

- (1) பக்கங்களின் எண்ணிக்கை 32
 (2) புதுக்கித் திருப்பிய நாள் 10-99
 (3) ஆதாரங்குறிப்பவர் சுருக்கொப்பம் 1092

தமிழ்நாடு ஆவணக் காப்பகம்.

தமிழ்நாடு அரசு

(70)

P. W. D துறை

அரசாணை எண். மு. கோப்புத் தாள் எண்.	3289 W	அச்சகம் பலவகை
நாள் :	08-12-1891	198

மடிக்கவோ கண்படி கையாளவோ கூடாது

16 sheets

8TH DECEMBER 1891, No. 3289 W., PUBLIC WORKS.

GOVERNMENT OF MADRAS.
PUBLIC WORKS DEPARTMENT.

General.
Account.

READ—the following papers:—

From Dr. H. WARTH, Officiating Superintendent, Government Central Museum,
to the Secretary to Government, Revenue Department, dated Madras, 7th
October 1891, No. 702.

I have the honour to submit a proposal for making some small use of the in-
exhaustible supply of pure iron ore in the Madras Presidency.

2. It was already during the time of the construction of the Madras Harbour that
I suggested to an Engineer the use of blocks of iron ore from Central India. The
distance by rail was, however, thought so great as to make the cost prohibitive.

3. On arriving lately at Madras, the site of the large concrete blocks revired in
me at once the idea of utilizing the iron ore not in the form of natural pieces which
are difficult to obtain in large size but as a material to make concrete blocks with.

4. I have made experiments on a small scale, Mr. Chatterton, Professor of the
Engineering College, having kindly given me his aid. We made small trial blocks
with cement, using for some the ordinary sand and for others the magnetic iron ore.
The specific gravity of the wet blocks of sand and cement is 1.88, that of the wet
blocks made with magnetite = 2.82. Immersed in fresh water, the iron ore blocks
weighed a little more than twice as much as the blocks made with ordinary sand.
Such blocks of magnetite and cement will accordingly resist the action of rushing
water as well as similarly shaped blocks of ordinary sand and cement of eight times
the size. Blocks of magnetite and cement will therefore be able to resist the rush of
the sea far better than blocks of ordinary sand and cement of the same size.

5. There is no reason why concrete should not also be made of pure magnetic iron
ore. Such blocks of concrete would be more costly on account of the transport of the
ore by rail a distance of 100 or 160 miles; still it would be quite worth while to
use them exceptionally at corners which will be exposed to the greatest violence of
the waves and as a protective covering over the ordinary concrete blocks.

6. In case the officers entrusted with the Madras Harbour Works would be
inclined to make up a number of concrete blocks of magnetic or hematite iron ore I
would like, with your approval, to offer my services in procuring and selecting the ore
for the experiment.

No. 1369, Routine.

Transferred to the Marine Department.

FORT ST. GEORGE,
22nd October 1891.

(Signed) C. A. GALTON,
Secretary to Government.

Transferred to the Public Works Department.

29th October 1891.

(Signed) J. F. PRICE,
Chief Secretary.

No. 4896 C.

Referred to the Chairman, Harbour Trust Board, for remarks.

MADEAS,
6th November 1891.(Signed) J. PENNYCUICK, Colonel, R.E.,
Secretary to Govt., P.W.D.From Dr. H. WARTH, Officiating Superintendent, Government Central Museum,
to the Secretary to Government, Revenue Department, dated Madras, 29th
October 1891, No. 776.In continuation of my report No. 702, dated 7th October 1891, I have the honour
to state that I have made two concrete blocks, one of gneiss rock and ordinary quartz
sand, the other of iron ore and iron ore sand.2. These concrete blocks are heavier than the cement blocks which I first made,
but the proportion of weight between the ordinary blocks and those of iron ore is
about the same and immersed in water the concrete blocks of iron ore weigh also
twice as much as the ordinary concrete blocks.3. The actual weights on the scale are 148 lb. and 241 lb., respectively, per cubic
foot of concrete. The specific gravities are 2.4 and 3.9 and immersed in water the
blocks weigh 86 lb. and 179 lb.

