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MADRAS RECORD OFFICE.

Government of Madras.

Public Works DEPARTMENT.

G.O. No. 761 Press / Mis.

336-37

Dated 30 1 1937.

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Proceedings of the Madras Government, Public Works Department, 20th January 1871.

No. 336. Read the following letter from the Consulting Engineer for Irrigation and Canal Company, to the Secretary to Government, Public Works Department, dated Madras, 20th December 1870, No. 108 :—

I HAVE the honour to submit the following report on the progress made in the works of the Madras Irrigation and Canal Company during the quarter ended 30th June 1870.

2. *Expenditure during the quarter.*—The progress made during the quarter, as indicated by the expenditure, shows an improvement on that of the previous quarter, the expenditure being Rupees 4,44,201 against Rupees 3,44,364 in the quarter ended 31st March 1870.

3. *Soonkasala Anicut.*—The expenditure on this work was Rupees 861-1-0 on the groyne at Soonkasala.

4. *Hindry Aqueduct.*—The expenditure on this work was Rupees 10-0-11 for special superintendence and sundries.

5. *1st Section, Main Canal.*—Rupees 13,601-6-8 were expended on the 1st Section of the Main Canal, 1 to 17¼ miles, the work done being :—

			RS.	A.	P.
Earthwork	Cubic yards	3,783	6,143	11	10
Revetment and shingling	Do.	3,488	1,212	10	0
Removing spoil			138	4	10
Masonry revetment, etc., at head-sluice			931	9	0
Three waste weirs			226	10	10
Ferry boat			14	7	0
Self-acting sluice and repairs to culvert in 2nd mile ...			3,319	4	0
Head-sluice apron			1,293	2	0
Special Superintendence and Sundries			321	11	2

6. *2nd Section.*—Rupees 10,387-11-11 were expended on the 2nd Section from the 18th to the 32nd mile, the items being :—

			RS.	A.	P.
Earthwork	Cubic yards	484	2,769	4	6
Revetment and shingling			62	8	0
Canal walls	Cubic yards	288	256	12	0
Bridge, second class, for Poodoor			192	12	6
Aqueduct at Kadrabagh			5	8	0
Raising and strengthening the right bank between the Kudrabagh Aqueduct and the slip in the 24th mile... ...			15	0	0
Protecting walls to stop the leakage in the 26th and 29th miles			6,923	11	3
Contingencies...			162	3	8

7. *3rd Section.*—Rupees 6,742-11-3 were expended on the 3rd Section from the 33rd to the 43rd mile, the details being :—

			RS.	A.	P.
Excavation and embankment ...	Cubic yards	505	1,700	0	0
Revetment			5	0	0
Bridge, second class, at Malayala			3	7	11
Do., do., close to waste weir No. 15 ...			473	2	6
Do., third class, at Satanicotta			1,367	5	10
Do., do., at Muddigutla			376	6	4

	Rs.	A.	P.
Sultanpore Tunnel	1,062	8	6
Ullur Aqueduct and deepening bed of stream under Ullur Aqueduct	47	11	0
Muddigutla Jetty	950	8	0
Contingencies for earth and masonry works	156	9	2

8. *4th Section.*—Rupees 635-11-10 were expended on the 4th Section or miles 44th to 60th of the canal, the particulars being :—

	Rs.	A.	P.
Excavation and embankment	141	4	0
Revetment and pitching	21	0	0
Two waste weirs	124	0	0
Three culverts	111	8	8
Contingencies	237	15	2

9. *5th Section.*—Rupees 5,347-3-11 were expended on the 5th Section of the Main Canal, from the 61st to the 72nd mile, the items being :—

		Rs.	A.	P.
Excavation and embankment ...	Cubic yards 9,412	3,415	11	3
Revetment		40	0	0
Two culverts		125	12	0
Bridge, second class, at Pummalpaud		840	14	0
Do., do., at Jootoor		569	3	6
Do., do., at Terragopilly		39	0	0
Contingencies		316	11	2

10. *6th Section.*—Rupees 33,543-13-7 were expended on the 6th Section or miles 73rd to 91st, the items being :—

		Rs.	A.	P.
Excavation and embankment ...	Cubic yards 73,240	6,538	3	3
Revetment	Do. 901	672	8	0
Catch-water drains	Do. 12,513	799	0	9
Stop bank in the 82nd and 83rd miles	Do. 7,770	934	0	0
Lock No. 2		1,535	9	10
Do. „ 2-A		1,572	4	9
Do. „ 3		1,814	2	6
Do. „ 4		3,660	4	3
Do. „ 5		63	7	0
Do. „ 6		113	13	4
Do. „ 7		50	7	0
Do. „ 8		2,175	3	8
Do. „ 9		486	11	2
Do. „ 9-A		398	3	2
Do. „ 10		1,770	14	1
Do. „ 11		238	14	7
Do. „ 12		248	12	7
Two culverts		3,720	6	1
Bridge No. 2, (second class,) at Valapanoor		88	0	0

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	Rs.	A.	P.
Aqueduct	127	3	2
Lock gates	6,033	8	0
Store and Store Charges	37	8	3
Special Superintendence and Sundries	464	12	2

11. *7th Section.*—Rupees 46,765-9-2 were expended on the 7th Section, miles 92nd to 114th, for :—

