,570	80,000	..	18,400	4,000	1,02,400	85,56,118	57,882
Total ..	..	..	..	3,47,520	5,150	79,930	4,400	4,37,000	..	..

The amounts provided for the Munnyeru and Sagileru projects involve an excess over the sanctioned estimates. The submission of the revised estimates for these projects should be expedited by the Superintending Engineers concerned.

The schedule of works which remained incomplete on the closure of the construction estimate of the Pálár anicut system will be shortly submitted to Government.

Owing to the reduction of the amount applied for for expenditure during 1897–98 no funds have been provided for the following works proposed by Superintending Engineers :—

	Amount applied for.
	RS.
Sanctioned works—	
Sangam Anicut System—	
1. Diverting surplus of Kanigiri reservoir into Pyderu. (G.O., No. 407 I., dated 9th May 1896)...	1,00,000
2. Supply channel from the Pennér above Sangam anicut to Nellore tank and improving its distributaries (G.O., No. 458 I., dated 28th May 1896)	1,00,000
Unsanctioned works—	
Sangam Anicut System—	
3. Allur swamp irrigation channels	10,000
4. Minor channels	10,000
5. Inspection bungalow at Kanigiri reservoir	3,000
Cumbum tank system—	
6. Sirvel Project Govindapalli channel extension	5,000
7. Remodelling the Sekrailcutwa channel, second section ...	5,000
Ganjám minor rivers system—	
8. Improvements to channels	10,000
Cheyár Anicut system—	
9. Improvements to Iyalavadi and Chengathvearam channels.	8,500
Maradur Anicut system—	
10. Improving Maradur Melakal	5,000
Total ...	2,56,500

17. *Revenue Account.*—The following statement shows the amount provided for each system under this head:—

Divisions.	Systems.	Extensions and improvements.	Maintenance and repairs.	Establishment. 23 per cent. on expenditure.	Establishment. 10 per cent. on direct receipts.	Tools and plant.	Total.
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Ganjám ..	Ganjám minor rivers ..	..	10,000	2,300	..	..	12,300
Kurnool ..	Cumbum tank	500	1,500	460	..	..	2,460
Coimbatore ..	Thadapalli channel	1,996	2,900	1,126	8	..	6,030
	Arkenkota do.	1,000	902	438	..	..	2,340
	Kalingaroyen channel ..	..	1,901	437	12	..	2,350
North Arcot ..	Pálár anicut	3,822	17,095	7,497	130	— 4	40,220
Chingleput ..	Do.	3,280	8,400				
North Arcot ..	Poiney anicut	1,000	9,000	2,300	50	..	12,350
	Cheyár do.	3,000	12,000	3,450	20	..	18,470
Chingleput ..	Chembrambakam tank ..	— 2,083	— 92	— 500	14	— 109	— 2,770
	Madras Water-supply and Irrigation extension	— 3,600	2,299	— 299	1,250	— 10	— 360
	Vallur anicut	2,701	500	737	2	..	3,940
South Arcot ..	Tirukkóyilúr anicut	3,002	8,000	2,531	57	..	13,590
	Mehamattur anicut	500	1,000	345	5	..	1,850
	Vriddháchalam anicut ..	496	2,500	689	5	..	3,690
	Shatiatope anicut	2,000	10,000	2,760	30	..	14,790
	Pelandorai do.	438	2,942	777	25	— 2	4,180
	Lower Coleroon anicut ..	2,000	16,000	5,175	103	..	27,780
Tanjore ..	Do. do. ..	1,502	3,000				
Trichinopoly ..	Nandyar channel	..	7,610	1,750	..	..	9,360
Tinnevelly ..	Marudur anicut	993	13,000	3,218	29	..	17,240
Ganjám ..	Chilka lake canal	..	301	69	..	..	370
Negapatam ..	Vedáranniyam canal ..	..	5,065	1,165	120	..	6,350
Buckingham canal.	Buckingham canal	2,366	54,000	12,964	11,140	3,000	83,470
	Total ..	24,913	1,89,823	49,389	13,000	2,875	2,80,000

In all cases the amounts applied for by Superintending Engineers have been provided with slight modifications to round off totals.

18. *Old maintenance charges.*—The sum provided is Rs. 61,974 more than that fixed in G.Os., Nos. 395 I. and 484 I., dated 18th July and 4th September 1890, respectively. The increase is due to the Board of Revenue having raised the old irrigation revenue for the Cauvery delta system from Rs. 23,65,000 to Rs. 33,97,900 (*vide* Proceedings of Madras Government, No. 1091 I., dated 26th December 1896).

