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(2) Date of repair _____

(3) Initials of the Referencer _____

MADRAS RECORD OFFICE

Government of Madras

Public Works DEPARTMENT

G.O. No.	12224 1223	Press
B.P. No.		Mis.
490, 491, 492.		
Dated	29-4-	1873.

Not to be folded or roughly handled

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*Proceedings of the Madras Government, Public Works Department,
29th April 1873.*

No. 490. Read the following endorsement of the Chief Engineer for Irrigation, dated Fort St. George, 5th April 1873, No. 216:—

From Lieutenant-Colonel J. F. FISCHER, R. E., District Engineer, Godavery, to Lieutenant-Colonel J. MULLINS, R. E., Chief Engineer for Irrigation and Joint Secretary to Government, Public Works Department, dated Dowlaiswaram, 22nd March 1873, No. 1,333.

ADVERTING to your remarks in paragraph 1 of your Memorandum of the 12th instant, No. 156, regarding experiments on concrete, I have the honour to forward, herewith, copy of a report from the

Executive Engineer in charge of the Eastern Delta Range on what has been done in the way of making concrete blocks, and what is intended to be done to carry on these experiments, and to observe that more progress could not be made until experiments had shown what mixture would give good concrete. This has now apparently been attained, and the manufacture can be more satisfactorily proceeded with.

2. I beg to add that I have approved of Captain Mead's proposals for making up 400 moulds, building two mills to be worked by bullocks, and, as an experimental measure, to build a portion of the coping of the Madapad Lock with some of the blocks already made.

3. I may as well explain that it was impossible to begin this manufacture as soon as the sanction was accorded; the Range Officer, Major Hasted, was removed, and great delay occurred in appointing his successor; no Assistant Engineer was sent up here for months after the recommendation had been made, and with the Central Delta attached to this range the Executive Engineer could give little attention to anything but works actually in hand, besides making himself well acquainted with the project. As far as the proceedings have gone they have been systematically and carefully proceeded with, and I trust the results will be satisfactory; in the meantime, I would beg to observe, the experiments had better not be entirely confined to this district, but taken up in several districts where good materials can be obtained.

From Captain H. R. MEAD, R. E., Executive Engineer, Godavery, to Lieutenant-Colonel J. F. FISCHER, R. E., District Engineer, Godavery, dated Dowlaiswaram, 18th March 1873, No. 765.

I HAVE the honour to report that, I think, the time has come to make concrete blocks on a larger scale than we are now doing; as far as the experiments have gone the following appears to be the best way of making them, and the result shows that good hard concrete blocks, that I think will be useful on work, can be made; the following is the process:—

2. Mortar made of one of lime, one of brick dust, and two of sand mixed in the ordinary way and then mixed with concrete stone in the proportion of one of mortar with two of stone and placed in the moulds and well rammed; the blocks can be moved from the moulds and handled with care in three days, and after they are about twelve days old they should be put under water for a fortnight or three weeks, taken out and stacked; they are thoroughly good in about a week's time, and, I believe, harder with age.

3. The blocks were first made 18" x 9" x 2" (the size proposed by the Chief Engineer for Irrigation); these are, I think, too large, and I have had some made 18" x 9" x 6," they weigh about 75 lbs. each, and are, I think, as good a size as could be made.

*Proceedings of the Madras Government, Public Works Department,
29th April 1873.*

4. With your sanction I propose to make up 400 moulds, build two mills to be worked by bullocks (one for mixing mortar, the other for grinding clay), and arrange to turn out 100 blocks a day, each $18'' \times 9'' \times 6''$; this will be about two cubic yards a day.

5. I request also your sanction to build a portion of coping of Malapal Lock with some of the blocks that have been made as an experiment to see if they stand. I believe that blocks of this sort will answer well for coping, and be most useful in the district. I would propose to make them at present as laid down in paragraph 2, but Mr. Martin is and will continue to experiment with small cubes, and doubtless we shall be able to improve on the present process.

With regard to expense, as we have only been working on a small scale, I cannot yet judge what the cost will be, but I think it will be from Rupees 5 to 6 a cubic yard, the necessity of using moulds and carrying, etc., the blocks, entails much cost.