		Rs.	A.	P.
Embankment and cutting	Cubic yards 17,210	5,404	11	0
Anicut and Head-works		3,253	15	5
Regulating lock		11,209	14	0
Three waste weirs		2,461	0	0
Bridge, second class, at 93rd mile...		159	3	7
Do., do., at 96th do.		1,831	14	3
Do., do., at 98th do.		260	14	3
Do., third class, at 100th do.		847	13	9
Do., second class, at 105th do.		989	8	11
Do., first class, at 107th mile, Ayaloor		287	0	4
Do., third class, at 108th do.		2,226	5	6
Do., second class, at 110th do.		2,919	6	2
Do., first class, at 112th do.		1,067	12	1
Eleven culverts		8,658	11	6
Aqueduct No. 20		33	2	0
Calingulah and bridge		4,583	13	4
Contingencies		570	7	1

12. *8th Section.*—Rupees 99,756-13-8 were expended on the 8th Section, miles 115th to 143rd, the items being :—

		Rs.	A.	P.
Embankment and cutting ...	...Cubic yards 1,19,049	22,143	5	6
Thirteen waste weirs		561	5	8
Lock No. 1 at 115th mile		5,876	4	6
Do. „ 2 at 117th do.		6,746	12	5
Do. „ 3 at 118th do.		932	3	5
Do. „ 4 at 119th do.		10,537	3	0
Do. „ 5 at 121st do.		7,729	7	1
Do. „ 6 at 122nd do.		1,950	10	0
Do. „ 7 at 123rd do.		2,690	8	6
Do. „ 8 at 124th do.		1,808	4	5
Do. „ 9 at 125th do.		2,676	12	4
Do. „ 10 at 126th do.		2,213	10	8
Do. „ 10-A at 129th do.		1,699	7	5
Do. „ 11 at 132nd do.		1,513	3	6
Do. „ 12 at 136th do.		5,178	5	11
Do. „ 13 at 137th do.		1,307	13	11
Do. „ 14 at 140th do.		2,139	4	1

				Rs.	A.	P.
Lock No. 15 at 142nd mile	...	...	...	6,573	15	2
Do. ,, 16 at 144th do.	...	...	...	6,950	2	8
Three culverts	...	...	...	1,235	0	10
Bridge	...	...	...	6,226	13	9
Stores and Store Charges	...	...	...	962	15	1
Special Superintendence and Sundries	...	...	...	103	3	10

13. *9th Section.*—Rupees 97,652-15-8 were expended on the 9th Section, or miles 144th to 178th of the canal, namely :—

			Rs.	A.	P.
Earthwork	...Cubic yards	4,32,427	46,142	10	6
Off-take Channel at Rajoly ...	...	...	234	6	4
Anicut across the Kundar at do.	...	...	187	7	4
Head-sluice at do. ...	...	...	1,718	9	11
Aqueduct at 150th mile	...	...	1	0	0
Do. at 153rd do.	...	...	24	15	0
Do. at 155th do.	...	...	10	0	0
Do. at 166th do.	...	...	1,204	0	0
Do. at 167th do.	...	...	470	0	0
Lock at 169th mile, 22 chains	...	...	2,607	12	6
Do. at 169th do., 60 do.	...	...	1,652	5	8
Do. at 170th do., 21 do.	...	...	1,679	13	7
Do. at 171st do., 60 do.	...	...	1,111	5	7
Do. at 172nd do., 50 do.	...	...	1,914	13	5
Do. at 174th do., 45 do.	...	...	3,153	5	10
Do. at 174th do., 74 do.	...	...	8,956	7	8
Do. at 176th do., 13 do.	...	...	10,133	6	5
Do. at 177th do., 72 do.	...	...	3,364	2	10
Six culverts	...	...	9,461	14	4
Public road bridge at 150th mile	...	...	1,073	13	0
Two surplus weirs	...	...	255	15	7
Over-bridge	...	...	1,654	12	6
Special Superintendence and Sundries	...	...	639	14	2

14. *10th Section.*—Rupees 40,256-4-2 were expended on the 10th Section, or miles 179th to 186th of the canal, the particulars being :—

			Rs.	A.	P.
Earthwork and embankment ...	Cubic yards	1,37,135	21,842	14	7
Head lock and bridge at Adimapully	...	...	3,360	1	4
Aqueduct at Punkul Wunkah	...	...	7,746	15	6
Do. at 84th mile, 35 chains ...	...	...	479	4	0
Five culverts	...	...	5,034	12	0
Bridge over scouring sluice channel under main road to Kurnool	...	...	395	0	0
Contingencies...	...	...	1,397	4	9

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15. *Adimapully Anicut.*—The expenditure on this work was Rs. 67,644-4-9.

16. *Distribution Works.*—The expenditure on works of distribution was Rupees 9,048-12-10, for :—

				Rs.	A.	P.
First Section distribution works	...	...	...	9	15	5
Kurnool town water-supply	...	...	...	4	2	9
Second Section distribution works	...	...	...	25	9	9
Third do. do.	...	...	...	4,342	15	9
Fourth do. do.	...	...	...	4,129	9	1
Fifth do. do.	...	...	...	453	6	5
Sixth do. do.	...	...	...	49	12	9
Ninth do. do.	...	...	...	33	4	11

17. *Buildings.*—The expenditure on buildings was Rupees 93-7-0, which was on the Office, Store, and Workshop at Kurnool.

