

INDEXED.

Local & Munl. (1896-) Department.

MISCELLANEOUS.

G.O., No. 2030 M.

DATED 27-11-96.

[Despatch Abstract.]

Water Supply

Comg. to the Munl Council
Lichinopoly G.O. No. 2030 M. regarding the
contributions due by the P.W.D. & the
South Indian Railway on account of
—

BACK PAPERS.

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

FURTHER PAPERS.

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

Local & Munl. (1896) Department.

CURRENT No. 3135 *h*

SECRETARY TO GOVERNMENT
20 NOV-1896
LOCAL & MUNICIPAL DEPARTMENT

From The Public Works Dept.

use
Order No 2030 *h* *h* *h* 27-11-96

Communicated to the
municipal Council, Trichinopoly.

V.A.
26/11/96
[Signature]

No. 3315 *W*

Dated 18th Nov. 1896

Received 20-11-96

Registered 20-11-96

Enclosures /

Spare copies.

SUBJECT.

Pro: *St* *h* *h* *h* sanctioning
the revised estimate of
Rs 5,18,255 for the water
supply of Trichinopoly,
communicated to officers
concerned.

To
The Chairman, *h* *h* *h* Trichinopoly

h *h* *h* 27/11/96

h *h* *h* 27/11/96

h *h* *h* 27/11/96

BACK PAPERS.

G.O.	No.	Department.	Date.

FURTHER PAPERS.

G.O.	No.	Department.	Date.

Local & Municipal Dept.
3135 M
Public Works Department.

PROCEEDINGS OF THE MADRAS GOVERNMENT.

Read the following:-

Proceedings of Government in the Local and Municipal Department, No. 1731 M., dated 10th October 1896.

Order thereon: No. 3315 W., dated 18th November 1896.

Communicated to the officers concerned.

2. A sum of Rs. 230 being the share of the additional contribution now claimed from the P.W. Department on account of water supply to the Jail is allotted from the Provincial reserve. The Superintending Engineer, VI Circle, will arrange to disburse the amount to the Trichinopoly Municipality as early as possible.

3. The Consulting Engineer for Railways will arrange for the payment of the amount due by the South Indian Railway.

(True Extract)

C. H. B. Boulton

Under Secretary.

To

The Suptg. Engineer, VI Circle.
 ,, Consig. Engineer for Railways.
 ,, Examiner, P. W. Accounts.
 ,, Local & Munl. Department.
 ,, Judicial Department.

Date.

Government { 1896 } of Madras.
LOCAL AND MUNICIPAL.

Recd.

Regd.

1896.

Enclosures

Spare copies

G.O., No. 1731 M., 10th October 1896.

OCTOBER.

Water-supply.

Sanctioning, with remarks, the revised estimate of Rs. 5,18,255 for the — of Trichinopoly, and stating that orders will be passed regarding the — scheme for Srirangam on receipt of the municipal council's remarks on it.

1
3185-10-1896

GOVERNMENT OF MADRAS.

LOCAL AND MUNICIPAL DEPARTMENT.

READ—the following papers :—

From J. A. JONES, Esq., MEM. INST. C.E., F.R.S.E., Sanitary Engineer to Government, to the Chief Secretary to Government, dated Fort St. George, 19th May 1896, No. 1559.

I have the honour to forward herewith revised estimates in connection with the water-supply scheme for Trichinopoly, which is approaching completion.

2. The estimate submitted after the destructive floods of 1893 was called a revised estimate, but in reality it was the original estimate for the works as constructed; the estimate now forwarded is therefore the first revision.

3. The accompanying comparative statement shows that the cost of the works as originally proposed, the estimate for which was Rs. 5,02,050, will be to the participators (if proposals to be made are acceded to) Rs. 5,18,255. There are, however, certain other works which are not included in the original estimate which, for reasons hereafter given, it is now deemed desirable to construct.

4. Dealing with the revised estimate for the works as originally designed, the first item to which I wish to call attention is the last in the estimate, viz., contingencies, tools and plant, &c. The revised figure of Rs. 62,167 is made up as follows :—

Contingencies ..	{ Establishment ..	..	..	..	Rs.
	{ Other contingencies ..	..	..	..	29,547
Tools and Plant ..	{ Machinery ..	..	..	..	12,965
	{ Other plant ..	..	..	..	16,733
		..	..	..	2,922
				Total ..	62,167

The charges for establishment are on the basis that the services of the Assistant Sanitary Engineer will be necessary at least up to the end of September. These charges amount to only 6 per cent. on the estimate, which is very low compared with what is charged and allowed in other departments, but they are nevertheless larger than they would otherwise have been, had not the works (owing to the large amount of water which had to be dealt with in foundations and to lengthened flood periods) proved much more difficult of execution than anticipated and thus extended over a longer time than estimated for.