19. *Ordinary works.*—The allotments proposed under this head are compared below with the current year's grants:—

	1897-98.	1896-97.
	Rs.	Rs.
Original works, major	66,132	1,29,655
Do. minor (see statement A)	2,30,827 *	1,31,800
Repairs (see statement A)	3,70,000	3,83,977
Total ...	6,66,959	6,45,432
Establishment at 23 per cent. on expenditure ...	1,53,400	1,47,414
Do. at 10 „ on direct revenue ...	500	500
Total ...	1,53,900	1,47,914
Tools and plant at 1½ per cent. on expenditure ...	10,005	9,614
Total ...	8,30,864	8,02,960

* Inclusive of a reserve of Rs. 1,06,827.

20. Under Original works—Major, funds have been provided for the following sanctioned works:—

	Amount provided. Rs.
Gódávari Western division—	
Diversion of Yerracalva and construction of masonry dams across it and Gudapalli channels	5,000
Kistna Northern division—	
Macherla tank	500
Ipur tank	12,000
Jonapad tank	10,712
Nellore division—	
Mopaud tank improvements	4,000
Budamgunta tank	2,500
Bellary division—	
Excavating a channel and constructing five syphon sluices for Gandiganur tank	2,010
Restoring the surplus weirs and raising banks of Apparazpett tank.	4,000
Improving Royalcheruvu tank	6,300
Kurnool division—	
Pedda and Chinna Mallalammal tank of Ramapuram	1,000
Coimbatore division—	
Constructing an aqueduct and bridge in lieu of Pungaliyur outlet on the Chithrachavady channel	2,870
South Arcot division—	
Cutting a channel from Ponniar river to irrigate lands in Tirukandesweram and other villages	2,700
Trichinopoly division—	
Reconstructing bridge on Road No. XX over Ponneri channel ...	3,360
Improvements to Kothamangalam tank	4,060
Madura division—	
Constructing an under tunnel at 3,200 feet from the head of Seeliampatty channel	710
Repairing and improving Athalai tank	2,590
Tinnevelly division—	
Improving Vadukachimathel tank and channel	1,820
Total ...	66,132

Owing to the curtailment of the grants applied for, the amounts proposed by Superintending Engineers for the following works for which estimates have not yet been sanctioned have not been provided:—

	Amount proposed. Rs.
Vizagapatam division—	
Mallapalem dam.—Cutting a new proposed head to Honjaram channel and clearing the old bed to Tamaram channel ...	3,000
Kistna Northern division—	
Atmakur tank	7,000
Nellore division—	
Tollapalem tank improvements	5,500
Kommalapudi do.	5,000
Vindur do.	3,000
Siddavaram do.	7,000
Tatiparti do.	6,000
Prabhagiripatnam do.	5,000
Kullur do.	3,000
Rayaguntapalem do.	2,900
Kurugonda do.	3,600
Gudur large do.	5,000
Challakalva L.B. do.	7,500
Bellary division—	
Siruguppa channel improvements	10,000

	Amount proposed.
	RS.
Kurnool division—	
Breaching Patha Cuddapah tank and constructing a channel with masonry works	5,000
Salem division—	
Excavating a new supply channel to Penugundapuram tank ...	5,000
Chingleput division—	
Improvements to Kinar tank	3,050
Trichinopoly division—	
Reconstructing Chintamony odai weir on the right bank of Ponneri channel	4,000
Madura division—	
Improving Thandalay tank	15,000
Tinnevelly division—	
Improvements to North Kodamelalaghiem channel	4,000
Singampatty Perungal	3,000
Valliyur channel	3,000
Total ...	1,15,550

21. *Tank Restoration Works.*—The amount provided for expenditure on tank restoration works has been distributed as shown below :—

Divisions.	Probable balance of sanctioned estimates on 1st April 1897.	Amounts applied for by Superintending Engineers.	Amounts provided.
	RS.	RS.	RS.
Gódávari Eastern	1,125	6,500	6,500
Kistna Northern	30,290	20,000	20,000
Salem	94,723	50,000	50,000
North Arcot	58,700	40,000	40,000
Chingleput	187,435	75,000	75,000
South Arcot	50,801	50,000	50,000
Negapatam	7,176	30,000	30,000
Madura	1,51,359	70,000	70,000
Tinnevelly	83,000	50,000	50,000
Total ..	..	3,91,500	3,91,500