18. *Telegraph.*—Rupees 11,853-6-0 were expended on the telegraph line from Soonkasala to Cuddapah.

19. *Abstract of Expenditure.*—The following abstract shows the expenditure on all works from the commencement to the close of the quarter compared with the sanctioned estimates :—

Works.	Amount of Estimate.	Expenditure up to 31st March 1870.	Cost during the quarter ended 30th June 1870.	Total Expenditure.	Add amount transferred to this from other works.	Deduct refunds to this from other works.	Total Net Expenditure.	Amount. Available.	Amount. Increase of Estimate.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Main Supply.									
Anicut and Head-works at Kurnool	3,03,080	60,327	.....	60,327	.....	.....	60,327	2,42,753	.....
Do. do. at Soonkasala	4,36,222	4,68,525	861	4,69,386	.....	.....	4,69,386	.....	33,164
Do. do. at Somaishweram ...	1,71,727	66,034	.....	66,034	86	.....	66,120	1,05,607	.....
Do. do. at Adamapully	3,44,440	2,48,899	67,644	3,16,543	90	199	3,16,434	28,006	.....
Aqueduct across the River Hindry	2,76,250	2,76,312	10	2,76,322	.....	.....	2,76,322	.....	72
Canal for one mile from the head-sluice of the Kurnool Anicut	65,000	49,285	.....	49,285	.....	.....	49,285	15,715	.....
Main Canal, 1st Section, 17¼ miles ...	10,73,687	10,83,418	13,601	10,97,019	192	5,503	10,91,708	.....	18,021
Do., 2nd do., 18th to 32nd mile ...	18,29,670	19,42,303	10,388	19,52,691	.....	463	19,52,228	.....	1,22,558
Do., 3rd do., 33rd to 43rd do. ...	9,75,790	8,97,305	6,743	9,04,048	.....	476	9,03,572	72,218	.....
Do., 4th do., 44th to 60th do. ...	10,55,521	9,76,919	636	9,77,555	.....	1	9,77,554	77,967	.....
Do., 5th do., 61st to 72nd do. ...	8,80,738	8,56,726	5,347	8,62,073	.....	.....	8,62,073	18,665	.....
Do., 6th do., 73rd to 91st do. ...	9,43,427	7,36,762	33,544	7,70,306	.....	12	7,70,294	1,73,133	.....
Do, 7th do., 92nd to 114th do. ...	7,48,483	5,82,419	46,766	6,29,185	.....	55	6,29,130	1,19,353	.....
Do., 8th do., 115th to 143rd do. ...	7,36,830	5,86,132	99,757	6,85,889	.....	6,268	6,79,621	57,209	.....
Do., 9th do, 144th to 178th do. ...	9,45,837	5,46,807	97,653	6,44,460	313	1,314	6,43,459	3,02,378	.....
Do., 10th do., 179th to 186th do. ...	2,55,640	1,01,423	40,256	1,41,679	.....	21	1,41,658	1,13,982	.....
Total...	1,10,42,342	94,79,596	4,23,206	99,02,802	681	14,312	98,89,171	13,26,986	1,73,815
Distribution.									
Branch channels and sluices of 1st Section ...	7,003	4,962	10	4,972	.....	.....	4,972	2,031	.....
Distribution Works of 2nd do. ...	6,000	4,593	25	4,618	.....	.....	4,618	1,382	.....
Do. do. of 3rd do. ...	11,150	5,754	4,344	10,098	.....	.....	10,098	1,052	.....
Do. do. of 4th do. ...	28,929	17,796	4,129	21,925	1	.....	21,926	7,003	.....
Constructing a bund across the canal in the 45th mile, 4th Section	76	73	.....	73	.....	.....	73	3	.....
Distribution Works of 5th Section	4,000	92	454	546	.....	.....	546	3,454	.....
Do. do of 6th do.	71,400	2 848	49	2,897	.....	.....	2,897	68,503	.....
Do. do. of 9th do.	15,125	346	34	380	.....	.....	380	14,745	.....
Do. do. at Soonkasala	925	925	.....	925	.....	.....	925	.....	.....
Kurnool town water-supply	1,699	1,4 3	4	1,417	.....	.....	1,417	282	.....
Total...	1,46,307	38,802	9,049	47,851	1	.....	47,852	98,455	.....
Buildings.									
Central Hospital, with out-houses and compound wall, at Kurnool	5,050	4,781	.....	4,781	.....	.....	4,781	269	.....
Repairs to do. do. do. do.	68	60	.....	60	.....	.....	60	8	.....
Overseer's hut at Kurnool...	1,245	.....	.....	.....	.....	.....	.....	1,245	.....
Office, Store-house, and Workshop at Soonkasala.	5,947	5,986	.....	5,986	.....	.....	5,986	.....	39
Powder Magazine, Store, and Station roads at Bowanassy	4,359	4,359	.....	4,359	.....	.....	4,359	.....	.....
Office and Store-room and Artificers' shed at do.	7,298	7,523	.....	7,523	.....	.....	7,523	423	.....
Repairing the above buildings at do.	648								
Improvement of the road approaching to the above buildings and repairing culverts at do.	578	318	.....	318	.....	.....	318	260	.....
Converting the unfinished building intended for a Gun Powder Manufactory into a Hospital at Bowanassy	427	19	.....	19	.....	.....	19	408	.....
Office and Store building at Valapanoor in do. ...	1,970	5,141	.....	5,141	.....	3,151	1,990	.....	20
Do. do. at Jupad in the Nagatoor Division.	4,123	4,782	.....	4,782	.....	.....	4,782	.....	659
Do. do. at Puggydial in do. ...	3,977	3,833	.....	3,833	.....	.....	3,833	144	.....
Do. do. at Chintagoonta in Kundar Division.	5,283	5,277	.....	5,277	.....	.....	5,277	6	.....
Do and temporary Store-shed at Ayalore in do.	612	67	.....	67	.....	.....	67	575	.....
Repairs to Anicut at Zorapore	327	308	.....	308	.....	.....	308	19	.....
Office, Store, and Workshop at Kurnool	30,612	14,391	93	14,484	.....	.....	14,484	16,123	.....
Iron and Brass Foundry at do.	15,328	15,168	.....	15,168	.....	.....	15,168	160	.....
Room for receiving and despatching stores at do....									
Quarters for Sub-Assistant Engineers and Assistant Surveyors at Kundar	1 236	561	.....	561	.....	.....	561	675	.....
Engineers' Bungalow at Dhoor	4,980	4,923	.....	4,923	.....	.....	4,923	57	.....
Total...	94,098	77,497	93	77,590	.....	3,151	74,439	20,377	718
Line of Telegraph	49,440	47,506	11,853	59,359	.....	8,284	51,075	.....	1,635
Grand Total...	1,13,32,187	96,43,401	4,44,201	1,00,87,602	682	25,747	1,00,62,537	14,45,818	1,76,168

