

(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.	3082	Press
B.P. No.		Mis.
Dated	30-10-	195

Not to be folded or roughly handled

No 522

Read the following —

No 1,223

MEMORANDUM

THE following notes on the Palar and Pomey Anicuts are submitted for the information of Government, in connection with the remarks on the reports of progress of these restorations for September

2 PALAR ANICUT — The length of anicut under restoration is 1,105 feet, including the splays by which the new and old work has been united. With the exception of a length of about 77 feet, the mass of rubble masonry forming the foundation of the crest wall, underlying the cut or large stone apron and forming the first apron below this, has been completed, and it will be fully completed by the evening of the 19th instant

At the south end of breach 415 feet of the cut-stone apron have been finished, and the crest wall brickwork is up to same level nearly throughout

At the north end of the breach 356 feet of cut-stone apron have been completed, and the crest wall is slightly above that level

The outer rough or dry stone apron has been completed to the full width, except for a few feet where a gap for baling was left, and this is to be filled in at once

3 To render the anicut safe during the freshes which are now due and which are not likely to be deferred many days, the following works should be carried out as quickly as possible —

1st — The crest wall must be brought to a uniform level (that of the brickwork at the north end of the breach) of a few inches above the surface of the cut-stone apron, this is essential to an equal distribution of the discharge

2ndly — The cut-stone apron cannot be completed until after the freshes, and where incomplete the stone should be packed dry in the position it is to occupy, and thereafter the setting of the stone can be gone on with as long as the state of the weather or river will allow.

3rdly — The ends of the ring bund abut on the crest wall at the two ends of the breach, and a tendency to scour here will be inevitable; consequently a layer of stone 3 feet deep should be placed above the anicut on the bed between it and the ring bund over the latter and be continued on the bed up to the line of the further faces of the first pier on either side. The space to be so covered on the south side has been marked out, and the protection required on the north side will be similar

4thly — The intermediate groynes on the upper side of the anicut and at right angles thereto should be laid down, the stone to be 3 feet deep with its surface flush with the top of the foundations for this season

5thly — A deep channel has been formed parallel to the anicut, and immediately in front of the bridge piers by the draught, during the small freshes of the season of the under and head sluices near the south end of the anicut. This must be stopped, and a modification of the intended groyne at the north end of the under sluices, south of the south end of the breach, will effect this. The groyne will start from the first bridge pier north of the under sluices, and its direction may conveniently approximate to the south

face of the cutwater of that pier. A considerable bank of sand has to be thrown in to stop the channel and carry the groyne and its aprons, and no time should be lost, therefore, in commencing this work; a sketch has been given.

6thly —As soon as the breaching of the ring bund becomes inevitable, as many cuts in it as possible should be made, so that the discharge of the river may be distributed equally, and that scour near the anicut may be avoided. The sooner the ring bund disappears the better. The mats used to protect the face should be removed two or three days after the completion of the crest wall to the level intended, viz., a few inches above cut-stone apron.

7thly —A groyne similar to that above described will be required between the north end of the breach and the under sluices to the northward, but there being no deep channel there some excavation instead of the formation of a bank will be needed.

8thly —If time will allow a sand bund may be thrown across the scour channel from the buttress pier to the south of the breach and between it and the under sluices to prevent the continuance of a deep channel here in continuation of that which will form sooner or later round the end of the groyne north of the under sluices, and to aid in silting up the channel. The surface of this bund may with advantage be protected by a coating of any rubbish, such as kiln refuse, which may be available. Its top should be flush from end to end with under sluice sill level.

9thly —The floorings of all the under sluices require immediate repair, which can be effected sufficiently for the present season with hydraulic concrete.

10thly —The cross stones of some of the under sluice vents have yet to be fixed.

At present the holes left to receive them are a source of weakness.

4 The material called burnt clay contains a great deal too much sand, which renders it of very little use for mixture with the lime to increase the hydraulic properties of the latter. Baked sand is no better than raw sand, and both are useless except for increasing the bulk of the mortar. The lime is somewhat hydraulic in its natural state, and appears to be of excellent quality. Mixed with a suitable quantity of burnt clay of a proper description, i.e., a strong clay, it is probably capable of making a cement good enough for any purpose.