22. The distribution of the amount of Rs. 5,53,000 provided for expenditure on agricultural works during next year compares with the current year's grants as shown below :—

	1897-98.	1896-97.
	RS.	RS.
Original works, major	59,420	1,14,846
Do. minor	17,700	76,503
Repairs	3,67,213	5,52,942
Establishment, at 23 per cent. on expenditure ...	99,667	1,66,012
Do. at 10 per cent. on direct receipts ...	2,500	2,500
Tools and plant, at 1½ per cent. on expenditure ...	6,500	10,827
Total ...	5,53,000	9,23,630

The major original works for which funds have been provided are enumerated in Part I of the Budget estimates for "43. Minor Works and Navigation." Funds

have not been provided for the following unsanctioned works proposed by Superintending Engineers :—

	Amount proposed.
	RS.
Gódávari Central division—	
Raising the Vasista left bank below 12½ miles, Gunnaram canal	10,000
Kistna Northern division—	
Raising the flood banks of the Kistna river above anicut ...	30,000
Kistna Western division—	
Raising the Kistna river right bank below the anicut	50,000
Tinnevelly division—	
Authur diversion right bank below Srivaikuntam anicut ...	20,000
Total ...	1,10,000

The distribution of the grants for minor original works and repairs is shown in statement B attached to this note.

In his endorsment, No. 2824 K.N., dated 8th January 1897, the Superintending Engineer, II Circle, applied for a revised grant of Rs. 79,500 for the Kistna Northern division on the ground that the amount was required for working out the balance of several estimates prepared and sanctioned for the right and left embankments of the Kistna river. The demand has been reduced to its original amount, viz., Rs. 1,500. More will be required, but the demands must be reduced to a minimum and the additional grant obtained by transfer from the existing grant from other works. It is not certain that anything will be available from the reserve.

23. *Minor Works, Revenue Department.*—The budget estimate of Rs. 35,000 has been distributed as shown below :—

	RS.
Reserve—	
Original works	28,112
Establishment	6,466
Tools and plant	422
Total ...	35,000

Superintending Engineers should make early application for the funds required for expenditure on sanctioned works to be executed by Public Works Department officers.

24. *Local Irrigation Cess Fund.*—The current year's revised estimate of expenditure exceeds the budget estimate by Rs. 4,444, the increase having been sanctioned chiefly for constructing an inspection shed at Jaderpalem in the Salem district. The budget estimate of Rs. 9,500 for next year is distributed as shown below :—

—	Original works.	Repairs.	Total.
	RS.	RS.	RS.
Salem division	5,500	2,000	7,500
Trichinopoly division ...	2,000	...	2,000
Total ...	7,500	2,000	9,500

25. 33. *Famine Relief.*—The requirements for the current year under the above head as estimated by the Superintending Engineers concerned are given below :—

	RS.
I Circle	2,000
III „	19,200
	21,200

The above amount has been provided by reducing the current year's grants under "43. Provincial—Minor Works and Navigation for which neither Capital nor Revenue Accounts are kept" as shown below:—

	Rs.
Vizagapatam division—	
Repairs	1,607
Bellary—	
Original works	6,500
Repairs	1,532
Cuddapah—	
Repairs	4,016
Kurnool—	
Repairs	3,373
	17,028
Establishment ...	3,917
Tools and Plant ...	255
Total ...	21,200

The amount required for expenditure for next year is estimated at Rs. 1,93,000,* but no provision has been made in the preliminary budget estimates pending a special assignment for the purpose from Provincial funds. With reference to telegram No. 46 A.C.W., dated 3rd February 1897, from the Government of India, communicated with G.O., No. 344 W., dated 5th idem, the grants for the current year under "33. Famine Relief" have been struck out from the budget estimates for "43. Minor Works and Navigation," with a view to the submission, as directed, of a separate budget under the former head.