Proceedings of the Madras Government, Public Works Department, 20th January 1871.

20. *Quarter's Expenditure.*—This statement shows that the expenditure of the quarter was Rupees 4,44,201, and the net total outlay, up to 30th June 1870, Rupees 1,00,62,537.

21. *Excess Expenditure.*—The subjoined statement shows the expenditure in excess of sanction at the end of the quarter to have been Rupees 1,76,168:—

Works.	Excess expenditure up to 31st March 1870	Excess expenditure during the quarter ended 30th June 1870.	Total.	Add transferred to this from other works.	Deduct refunds.	Excess net expenditure on 30th June 1870.
Main Supply.						
Anicut and Head-works at Soonkasala	Rs. 32,303	Rs. 861	Rs. 33,164	Rs. ...	Rs. ...	Rs. 33,164
Hindry Aqueduct...	62	10	72	...	...	72
Main Canal, 1st Section.						
Excess expenditure up to 31st March 1870	1,471					
Add amount of savings effected by modification of the design of a self-acting sluice which is deducted from the sanctioned estimate during the quarter	8,260					
	9,731	13,601	23,332	192	5,503	18,021
Main Canal, 2nd Section.						
Excess expenditure up to 31st March 1870	1,25,933					
Deduct amount sanctioned during the quarter	13,300					
	1,12,633	10,383	1,23,021	...	463	1,22,558
Total...	1,54,729	24,860	1,79,589	192	5,966	1,73,815
Buildings.						
Office, Store-house, and Workshop at Soonkasala	39	...	39	...	...	39
Do. do. at Valapanoor ...	3,171	...	3,171	...	3,151	20
Do. do. at Jupad ...	659	...	659	...	...	659
Total...	3,869	...	3,869	...	3,151	718
Line of Telegraph	...	9,919	9,919	...	8,284	1,635
Grand Total...	1,58,598	34,779	1,93,377	192	17,401	1,76,168

22. *Preparation of Revised Estimates.*—Supplemental estimates for the anicut and head-works at Soonkasala and for the 2nd Section, Main Canal, were sanctioned in Government Orders, Nos. 2,352 and 2,782, of the 29th September and 19th November 1870, respectively.

23. The excess expenditure on the 1st Section, Main Canal, which in the previous quarter amounted to only Rupees 1,471, is increased in the present quarter to Rupees 18,021 by actual expenditure of Rupees 13,601 which was incurred in this quarter, and a reduction of Rupees 8,260 made from the total amount of the sanctioned estimate of the section on account of the savings effected by the sanctioned modification in the original design of a self-acting sluice. The above sum of Rupees 18,021, and Rupees 7,692 which is shown against this work in the Chief Engineer's estimate of funds required for the completion of works from 1st July 1870, make up a total excess of Rupees 25,713, which being still within 5 per cent. of the sanctioned estimate will be sanctioned by this office in due course.

24. The Agent has been asked to furnish explanation of the cause of excess expenditure on the works marginally noted, in order to enable me to sanction them, they being within 5 per cent. of the sanctioned estimates.

*Hindry Aqueduct Office, Store-house, and Work-shop at Soonkasala.