5 The Assistant Engineer in charge, Mr. Smither, considers that it is easier and cheaper to sink wells after the old fashion by means of well sinkers than by excavators or dredgers. He appears, however, to have left the item of baling out of the account, and this is manifestly a matter of considerable importance. The description of excavator used is Fouracre's. At the Pennair Anicut at Nellore, Bull's excavator has been used with success, both as regards economy and rapidity.

6 The Palar Anicut will offer so little obstruction to the river at the low level at which it will remain until after the freshes that, notwithstanding the greenness of the masonry, it may be expected to suffer little or no damage if the work detailed above be fully carried out before the river rises. There will manifestly be considerable difficulty in supplying the channels on either flank, and unless the season should be particularly favorable and the local rainfall considerable, loss of revenue will be inevitable. It will be necessary therefore to make arrangements for constructing a

temporary dam along the line of the anicut, across the breach, as soon as the freshes are over, and probably in this way there will not be much difficulty in increasing the supply for irrigation by raising the water level $2\frac{1}{2}$ to 3 feet. If other suitable material be not forthcoming in sufficient quantity, a rough stone dam may be constructed with stone of a size which can be readily carried along the apron immediately in rear of the crest wall, and the sand or mud dam will then be placed in front and be sufficiently supported.

7. POINER ANICUT —The length of the new crest including the splays is 582 feet. At the west or right end of the breach 234 feet of the anicut have been completed, except that the crest wall is $2\frac{3}{4}$ instead of 6 feet high, and at the east end of this length for a few feet the wall has been raised to the full height to form an abutment to the ring bund. Looking to the backward state of part of the work, the raising of any part of the crest wall, unless for a few feet with a special object, was a mistake.

For the next 75 feet the rubble masonry is complete to top of foundation level, and the rough stone apron below is very nearly finished. For the next 105 feet the rubble masonry is up to foundation level in front and rear and about 15 inches remain to be filled in between. The rough stone apron has yet to be packed. Then comes a gap which is nearly 5 feet below top of foundation level, this has been used in connection with baling and is to be immediately filled in. The next 75 feet are much behind hand. The front and first retaining walls are nearly complete to 3 feet below top of foundations, and the second retaining wall and aprons have not been commenced. To the east of this section the aprons are complete, and the crest wall has been raised in brickwork three courses above foundation level.

8 The security of the new work from serious damage will depend upon the state of the 75 feet section, which is so incomplete at the time of the first considerable fresh. It is manifestly useless to think of trying to complete it below the first retaining wall, consequently all the available labor, which as regards builders is much less than is desirable, should be employed on.

1st —Raising the front and first retaining walls to apron level, and completing the rubble masonry apron between them.

2ndly —And simultaneously filling the entire space behind or below the first retaining wall with dry stone extending to the outer line of the future rough stone apron and with the surface at the proper level of the latter, except at the first retaining wall where it should be sloped or stepped down.

3rdly —To completing the eastern 343 feet of crest to three courses above the apron level.

4thly —Making the crest wall for the 75 feet of weak section, and for 12 feet on either side $4\frac{1}{2}$ feet high, so that no water may pass directly over this part, which will necessarily not have had time to set properly, until there is a considerable depth of water in the river below.

5thly —Placing a groyne at the west end of the straight part of the new body wall and at right angles thereto, the length to be 45 feet, the height at the body wall $2\frac{3}{4}$ feet, the nose being flush with the under sluice sill. A rough stone apron 12 feet wide and $2\frac{1}{2}$ feet thick to be placed above the (upstream side) masonry floor of the under sluices, carried along the splay of the anicut, thence along the west side of the groyne round its nose and 12 feet along the east face of this groyne.

Proceedings of the Madras Government, Public Works Department,
30th October 1875.

6thly—A similar groyne to be run out from the west front wing of the east under sluices with a length of 60 feet and to be similarly protected by an apron

9 Plans and sections showing the exact state of each part of each amcut on the discontinuance of work for the freshes should be prepared, as also longitudinal sections of the several walls showing the depths at which the foundations have been laid, the nature of the soil, &c

10 After the heavy freshes water level may be raised to supply the channels taking off from the Poiney Amcut in the manner suggested for the Palar Amcut

(Signed) JOHN MULLINS, Lt-Col, R E,
PALAR ANICUT, Chief Engineer for Irrigation
18th October 1875

P S—Should the river rise before the works at the Poiney Amcut have been so far advanced as to be reasonably safe, there should be no hesitation in cutting down the 200 feet of crest wall at the west end of the breach to three courses above top of foundation