	Rs.
* I Circle	1,68,000
Cuddapah division	10,000
Kurnool	5,000
Bellary	10,000
Total ...	1,93,000

26. The total grant for works and repairs under all heads and the contribution to "45. Civil Works" on account of establishment and tools and plant charges are shown below:—

	1897-98. Rs.	1896-97. Rs.
Total grant for works and repairs	38,39,738	45,83,042
Establishment—		
23 per cent. on expenditure	8,57,767	10,15,538
10 „ on direct revenue	34,090	34,090
6 „ on indirect revenue	6,33,480	6,07,740
Total ...	15,25,337	16,57,368
Tools and plant, at 1½ per cent. on expenditure ...	22,806	27,348

27. The following statement shows the amounts provided for each division for land compensation under the several heads, excepting "49. Capital expenditure not charged to Revenue," particulars appertaining to which are shown in paragraph 11:—

35. Protective Works—Irrigation.
Rushikulya Project.

	Rs.	Rs.
Ganjám Division	5,000	5,000

42. Major Works (Working Expenses).
Maintenance and Repairs.

	Rs.	Rs.
Gódávari Eastern Division	500	
„ Western „	1,000	
Kistna „ „	1,000	
Trichinopoly Division	670	
Madura Division	40,000	43,170

43. Minor Works and Navigation.
Capital Account.

North Arcot Division	5,150	
Agricultural Works.		
Original Works.		
Gódávari Central Division	4,000	
„ Western „	3,000	
Kistna Northern „	3,000	
„ Western „	1,000	16,150
Total ...		64,320

(Signed) W. HUGHES,
Chief Engineer for Irrigation.

5th February 1897.

Enclosures.

A.—Statement showing the proposed grants for Minor original works under Rs. 2,500 each and repairs for 1897-98 under "Minor works for which neither Capital nor Revenue Accounts are kept, P.W.D."

Divisions.	Irrigation revenue for 1897-98.	Grant for 1897-98. Minor original works.	Repairs.
	Rs.	Rs.	Rs.
Ganjám	98,948	5,000	12,000
Vizagapatam	1,62,862	6,000	9,500
Gódávari Eastern	97,089	8,000	17,500
„ Central		..	..
„ Western		2,000	4,000
Kistna Eastern	54,271	..	6,000
„ Northern		1,500	4,000
„ Western	2,96,364	..	..
Nellore	2,91,144	15,500	26,000
Cuddapah	84,959	10,000	30,000
Kurnool	3,74,831	3,000	10,000
Bellary	..	5,000	30,000
West Coast	3,23,203	..	2,000
Coimbatore	1,50,390	6,000	12,000
Salem	2,43,075	4,000	12,000
North Arcot	6,22,544	15,000	25,000
Chingleput	3,81,293	10,000	35,000
South Arcot	45,162	10,000	35,000
Tanjore		1,000	2,000
Negapatam	4,43,278	..	..
Trichinopoly	3,50,035	10,000	25,000
Madura	7,60,651	6,000	37,000
Tinnevelly		6,000	36,000
Total ..	..	1,24,000	3,70,000
Reserve ..	..	1,06,827	..
Total ..	..	2,30,827	3,70,000

B.—Statement showing the grants for Minor original works below Rs. 2,500 each and repairs under "Agricultural works" for 1897-98.

Divisions.	Minor original works. Rs.	Repairs. Rs.
Ganjám	3,000	6,000
Vizagapatam	300	2,500
Gódávari Eastern		20,000

Divisions.	Minor original works.	Repairs.
	Rs.	Rs.
Gódávari Central	1,000	65,000
Do. Western	3,000	16,000
Kistna Eastern	...	9,000
Do. Northern	...	1,588
Do. Western	...	1,00,000
Nellore	...	6,500
Buckingham Canal	...	7,000
Cuddapah	...	4,000
Coimbatore	3,500	6,500
Salem	...	625
Chingleput	500	1,500
South Arcot	400	6,000
Tanjore	2,000	60,000
Negapatam	2,000	20,000
Trichinopoly	2,000	25,000
Tinnevelly	...	10,000
Total ...	17,700	3,67,213

ORDER—No. 125 I., dated 9th February 1897.

The budget estimates preliminary issue for "Major Works" and "Minor Works and Navigation" for 1897–98, embodying the revised estimates for 1896–97 as drawn up by the Chief Engineer for Irrigation, are approved and will be forwarded to the Government of India. The distribution by divisions of the grants for minor original works and repairs proposed by him is also approved.

2. The modifications of allotments for the current year given in paragraph 25 are sanctioned.

3. The attention of the Superintending Engineers concerned is drawn to the remarks made in the foregoing note.

4. Ordered that the following letter be sent.

[Here enter No. 126 I., dated 9th February 1897.]

(True Extract.)

(Signed) W. HUGHES,
Joint Secy. to Government,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" all Superintending Engineers.
" the Superintending Engineer on Special Duty, Cauvery Completion Estimates.
" the Examiner, Public Works Accounts.
" the Revenue Department.
" the Financial "

Exd. T. K. Narayana Aiyangar.

1897/56
4026
RH/94.