25. *Estimates submitted to Government during the quarter.*—The following estimates were received from the Agent and submitted to Government during the quarter:—

	Rs.	A.	P.
Revised estimate for distribution works of the 6th Section	71,400	0	0
Plans and estimate for an additional protection to the aqueduct over the Punkal Wunkah ...	687	0	0
Plan and estimate for substituting an Appold's Patent Regulator for an ordinary sluice in the distribution works of the 9th Section	170	0	0
Plan and estimate for a second-class bridge at the 114th mile	5,700	0	0
Plans and estimate for modifying the calingulahs of the 8th Section	4,868	5	3
Project of irrigation and navigation in the Nellore District			

26. *Estimates sanctioned.*—Of these the first and the third received the sanction of Government during the quarter, and the rest, with the exception of the Nellore project, were since sanctioned; also four other estimates, which were previously submitted for constructing a self-acting sluice in the 1st Section, Rupees 10,800; protecting walls to stop the leakage in the 26th and 29th miles of the 2nd Section, Rupees 13,300; a waste weir, No. 9, in the 7th Section, Rupees 1,900; and the earthworks of the 6th Section, Main Canal, Rupees 1,81,500; were sanctioned during the quarter.

27. *Cost of Establishments.*—The cost of Executive permanent establishments, including that of establishments engaged in investigations in Bellary and for reservoirs, amounts, for this quarter, to 15·7 per cent. on the expenditure for construction, and that of the temporary establishment to 0·3 per cent., and that of General Management to 5·7 per cent.

28. *Total cost of Establishments.*—The total cost of the permanent establishment was therefore 21·4, and of temporary establishments 0·3 per cent. on the expenditure.

No. 337. ORDER THEREON, 20th January 1871, No. 161.

IRRIGATION, No. 16.

ORDERED that this Report be forwarded to the Home Government.

(True Extract.)

(Signed) CHARLES A. ORR, Colonel, R. E.,
Secretary to Government.

To the Consulting Engineer for the Madras Irrigation and Canal Company.
,, Agent and Manager for do. do.

Ex. E. C. Shunker.

Govt. of {1871} Madras

PUBLIC WORKS.

To

THE CONSULTING ENGINEER :
THE MADRAS IRRIGATION AND
CANAL COMPA
&c., &c.,

Dated January 24th.

Rcd. Encl.

G. O., 20th January 1871, No. 191.

JANUARY
Nos. 336-337

Madras Irrigation and Canal Company Works.—Passing orders on the Consulting Engineer's report on the progress of the Madras Irrigation and Canal Company's works during the quarter ending 30th June 1870.

Consulting Engineer's office :
Irrigation & Canal Company
Madras, 20th December 1870.

No. 108.

From,

Colonel J. Carpendale R.E.
Consulting Engr. for I. & C. Co.

To,

The Secretary to Government
Public Works Department.

Sir,

I have the honour to submit the following report on the progress made in the works of the Madras Irrigation and Canal Company during the quarter ended 30th June 1870.—

Expenditure during the quarter.

2. The progress made during the quarter as indicated by the expenditure shews an improvement on that of the previous quarter the expenditure being Rupees 444201 against Rupees 344364 in the quarter ended 31st March 1870.

3. The expenditure on this work was Somkasala Anicut.— Rupees 861-1-- on the groyne at Somkasala.—

4. The expenditure on this work was Vendry Aqueduct.— Rupees 10--11 for special superintendence and sundries.—

5. Rupees

5. Rupees 13,601-6-8 were expended on the 1st Section of the 1st Section Main Canal.
Main Canal, 1 to 17¼ miles, the work done being:

Earthwork	Cyds 3783	Rs: 6,143-11-10
Revetment & shingling	3488	1,212-10-"
Removing spoil		138-4-10
Masonry revetment &c. at Headsluice		931-9-"
3 Waste weirs		226-10-10
Ferry boat		14-7-"
Self acting sluice & Repairs & culvert in 2nd miles		3319-4-"
Headsluice apron		1293-2-"
Special superintendence & sundries		321-11-2

6. Rupees 10,387-11-11 were expended on the 2nd Section from the 18"8 2nd Section.
the 32nd mile, the items being:

Earthwork	Cyds 484	Rs: 2769-4-6
Revetment & shingling		62-8-"
Canal walls	288	256-12-"
Bridge 2nd class for Poodoor		192-12-6
Aqueduct at Kadrabagh		5-8-"
Raising and strengthening the right bank between the Kadrabagh Aqueduct & the slip in the 24th mile		15-"-"
Protecting walls & stop the leakage in the 26th & 29th miles		6923-11-3
Contingencies		162-3-8

7. Rupees 6,742-11-3 were expended on the 3rd Section from the 33rd 3rd Section.
the 43rd mile, the details being:

Excavation & Embankment	Cyds 505	Rs: 1700-"-"
Revetment		5-"-"
Bridge 2nd class at Malayala		3-7-11
do do close & Waste weir No 15		473-2-6
do 3 do at Satanicotta		1367-5-10
do do Muddigutta		376-6-4

Sultanpore

Sultanpore Tunnel — Rs: 1662-8-6
Allis Aqueduct & deepening bed of stream under Allis Aqueduct — 47-11-"
Muddigutta Jetty — 950-8-"
Contingencies for earth & masonry works — 156-9-2

8. Rupees 635-11-10 were expended on the 4th Section — the 4th Section or miles 44 to 60 of the Canal, the particulars being:

Excavation & Embankment		Rs: 141-4-"
Revetment & pitching		21-"-"
2 Waste weirs		124-"-"
3 Culverts		111-8-8
Contingencies		237-15-2

