

(1) Number of pages 22
(2) Date of repair 16. 9. 87
(3) Initials of the Referencer ✓

TAMIL NADU ARCHIVES

GOVERNMENT OF TAMIL NADU

Public Works

DEPARTMENT.

G.O. No. 763.W.
B.P. No.

Press.
Mis.

Dated 27 — 3 — 1985 198

Not to be folded or roughly handled.

27TH MARCH 1885, No. 763 W., PUBLIC WORKS.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Buildings and Roads.
Civil Works.

READ—the following letter from Colonel H. L. PRENDERGAST, R.E., Superintending Engineer, V Circle, to the Chief Engineer, Public Works Department, dated Chépák, 21st March 1885, No. 4780:—

With reference to your memorandum No. 499 C., dated 10th instant, I have the honor to report that a further grant of Rs. 8,300 is required for the Artesian well in the current year in addition to Rs. 5,000 allotted in G.O., No. 333 W., dated 12th February 1885.

ORDER—dated 27th March 1885, No. 763 W., Public Works.

In G.O. dated 9th February 1885, Mis. No. 271, Financial Department, a grant of Rs. 5,000 was made for sinking an Artesian well at Madras, for which work an approximate estimate of Rs. 15,475 was sanctioned in G.O., No. 3429 W., dated 19th December 1884; and it was intimated that a further assignment would be made on application.

2. The Superintending Engineer, V Circle, now applies for an additional allotment of Rs. 8,300, for expenditure during the current official year, and as funds are available in the Public Works Department, an appropriation of that amount is made from the Provincial reserve with Government. The total grant for 1884-85 will thus amount to Rs. 13,300.

(True Extract.)

Major, R.E.,
Under Secy. to Govt., P.W.D.

To the Superintending Engineer, V Circle.
" Examiner, Public Works Accounts.
" Financial Department.

Exd. A. Aubert,
Spare Copies

BUILDINGS AND ROADS.
CIVIL WORKS.

Govt. of Madras.

PUBLIC WORKS.

Dated March, 27th.

Recd.

Encl.

G.O., 27th March 1885, No. 763 W.

MARCH.

Artesian Well at Madras

Rs. 8,300 allotted for expenditure on the
during the current official year.

19TH DECEMBER 1884, No. 3129 W., PUBLIC WORKS.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Buildings and Roads.
Civil Works.

READ—the following letter from LOUIS CORNET, Esq., to the Deputy Chief Engineer, Public Works Department, dated Madras, 15th December 1884.

In reply to your letter, No. 2069 C., dated the 13th instant, I have the honor to forward a statement of the terms on which I will agree to undertake an experimental artesian boring at Madras on the conditions mentioned in paragraph 2 of your letter.

2. The depth of the well not being given I have taken it at 120 metres or, say, 393 feet.

3. The tools and appliances, &c., required for the above-mentioned specification will cost about Rs. 12,500, as per details in the estimate and abstract appended hereto. Of this sum Rs. 11,000 are required for tools and appliances to be imported and Rs. 1,500 for masonry, staging and sheds to be erected on the spot.

4. The masonry, staging and shed require to be erected first. While the masonry is settling the staging and shed may be made. The whole can be made ready in one month.

5. After striking a gushing spring the site has to be cleared and a masonry basin constructed. The cost of this work is not included in the next paragraph.

6. The following five items are charges payable by Government:—

(a) I shall require payment of about Rs. 1,500 for the erection of masonry, staging and shed. This payment is to be made as soon as I receive orders to begin work. These works will be executed according to the data of the Public Works Department. I consider my estimate sufficient for the purpose. Any saving under this head will accrue to Government.

(b) I shall require payment of about Rs. 11,000 for cost of tools and appliances to be imported. This payment is to be made as soon as I deliver the tools and appliances on the works. The exact cost is to be determined by the amount of the manufacturer's invoice plus usual charges.