Government {1897} of Madras.

PUBLIC.

Recd. } 1897. Enclosures

Regd. } Spare copies

G.O., No. 49, 16th January 1897.

JANUARY.

So 308 to 3-2-97

Method of dating Initials, &c.

Directing that, when it is necessary to add a date to initials or signature or to give a date without initials, the year as well as the date and month should be shown.

Indexed.

GOVERNMENT OF MADRAS.

PUBLIC DEPARTMENT.

ORDER—No. 49, Public, dated 16th January 1897.

It will in future be a positive rule in all Government offices in this Presidency that when it is necessary to add a date to initials or signature, the year as well as the date and month shall be shown. This rule will apply to all grades of officials and also to cases in which the date without initials is given, such as dates of receipt, despatch, circulation, return from circulation, &c.

(True Extract.)

J. F. PRICE,
Chief Secretary.

To the Departments of the Secretariat.
„ all Collectors and District Magistrates.
„ all Heads of departments under the Chief Secretary.
Gazette.

Exd. A. Baitt.

Public Works (1897) Department.

G.O., No. 287 I

DATED 6 April 1898

[Despatch Abstract.]

Notes of Inspection of the Kistna Delta by the Chief Engineer for Irrigation Contd to the S.E. II Circle for information & guidance

Indexed.

[P. W. 26. 5,000—12-3-98.]

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.

Government {1898} of Madras.

PUBLIC WORKS.

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G.O., No. 287 I., 4th April 1898.

APRIL.

Notes of Inspection

Notes of inspection of the Kistna delta by the Chief Engineer for Irrigation, communicated to the Superintending Engineer, II Circle, for information and guidance.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.

Read—the following paper:—

No. 117 I.

Notes of Inspection by the Chief Engineer for Irrigation.

Kistna Delta.

Anicut.—The experimental shutters fitted last year are reported to have acted well. It is noticed that there must have been a good deal of vibration in the shutters when they were lying on the crest, as the edge of the top angle irons has cut into the stone as much as half an inch in some places where the stone was irregular. Possibly this will stop when the angle irons have cut a channel evenly along the crest. The shutters received from Burn & Co are very roughly and badly made. Apparently all of them are defective in some way or other, but it may not be necessary to reject more than a few. Burn & Co. should pay for remedying defects. The masonry is in active progress and something less than a third done. The rubble apron is very much scoured in places and a good deal of the loose apron displaced. Repacking and grouting in progress.

River.—For some time past the right side of the river above the anicut has been shoaling and now when the river is at all low water can reach the Western delta head works only by passing along the front of the anicut and thence round the end of the groyne which divides off the channel to the head and scouring sluice from the main stream. The cause of this seems to be undoubtedly due to a set in the neighbourhood of the Vadarangum village. From this set the current is thrown off towards the left side of the river. An estimate of Rs. 4,200 was sanctioned in G.O., No. 1131 I., dated 16th December 1897, for a series of Brownlow's weeds along the set, but though these may prevent further erosion, they cannot be expected to remedy the present difficulties. It seems unavoidable to undertake extensive training works, no trifling matter in a river over 1½ miles in width and with islands in the middle. The survey necessary for the design of training works is still incomplete. As far as can be judged at present, it is probable that several massive groynes will have to be constructed. One is especially required at the head of the Vadarangum set in order to prevent further erosion. The distance to which this should project into the river demands very full consideration. The Superintending Engineer should submit the survey with his proposals.

Eastern Main Canal and Branches.—The canal being still open, the condition of the head sluice could not be examined. The weakest part of the sluice being the piers, care should be taken to completely fill any bad joints with cement grout during the closure. There is a great deal of silt in the canals near the bifurcation of Ryves' and Ellore canals. It seems impossible to prevent a deposit here. Navigation, with about 4 feet on gauge, was much impeded and dredgers were working to clear passages for the boats. The basin where coal is usually loaded cannot be used and coal is now railed to Tadapalli, two miles down the Western main canal.

Floating Plant.—One of the stern wheel steamers has been completed and launched. The vessel is of very simple construction and of a cheap type. She is reported to have done 9 miles an hour on her trial trip. The other steamer is being put together under the direction of Mr. Taylor, who has been sent down from Calcutta for the purpose.

Western Delta.

Main Canal.—New head sluice nearly completed. The main canal seems to be silted about 2 feet throughout. This is unfortunate and not likely to be remedied as long as the river is in its present state.