Enclosures Five.

SUBMITTED to Government with
reference to G. O., No. 1,703, of the
16th July 1872.

2. These reports regarding the experiments in the manufacture of concrete at Dowlaishweram show that hitherto very little has been done, owing to changes in Eastern Delta Range, and to the Executive Engineer having his time more than fully occupied.

3. The District Engineer has been requested to report again after an interval of six months, and to furnish particulars of expenditure and of quantity of blocks manufactured.

G. O., No. 1,077, dated 18th April.
4. The total outlay incurred since
sanction was first given in 1871 appears
from the Progress Report to have been Rupees 385.

(Signed) JOHN MULLINS, Lieut.-Colonel, R.E.,
Chief Engineer for Irrigation.

No. 491. ORDER THEREON, 29th April 1873, No. 1,222.

IRRIGATION, No. 30.

ORDERED that a copy of these Proceedings be forwarded to the Government of India with reference to the Deputy Secretary's letter No. 521 I., dated 2nd July 1872.

(True Extract.)

(Signed) J. MULLINS, Lieut.-Colonel, R.E.,
Joint Secretary to Government.

No. 492.

(DOCKET No. 1,223, dated 29th April 1873.)
COPY of the above forwarded to the Government of India.

(True Extract.)

(Signed) J. MULLINS, Lieut.-Colonel, R.E.,
Joint Secretary to Government.

Exd. S. T. Austin.

15/65
Dowlaishweram
Executive Engineer's Office
18th March 1873
From The Executive Engineer
In Charge Major E. D.
Range Godavery District
The District Engineer
Godavery
Dowlaishweram

Mr. I have the honor to report that
I think the time has come to make concrete blocks
on a larger scale than we are now doing as far
as the experiments have gone the following appears
to be the best way of making them and the result
shows that good hard concrete blocks, the
I think will be useful on work can be made.
the following is the process.

1. Mortar made of 1 of lime, 1 of brick
dust and 2 of sand mixed in the ordinary way
and then mixed with concrete stone in the pro-
-portion of 1 of Mortar with 2 of stone and
placed in the moulds and well rammed,
the blocks can be moved from the moulds and
handled with care in 3 days and after they are
about 12 days old they should be put under
water for a fortnight or 3 weeks taken out
and stacked, they are thoroughly good in about
a week's time and I believe harden with age.
3 The blocks were first made $18'' \times 9'' \times 9''$ (the
size proposed by the Chief Engineer for Irrigation)
these are I think too large and I have had some
made

already

made $18 \times 9 \times 6$ " they weigh about 75 lbs each
and are I think as good a size as could be
made.

With your sanction I propose to make
up 400 moulds built 2 shells to be worked by
bullocks (one for mixing mortar the other for
grinding clay) and arrange to turn out 100 blocks
a day each $18 \times 9 \times 6$ " this will be about 2 Gps
a day.

I request also your sanction to build
a portion of coping of Madapad Lock with
some of the blocks that have been made as an
experiment to see if they stand I believe that
blocks of this sort will answer well for
coping and be most useful in the District.

I would propose to make them at present
as laid down in para 2 but Mr Martin is
and will continue to experiment with small
fishes and doubtless ~~we~~ shall be able to
improve on the present process.

With regard to expense as we have
only been working on a small scale I cannot
yet judge what the cost will be but I think
it will be from Rs 15 to 6 a Gp the necessity
of using moulds and carrying the blocks entails
much cost.

Yours very truly
J. R. Martin Esq
District Engineer Godavari

(True copy)

W. T. Martin
District Engineer Godavari

as an experimental measure, to build a portion of
the coping of the Madapad Lock with some of the blocks
already

made 18x9x6" they weigh about 25 lbs each

No 1516/73.

N. 2334/73.
A. 29 April 73 B. 2-490
(Enclosed in a letter)
No 1232 dated 22 March 73
from the District Engineer
Madras to the Chief Engineer
for Irrigation and
Secretary to Government
Madras.