4. The specific gravity of the gneiss was 2.6 and that of the iron ore 4.5.

5. I have the honour to ask that I may be informed to what Engineer or officer
in charge of the Madras Harbour Works I might send the blocks for inspection and
give further details.

No. 1509 R.

Transferred to the Marine Department in continuation of endorsement, dated
22nd October 1891, No. 1369, Routine.FORT ST. GEORGE,
5th November 1891.(Signed) C. A. GALTON,
Secretary to Government.Transferred to the Public Works Department in continuation of current No. 1130
of the 29th ultimo.

(By Order.)

12th November 1891.

(Signed) N. S. BRODIE,
Ag. Assistant Secretary.

No. 5111 C.

Referred to the Chairman, Harbour Trust Board, in continuation of endorsement,
No. 4896 C., dated 6th November 1891, and with request that the information asked
for in para. 5 may be supplied to Dr. Warth direct.

17th November 1891.

(Signed) J. PENNYCUICK, Colonel, R.E.,
Secretary to Govt., P.W.D.From W. P. AUSTIN, Esq., C.S., Chairman, Harbour Trust Board, to the Chief
Secretary to Government, dated Madras, 26th November 1891, No. 2368.With reference to two letters from Dr. Warth, Nos. 702 and 776, dated 7th and
29th October 1891, forwarded, for remarks, under endorsement in the Revenue Depart-
ment (current Nos. 1130 and 1186 returned herewith), I have the honour to submit,
the Board's Engineer.

ENCLOSURE.

From A. LEE POGSON, Esq., Engineer, Harbour Trust Board, to the Chairman, Harbour
Trust Board, dated Madras, 23rd November 1891, No. 948.In reply to your letter No. 5146, dated 10th instant, forwarding a letter from Dr. Warth for
remarks regarding the use of iron ore in block-making, I have the honour to inform you that
such material could not be used for several reasons and I should be sorry to use such material in
connection with any work exposed to salt water and were such material used in the blocks it
would not be long before the iron ore blocks would want protection instead of the present con-
crete blocks being protected.2. The question of the use of the material would be a small matter to settle, but, were such
material suitable to block-making and even if it could be delivered in Madras for nothing, the
change would cost the works an enormous amount, as the blocks being heavier could not be made
or handled by the present machinery; therefore new plant throughout would be required or
smaller blocks would have to be made to be within the required weights. This would mean an
alteration in design, rendering the present cranes and machinery useless, or an unnecessary
weight and quantity of materials put into the works besides new block moulds throughout.3. It is, therefore, useless to go into the details of what the action of salt water would be
upon the iron ore used for concrete when compared with experience in the use of our rich (iron)
clay accidentally used in the manufacture of Portland cement afterwards exposed to salt water.

Transferred to the Public Works Department.

(Signed) J. F. PRICE,
Chief Secretary.

1st December 1891.

Note by the Chief Engineer, Public Works Department.

The undersigned entirely concurs in the views of the Engineer to the Harbour
Trust Board. The objections to Dr. Warth's proposal are obvious to any one with
practical knowledge of the subject.(Signed) J. PENNYCUICK, Colonel, R.E.,
Chief Engineer, P.W.D.

3rd December 1891.

ORDER—dated 8th December 1891, No. 3289 W., Public Works.

The Government agrees with the Chief Engineer in considering the proposal
to use iron ore in the manufacture of concrete blocks for the Madras Harbour to be
impracticable.

(True Extract.)

Major, R.E.,
Under-Secy. to Govt., P.W.D.To the Chairman, Madras Harbour Trust Board.
" Marine Department.
" Revenue "Exd. A. D. Xavier.
Spare Copies

GENERAL
ACCOUNT.

Govt. of {1891} Madras.
PUBLIC WORKS.

Dated December, 8th.

Recd.

Encl.

G.O., 8th Dec. 1891, No. 3289 W.

DECEMBER.

Iron Ore

Agreeing with the Chief Engineer in considering that the proposal to use — in the manufacture of concrete blocks for the Madras Harbour is impracticable.

No. 702

From



To

Government Central House

Madras

Madras 7. October 1891

Mr H. W. H. H.