Bank Canal.—This canal takes off about 8 miles from the anicut and is supplied by a head sluice, in rear of which the bed and banks are much scoured for some distance. As the canal is in deep cutting and there is no irrigation for a good many miles, the Executive Engineer suggests that this part of the canal should be raised to the level of the main canal by building a new lock and weir at the end of it and removing the present head works. It is impossible to form an opinion on the merits of this scheme until it has been properly worked out and its advantages and cost clearly shown. The question does not seem to have made any advance since Mr. Walch referred to it in his inspection notes published with G.O., No. 193 I., dated 24th March 1890.

Drainages.—The system adopted for estimating the requisite capacity of drains is thus described by Colonel Mullins in paragraph 5 of his note printed with Proceedings of Madras Government, No. 3528, dated 22nd December 1876: "A period of six days has been taken as that within which all rainfall drainage accruing within that time is to be got rid of. The maximum drainage in one day of that period has been taken to be equivalent to 10 inches over the area and 2 inches are supposed to be the drainage of the other five days, so that 12 inches are estimated to be the quantity to be disposed of in the six days. The standard area adopted is 5 square miles, the discharge from which will be 1,314 cubic feet per second and the corresponding discharge from other areas has been calculated by the formula $D = 450\sqrt[3]{M^2}$, *e.g.*, the drains for an area of—

10 square miles will discharge 1·60 inches from that area.
20 " " 1·27 " "
* " * * * *
150 square miles will discharge ·65 inches from that area.

"The arrangement is applicable, of course, only to drainage within the delta, the area of which will be subdivided by canals, channels, main and subsidiary drains into a number of small spaces, on which drainage will accumulate after very heavy falls of rain, and thereafter be carried away as fast as the drains will allow.

"Upland or extra delta drainage will have to be disposed of, so far as passing it across the canals is concerned, as fast or nearly as fast as it can come down."

The formula used by Colonel Mullins is that usually adopted in this Presidency for calculating the maximum *rate of run-off* which bears a much greater ratio to the total run-off for smaller areas than for large. In using a formula of this form it would be more correct to take a higher power of the drainage area when it is assumed, as was done by Colonel Mullins, that the whole drainage is to be passed off in the same time from all areas. His results are much too small for large areas. The average maximum rainfall decreases as the area extends, but the difference in this respect would be sufficiently allowed for by taking the index of *M* at ·8 or even higher. It is important to know the total run-off, even though the drains cannot be made big enough to carry more than a small fraction of it without spilling over, and it is essential to know the maximum run-off when roads, railways or canals cross the drainage line. In most cases it is quite out of the question to make the drains large enough to carry off the whole drainage even in six days. The expense would be prohibitive and it has also to be considered that if drains were made of such size that they would run full only on very rare occasions, it would probably be impossible to keep them clear. Since the size has to be limited it is most essential in aligning drains to keep to the lowest ground, to avoid embankments and where they have to be made to place them far back. The larger drains in the Western Kistna delta are embanked on one side only. This is the best thing to having no continuous embankment.

It seems probable that the following formula would give a better estimate than that proposed by Colonel Mullins of the drainage to be dealt with in delta country. Assuming, as he does, an initial area of 5 square miles with a run-off for that area, of 2 miles a day, the average flow from other areas might be calculated by the formula $D = C M^{\cdot 8}$. For the initial area the co-efficient works out to nearly 75. The average discharge during the six days the flood is supposed to last will then be—

Area.	Discharge cubic feet per second.	Rainfall run-off per day.	Total run-off in six days.
5	269	2·0	12·00
10	473	1·76	10·56
20	823	1·53	9·18
40	1,435	1·33	7·98
60	1,984	1·23	7·38
80	2,497	1·16	6·96
100	2,986	1·11	6·66
200	5,198	·97	5·82
300	7,192	·89	5·34
400	9,060	·84	5·04
500	10,822	·80	4·80

