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(2) Date of repair_____

(3) Initials of the Referencer_____

# MADRAS RECORD OFFICE

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## Government of Madras

Public Works DEPARTMENT

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| G.O. No. / B.P. No. | 2596 | Press / Mis. | Original |
| Dated | 27-9- | | 1876 –195– |

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*Proceedings of the Madras Government, Public Works Department,*
*27th September* 1876. *No* 2,596.

No 483 Read the following endorsement of the Chief Engineer for Irrigation, dated Ootacamund, 26th August 1876, No 187 W —

From Major J O HASTED, R E, Superintending Engineer, Kistna, to Lieutenant-Colonel J MULLINS, R E, Chief Engineer for Irrigation, dated Masulipatam, 17th August 1876, No 54

I HAVE the honor to report that the Kistna rose from 28 feet (8 feet above anicut) at noon on the 29th ultimo to 34 on the 30th, 36 30 on the 31st, and 36 90 at noon on the 1st instant, it then began to fall steadily, but gradually at *first*, the register being 35 90 at 6 P M on the 2nd

2 The damage done was, I am sorry to say, extensive In the Eastern Delta, several breaches occurred in the river embankment, the principal being at a little distance from Walloorpollem, the water spread over the country, breached into the Masulipatam canal in many places near Wulloor, and crossing it stood up against the Pulleru bank, from whence it turned again to the canal breaching across it badly near Ooratoor a little above Pamarru, and passed into the Sallapally drainage The water was within 9 inches of the top of the north side wall of the new Inampudi tunnel, but did no damage to the work, and there is no doubt that the tunnel prevented the heavy breaches which we had last high flood about Ooratoor, those breaches that have occurred being much less serious

3 There were altogether twelve breaches in the river embankment between Royyoor and a little below Sticaculam, but several of these are of little consequence In the Masulipatam canal there are ten breaches, only those about Ooratoor, caused by the water returning towards the river, are serious It is estimated that the repairs will not much exceed 3,000 Rupees The Masulipatam canal was reopened to traffic as soon as possible, and the breaches in the river bank have been ring bunded and are being closed

4. Divy appears to have suffered comparatively little, a few small breaches happened in the embankment, and several of the tanks breached, but were promptly repaired. Repairs here will cost within 600 Rupees

5 In the Western Delta the damage done to banks was more serious. The embankment between Seetanagaram and Wallabhapuram breached in twelve places, and the Western Bank canal in thirty-five places, the most serious breaches are those at Wallabhapuram and Kolloor, but the canal was soon able to carry water again, and I was able to take my boat down to Munnangi, where the large breach was before, on the 7th instant, here the river had set into the bank a little below the old breach and had completely cut away the lunka, and great damage would have been done had not Mr. Sub-Engineer Carher, who is at present in charge of the division, taken measures to prevent it I found him on the spot with the Tahsildar of Rapilley and consider his arrangements entirely satisfactory The repairs in Western Delta will probably cost about 6,000 Rupees

6 In both deltas but little damage was done by the water flooding the country, though minor channels have in places been breached and some rice seed-beds have been destroyed Transplantation had only commenced in a few places, and the ground was so dry on account of the failure of the monsoon that the flooding was, I believe, actually beneficial Most part of the flooded country is zemindary, and there will

reduction of allotments of other districts, but it is yet too early in the year to say from what districts money can be withdrawn with the least inconvenience. It is suggested therefore that the Superintending Engineer should be instructed to do what work is now most necessary from the Repair Funds provided for the delta, and to apply, after the 1st December, for such a supplemental grant as he may then find to be indispensable for meeting the requirements of the delta up to the 31st March 1877.

(Signed) JOHN MULLINS, Lt-Col, R.E.,
*Chief Engineer for Irrigation.*

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No. 484. ORDER THEREON, 27th September 1876, No. 2,596.

IRRIGATION, No 49

RECORDED.

2 The attention of the Superintending Engineer, Kistna, will be called to the remarks of the Chief Engineer for Irrigation on the best way, in that officer's opinion, of reducing risk of breaches in the Kistna flood embankments, and after considering those observations the Superintending Engineer should submit estimates for such improvements as may be found most suitable to the circumstances of each part of the embankments, noting what portion of such can be carried out in connection with the Bank canals without extra expense.