9. Rupees 5,347-3-11 were expended on the 5th Section — 5th Section of the Main Canal from the 61st to the 72nd mile, the items being:

Excavation & Embankment	Cyds 9412	Rs: 3415-11-3
Excavation & Embankment		40-"-"
Revetment		125-12-"
2 Culverts		840-14-"
Bridge 2 class at Samalpad		569-3-6
do do Poodoor		39-"-"
do do Terozapully		316-11-2
Contingencies		

10. Rupees 33543-13-7 were expended on the 6th Section — on the 6th Section or miles 73 to 91, the items being:

Excavation & Embankment	Cyds 73240	Rs: 6538-3-"
Revetment	901	672-8-"
Catch water drains	12513	799-"-9
Stop bank in the 82nd & 83rd miles	7770	934-"-"
Sort No 2		1535-9-10
do 2A		1572-4-9
do 3		1814-2-6
do 4		3660-4-3
do 5		63-7-"
do 6		113-13-4
do 7		50-7-"
do 8		2175-3-8

Sort No 9

Lock No. 9	Rs.	486-11-2
do 9A	"	398-3-2
do 10	"	1770-14-1
do 11	"	238-14-7
do 12	"	248-12-7
2 Culverts	"	3720-6-1
Bridge No. 2 (2nd class) at Valapanoor	"	88-"-"
Aqueduct	"	127-3-2
Lock gates	"	6033-8-"
Stone & stone charges	"	37-8-3
Special superintendence & sundries	"	464-12-2

11. Rupees 46765-9-2 were expended on the 7th Section, miles 92 to 114 for

Embankment & earthwork	Cy.	17210	Rs. 5404-11-"
Aqueduct & Headwork	Rs.		" 3253-15-5
Regulating Lock	Rs.		" 1209-14-"
3 Waste weirs	Rs.		" 2461-"-"
Bridge 2nd class at 93 mile	Rs.		" 159-3-7
do do 96	Rs.		" 1831-14-3
do do 98	Rs.		" 260-14-3
do 3rd class 100	Rs.		" 847-13-9
do 2nd 105	Rs.		" 969-8-11
do 1st 107 Ayalore	Rs.		" 287-"-4
do 3rd 108	Rs.		" 2226-5-6
do 2nd 110	Rs.		" 2919-6-2
do 1st 112	Rs.		" 1067-12-1
11 Culverts	Rs.		" 8658-11-6
Aqueduct No. 29	Rs.		" 33-2-"
Telinjalah Bridge	Rs.		" 4583-13-4
Contingencies	Rs.		" 570-7-11

12. Rupees 99756-13-8 were expended on the 8th Section, miles 115 to 143; the items being:

Embankment & earthwork	Cy.	119049	Rs. 22143-5-6
13 Waste weirs	Rs.		" 561-5-8
Lock No. 1 at 115 mile	Rs.		" 5876-4-6
do 2 117	Rs.		" 6746-12-5
do 3 118	Rs.		" 932-3-5
do 4 119	Rs.		" 10537-3-"
do 5 121	Rs.		" 7729-7-1
do 6 122	Rs.		" 1950-10-"
do 7 123	Rs.		" 2690-8-6
do 8 124	Rs.		" 1808-4-5

Lock No. 9 at 125 mile	Rs.		2676-12-4
do 10 126	Rs.		" 2243-10-8
do 10A 129	Rs.		" 1699-7-5
do 11 132	Rs.		" 1513-3-6
do 12 136	Rs.		" 5178-5-11
do 13 137	Rs.		" 1307-13-11
do 14 140	Rs.		" 2139-4-1
do 15 142	Rs.		" 6573-15-2
do 16 144	Rs.		" 6950-2-8
3 Culverts	Rs.		" 1235-"-10
Bridge	Rs.		" 6226-13-9
Stores & stone charges	Rs.		" 962-15-1
Special superintendence & sundries	Rs.		" 103-3-10

13. Rupees 97652-15-8 were expended on the 9th Section or miles 144 to 178 of the Canal, viz:

Earthwork	Cy.	432427	Rs. 46142-10-6
Off take channel at Rajoly	Rs.		" 234-6-4
Embankment across the ravines at do	Rs.		" 187-7-4
Headsluice at do	Rs.		" 1718-9-11
Aqueduct at 150 mile	Rs.		" 1-"-"
do 153	Rs.		" 24-15-"
do 155	Rs.		" 10-"-"
do 166	Rs.		" 1204-"-"
do 167	Rs.		" 470-"-"
do 169	Rs.	22 chs	" 2607-12-6
Lock 169	Rs.	60	" 1652-5-8
do 169	Rs.	60	" 1679-13-7
do 170	Rs.	21	" 1111-5-7
do 171	Rs.	60	" 1914-13-5
do 172	Rs.	50	" 3153-5-10
do 174	Rs.	45	" 8956-7-8
do 174	Rs.	74	" 10133-6-5
do 176	Rs.	13	" 3364-2-10
do 177	Rs.	72	" 9461-14-4
6 Culverts	Rs.		" 1073-13-"
Public road bridge at 150 mile	Rs.		" 255-15-7
2 Surplus weirs	Rs.		" 1654-12-"
Overbridge	Rs.		" 639-14-2
Special superintendence & sundries	Rs.		