The last amount represents a run-off of ·8 inches per day or 4·8 inches in six days which agrees sufficiently well with experience. It must be understood that the formula is merely intended to show the average run-off. The maximum may be much more, depending on the extent to which the drains can spill or the water be ponded back and the more the maximum exceeds the average the sooner will the floods fall below an injurious level. It is out of the question to make the drains carry even the average drainage discharge, as not only would the cost be ruinous, but if the drains are so large that the current cannot scour them in ordinary floods, they would want constant clearing to keep them free. Spill must be allowed for and facilitated and at the same time kept within such bounds as will prevent destruction of crops by over-long submergence. One can really only judge by experience the most suitable size for each drain, and for this reason it has been made the practice in the Kistna to calculate the theoretical section by Colonel Mullins' rule and design the drains to carry at ordinary full supply level $\frac{3}{10}$ths or, in some cases, $\frac{1}{3}$rd of the theoretical discharge. The reasons for making the drains so much smaller than what is expected to be ultimately required are given in Colonel Mullins' memorandum No. 104 K.S., dated 19th October 1881. Some of the reasons are out of date, but the central idea of making the drains of tentative dimensions at first in order to ensure that the waterway provided shall be limited to what practical experience may show to be necessary is as important as ever. The mistakes which have been made are chiefly due to making the tentative section a fixed proportion of the theoretical section, irrespective of locality and formation of ground.

The immediate cause of this discussion is a question which has arisen regarding the sufficiency of certain drains which cross the East Coast Railway between Bápatla and Ponnur. Previous to the construction of the railway the most important obstruction to the flow of drainage towards the coast was the Bápatla-Guntúr road, which was liable to be topped and breached in excessive floods, although there are several causeways in addition to the bridges, and there was no other obstruction except that due to the narrowness of the opening through the sand hills close to the coast. The railway has greatly altered the conditions, the drainage which formerly flowed freely over the country in very heavy floods being now collected at a few points where bridges are provided. It is to be feared that this will raise the maximum flood level much more than the improvement of the drains has lowered it. The drains which affect this portion of the railway are—

(1) The Nallamada drain.
(2) The Ponnur straight cut on the Tungabhadra.
(3) The Tungabhadra immediately above and below the railway.

The Nallamada drains 623 square miles, nearly all upland country, and has a course of 7 miles between the Commamur canal and the railway, or the Guntúr road which is immediately above the railway. Colonel Mullins, in 1880, estimated the maximum discharge during the flood of November 1879 from 450 square miles at 55,000 cubic feet a second, but as there was supposed to be some spill from the Pundla affluent which joins lower down, the Superintending Engineer, when submitting the estimate, took 55,000 cubic feet per second as the maximum discharge for the whole area. It was then assumed, in forgetfulness of Colonel Mullins' warning, that the rule which he laid down applied only to delta areas, that the discharge might be taken at $\frac{1}{6}$th of the above. This gave 9,166 cubic feet per second as the necessary theoretical capacity. A tentative capacity of one-third of this was then adopted and the drain designed to carry about 3,000 cubic feet per second with 7 feet depth. It will, of course, carry much more in high floods. The designed bed width of the drain is 189 feet, but it has been excavated to only 90 feet as yet. The road bridge has 5 spans of 20 feet, and 5 additional spans have been sanctioned in G.O., No. 258 I., dated 20th March 1894, and are now being built. Orders have been given to make the flow $1\frac{1}{2}$ feet lower than designed and to lower the old bridge floor to the same level. This will give 300 square feet additional waterway. As the drain is embanked on the right and can only spill towards the Tungabhadra, which would be in flood at the same time, and the flat deltaic portion of the catchment is only 3 per cent. of the whole, I see no reason for expecting that a flood would be much mitigated by such ponding back as is likely to occur, and if Colonel Mullins' calculations of the discharges in the 1879 flood are at all correct, I should expect the quantity which the railway will have to provide for passing to be found not less than 40,000 cubic feet per second. I do not, however, think it will be advisable at present to make the drain wider than sanctioned or to lengthen the road bridge, but, of course, if the railway branch desires to have the bridge further enlarged, there will be no objection to this being done, provided it is agreed to charge the cost to the railway. The railway bridges in the 224th and 225th miles, exclusive of irrigation culverts, aggregate 436 feet in length. The road bridges aggregate 254 feet with 800 feet of causeway. The Ponnur straight cut is a channel about 4 miles long and 27 feet bed width from Ponnur village to near where the Tungabhadra crosses the railway. This channel was intended to take the whole of the Tungabhadra drainage above Ponnur village and, in fact, as far as this portion of the drainage is concerned, to supersede altogether the old channel across which a strong bund was made. As the new channel is in pretty deep cutting and is bunded on the right or Tungabhadra side, it cannot be relieved much by spill and should apparently have been made of much more than its present capacity. The best thing to do is to let the water spill over into the old course. The new channel will take ordinary drainage and, in heavy floods, will be supplemented by the old channel.

See G.O., No. 499 I., dated 27th August 1888.