3 The Superintending Engineer should utilize the Repair grant at his disposal on such work as may be for the present more immediately required, and when the funds remaining at his disposal are so far reduced as to suffice for the expenditure of six or seven weeks only, he should apply for a supplemental assignment showing at the same time what the expenditure on special, as distinguished from ordinary, repairs will amount to, and what work generally remains to be done before the close of the year under Repairs. Care must be taken to restrict the charges to Repairs to work properly coming under that head. Improvements, however desirable, which should be classed as Original Works, should be excluded from Repair estimates.

(True Extract)

Colonel,
*Offg Under Secy to Govt, P.W.D.*

To the District Engineer, Kistna
,, Chief Engineer for Irrigation

Exd C Shunker.

Spare Copies

No 187-W 3 [illegible]

Submitted for the information of Government.

It will be seen that the breaches in the embankments on either side of the Kistna were not occasioned by any want of height in the flood banks, but are attributed by the Superintending Engineer to the state of the banks and ground which were extensively cracked owing to the long drought.

2. The widening of the embankments would do far to prevent breaches in that it would take longer for the water to work its way through them and give more time for stopping leaks. The embankments may doubtless be in some places made of insufficient width in many miles in constructing the Bank Canal, Eastern delta, and

in improving the Bank Canal
Western delta, when the estimates are
sanctioned and allowed to be
carried out, but it is very doubtful
whether it will be worthwhile else-
where to adopt this arrangement.

3. Under the peculiar circum-
stances of the soil, safety will
best be secured in future, it is thought
1st by filling and stamping all apparent
cracks just before the river rises
2nd by patralling the banks thoroughly
and constantly when the river
is on the rise in July (generally),
and attending forthwith to any
places which appear to need treat-
ment.

It is probable that the nature of
the soil in some miles will
indicate the need of greater attention,
and there of course the numbers
of men employed should be
increased.

It is possible that with such precautions
accidents may not be altogether
averted, but it would seem to be
quite possible to prevent breaches
at all events over that length
of embankment where it is
known that the ingress of water
is likely to do much damage.

4. Further, in exceptionally
dry seasons it may be desirable
to increase still more the amount
of labour to be placed on the
banks for a few days. Were
400 or 500 men employed for 10
days even 2 or 3 times during
the critical season, the expence
would be at most about 2,500
Rupees and it is even now well
worth while to incur such ex-
pense, while in the future the
outlay will yearly become smaller
in proportion to the value of
the property protected. Moreover
it might be arranged to carry
out all the annual petty repairs

to the flood banks at this season, and then the additional expense would be almost if not quite, nominal.

5 In the opinion of the undersigned flood banks maintained at a sufficient height and in all respects in an efficient state are essential in the case of Deltas covered with a network of canals, distributaries and drains. The river cannot be permitted to encroach over a tract of country to be occupied, for the damage which would result would be altogether out of proportion to the cost of excluding it, and confining it to its proper channel, which latter must of course be left adequate in area and kept generally effective by due attention to the changes which are inevitable from the effects of successive freshes. It may not be practicable to render a breach now and again impossible, but it is believed to be practicable to render such accidents extremely rare and comparatively harmless.

6. Under the arrangements recently ordered to be carried out there are no funds allotted for supplementing the Repair grant of the Kistna District to the extent of Rupees 10,000 for the repair of these special damages. Funds can be obtained by reduction of allotments of other districts, but it is yet too early in the year to say from what districts money can be withdrawn with the least inconvenience. It is suggested therefore that the Superintending Engineer should be instructed to do what work is now most necessary from the Repair funds provided for the

G.O. No 1067 dated 28th April 1876

delta and to apply after the
1st December for such a supplemental
grant as he may then find
to be indispensable for meeting
the requirements of the Delta
up to the 31st March 1877.

I am &c
Lt Colonel RE
Chief Engineer for Irrigation

Rotacammund
26th August 1876

P.W.D.
2775376
1876
No. 1 L 2

From
The Chief Engineer for Irrig.
To the Secy. to Govt. P.W.D.

Dated 26 Aug. 1876.

Encls 1

R: 187-W.