Officiating Superintendent
Government Central
House

The Secretary to Government
Revenue Department
Fort Saint George

Sir,

I have the honor to submit a proposal for making some small use of the inexhaustible supply of pure iron ore in the Madras Presidency.

2.) It was already during the time of the construction of the Madras Harbour that I suggested to an Engineer the use of blocks of iron ore from Central India. The distance by rail was, however, thought to great as to make the cost prohibitive.

3.) On arriving lately at Madras the sight of the large concrete blocks

reminded

It in me at once the idea of utilizing iron ore, not in the form of natural pieces which are difficult to obtain in large size but as a material to make concrete blocks with.

4.) I have made experiments on a small scale. Mr. Robertson, Professor of the Engineering College having kindly given me his aid. He made small trial blocks with cement using for some the ordinary sand and for others the magnetic iron ore. The specific gravity of the wet blocks of sand and cement is 1.88, that of the wet blocks made with magnetite = 2.82. Immersed in fresh water, the iron ore blocks weighed a little more than twice as much as the blocks made with ordinary sand.

Such blocks of magnetite and cement will accordingly resist the action of rushing water as well as similarly shaped blocks of ordinary sand and cement of 8 times the size. Blocks of magnetite and cement will therefore be able to resist the rush of the

sea far better than blocks of ordinary sand and cement of the same size. There

5. There is no reason why concrete should not also be made of pure magnetic iron ore. Such blocks of concrete would be more costly on account of the transport of the ore by rail a distance of 100 or 160 miles. Still it would be quite worth while to use them exceptionally at corners which will be exposed to the greatest violence of the waves and as a protective covering over the ordinary concrete blocks.

2 Pic

6.) In case the officers entrusted with the Madras Harbour Works would be inclined to make up a number of concrete blocks of magnetic or hematite iron ore I would like with your approval to offer my services in procuring and selecting the ore for the experiment.

I have the honor to be,

Sir,

Your Most Obedient Servant
H. Warth

Officiating Superintendent
Government Museum.

1130

Marine Revenue 1891 Department

P. W. CURRENT No. 144

Current No. 8076

Revenue (1891) Department

From The Officialing Supp.
Govt. C. Museum.

No 702

Dated 7th October
Recd 8th Oct 1891



Subject

Submitting a proposal
for making some small
use of the inexhaustible
supply of pure iron ore
in the Madras Presidency.

Transferred

Litham

G.O. Routine No. 1369-

Transferred to the Marine Dept.

Ch. M.
Secretary to Govt.

Final 22 Oct 91

22 October 1891
Transferred to
the Public Works Dept.
Litham
Chief Secy.

20/10
26/10

Revenue Department

No. 48760 of 1891

From the Supr. Govt. Central Museum, Madras,
No. 702 dated 7 October 1891.

Endorsement in the Revenue Dept. No. 1369 dated
22nd October 1891

Endorsement in the Marine Dept. dated 29th Oct. '91

C. No. 11459

Regarding proposal for
utilising pure iron ore
in the Madras Presidency
in connection with the
construction of the Madras
Harbour.

Referred to the
Chairman, Harbour
Trust Board for
remarks.

21/10/91 S W

To the Chairman, H.T. Board
to be returned. 107/11

L.S.

Specific

The suggestion is
 one perhaps worth
 making practical
 trial of - if the
 expense be not
 too great. - but it
 would not do to
 have to receive
 Mr. Warham's estimate.

Perhaps the letter
 had better be
 referred to his
 Chairman W. T. W.

over
 W. T. W.

The idea is sound -
 No extra weight would
 be required compared to
 for the cost of carriage
 and (possibly) fuel
 but cost of graving -
 The former alone would
 amount to something like
 6 per ton on the

P. W. Department

Offg. Superintendent
 , Broadway, No. 776
 stating to be informed
 in charge of the
 would certainly
 him, he sent for

Revenue Department

mine Department

referred to the
 in, Harbour
 Board in
 action of endorsement
 BC dated 6th Nov
 with request
 to inform

Specific

329
 378, 4

to 10th

80 at least for
cabin feet. But
is an objection to the
plan proposed to the
Commission H.T. D. I
remains -

S 2/11

P. W. Department

Memo

P.W.C. No. 11992

Letter from Mr. H. North Offg. Superintendent
Government Central Museum, Madras, No. 776
dated 29th October 1891, requesting to be informed
to what Engineer or officer in charge of the
Madras Harbour Works, should certain
concrete blocks, made by him, be sent for
inspection.