No. 523 ORDER THEREON, 30th October 1875, No 3,082

IRRIGATION, No 48

RECORDED, and communicated to the District Engineer, North Arcot, who will report the state of each amcut on the freshes putting a stop to the work. The Government notice with anxiety the present insecure circumstances of the Poiney Amcut. It should be reported by the District Engineer when arrangements were first made for the supply of materials for the restoration of these two amcuts, what these were as regards time of supply, and what steps were taken, and when, to obviate delay and ensure due progress

(True Extract)

(Signed) G. W. WALKER, Major-General, R E,
Secretary to Government.

To the District Engineer, North Arcot
" Chief Engineer for Irrigation.

Exd. E C Shunker
Spare Copies

1223

Memorandum

The following notes on the Palar and Poiney amcuts are submitted for the information of Government in connection with the remarks on the reports of progress of these restorations for September.

Palar Amcut. 2. The length of amcut under restoration is 1105 feet including the splash by which the new and old work has been united. With the exception of a length of about 99 feet the mass of rubble masonry forming the foundation of crest wall underlying the cut is large stone apron and forming the first apron below this has been completed, and it will be fully completed by the evening of the 17th instant.

At the south end of breach 415 feet of the cut stone apron have been finished, and the crest wall brickwork is up to same level nearly throughout.

At the north end of the breach 356 feet of cut stone apron have been completed and the crest wall is slightly above that level.

The

The outer rough or dry stone apron has been completed to the full width except for a few feet where a gap for halting was left and this is to be filled in at once.

3. To render the ancient safe during the freshes which are now due and which are not likely to be deferred many days, the following works should be carried out as quickly as possible.

1st The crest wall must be brought to a uniform level (that of the brickwork at the north end of the breach) of a few inches above the surface of the cut stone apron, this is essential to an equal distribution of the discharge.

2nd The cut stone apron cannot be completed until after the freshes and when incomplete the stone should be packed dry in the position it is to occupy and thereafter the setting of the stone can be gone on with so long as the state of the weather or river will allow.

3rd The ends of the ring head abut on the crest wall at the two ends of the breach and a tendency to scour here will be inevitable, consequently a layer of

of stone 3 feet deep should be placed above the ancient on the head between it and the ring head over the latter, and be continued on the bed up to the line of the further faces of the 1st pier on either side. The space to be so covered on the south side has been marked out and the protection required on the north side will be similar.

4th The intermediate groynes on the upper side of the ancient and at right angles thereto should be laid down, the stone to be 3 feet deep with its surface flush with the top of the foundations, for this reason.

5th A deep channel has been found parallel to the ancient and immediately in front of the bridge piers by the draught, during the small freshes of the seasons of the under and head sluices near the south end of the ancient. This must be stopped and a modification of the intended groyne at the north end of the under sluices, south of the south end of the breach, will effect this. The groyne will start from the 1st bridge pier north of the under sluices and its direction

direction may conveniently approximate to the south face of the cutwater of that pier. A considerable bank of sand has to be thrown in to stop the channel and carry the groyne and its aprons, and no time should be lost therefore in commencing this work - a sketch has been given.

6th As soon as the breaching of the pier head becomes inevitable, as many cuts in it as possible should be made, so that the discharge of the river may be distributed equally, and that scour near the ancient may be avoided. The sooner the pier head disappears the better. The mats used to protect the face should be removed 2 or 3 days after the completion of the scree wall to the level intended - viz a few inches above cut stone apron.

7th A groyne similar to that above described will be required between the north end of the breach and the undersluices to the northward, but there being no deep channel there

some

some excavation instead of the formation of a bank will be needed.

8th If time will allow a sand bank may be thrown across the pier channel from the lintress pier to the south of the breach and between it and the undersluices to prevent the continuance of a deep channel here in continuation of that which will form some or later round the end of the groyne north of the undersluices, and to aid in filling up the channel. The surface of this bank may with advantage be protected by a coating of any rubbish, such as kelp refuse, which may be available. Its top should be flush from end to end with undersluice sill level.

9th The floorings of all the undersluices require immediate repair, which can be effected sufficiently for the present season with hydraulic concrete.

10th The coping stones of some of the undersluice walls have got to be fixed. At present the holes left to receive them

are

are a source of weakness.