14. Rupees 40256-4-2 were expended on the 10th Section or miles 179 to 186 of the Canal, the particulars being:

Earthwork

Earthwork & Embankment Cy.d 137135 Rs: 27842-14-7
Head Lock & Bridge at Adamapilly ——— 3360-1-4
Aqueduct at Kuttaliwankal ——— 7746-15-6
do ——— 84" mile 35" ch: ——— 479-4-"
5 Culverts ——— 5634-12-"
Bridge over scouring sluice channel under main road & Turnool ——— 395-"-"
Contingencies ——— 1397-4-9

15. The expenditure on this work was Rupees 67,644-4-9.—

Adamapilly Anicut.

16. The expenditure on works of distribution was Rupees 9048-12-10 for Distribution works.—

1st Section distribution works Rs: 9-15-5
Turnool town water supply ——— 4-2-9
2" Section distribution works ——— 25-9-9
3" ——— do ——— do ——— 4342-15-9
4" ——— do ——— do ——— 4129-9-1
5" ——— do ——— do ——— 453-6-5
6" ——— do ——— do ——— 49-12-9
9" ——— do ——— do ——— 33-4-11

17. The expenditure on Buildings was Rupees 93-7-" which was on the Office, Store and Workshop at Turnool.—

Buildings.—

18. Rupees 11853-6-" were expended on the Telegraph Line from Soontakala & Cuddapah.—

Telegraph.—

19. The following abstract shews the expenditure on all works from the commencement to the close of the quarter compared with the sanctioned estimates.—

Abstract of expenditure.—

Vide Rs.

Main Supply.

Principal Head Sluice at Turnool
do ——— do ——— Soontakala
do ——— do ——— Somasiragum
do ——— do ——— Adamapilly
Aqueduct across the minor Hindoo Canal for 1 mile from the Headsluice of the Turnool Main Canal 1st Section 1 1/4 miles
do 2" " 18" & 32"
do 3" " 33" & 43"
do 4" " 44" & 60"
do 5" " 61" & 72"
do 6" " 73" & 91"
do 7" " 92" & 114"
do 8" " 115" & 143"
do 9" " 144" & 178"
do 10" " 179" & 186"

Total

Distribution.									
Branch channels & sluices of 1st Section	7003	4962	10	4972	"	"	4972	2031	"
Distribution works of 2nd "	6000	4593	25	4618	"	"	4618	1382	"
do 3" "	14150	5754	4344	10098	"	"	10098	1052	"
do 4" "	28929	17796	4129	21925	1	"	21926	7003	"
Constructing a bund across the Canal in the 45th mile 4th Section	76	73	"	73	"	"	73	3	"
Distribution works of 5" Section	4000	92	454	546	"	"	546	3454	"
do 6" "	7140	2548	49	2897	"	"	2897	68503	"
do 9" "	15125	346	34	380	"	"	380	14745	"
do at Soon Kasala	925	925	"	925	"	"	925	"	"
Kurnool Town water supply	1699	1413	4	1417	"	"	1417	282	"
Total	146307	38802	9049	47851	1	"	47852	98455	"
Buildings.									
Central hospital with outhouses & compound wall at Kurnool	5030	4781	"	4781	"	"	4781	269	"
Repairs do do do	68	60	"	60	"	"	60	8	"
Overseers hut at Kurnool	1245				"	"		1245	"
Office, store house & workshop at Soon Kasala	5924	5986	"	5986	"	"	5986		39
Powder Magazine, store & station roads at Bowanassy	4359	4359	"	4359	"	"	4359	"	"
Office & store room & artificers sheds at do	7296		"		"	"			"
Repairing the above buildings at do	648	7523	"	7523	"	"	7523	423	"
Improvement of the road approaching & the above buildings & repairing culverts at do	578	318	"	318	"	"	318	260	"
Converting the unfinished building intended for a gunpowder manufactory into a hospital at Bowanassy	427	19	"	19	"	"	19	408	"
Office & store building at Vellapanoor do	1970	5141	"	5741	"	3151	1990	"	20
Do Do Cuppás in the Nagatore do	4123	4782	"	4782	"	"	4782	"	659
Do Do Cuddapah do	3177	3833	"	3833	"	"	3833	144	"
Do Do Chintagunta in Kundair	5283	5277	"	5277	"	"	5277	6	"
Do & temporary Store sheds at Ayalur in do	642	67	"	67	"	"	67	575	"
Repairs & Ameut at Borapore	327	308	"	308	"	"	308	19	"
Office, Store & Workshop at Kurnool	30612	14391	93	14484	"	"	14484	16128	"
Crown & Brass foundry do	15328	15168	"	15168	"	"	15168	160	"
Room for receiving & despatching stores at do									
Quarters for Sub Asst Engrs & Asst surveyors at Kundair	1736	561	"	561	"	"	561	675	"
Engineers Bungalow at Dhoor	4980	4923	"	4923	"	"	4923	57	"
Total	94098	77497	93	77590	"	3151	74439	20377	718
Line of Telegraph	49440	47506	11853	59359	"	8284	51075	"	1635
Grand Total	1133187	963401	444205	1008760	682	25747	1006537	145818	17616

20. This statement shews that the expenditure of the Quarters expenditure. quarter was Rupees 44201 and the net total outlay upto 30th June 1870, Rupees 100,62537.—