(c) I shall require monthly a payment of the sum of Rs. 400 for my salary.

(d) I shall require monthly a payment of a sum of about Rs. 150 for the wages of workmen. Savings under this head to accrue to Government.

(e) I shall require once for all a credit of Rs. 200 to be availed of as required to provide fuel, iron, steel and other materials for repairs.

7. With the tools specified I undertake to sink a well, to the depth stipulated, through any soil, however hard or difficult to work.

8. My service is to begin as soon as I join work under the orders of Government, and it is to cease on one month's notice, or as soon as the basin referred to in paragraph 5 is completed.

9. I am prepared to begin work as soon as I receive orders. The tools and appliances have to be imported. They are to be had ready made at Paris. They will probably be here within three months. In anticipation of their arrival the masonry, staging and shed may be erected.

(c) *Accidents as detailed in paragraph 2 of explanatory memorandum.—No estimate of progress possible.*

13. The estimate for tools and appliances includes all the extra piping (120 metres) of small bore (21 centimetres) for the purpose mentioned in paragraph 3 of the explanatory memorandum attached hereto. For the reasons given there only 80 metres of 26 centimetres gauge are included with 120 metres of 21 centimetres gauge.

Number of Tools.	Description of Tools.	Diameter.	Weight in Kilog.	Price in Francs.
1	Tête de soude, No. 3	..	10	30
1	Clef de relevée, Nos. 1, 2, 3	..	37	111
1	Clef de retenue, Nos. 1, 2, 3	..	18	45
6	Tourne-à-gauche	..	55	110
1	Grand manche de manœuvre, No. 3	..	22	38
1	" " No. 1	..	21	63
1	Morillon pour la chaîne	..	9	31
1	Chaîne cable de 2, 6 mètres de	25 n/m	370	444
1	Poulie et son axe de	560 n/m	95	133
1	Treuil, No. 1, complet pouvant être mû à bras ou actionné par une machine à vapeur avec ses pièces de rechange	..	2,000	2,800
1	Esse à brides	..	10	20
1	Poupée, No. 1, avec ferrures de levier	..	250	500
1	Paire d'emmanchements, No. 0 de rechange de	..	50	150
1	" No. 1 "	..	36	108
1	" No. 2 "	..	28	84
1	" Nos. 2 et 3 "	..	37	111
1	Maitresse tige, Nos. 0, 1, de 5 mètres	..	193	270
2	Tiges, No. 1, de 6 mètres	..	200	300
1	Raccord, Nos. 1, 2, de 1 mètre	..	20	60
1	Tige raccord, Nos. 1, 2, de 6 mètres	..	95	142
5	Tiges, No. 2, de 6 mètres	..	385	577
1	Raccord, Nos. 2, 3, de 1 mètre	..	15	45
1	Tige raccord, Nos. 2, 3, de 6 mètres	..	74	111
10	Tiges, No. 3, de 6 mètres	..	570	855
1	Allonge, No. 3, de 4 mètres	..	40	72
1	" " 3, de 3 "	..	32	64

Number of Tools.	Description of Tools.	Diameter.	Weight in Kilog.	Price in Francs.
30 only	80 Mètres de tuyau de 260 ⁿ / _m par bouts de 2 mètres (le mètre de tuyau pèse 24 kilogs. et coûte Fr. 31-20)	..	1,920	2,496
80 only & 200	120 Mètres de tuyau de 210 ⁿ / _m par bouts de 2 mètres (le mètre de tuyau pèse K. 19-50 et coûte Fr. 25-35)	..	2,340	3,042
	100 Boulons de jonction de tuyaux	..	..	20
	1,000 Rivets d'assemblage de tuyaux à Fr. 6 le 100	..	..	60
1	Riviroir pour tuyaux de 2 mètres avec manchons de 26 et 21 ⁿ / _m	{ 260 ⁿ / _m 210 ⁿ / _m	{ 165	333
0 ——— 1	Jeu de vis de pression complet avec têtes de tuyaux de 260 et 210 ⁿ / _m	{ 260 ⁿ / _m 210 ⁿ / _m	{ 305	1,067 50
	Total ..	..	..	7,018 50
	4 % pour caisses, emballage et camionnage en gare ..	..	..	280 74
	Total net en Francs ..	..	4,730	7,299 24

Abstract of Cost.