5. It will be noticed that a deduction has been made from the total of the revised estimate on account of machinery purchased under conditions laid down in G.O., Mis. No. 1261 M., dated 19th September 1893. The cost of the machinery was Rs. 16,733, it is now put down at Rs. 13,387, or 20 per cent. reduction for two years' use. It is unlikely that the municipality would find purchasers for it, although it may wish to retain some, and it is hoped Government will take over the balance as it will be useful on future works whether carried out by this department or the Public Works Department. If the municipality purchases it must, of course, pay for its purchase from other funds so that all the participators in the scheme are properly credited with their share.

6. Dealing next with the other individual items; revised estimates are attached which show clearly how the extra expenditure has occurred. To go into all the details of each of these would be almost a repetition of the figures in these estimates, but I make, for the information of Government, the following notes as to the main causes for increase :—

(i) *Infiltration wells.*—When the works came to be executed the river sand bed has been found to be $3\frac{1}{2}$ feet higher on an average than in the original section (the level varies from year to year) and this required this excess amount of sinking and building for the three river wells. Again it was found that in sinking the wells the employment of divers was absolutely necessary as when the water was lowered by pumping the wells immediately filled up. In addition to the excess due to the above causes, the rates of the lowest and accepted tender were somewhat higher than the estimates.

(ii) *Steel pipes to collecting wells.*—Though there was a slight reduction in the length laid, the pipe has been laid at a lower level because of the rise in the river-bed as already noted and because further consideration rendered it desirable that the pipe which may have to act as a syphon occasionally should have a fall away from the pump well so that any air in the pipe might rise to that end and escape. The greater depth of excavation entailed increases in the cost of pumping and piling.

(iii) *Raising site and retaining wall.*—There is a slight increase due to an excess length of wall to extend it into the river bank further than was originally thought necessary and to a great depth of wall being necessary at the point of the crossing of the collecting pipe under it; this was not at first foreseen. The lowest tender rates were higher than the estimate rates.

(iv) *Diversion of flood banks, &c.*—Part (Rs. 110) of the excess is due to the contractor's tender being higher than estimate and part due to a provision for metal-ling a larger area and length of road to the pumping station and drivers' quarters than at first proposed.

(v) *Screening chamber.*—This shows a slight increase only.

(vi) *Main engine and boiler house, and engines, pumps and boilers.*—These are taken together; the expenditure under engines is less than the original, because the amount entered is for engines alone not including their foundations, building round boilers, &c. The excess of Rs. 2,300 is due chiefly to an excess cost of foundations owing to the difficulty of constructing the house on ground undermined by the operation of sinking the screening chamber and the pumping well and to large beds of concrete having to be formed for building the tower, the engine room floor and foundation for boilers.

(vii) *Store and wood shed.*—This shows a small increase of Rs. 415. The chief increase is due to excess iron found to be necessary for roof and to the provision of shelves and plastering with cement.

(viii) *Engine drivers' quarters.*—This shows a decrease.

(ix) *Subsidiary engine and boiler house, and engines, pumps and boilers.*—The increase is due chiefly to the excess cost of flooring, to the necessity for raising the railway wall and providing a wall to shut in the station from the adjoining buildings and to an extra length of flue over that provided in estimate.

(x) *Pipes, valves, &c.*—Increase Rs. 1,464. It is always difficult to estimate the exact cost of these, as small items not provided for and which cannot be foreseen are invariably required.

(xi) *Laying and jointing pipes, &c.*—The increase is Rs. 7,181. The work is almost completed and the actuals entered. There was considerable difficulty found in laying some of the pipes. At one place a large length of rock had to be blasted, at other places the old fort walls were traversed and the excavation consisted of large boulders and stones which had to be raised by shear legs. A large portion of the excess is due to an extra number of lead joints having to be put in where broken and cut pipes were used instead of turned and bored pipes. Again in laying pipes through

the town numerous culverts, drains, &c., were encountered that no one knew previously anything of. The excesses are made up of so many small items that it is only by copying out the ledger that they can be detailed to any extent.