Endorsement in the Revenue Department
No. 1509 P.d/15th Nov. 1891.

Endorsement in the Marine Department
dated 12th November 1891.

Referred to the
Chairman, Harbour
Trust Board in
continuation of endorsement
No. 4896C dated 6th Nov.
1891, and with request
that the information

Specific

asked for in paragraph
5 may be supplied to
Dr. Worth direct.

126-1

Copy of the above
forwarded to Dr. Worth
for information.

1st of J. P.

W.

Dr. W.

N. 4896C of 6-11-91

To

Dr. A. Worth

Offg. Superintendent
Govt. Central Museum

Enclosed.

I. W. Department.
Madras 6th November 1891

N^o 4896C

229/4

From the Superintendent
Government Central Museum,
Madras, no. 702 dated 7th October
1891

5 P. 11

Endorsement in the Revenue
Department no. 1369 dated 22nd
October 1891

Endorsement in the Marine
Department dated 29th October 1891

Referred to the Chairman,
Harbour Trust Board, for
remarks.

Subd. J.
Col. R. L.
Secy. to Govt.
C. W. D.

To
The Chairman, H. T. Board
to be returned.

X. 11

Specific



No. 776

GOVERNMENT CENTRAL MUSEUM

Pantheon Road Egmore,
Madras 29th October 1891

From

Dr. H. WARTH
Officiating Superintendent,
Government Central Museum, Madras

To

6 Nov
The Secretary to Government
Revenue Department
Fort Saint George.

Sir,

In continuation of my report No 402 dated 7th October 1891. I have the honor to state that I have made two concrete blocks, one of gneiss rock and ordinary quartz sand, the other of iron ore and iron ore sand.

2/ These concrete blocks are heavier than the cement blocks which I first made, but the proportion of weight between the ordinary blocks and those of iron ore is about the same and immersed in water the concrete blocks of iron ore weigh also twice as much as the ordinary concrete blocks.

3/ The actual weights on the scale are 148 lbs and 241 lbs respectively per cubic foot of concrete the specific

Specific gravities are 2.4 and 3.7 and immersed in water the blocks weigh 86 lbs. and 177 lbs.

4/ The specific gravity of the gneiss was 2.6 and that of the iron ore 4.5.

5/ I have the honor to ask that I may be informed to what Engineer or Officer in charge of the Madras Harbour works I might send the blocks for inspection and give further details.

I have the honor to be,

Your most Obedient Servant,
A. Warth.

Officiating Superintendent
Government Central
Museum.

Madras 1130/91

1890/91 1869/11 Marine Deptt.

P. W. CURRENT No. 11992

Endorsement No. P. 1509.

Revenue (1891) Department
Current Number 8/57.
From

The Offg. Superintendent
Government Central
Museum.

No. 776

Enclosure A/B

Dated 29 October 1891
Recd 29

NOV 01

Subject

Reporting further that he has made two concrete blocks, one of gneiss rock and ordinary quartz sand, the other of iron ore and iron ore sand and requesting instructions as to when the blocks might be sent for inspection and further details given. With an endorsement

Transferred to the Marine Department in continuation of endorsement of 22 October 1891 No. 1369 Routine.

Collector
Secretary to Government
Fort St. George
5 Nov 1891
7/12 November 1891

Transferred to the Public Works Dept in continuation of Current No. 1130 of the 29th ultimo.

By order /
2896 C.D. 11.91 M. Brodie
as asst Secy

Copy to the Supt.
Govt Central Museum
12/10 1891

No 5111 C of 17th Nov 1891

Referred to the
Chairman, Harbour Trust
Board in continuation
of endorsement No 4896
of 6th November 1891, and
with request that the
information asked for
in paragraph 5 may
be supplied to Mr. Worth
direct.

J. B. ...
Col. Mc

Secretary to Govt
P.W.D.