	FRANCS.
Perforating tools	12365, 68
Piping with rivetting and forcing tools	7299, 24
	19664, 92
	RS.
At exchange of two francs per rupee	9,832
Freight, insurance, agent's commission, and charges interest, landing, cartage, &c.	1,168
	11,000
Masonry, staging and shed	1,500
	12,500

Explanatory Memorandum.

1. *Choice of tools.*—There is a great variety of tools used for boring artesian wells. In some spots specially favored the tools required (for narrow bores) and the process of boring are reduced to such simplicity that any intelligent foreman will in a few days acquire all the information necessary to bore a well with tools worth a few hundred rupees. Such is the case with most wells at Pondicherry. This however is far from being so in every locality. Most borings, particularly of large diameter, are impeded by difficulties which can be overcome by the use of proper tools in the hands of an operator who has had much experience. A few words will explain the disparity of circumstances under this head. Let us, for instance, take into consideration the wells, Nos. 8, 9, 11, and 13, mentioned in the Proceedings of the Sanitary Commissioner under No. 39, dated the 11th January 1883, and G.O., of 26th January 1883, No. 170, Financial. These wells being bored in modern alluvium and in tertiary soils, the simplest form of apparatus was sufficient. Well No. 14 bored at Bahour, and the well at Karikal having struck secondary rock, a choice assortment of tools was needed. The easy wells I refer to are 20 to 40 metres deep. The more difficult ones exceed 100 metres. One well is about 200 metres deep. Such deep wells cannot be sunk with cheap tools. Above all I may mention the well that I have sunk at Trivandrum, of which the last six feet were through solid gneiss found at a depth of 246 feet from the level of the ground.

2. *Accidents.*—In boring artesian wells the least foreseen of accidents might occur, and they require the display of the greatest ingenuity for the contrivance of special tools adapted to the peculiar circumstances of the case. I may mention the following cases:—

- Obstruction of the lower end of the bore by the fall of a broken piece of the boring tool.
- Wedging in of the boring tool between the pipe and some hard substance, causing the tool to become fixed and immovable.
- Deviation of the pipe from the vertical line brought about by neglect in testing sufficiently often the accuracy of the vertical. It is also brought about by the bending of bad material.
- The rupture of rivets connecting two successive pipes.
- The compression of the pipe by such pressure of the earth as to render it immovable.

Each of these cases includes thousands of varieties which if they be detailed would fill up volumes over volumes. Although it is impossible to indicate in a few words how all these cases are to be met, it may be said that with a proper assortment of tools in competent hands all difficulties may be overcome.

3. *Compression of pipe.*—Case (e) among accidents must be expected in great depths. In the trial boring of 10 inches at Madras the pressure at 80 metres will most likely arrest further progress of the 26 centimetres pipe. In that case a pipe of 21 centimetres must be introduced into the original pipe and the boring continued. Under these circumstances a great variety of cases may occur, which can all be met with the piping and tools specified.

4. *Inefficiency of cheap tools.*—Cheap tools bring about accidents. When such occur they are unfit to remedy them. Moreover no great depth can be attained and rock cannot be cut through with cheap tools. With such tools, particularly in the hands of amateurs, a small boulder is enough to arrest for ever the progress of a very promising well, or failure is due to some small accident which would be a trifle with good tools and material, but is insuperable with cheap tools. Should a trial be made at Madras with inefficient tools and failure ensue, the possibility of successfully boring an artesian well will be anything but tested, and yet the failure will act as a damper on further enterprise and arrest for a long while all search for artesian springs. In this as in all other matters the cheapest is to procure the best available material and tools. It is

so specially in this case, when it is considered that the right tools once acquired all subsequent borings will be reduced in cost to a very low figure.

