

(1) Number of pages_____

(2) Date of repair_____

(3) Initials of the Referencer_____

MADRAS RECORD OFFICE

Government of Madras

Public Works

DEPARTMENT

G.O. No.

B.P. No.

3176

Press

Mis.

Dated

27-11-1876

195

Not to be folded or roughly handled

*Proceedings of the Madras Government, Public Works Department,
27th November 1876. No. 3,170.*

Read the following papers:—

No. 470. From Lieutenant-Colonel R. B. KENNEDY, District Engineer, Malabar, to Major-General G. W. WALKER, R.E., Secretary to Government, Public Works Department, dated Calicut, 10th October 1876, No. 134.

I HAVE the honor to forward for sanction a revised abstract estimate with comparative statement for sinking a well near the elephant shed at Cannanore.
Rupees 798-15-11.

2. An estimate for Rupees 660 was sanctioned for this work in G.O., No. 2,723, dated 25th September 1874, and the necessity for revision is that Lieutenant Dobson had to use Portland cement for masonry which was not provided for in the original estimate, and the other two items of "Digging Well" and "Baling Water" proved to be in excess of his anticipations.

No. 470-A. From the same Officer, dated Camp at Luckadie, 8th November 1876, No. 159.

REFERENCE memorandum T-1,203, dated 27th October 1876.

With reference to above, I have the honor to inform you that I have received the enclosed explanation* from the Assistant

* No. 217, dated 2nd November 1876. Engineer in charge of Cannanore Range, copy of which is forwarded for your information.

From Lieutenant A. E. DOBSON, R.E., Assistant Engineer, in charge Cannanore Division, to Lieutenant-Colonel R. B. KENNEDY, District Engineer, Malabar, dated Cannanore, 2nd November 1876, No. 217.

YOUR No. 195 of 30th ultimo.

I have the honor to forward the explanation called for. The well in question was carried out in the native way of construction as far as possible, as ordered. In sinking the well hard rock was found about 4 feet from the surface of the ground. The well was then sunk through nearly 30 feet of solid rock, laterite, and then water was found in small quantities, so far the sinking was done by a native petty contractor, but when water was found his contract ended and the work was afterwards carried on departmentally.

2. After the rock had been pierced very bad and treacherous ground was met with, consisting of a kind of disintegrated granite and "kaolin." I myself went down the well and inspected the material and soil, and came to the conclusion that some better material should at least be used in parts than the ordinary chunam to give the steining a proper stability, and that the steining should be 18 inches instead of 9 inches thick in the very bad stratum after the well had been sunk some feet below the rock; the earth fell in in such quantities and became so bad that the coolies would not work. I then began steining in this way; three bottom courses in cement and three in chunam, and so on up to where the solid rock was joined.

3. As the steining was carried up, the earth had to be carefully filled in behind and made good to prevent water accumulating behind the steining and forcing it out; it will be seen that the usual way of construction (native) was carried out, except that in order to secure additional stability and only after personal inspection, when the well was 40 feet deep, for I went down it myself, that I built some courses in Portland cement to avoid any chance of the well giving way.

The work was completed to a depth of about 48 feet in May 1875, when the work was stopped for the monsoon, the steining being all in for a cost of Rupees 427-11-9. The estimate depth of the well was 54 feet. In March this year I began again, but this time, as I knew the earth was so bad, I did not carry out the work on the native principle but on the English principle, and which was highly approved of in G.O., No. 423, of 15th February 1875, the work being

carried out in Vizagapatam by Major Hindle. Here again I used Portland cement as before in alternative courses of three stones each, the earth being so bad; and I am sure that the stability of the well has been much increased and the length of time it will last. I may add that as I had cut the well through rock which required no steining that I had hoped to have worked within the estimate; but on the other hand, as I did not get anything like the quantity of water required in the hot weather at 54 feet deep, I sank the well nearly 9 feet deeper than the estimate allowed, and even then in the hot weather the water was not so plentiful as I should like to have seen. Under the circumstance I trust that I shall have been only considered to have done my duty acting on my own responsibility for using a better material in parts than the ordinary chunam, which is the fattest lime that can be got, when after close previous inspection in the well itself I found the strata the well was going through so very bad.