21. The subjoined statement shews the expenditure in excess of Excess expenditure.— sanction at the end of the quarter to have been Rupees 176168.—

Works.	Excess expenditure up to 31st March 70.	Excess expenditure during the Qr ended 30th June 70.	Total.	Charges & Establishments from other works	Deduct refunds.	Excess net expenditure on 30th June 1870.—
Main Supply.						
Anicut & head works R. at Soonkasala	32303	861	33164			33164
Hindry Aqueduct	62	10	72			72
Main Canal-1st Section.						
Excess expenditure up to 31st March 70 Rs: 1471						
Add amount of savings effected by modification of the design of a selfacting sluice which is deducted from the sanctioned estimate during the quarter — 8260						
	9731	13601	23332	192	5503	18021
Main Canal-2nd Section.						
Excess expenditure up to 31st March 70 Rs: 125933						
Deduct amount sanctioned during the Qr Rs. 13300	112633	10388	123021		463	122558
Total	154729	24860	179589	192	5966	173815
Buildings.						
Office, Store house & workshop at Soonkasala	39		39			39
do do do Valapanoor	3171		3171		3151	20
do do do Tupid	659		659			659
Total	3869		3869		3151	718
Line of telegraph		9919	9919		8284	1635
Grand Total	158598	34779	193377	192	17401	176168

22. Supplemental

22. Supplemental estimates for the Amount Preparation of and head works R. at Soon- revised estimates. -kasala and for the 2nd Sec- -tion Main Canal were sanctioned in Government orders Nos. 2352 and 2782 of the 29th September and 19th November 1870 respectively.—

23. The excess expenditure on the 1st Section Main Canal which in the previous quarter amounted to only Rupees 1471 is increased in the present quarter to Rupees 18021 by actual ex- -penditure of Rupees 13601 which was incurred in this quarter and a reduction of Rupees 8260 made from the total amount of the sanctioned estimate of the Section on account of the savings effected by the sanctioned modification in the original design of a selfacting sluice— The above sum of Rupees 18021 and Rupees 7692 which is shewn against this work in the Chief Engineer's estimate of funds required for the completion of works from 1st July 1870 make up a total excess of Rupees 25713 which being still within 5 per cent of the sanctioned estimate will be sanctioned by this office in due

24. The

24. The Agent has been acked to furnish explanation of the cause of excess expenditure on the works marginally noted in order to enable me to sanction them, they being within 5 per cent of the sanctioned estimates.—

Kundy aqueduct office, store house & workshop at Soonkasala.—

25. The following estimates were received from the Agent and submitted to Government during the quarter.—

Estimates submitted to Govern.t during the quarter.

	Rs:
Revised estimate for distribution works of the 6th Section.	71400
Plans & estimate for an additional protection to the Aqueduct over the Pinnical Wunkah	687
Plan & estimate for substituting an Appolds Patent Regulator for an ordinary sluice in the distribution works of the 9th Section.	170
Plan & estimate for a 2nd class bridge at the 114th mile	5700
Plans & estimate for modifying the calingulahs of the 8th Section.	4868.5.3
Project of irrigation & navigation in the Nellore District	

26. Of these, the first and the third received the sanction of Government. Estimates sanctioned during the quarter and the rest, with the exception of the Nellore Project were since sanctioned, also four other estimates which were previously submitted for constructing a self acting sluice in the 1st Section Rupees 10,800 - Protecting walls to stop the leakages in the 26th and 29th miles of the 2nd Section - Rs: 13,300 a waste weir No 9 in the 7th Section - Rs: 1,900 and the earthworks of the 6th Section Main Canal Rupees 181,500 were sanctioned during the quarter.—

27. The cost of executive permanent establishments including that of establishments engaged in investigations in Bellary and for reservoirs amounts for this quarter to 15·7 per cent on the expenditure for construction and that of the temporary establishment to 0·3 per cent and that of General Management to 5·7 per cent.

Cost of establishments

28. The total cost of the permanent establishment was therefore 21·4 and of temporary establishments 0·3 per cent on the expenditure.—

Total cost of establishments.

Have the honor to be,
Sir,
Your most obedient servant,
J Gubbins Lieut R.E.
Consulting Engr for P.W. Company.—

P. W. 1870 Department
No. 108.

From, No. 5216

The Consulting Engineer
I. & C.

To

The Secretary to Govt.
P. W.

Dated 28th
Recd 22nd December /70

No 161 - 20: Jany /71
Submits report on the progress made in the works of the M. I. & C. Co during the Quarter ended 30th June 1870.

With an Order.

W. Sec to Engr D 7/24 Jany
No 360/71

No 161
Ordered that this Report be forwarded to the Home Govt.
Forwd. Secy
20 Jany /71
To Ind Supy, Madras I. & C. Co.
Agent & Manager do.
Nos 23/1/71

P. W. Sec to Govt. dd 24th January D. 07 1871

No. 246.
111

Govt. of ~~Madras~~ Madras.
1871
PUBLIC WORKS.

To The Consulting Engr. for the Madras Irrigation and Canal Company

Dated.

Rec'd.

G. O. 25th January No. 161

Nos. 336-337

Madras Public Works.

Copies orders in the Irrigation Dept. on the Progress of the Madras Public Works during the quarter ending 30th June 70.