District *to Government*
SUPERINTENDING ENGINEER'S OFFICE, 1st DIVISION
DOWLAISHIVARAM, 22nd March 1873

No. 1333

From

Sir C. J. Fisher R.E.
District Superintending Engineer
1st Division

To

Sir C. J. Mullins R.E.
Chief Engineer for Irrigation and
Joint Secretary to Government
MADRAS

SIR,

Referring to your remarks, in
para of your Memoir of the 12th Instant, No 156,
regarding experiments on concrete, I have the honor
to forward herewith copy of a report from the
Executive Engineer in Charge of the Eastern Delta
Range, in what has been done in the way of making
concrete blocks, and what is intended to be done
to carry on these experiments, and to observe that
more progress could not be made until experi-
ments had shown what mixture would give
good concrete. This has now apparently been
obtained, and the manufacture can be more satis-
factorily proceeded with.
I beg to add that I have approved of
Captain Meade's proposals for making up 400 masonry
building 2 miles to be worked by bullocks, and for,
as an experimental measure, to build a portion of
the coping of the Masabod Vack with some of the blocks
already

already made.

3/ I may as well explain that it was impossible to begin his manufacture as soon as the sanction was accorded - the Range Officer Major Hester was removed, and great delay occurred in appointing his successor; his Assistant Engineer was sent up here for months after the recommendation had been made, and with the Central Bulletin attached to this Range, the Assistant Engineer could give little attention to any thing but work actually in hand, besides making himself well acquainted with the project. As far as the proceedings have gone they have been systematically and carefully proceeded with and I trust the results will be satisfactory in due season. I would beg to observe the experiments had better not be entirely confined to this District, but taken up in several Districts where good materials can be obtained.

I have the honor to be

Sir

Your most Obedt. Servant

Wm. T. L. S. J. C. M. L.

District Engineer Godavari

No. 216

Submitted to Government with
reference to G.O. No. 1708 of the 16th
July 1872. -

2 These reports regarding the
experiments in the manufacture of
concrete at Dowlaishwaram show
that hitherto very little has been
done, owing to changes in Eastern
Delta Range, and to the Executive
Engineer having his time more than
fully occupied. -

3 The District Engineer has
been requested to report again after
an interval of 6 months, and to
furnish particulars of expenditure
and of quantity of blocks manu-
factured. -

4 The total outlay incurred
G.O. No. 1077
dated 18th April since sanction was first given in 1871
appears

1872. No. 576

The District Engineer,

First Division,

The Chief Engineer for Irrigation,

Madras

Dated 22nd March 1873.
Received 31st

NO. 1333

ENCLO. (See - 7)

Subject.

Forwards copy of letter from
the Executive Engineer in charge
of the No. 1 Range (Madras) re-
lating to the fact and future
progress of the concrete blocks
will contain suggestions on the
subject -

P. N. 2334/73.
14.29.21.10/1313 & 1490.

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2. *Agave* $\frac{1}{15}$

Voluntarily Lieut. Col. R. B.
Chief Engineer for Irrigation.

To,
The Secretary to Government
Public Works Department.

Ordered that a copy of these Proceedings be forwarded to the Govt of India, with reference to the Deputy Secretary's letter No 521 I dated 2nd July 1872.

4.5/4/73 Enur

1223

Copy of the
above forwarded to the
Port of India.

~~25~~ ~~2~~ ~~Chart 7-5-73~~

W.S.

P.W. 1873 Report
Proposed for
From No. 2334.
The Chief Engineer for
Irrigation

To
The Secretary to
Government.
P.W.D.

Dated 5th
Received 10th } April
1873.

Enclosure 5th

No. 216.

Submits report on the
experiments in the
manufacture of Con-
crete at Dowlish-
waraw.

No 490

No 1222-1228-29th April

No 490-92.

Cp. 2334

Code of 1873

PUBLIC WORKS.

To the Secretary to the
Govt of India

Date

Recd.

Encl. 2

G. O. 29 April 1923 No. 12224/1223

No. 490-491-192

Concrete. Reports, etc.

Submitted by the Chief Engineer
for Irrigation, on the
Manufacture of Con-
crete at Dorlaishwaram
ordered to be forwarded
to the Govt of India.

Forward reports on the
Manufacture of concrete at
Dorlaishwaram.

N. 490-92.