I beg to point out that there is no "ordinary cement" in Malabar, at least in Cannanore Range, and there is nothing between the common shell lime as fat as it can be, and not in the least hydraulic, and Portland cement, and further that the ordinary mortar was used except in parts as stated above. If there had been any ordinary cement I should certainly have used it and would always use it.

I beg also to point out that the amount sanctioned in G.O., No. 2,723, dated 15th September 1874, 690 Rupees, and that amount was appropriated to me in List No. A (16th December 1874), and also, that although the well was carried down 9 feet deeper than the estimate allowed, and Portland cement used in portions of the work, that the amount of excess over estimate was not large, and would not have been so much if the earth had not been so bad and much more bad to be taken out than estimated for owing to so much falling in, and then had to be put back again to fill up and make the earth good behind the steining.

No. 471.

ORDER THEREON, 27th November 1876, No. 3,170.

MILITARY WORKS, No. 6-A.

(a) Heads of Service.—Imperial.
Fund.—Ordinary.
Class.—Original Works.
Main-head.—Military.
Sub-head.—Military Buildings.
Section.—Commissariat Buildings.
Name of Work.—Sinking a well near the elephant shed at Cannanore.
Amount.—Rupees 799.
Carried out by the Public Works Department.

THE excess of Rupees 139 (not Rupees 100) incurred having arisen from the necessity for sinking the well to an additional depth of 9 feet, through the very treacherous stratum of soil which generally underlies laterite on the West Coast, the revised estimate of Rupees 799 is sanctioned.

2. Lieutenant Dobson has evidently paid great attention to the details of the work, and in persevering till he founded the bottom of the well on solid rock has done all in his power to secure it from falling in at any time, and to ensure as copious a supply of water as the site can afford.

3. This sanction has been registered as Imperial No. 101 W of 1876-77.

(True Extract.)

Major-General, R.E.,

Secretary to Government.

To the District Engineer, Malabar.

„ Examiner of Public Works Accounts.

„ Military Department.

Exd. S. T. Austin.

Spare Copies

Notes on letter from Dist Engr.
Malabar. No. 159 of 8th Nov.
and its enclosure from Lieut.
Dobson S. S. No. 217 of 2nd Nov.

The Chief Engineer, regrets
again to notice what he has
before unimadvisedly, viz.
that Lieut. Dobson is left very
much to his own devices in
planning, estimating, &
executing works; and that
his reports are sent up with-
out note or comment by the
District Engineer. This is
not fair to a young Officer;
True, that Lieut. Dobson has
done very well by himself;
but the District Engineer should
make some attempt to re-
strict him, and give him
the benefit of his experience.
The Chief Engineer hopes that
the following remarks, based
on the experience of much
work similar to that of the
Well at Cannanore under
review, may be of use to
Lieut. Dobson.

The strata pierced seem
to have been 4 feet of earth,

30 feet of Latent Rock, &
29 feet of that treacherous
disintegrated substance
which invariably under-
lies Latent, on the West
Coast - Lieut. Wilson de-
serves credit for perse-
vering as he has done, and
not resting satisfied till
he had laid the bottom
of his well on the solid
rock - He becomes "the
rough Executive Officer he
has been to the work him-
self; and it is more to be
a lasting one, and to
secure every drop of water
that the site can furnish -
For want of being driven
to the rock, many of the
Wells on the West Coast fail
in; or if they do not, fail
to give a full supply in the
dry weather, when it is
most wanted - It is a
pity though, that the suc-
cessful steaming below the
Latent was not laid dry -
With a thickness of 18", the
increase which is quite

approved, and a circular
form breast is turned
in place. There was no ne-
cessity of anything being
added under the surface.
- seen of giving more stabi-
lity - And as the whole
of the stratum below the
Latent is water bearing,
the use of Portland cement
has probably had the ef-
fect of lessening the sup-
ply - Its use should have
been confined to the upper
4 feet - Common shell ch-
nour would simply be
washed out in time -

Indebted to the Stran-
don met with below La-
tent on the West Coast,
the Chief Engineer has
found it best to use a
wooden ring, ^{accurately} ~~carefully~~
framed together; under-
cutting it carefully, &
only enough ~~to~~ to
admit of one course at a
time being inserted -