Another straight cut has been made from just above the railway crossing to a couple of miles below. Except close to the railway the bed width has been made only 61 feet. The estimated and sanctioned width of the drain is 193 feet. I consider it was an error to cross the railway anywhere, but in the natural drainage line where the channel would have low margins and there would be a large section of discharge in floods. The new channel is in 7 feet of cutting. It must be connected above the bridge with the old drain, and below the bridge the left bank which separates it from the old channel must be removed for 400 feet as agreed upon with the Railway Engineers. No bank should have been made between the old and new channels. The Superintending Engineer will see that it is removed in a sufficient number of places to make the flood level of the old and new channels practically the same. I entirely agree with all the Engineer-in-Chief has said in his letter of the 10th August 1897 about the waterway which is required and the probable maximum flood discharge.

An estimate was sanctioned for Rs. 1,20,100 in G.O., No. 599 I., dated 22nd July 1896, for excavating a drain from the Romperu swamp about 4 miles west of Bápatla to the Perali backwater, but work was not put in hand chiefly because it was found

that this department will probably have to pay for a bridge on the railway and no estimate has yet been received for this work from the railway officers. For the greater part of its length the channel will be cut through a sand ridge, and I am rather doubtful whether it will be possible to keep the channel efficient without much clearing. The maximum velocity is estimated at 2½ feet per second, but that will occur only at intervals of many years, and the depth and velocity in most seasons will be trifling.

Chepâk,
28th March 1898.

(Signed) W. HUGHES,
Chief Engineer for Irrigation.

Order—No. 287 I., dated 4th April 1898.

Communicated to the Superintending Engineer, II Circle, for information and guidance.

(True Extract.)

Under Secretary to Government,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Consulting Engineer for Railways.
" Superintending Engineer, II Circle.
" Examiner of Public Works Accounts.
" Engineer-in-Chief, Bezwada-Madras Railway.

Exd. W. D'Moss.

A.E.

AD.

Public Works Department,

Irrigation Branch.

PROCEEDINGS OF THE MADRAS GOVERNMENT.

Notes of Inspection of the Kistna Delta for February 98

Under date the

Read the following

Notes of Inspection of the Kistna Delta by the Chief Engineer for Irrigation ..... } M.E.No: 117- I, dated 28 March/98

Print

12D

No 287/I/4.4.98

Communicated to the Superintend-

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31.3.98

-ing Engineer, Second Circle, for inform-

-ation and guidance.

W. Hughes

Print 4 copies
Emergently

WH

2-4-98 I

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1/4/98

To,

The Chief Engineer for Irrigation. ✓

,, Consulting Engineer for Railways. ✓ D 2/4/98

,, Superintending Engineer, II Circle. ✓

,, Examiner of P.W. Accounts. ✓ ✓

,, The Engineer in-Chief, Bezwada-Madras Railway.

1CW
28/3/98

Public Works (1898) Department.

CURRENT No. 3035

From the Chief Engr for Irrign

Order

No. 117. I.

Dated 28-3-98

Received

Registered 2-4-98

Enclosures

Spare copies

SUBJECT.

Notes of Inspection by the Chief Engineer for Irrigation Kistna Delta Feb 98. Submitted

E. I. Form No. 1—500—1-11-97

BACK PAPERS.

No.	Date.

FURTHER PAPERS.

No.	Date.

Ro 117. I.

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Flagged B

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***	***	***	***	***	***	***
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Sul G.O.N. 4999 dt 27-8-88.

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W. E. 9

Please see the Hon: Sir Henry Bliss' remarks on the over of par copy 7 Cy. 287 dy 4/4/98. The two words reported arent misprints, please see might put up. Kindly take action herein as errata if necessary

26/4/98.

with all the Engineer in Chief has said in his letter of the 10 August 1897 about the waterway which is required and the probable maximum flood discharge.

An estimate was sanctioned for Rs. 1,20,100 in G.O.No. 599 I, dated 22nd July 1896, for excavating a drain from the Romperu Swamp about 4 miles west of Bapatla to the Perali backwater but work was not put in hand chiefly because found that this Department will probably have to pay for a bridge on the Railway and no estimate has yet been received for this work from the Railway Officers. For the greater pa of its length the channel will be cut through a sand ridge and I am rather doubtful whether it will be possible to keep the channel efficient without much clearing. The maximum velocity is estimated at 2½ feet per second but that will occur only at intervals of many years and the depth and locity in most seasons will be trifling.

1898.

W. Hughes

Chief Engineer for Irrigation.

Joint Secy to Govt Revenue Dept.