5. *Missing the spring.*—All artesian wells do not spout up to their best as soon as they are tapped. Owing to obstructions that are removable some of the best springs are often very lazy and require much coaxing before they begin to flow. A case of this sort may in incompetent hands be mistaken for a worthless spring. I have seen cases of this sort.

6. *Information on tools specified.*—These tools are exactly like those now used by the French Government at Pondicherry, and they are to be indented for from the same manufacturers, who supply also the requisite for wells of bigger and of smaller bore.

ORDER—dated 19th December 1884, No. 3129 W., Public Works.

This letter refers to a tender submitted by Mons. L. Cornet for sinking an artesian well at Madras to a depth of 393 feet (120 metres).

2. The tools and appliances are estimated to cost Rs. 12,500. Of this sum masonry and staging will cost Rs. 1,500. The latter will first be put in hand, and will be ready against the arrival of the apparatus for which it is proposed to telegraph. Mons. Cornet demands a salary of Rs. 400 per mensem, and approximately estimates the wages of workpeople at Rs. 150 per mensem.

3. The approximate cost of the well will be as follows:—

	RS.
Apparatus	11,000
Masonry, staging, &c.	1,500
Salary of Engineer for four and-a-half months	1,800
Pay of workpeople for do. do.	675
Masonry cistern to hold supply	300
Fuel, iron and steel for repairs, &c.	200
Total	15,475

4. This rough estimate is based on the assumption that the apparatus will arrive from Paris within six weeks, and that it will take three months to sink the well 393 feet. The latter period will however depend entirely on the nature of the strata to be penetrated. If much rock be encountered the work may occupy a longer time, but if nothing but clay and sand be traversed the well will probably be sunk in six weeks.

5. It is understood that, if water of good quality or of sufficient quantity be not tapped at a depth of 393 feet, the necessary tubes for lining the bore, should it have to be carried further down, can be made up quickly and cheaply at Madras.

6. It is observed that apparatus, other than tubing, valued at about Rs. 6,000 will, on completion of the well now proposed, be available for similar wells elsewhere.

7. His Excellency the Governor in Council considers that it is in every way desirable to make the experiment, and accordingly resolves to accept Mons. Cornet's offer.

8. The site of the experiment will be fixed by the Chief Engineer, Public Works Department.

9. The question of an allotment of funds will be considered in the Financial Department.

(True Extract.)

(Signed) J. SHAW-STEWART, Colonel, R.E.,
Secretary to Govt., P.W.D.

To Mons. L. Cornet.
To the Financial Department.
" Superintending Engineer, V Circle.
" Examiner, Public Works Accounts.

Edw. C. Howarth.
Spare Copies

BUILDINGS AND ROADS
CIVIL WORKS.
Govt. of Madras.
PUBLIC WORKS.

Dated December, 1884.

Recd.

Encl.

G.O., 19th Dec. 1884, No. 3129 W.

DECEMBER.

Artesian Well at Madras
Orders on Monsieur Cornet's tender for
sinking an —.

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4
Did not
make any alterations
on the section. Well
asked the mull
say that funds
would be given
on application?
The ~~part~~ paper
and stated to be
with you.

10/3

I Am

From the Engineer
Vijayar I find
that the 5000 have
been added for
the Artesian Well
by the Financial Dept
in their order book
communicated with

Superintd of
public

From

THE SUPERINTENDING ENGINEER,
5TH CIRCLE,

To

The Chief Engineer
P.W.D.



Dated

21 March 1885

Recd.

ENCLOSURES.

No. 4780.

Artesian Well.

Report that
a further grant of
Rs. 8,300 is required
for the Artesian Well
in the present year
and also Rs. 5000 for

PUBLIC WORKS DEPARTMENT.