It is not quite known what
is the Native method of
construction alluded to by
Lieut. Nelson as having
been ordered. The ordi-
nary method of construc-
tion, without Portland
Cement, was that which
was designed. He should
have attended to this, and
the instructions of Memo.
No. 440 of 18th June 1874, to
report on the nature of the
sterling used in neigh-
bouring wells should not
have been overlooked -
In future, Lieut. Nelson
would do well to send
in a section of the nearest
existing Wells, when ask-
ing sanction for new
one -

MM
17.11.

Memo No 1203 Id/27th Oct/70

MEMORANDUM.

Letter Number 134
dated the 10. Oct. 1870
from the District Engineer of Madras.

Vol. No. 440 of 18th June 74
distinctly directed the
ordinary method of
construction to be adopted
and Portland Cement
avoided, the use
of State cement that such
was used for the building
of the well in question
is deemed insufficient
and a clear explanation
should be afforded as
to the necessity of its
substitution for ordinary
Cement or Mortar.
It is remarked that
the Architect's Estimate
amounted to Rs 800
and Rs 0 90 as extra
in the later under-
taken.

By order W.H.
20.10.70.
Copy
20/10

GOVT.
OF MADRAS. }

1876.

{ P.W.
DEPT.

SECRETARY.

Fort St. George,

14 Oct 1876

OFFICE NOTE.

To C.

With your please to see
whether the enclosed statement
was provided with funds.
When the work was com-
pleted, if it is completed,
and total of expenditures
to date, stating date of
last expenditure.

W. S. M.
17.10.76.

TO W.

AN APPROPRIATION OF RS. 690 -

WAS MADE FOR THE WORK IN THE
D.M.L.'S APPROPRIATION RETURN FOR
DECR. 1874.:- OUTLAY FIRST SHOWN
IN THE ACCTS. FOR JAN. 1875.:-
WORK REPORTED COMPLETE IN MAY
1876.:- EXPENDITURE LAST SHOWN IN
THE ACCTS. OF THAT MONTH.:- EX-
PENDITURE TO END OF MAY 1876 HAS
BEEN RS. 798-15-11.

690
100

W. S. M.
18/10

7338

Annals of the

Confidential & Unpublished

Chips

Revised Abstracts Coll.

of the expense incurred

in granting a vote of 99 +
in dissent, we + the

Department of Education

Chancellor

Comparative Statement showing the exps incurred in digging a well near the Elephant shed, at Cannanore

1394
29. 5. 1876

No	Particulars	As per Original Estimate			As per Revised Estimate			More than		Less than		Remarks
		Quantity	Rate	Amount	Quantity	Rate	Amount	Quantity	Amount	Quantity	Amount	
1	Digging well	24	3	72	24	3	72	81	3	9		
2	Laterite in Chunnam	1385	30	415 10 5	1626	32 6 2	526 93		76 8 9			This work done in Portland Cement & Chunnam, hence exp in this item
3	Do	191	18	34 6 1								
4	Spitting with Portland Cement	425	3	12 12	425	3	12 12					
5	Boring water			40				6	9	21	9	
6	Clearing away mud brought out			50				20				
Total				624 12 6			731 6		106 9 6			
7	Sundries & Superintendence			35 3 6			67 9 11		32 6 5			
Total Estimate Paper				660 16 0			798 15 11		138 15 11			

Cannanore D. Office
Camp
28 September 1876

Malabar D. Engrs Office
Recd 10th October 1876

St. R. P.
W. D. Kerner. Lt. Col.
D. Engrs Malabar. Asst. Engrs Malabar.

P.L.

P.W.D.

13 OCT 76

7398

Permanent Office

Construction of
the new building
in the new
place at
Kadavur.

No. 134

(a) Heads of Service—

Superior

Fund.

Military

Class.

Military

Main-head.

Military

Sub-head.

Military Buildings

Section.

Construction Buildings

Name of Work.

Building of the new
place at Kadavur.

Amount.

Rs. 799.

To be carried out by the

P.W.D.

Department.