(xii) *Losses by floods.*—These stand as in the previous estimate.

(xiii) *Contingencies, tools and plant, &c.*—This item has been already referred to—see paragraph 4.

7. Detailed estimates are forwarded for information.

8. The total excess over original estimate, if the above figures are accepted, amounts only to Rs. 16,205 or little over 3 per cent. I venture to say that for a class of work where so much water had to be dealt with this is not an unsatisfactory result, especially as for long periods divers with diving dresses have been employed and much steam pumping done. I cannot say that the contractor will consider the result so satisfactory, for he has had to increase his proposed expenditure very considerably in many cases and while the estimate in some particulars is increased to meet some of the charges for extra work it has not been deemed equitable to allow for other cases where extra work was not ordered but unforeseen expenditure was incurred.

9. At the foot of the comparative statement will be found three additional works proposed—

	RS.
Native staff quarters	3,800
Fencing around pumping station	2,450
Additional well, &c.	12,064
Total	18,314

10. The pumping station is so far away from Trichinopoly town (about 2 to 3 miles) that it will not be expedient for the coolies employed on the pumping station to traverse that distance daily and it will be advantageous to erect native staff quarters to keep the men on the premises; the necessity for the construction of such quarters is one about which there is little doubt, and about the expediency of which there is none.

11. It is also desirable to fence the engine station to keep out intruders and protect properly fuel, &c.; steel pale fencing is proposed.

12. The third item is also recommended. Pumping has been going on for some time. The season is no doubt an abnormal one, and is one therefore in which a good test has been possible as the water has seldom if ever been so low in the Cauvery bed. From the three wells the possible supply without lowering the water more than 5 feet (below that sand blows into the well) is 750 gallons per minute.

13. At present the quantity required for all parties is—

	GALES.
Town	600,000
Military	42,000
Railway	100,000
Jail	15,000
Per 24 hours	757,900
Half in 6 "	378,500
In 1 hour	63,083
In 1 minute	1,051

One more well will be required; the town will not take probably more than half 600,000 gallons at first and of course immediately the river even slightly rises the supply will be sufficient, but I recommend strongly that during the next dry season another well be constructed. (This is altogether apart from the one recommended for Srirangam).

14. The cost of the above items if approved by the participators should be borne in the pre-arranged proportion by the various contributors to the scheme. Taking it

that Government will approve of the additional items and of the sale of the machinery, the total of the new estimate would stand at Rs. 5,36,569 and the excess payments would be thus—

	Percentage.	Estimate as now submitted.	Previous estimate.	Excess.
Municipality	82.5	4,42,669	4,14,120	28,549
Railway	11.6	62,242	58,340	3,902
Military	4.5	24,146	22,670	1,476
Jail	1.4	7,512	6,920	592
Total	100	5,36,569	5,02,050	34,519

If Government pay the usual amount of Rs. $\frac{34,519}{2}$ = Rs. 17,260, the amount of loan to be raised by the municipality will be Rs. 28,549 — 17,260 = Rs. 11,289 at 5.96 per cent. = 678.

15. Another item not as yet referred to is the construction of a service reservoir.

Letter No. 1515, dated 4th May 1896, from the Chairman, Municipal Council, Trichinopoly, to the Sanitary Engineer to Government, with an extract from the proceedings of the Municipal Council under date 30th April 1896.

Letter No. 1508, of 15th May 1896, from the Sanitary Engineer to Government, to the Chairman, Municipal Council, Trichinopoly.

This is referred to, because of the desire of the municipality (*vide* correspondence noted in margin attached). The whole cost of the reservoir, Rs. 70,000, should be borne by the municipality less any grant Government may propose to make.

16. If, however, the town of Srirangam enters the scheme, the proportionate cost shown in the table in paragraph 14 will be materially altered and no increased contribution whatever will be required from the participating parties.

17. In my No. 407, of 10th February 1896, I estimated that the proportionate cost of the head works which Srirangam would have to bear would be Rs. 53,853. Seeing that for Srirangam another well must be provided for its sole use, the proportionate cost of the head works may be calculated as 25 per cent. of the following:—

	RS.
Raising site and retaining wall	15,340
Diversion of flood banks	2,000
Screening chamber	17,500
Main engine and boiler house, and engines and pumps	95,400
Store and wood shed	2,800
Engine drivers' quarters	6,200
Native staff quarters	3,800
Fencing around pumping station	2,450
	1,45,490
Twenty-five per cent. of the above	36,372
Add 15 per cent. for contingencies, &c.	5,455
	*41,827
Proportionate cost of main	22,706
Total	64,533

The above sum is much above the excess shown in the table in paragraph 14, so that if Srirangam enters the scheme, the excess would be entirely met without drawing further sums from contributors and there would be a balance of Rs. 64,533 — 34,519 = 30,014 in their favour.