Kistna Floods & the consequent damages to works in the E&W. Deltas — Submits, for information, report from the Supdg Engr. Kistna regarding the recent ——, with remarks

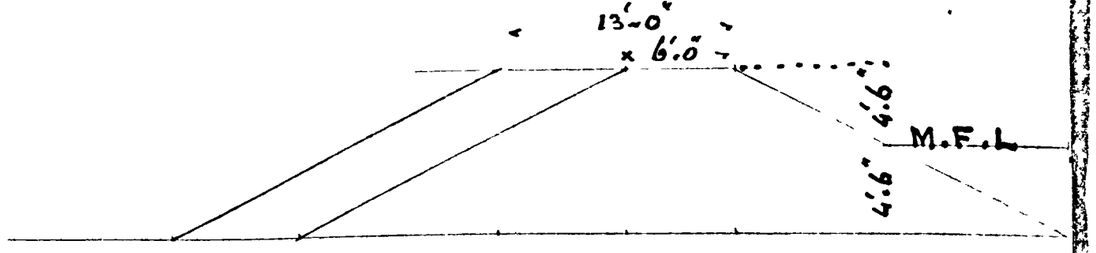
No 483

Flood embankments Kistna

Memorandum

1

It may be noticed with reference to the remarks of the Hon'ble Mr. Ellis on the papers that there is, I think, no necessity for Government to express any decided opinion as to the proper treatment of the embankments - Major Haskell will give the remarks of the Chief Engineer for due consideration, and will probably be glad of the suggestions made. The argument of the latter will be better understood from the subjoined diagram, which shows that adding (say) 6 feet to the top width of an embankment has but a small proportionate effect




Base width 6 feet top width = 42 feet
do = 13 do — do = 49 "

W. 19/9/76

PUBLIC WORKS DEPARTMENT.

Note by the Chief Engineer for Irrigation
No 2 dated 26th Augt 76.

FOR ORDERS.

Spencer
8/9 mn

I do not feel competent to pronounce as to whether the banks should be widened as proposed by Col Haskell & in a measure supported by General Walker - or whether vigilance of the condition of banks after drought - careful tamping & repairing cracks and an efficient patrol as suggested by Col Mullins will not be sufficient. There is no estimate of the cost of Col Haskells suggestion but the expense will probably

Lieutenant Lt Colonel &
Joint Secretary to Govt N.W.
2/8

be very considerable. On the whole I should be inclined to adopt Col. Mullins' suggestions & test the proposal by the experience of another season. Even a moderate season may exhibit the result of more systematic attention to cracks in banks.—
The proposal for obtaining funds later in the year from relinquishments may be approved. RM. 3/8

Read 8/9/76

FOR ORDERS.

2

Form No. 22

10 11

No. 2596 Public Works Department.

PROCEEDINGS of the MADRAS GOVERNMENT.

UNDER date the 27 Sept 24.

Read the following :—

Note by the Chief Engr. forwarding E.E. No. 157 dt. 26th August 1896

Recorded.

The attention of the Superintending Engineer, Kistna, will be called to the remarks of the Chief Engineer for Irrigation on the best way, in that Officer's opinion, of reducing risk of breaches in the Kistna flood embankments, and after considering those observations the Superintending Engineer should submit estimates for such improvements

Read — 6-9-25-5-25

as may be found most suitable to the circumstances of each part of the embankments, noting what portion of such can be carried out in connection with the Bank Canals without extra expense.

2. The Superintending Engineer should utilize the Repair grant at his disposal in such work as may be for the present more immediately required, and when the funds remaining at his disposal are so far reduced as to suffice for the expenditure of 6 or 7 weeks only, he should apply for a supplemental assignment, showing at



the same time what the expenditure on special, as distinguished from ordinary repairs will amount to, and what work generally remains to be done before the close of the year under Repairs. Care must be taken to restrict the charges to Repairs to work properly coming under that head. Improvements however desirable, which should be classed as original works, should be excluded from repair estimates.

W.Y. 19/9

H.K. Kirkwood
C.E. for I. Irrigation Circle

Dated 12/10/11

7003

# Govt. of {1876} Madras.

## PUBLIC WORKS.

*To*

The D. C. Kistna

*Dated*

*Issued*

*Read* *Encl*

G. O., 29th Sept. 1876, *No.* 2596

Nos. 482/84

Damages to works in the Eastern and Western Delta by floods.

Restrn &c. - Passing orders on Endorsement of the Chief Engr for Direct &c to meeting the report of the Super on the ——— by the breaching of the River embankments