Print in the margin of G.O. No. 8170 of 27-11-76.

Distt. Engineer, Malabar

NK No 134.

Malabar Distt. Engin Office
Calicut 10th October 1876

From

The District Engineer
Malabar

To

The Secretary to Government
P. W. D.
Madras

Sir,

Rs. 798-15-11

I have the honor to forward
for sanction a revised abstract estimate with
comparative Statement for sinking a well
near the Elephant shed at Cannanore.

An estimate for Rs. 890. was
sanctioned for this work in G. O. No. 2723 of
25th September 1874, and the necessity for re-
vision is that Lieut. Dobson had to use
Portland Cement for masonry which was not
provided for in the original estimate, and the
other two items of "Digging well" and "Baling
water" proved to be in excess of his anticipations.

I have the honor to be

Sir,

Your most Obt. Servant

W. B. Kenealy Lt. Col.

Distt. Engineer, Malabar

P.W.D.
13 OCT 76
No 7388

Forward for attention
a Council abstract minute
for sinking a well near
the elephant-stand at
Bannanore -

Letter No 10
Recd 13/10/76
13/10/76
Circular, C.

The Secretary to Govt.
D. P. W. D.
Madras.
The District Engineer
Malabar, D. P. W. D.
Calicut.

Memo No 1203 Jy 27th Oct 76.

No 170

Oct 21/7

Comdant Division Office
Bannanore 2nd November 1876

From
The Officer in Charge
Bannanore Division, D. P. W. D.

To
The District Engineer,
Malabar, D. P. W. D.,
Calicut.

Sir,
Yours No 195 of 30th Oct 76.

I have the honor to forward
the explanation called for. The well in
question was carried out in the native
way of construction as far as possible.
In sinking the well hard
rock was found about 4 feet from the
surface of the ground. The well was
then sunk through nearly 30' of solid
Rock Laterite, and then water was
found in small quantities. So far the
sinking was done by a native petty
Contractor, but when water was found
his Contract ended and the work was
afterwards carried on departmentally.
After the rock had been
pierced, very bad and treacherous ground
was

was met with - consisting of a kind of
disintegrated granite and "Kaolin". I
myself went down the well and inspected
the material and soil, and came to the
conclusion that some better material
should at least be used in parts than the
ordinary Chuanam to give the stining a
proper stability, and that the stining
should be 18" instead of 9" thick in the
very bad stratum after the well had
been sunk some feet below the rock.
The earth fell in in such quantities
and became so bad, that the coolies
would not work. I then began stin-
ing in this way - three bottom courses
in cement and three in Chuanam and
so on up to where the solid Rock was
joined.

As the stining was carried
up, the earth had to be carefully
filled in behind and made good to
prevent water accumulating behind
the stining and forcing it out. It will
be seen that the usual way of construc-
tion (native) was carried out, except
that in order to secure additional
stability and only after personal in-
spection, when the well was 40 feet
deep

deep for I went down it myself, that
I built some courses in Portland Cement
to avoid any chance of the well giving
way.

The work was completed to
a depth of about 48' in May 1875, when
the work was stopped for the monsoon
the stining being all in for a cost
of Rs. 427-11-9. The estimate depth
of the well was 54 feet. In March
this year I began again but this time,
as I knew the earth was so bad, I did
not carry out the work on the native
principle but on the English principle
and which was highly approved of in
G. O. No. 423 of 15th February 1875 the
work being carried out in Vizaga-
patnam by Major Scudde. There
again I used Portland Cement as
before in alternative courses of
three stones each - the earth being
so bad - and I am sure that the
stability of the well has been much
increased and the length of time it
will last. I may add that as I had
cut the well through rock which re-
quired no stining that I had hoped
to have worked within the estimate,
but

but on the other hand as I did not get any thing like the quantity of water required in the hot weather at 5 1/4' deep, I sank the well nearly 9' feet deeper than the estimate allowed and even then in the hot weather the water was not so plentiful as I should like to have seen. Under the circumstance I trust that I shall have been only considered to have done my duty acting on my own responsibility for using a better material in parts than the ordinary Chunar which is the fattest lime that can be got - when after close previous inspection in the well itself I found the strata in well was going through so very bad.