* This figure is instead of Rs. 53,853 appearing in the table in my No. 407 quoted above and which appears to have included a proportionate cost of the whole of the head works including wells and collecting pipe and not now included as not fairly debitable, as Srirangam will obtain a supply from its own well alone. This would make the cost of the Srirangam scheme only Rs. 64,533 + 96,540 = Rs. 1,61,073 instead of Rs. 1,73,099.

18. An early decision as to Srirangam and other points above mentioned is therefore desirable.

No. 698.

Referred to the Sanitary Board for remarks.

(By order.)

FORT ST GEORGE,
19th June 1896.

(Signed) W. W. PHILLIPS,
Ag. Asst. Secretary.

From J. A. JONES, Esq., MEM. INST. C.E., F.R.S.E., Sanitary Engineer to Government, to the Chief Secretary to Government, dated Fort St. George, 11th June 1896, No. 1835.

With reference to G.O., Mis. No. 938 M., dated 6th June 1896, I have the honour to point out that I have already reported to Government on the question as to whether the existing head works and wells will be sufficient for Trichinopoly—*vide* paragraph 12 of my No. 1559 of 19th May 1896; the head works are, but the wells should be increased in number for Trichinopoly and one extra will be required for Srirangam. The settlement of the question need not therefore be longer delayed. Indeed, it is important it should be settled at once if any work is to be done in the next dry season. Much delay in decision would relegate the works to a following dry season.

From the President, Sanitary Board, Madras, dated 23rd July 1896, No. 115-S.

ABSTRACT.—Returning, with remarks, revised estimate in connection with the Trichinopoly water-supply scheme.

ORDER—No. 1731 M., dated 10th October 1896.

The revised estimate of Rs. 5,18,255 for the water-supply works of Trichinopoly is sanctioned.

2. The excess of Rs. 16,205 in the revised estimate over that sanctioned in G.O., No. 384 M., dated 28th March 1894, will be met as follows:—

	RS.
Grant from Provincial funds	8,100
Contribution from the South Indian Railway	1,880
" " Military Department (for the Cantonment)	730
" " Public Works Department (for the Jail)	230
Municipal Council's share	5,270
Total	16,210

The contributions payable by the South Indian Railway and the Military and Public Works Departments have been raised in the proportion of the revised to the original estimate. The additional grant of Rs. 8,100 required from Provincial funds will be disbursed from the sum of Rs. 1,50,000 provided for the Cuddapah drainage works in the budget estimate of Provincial grants for 1896-97. The Public Works Department will be requested to arrange for payment of the contributions now required from the South Indian Railway Company and the Jail, and the Lieutenant-General Commanding the Forces, Madras, for that of the Cantonment, and the Municipal Council will be requested to report how it proposes to meet its share of Rs. 5,270.

3. With reference to paragraph 5 of the Sanitary Engineer's first letter read above, the municipal council will be requested to state whether it wishes to retain any portion of the machinery therein referred to, and if so, how it proposes to meet the cost. The Sanitary Engineer will also report whether there is any other place at which water-works are, or are soon likely to be, in progress, at which the machinery, or any part of it, will be required.

4. The Sanitary Engineer's proposals in paragraphs 9 to 14 of his first letter read above will be referred to the Municipal Council, Trichinopoly, for remarks, and the council's proposals regarding the extension of water-supply to Worriyur and Puttur, referred to in the Sanitary Engineer's note, dated 17th July 1896, will be awaited.

5. Orders will be passed regarding the scheme of water-supply drawn up for the town of Srirangam on receipt of the municipal council's remarks on it, which should be expedited.

(True Extract.)

A. T. ARUNDEL,
Ag. Chief Secretary.

To the Chairman, Municipal Council, Trichinopoly.
Srirangam.

" Collector of Trichinopoly.
" Accountant-General.
" Financial Department.
" Judicial Department.
" Public Works Department.
" Sanitary Board.
" Deputy Adjutant-General, Madras Command.

Exd. C. M. Thamudawamy.