16.11.91

Harbour Trust Board Office,

MADRAS, 26th Nov 1891.

No 2368

From Ware Austin Esquire Es

CHAIRMAN, HARBOUR TRUST BOARD,
MADRAS.

To

The Honble J. F. Rice Es

CHIEF SECRETARY TO GOVERNMENT,
Marine Department.

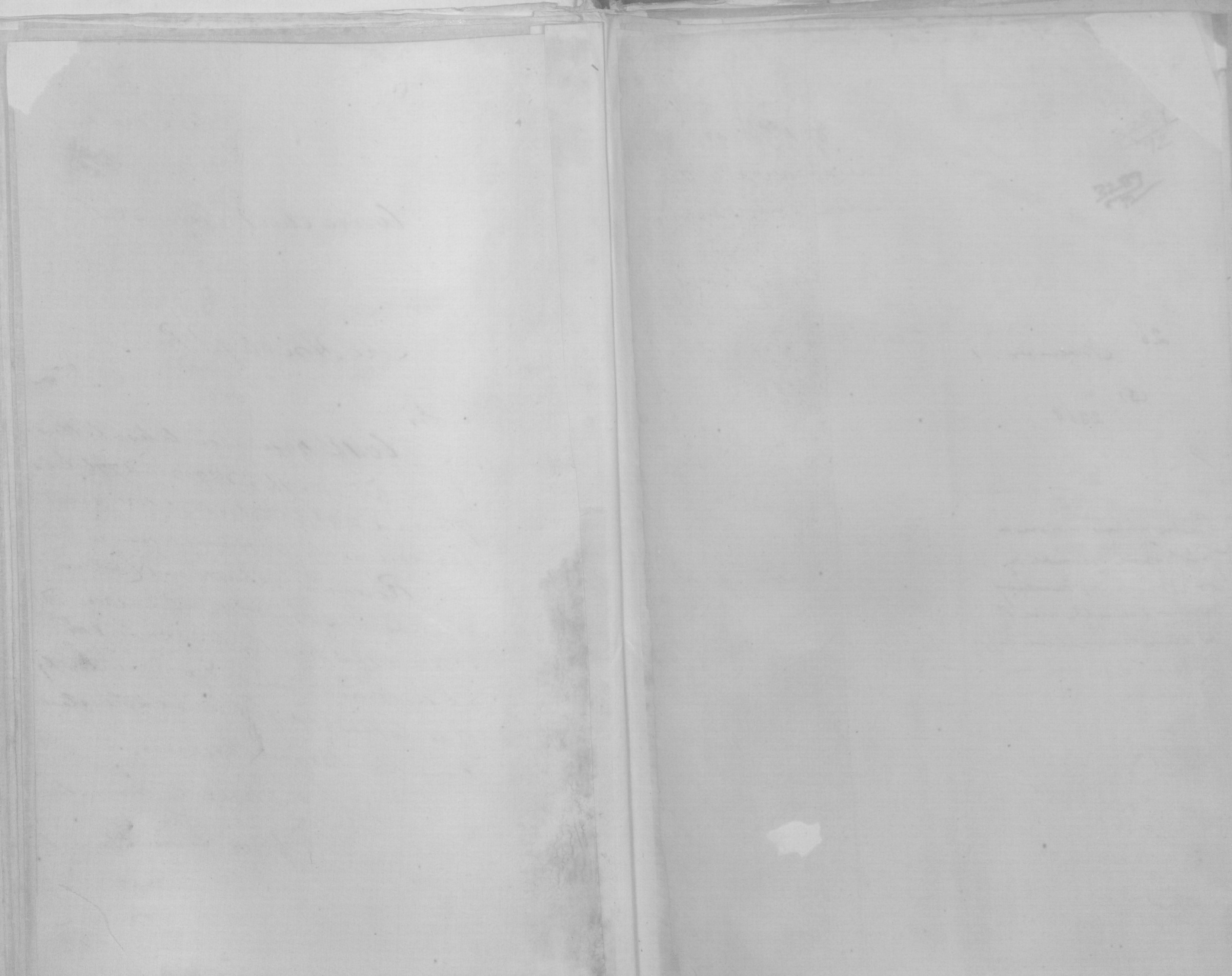
Sir

With reference to two letters
from Mr. Worth Nos 702 and 776 dated
7th and 29th October 1891 forwarded
for remarks under endorsement in
the Revenue Department (Current
numbers 1130 and 1186 returned herewith)
I have the honour to submit for
the information of Government copy
of a letter No 948 dated 23rd instant
from the Board's Engineer.