PROCEEDINGS OF THE MADRAS GOVERNMENT.

Under date the

Read the following

Financial Department
Proceedings of the Madras Government
Read the following:-

Proceedings of the P.W. Dept. of 19 Decr/84
No. 3129. W passing orders on Mr. Cornet's
tender for sinking an artesian well
at Madras.

Order thereon 9 February/85 No. 271. P.W.D.

A grant of Rs (5000) five
thousand is sanctioned from Prov.
funds for the current year.

2. If this amount is found to
be insufficient a further assign-
ment will be made on application.

3. The President Madras
Municipal Commission is requested to
consult the Commissioners and to
report in June next whether

they are then willing to bear a
portion of the cost of the work
which is primarily intended for
the benefit of their constituents

/True Extract/

To
The P.W. Dept. Chief Secretary

Order thereon No. 333. W a / 12 Feby. / 15

Communicated to the
Suptg. Engineer V circle and the
Examiner. P.W. accounts.

/True Extract/

Sgt C. Bowen. Major R.E.
Under Secy. to Govt P.W.D.

To
The S.E. V circle
Ex: P.W. accts.

163
10

Govt. of (188) Madras.

To

The P.W. Dept



Proceedings, dated 9 July 1885.
No. 27/1885
Subject.

Sanction a grant
of Rs 5000 from Provincial
funds for the current
year.

Withdrew

Financial Department.

PROCEEDINGS OF THE MADRAS GOVERNMENT.

Read the following

Proceedings of the P.W.
Dept. dated 19th Decr 1884 No 3129
W. passing order on Monsieur
Cornet's tender for sinking an
artesian well at Madras.

Order of 9th February 1885 No 271 Dis

A grant of Rs (5000) five
thousand is sanctioned from
Provincial funds for the current
year.

2 If this amount is found to
be insufficient a further assign-
ment will be made on appli-
cation.

3 The President Madras
Municipal Commission, is requested
to consult the commissioners and
to

to report in June next whether
they are then willing to bear a
portion of the cost of the work
which is primarily intended
for the benefit of their constituents
(True Contract)

Wm. T. Miller
Chief Secretary

To

The R. M. D. W. T.

" Acct. General

" Presdt. M. C. Madras

" Board of Revenue

Copy to Dr. Funnell,

do Sanitary Commr.

W. T. Miller

No 763 W
PUBLIC WORKS DEPARTMENT.
PROCEEDINGS OF THE MADRAS GOVERNMENT.

Under date the 27th March/85

Read the following

Letter from S. E. V. and K. B. No 4780 d/21 March/85.

In G.O. dated 9th July/85,
No 271. M. S., Financial Dept.,
a grant of Rs 5000 was
made for sinking an
artesian well at Madras,
for which work an
approximate estimate
of Rs 15,475 was sanc-
-tioned in G.O. No 3129. W
dated 19th December 1884;
and it was intimated
that a further assign-
-ment would be made
on application. The

2. The Supt. Engineer
 V. Arice now applies for
 an additional allotment
 of \$8,300, for expendi-
 =ture during the current
 official year, and as
 funds are available in
 the P.W. Department, an
 appropriation of that
 amount is made from
 the Provincial reserve
 with Government. The
 total grant for 1884-85
 will thus amount to
 \$13,300.

Cd
 24.5.85

JW

Cd

LL
 24.3.85

S. E. V. Arice
 Ex: P.W. Accts.
 Genl. Dept.
 (Chief Secy. for Counterinitials)

Sec. at mce
 in mto of SS V
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 21.3.85

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 27/5

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2023

Govt. of Madras.

PUBLIC WORKS.

51/3/82

G.O. 27 Mar 1885 No. 7534

Artesian well
at Madras

Rs 8300 allotted
for expenditure within
during the current
financial year

50
13

127/3