I beg to point out that there is no "ordinary Cement" in Malabar, at least in Cannanore Range and there is nothing between the common shell lime as fat as it can be and not in the least hydraulic and Portland Cement - and further that the ordinary mortar was used except in parts as stated above. If there had been any ordinary

15
ordinary Cement I should certainly have used it and ^{would} always use it.

I beg also to point out that the amount sanctioned in G.O. 122723 dated 15th September 1874, 691.0 and that amount was appropriated to me in List A (15th December 1874) and also that although the well was carried down 9 feet deeper than the estimate allowed and Portland Cement used in portions of the work that the amount of excess over estimate was not large, and would not have been so much if the earth had not been so bad and much more had to be taken out than estimated for owing to so much falling in and then had to be put back again to fill up and make the earth good behind the stringing.

I have &c.
(Signed) A. E. Dobson Lt. Col.
Dist. Engr, Malabar

True Copy

Mt. W. Kennedy Lt. Col.
District Engineer,
Malabar

Malabar Distt. Engg's Office
Camp Lackadie 8th November
1876

33

From

The District Engineer,
Malabar

To

The Chief Engineer,
Public Works Department,
Madras.

Sir,

Reference: Memo. No. 1203 dated 27th
October 1876

With reference to above I
have the honor to inform you that
I have received the enclosed expla-
nation from the Assistant Engineer
in charge of Cannanore Range copy
of which is forwarded for your in-
formation.

I have the honor to be
Sir,

Your most oast. Servant,
W. P. S. Murray, Lt. Col.
District Engineer,
Malabar

1/207 dated
2 November 1876

The explanation given for
the necessity of using
Portland Cement is deemed
satisfactory but satisfactory
and the Range Officer
does not appear there has
justified in departing
from the instructions
furnished to
him from the Engineer, it
is further remarked that
while the surroundings
of the work are totally
different from those
of similar works in the
Vijayapatnam & Madras
Districts, the latter
works the Range
Engineer of No. 799
is sanctioned as being
of that sanctioned as
No. 2723 dated
23 Sept 1876.
The amount being below
500 Rs requires no
appropriation of funds
This sanction is Registered
as

W. P. S.
10/11/76

Letter No. 217 of 27th November 1876
from the Cannanore
Range Officer explaining
the same for using
Portland Cement - See the
enclosed explanation.

25-9-76 to 2723. orig
 15-2-75. 423
 memo: to 12037. 27/10/76 orig
 Ch: Sup's memo: 27-11-76.

P.W.D.
 11/11/76
 8150

Transmits copy of letter
 from the Singapore Branch
 of the 'Singapore' at
 Singapore for the 'Singapore'
 and for the 'Singapore' at
 Singapore.

The Chief Engineer
 Malacca
 27/10/76
 27/10/76
 27/10/76
 27/10/76

2470 a

No 3170
 Public Works Department

PROCEEDINGS OF THE MADRAS GOVERNMENT.

UNDER date the 27 November 1876
 Read the following:—

From the District Engineer
 Malacca 27/10/76

The expenses of Rs
 139 (not Rs 100) incurred
 having arisen from the
 necessity for sinking
 the well to an additional
 depth of 9 feet, through
 the very treacherous strata
 of soil which generally con-
 sists of laterite on the
 West Coast, the revised
 estimate of Rs 799 is sanc-
 tioned.

2. District Engineer has evi-
 dently paid great attention
 to the details of the work
 and in persevering till
 he founded the bottom

of the well in solid
rock, has done all in
his power to secure
it from falling in at
any time, and to ensure
as copious a supply
of water as the site can
afford.

G.M.W.

This sanction has
been registered as Imperial
No 101 W. of 1876-77-

1338
8/10

Sect. of 11876: Madras.
PUBLIC WORKS.

To
the H. B. Malabar

1132

Dated

Issued

Recd

Encl.

G. O., 27th Feb 1876, No. 370

Recd 27/2

Well at Cannanore in
the Malabar Dist. The
revised estimate of Rs 739
for sinking a — — —
with cement.

1132

270/71

20-11-76.

Depu - 11-11-76