I have the honour to be
Sir
Your obedient servant.

P. Rice

Chairman
Harbour Trust Board



MARINE DEPARTMENT.

W. CURRENT No: 1262/15
FROM THE CHAIRMAN,
HARBOUR TRUST BOARD,
MADRAS.

To THE CHIEF SECRETARY TO GOVERNMENT,
Marine Department

DATED 26 } November 1891.
RECEIVED }
Regd 27 }
ENCLOSURE (5) five
No. 2368

SUBJECT.

Reporting upon a
proposal made by
Mr. Warrth for making
some small use of
the unserviceable supply
of iron ore in
the Madras Province

Transferred.

27/11 Dec 27/91
Transferred to the
Public Works Dept.
Indrunkid
Chief Secy

30B.
30/11.

12 Dec

30B
for

N. 948

From The Engineer
Harbour Trust Board
Madras

To The Chairman
Harbour Trust Board
Madras

Madras 23rd November 1891

Sir
In reply to your letter N. 5146 dated 10th instant forwarding letter from D. Warrth for remarks regarding the use of iron ore in blockmaking. I have the honor to inform you that such material could not be used for several reasons and I should be sorry to use such material in connection with any work exposed to salt water and were such material used in the blocks it would not be long before the iron ore blocks would want protection instead of the present concrete blocks being protected.

2. The question of the use of the material would be a small matter to settle, but were such material suitable to blockmaking and even if it could be delivered in Madras for nothing, the change would cost the Works an enormous amount, as the blocks being heavier could not be made or handled by the present machinery, therefore new plant throughout would

would be required or smaller blocks would have to be made to be within the required heights. This would mean an alteration in design, rendering the present cranes and machinery useless, or an unnecessary weight and quantity of materials put into the works besides new block moulds throughout.

3. It is therefore useless to go into the details of what the action of salt water would be upon the iron ore used, for concrete, when compared with experience in the use of our rich (iron) clay accidentally used in the manufacture of Portland Cement afterwards exposed to salt water.

I have to
(signed) A. Lee Pogson
Engineer Harbour Trust B.

True copy
A. D. C.

C. J. Pintment

Secretary
Harbour Trust Board

P.W. Department

Note by the Chief Engineer P.W. Dept.
dated 3rd December 1891.

Read
Letter from the Chairman, H. J. Board, No. 2368 dated 26th November 1891.

Endorsement thereon in the Marine Dept. dated 1st December 1891.

13 Pica

The undersigned entirely concurs in the views of the Engineer to the Harbour Trust Board. The objections to Dr. Warth's ~~the~~ proposal are obvious to any one with practical knowledge of the subject.

D

E.W. 2.12

No. 3289 of 8th Decr 1891

Genl
Secy
PUBLIC WORKS DEPARTMENT.

PROCEEDINGS OF THE MADRAS GOVERNMENT.

2281/15
Read the following

Letter from the Chairman, } H.C. No. 2368 of 26th Nov 91
M. H. Board, Madras }
Encl^d thereon in the Marine Dept - of 1st Decr 91
Note by the Chief Engineer P.W.D. - of 5th Decr 91

14 Decr
The Govt. agrees
with the Chief Engineer
in considering the
proposal to use iron
ore in the manufacture
of concrete blocks
for the Madras Harbour
to be impracticable.

14/12
To the Chairman, M. H. Board
Marine Dept.
Revenue Dept.

Am

~~3287~~
16

3287
16

15

Am 3-12-91 10-91

CN^o 12627

Govt. of 1891 Madras.

PUBLIC WORKS.

11/11/11

8.11. 91 3289W.

Spec One

Agreement ^{in order} with the
Chief Engineer that
the proposal to use
in the manufacture
of concrete blocks
for the Madras
Harbour is
practicable.

50

4

20.11.11
M/V
a