4 The material called burnt clay contains a great deal too much sand, which renders it of very little use for mixture with the lime to increase the hydraulic properties of the latter. Baked sand is no better than raw sand, and both are useless except for increasing the bulk of the mortar. The lime is somewhat hydraulic in its natural state and appears to be of excellent quality. Mixed with a suitable quantity of burnt clay of a proper description, i.e. a strong clay, it is probably capable of making a cement good enough for any purpose.

5 The Assistant Engineer in charge, Mr. Smith, considers that it is easier and cheaper to sink wells after the old-fashioned means of well sinkers than by excavators or dredgers. He appears however to have left the item of baling out of the account and this is manifestly a matter of considerable importance. The description of excavator

used

used in Tanjore at the Pannai Anicut at Nellore, Bull's excavator has been used with success both as regards economy and rapidity.

6 The Pannai Anicut will offer so little obstruction to the river at the low level at which it will remain until after the freshes that notwithstanding the greenness of the masonry, it may be expected to suffer little or no damage if the work detailed above be fully carried out before the river rises. There will manifestly be considerable difficulty in supplying the channels on either flank, and unless the season should be particularly favorable and the local rainfall considerable, loss of revenue will be inevitable. It will be necessary therefore to make arrangements for constructing a temporary dam along the line of the anicut, across the breach as soon as the freshes are over and probably in this way there will not be much difficulty in increasing the supply for irrigation by raising the water level $2\frac{1}{2}$ to 3 feet. If other suitable material be not forthcoming

forthcoming in sufficient quantity
a rough stone dam may be constructed
with stone of a size which can be
readily carried, along the apron
immediately in rear of the crest wall
and the sand or mud dam will then
be placed in front and be sufficiently
supported.

7 The length of the new crection Piney Ancient
including the splash is 582 feet. At
the west or right end of the breach
234 feet of the ancient have been com-
pleted, except that the crest wall is
2 3/4 instead of 6 feet high and at the
east end of this length for a few
feet the wall has been raised to the
full height to form an abutment
to the wing dam. Looking to the
backward state of part of the work
the raising of any part of the crest
wall, unless for a few feet with a
special object, was a mistake.

In the next 75 feet the rubble masonry
is complete to top of foundation level,
and the rough stone apron below is
very nearly finished. In the next 105
feet the rubble masonry is up to
foundation

foundation level in front and rear and
about 15 inches remain to be filled in
between. The rough stone apron has yet
to be packed. Then comes a gap which is
nearly 5 feet below top of foundation level.
This has been used in connection with baling
and is to be immediately filled in.

The next 75 feet are much behind hand.
The front and first retaining walls are
nearly complete to 3 feet below top of
foundations and the 2nd retaining wall
and aprons have not been commenced.
To the east of this section the aprons are
complete and the crest wall has been raised
in brickwork 3 courses above foundation
level.

8 The security of the new work from
serious damage will depend upon the
state of the 75 feet section which is so
incomplete at the time of the first
considerable fresh. It is manifestly
useless to think of trying to complete
it below the first retaining wall -
consequently all the available labor,
which as regards builders is much less
than is desirable, should be employed
on the front and first retaining walls.

walls to apron level and completing the rubble masonry apron between them

2nd and simultaneously filling the entire space behind or below the 1st retaining wall with dry stone extending to the outer line of the future rough stone apron and with the surface at the proper level of the latter, except at the first retaining wall where it should be sloped or stepped down.

3rd to completing the eastern 340 feet of crest to courses above the apron level

4th making the crest wall for the 75 feet of weak section, and for 12 feet on either side $4\frac{1}{2}$ feet high, so that no water may pass directly over this part, which will necessarily not have had time to set properly, until there is a considerable depth of water in the river below.

5th placing a groyne at the West end of the straight part of the new body wall and at right angles thereto, the length to be 45 feet, the height at the body wall $2\frac{3}{4}$ feet, the nose being flush with the midchannel sill. A rough stone apron 12 feet wide and $2\frac{1}{2}$ feet thick to be placed above the (upstream side) masonry floor of the midchannels, carried along the splay of the ancient $7\frac{1}{2}$ feet

along the West side of the groyne, round its nose and 12 feet along the East face of this groyne.

6th a similar groyne to be run out from the West fronting of the East midchannel, with a length of 60 feet and to be similarly protected by an apron.

9 Plans and sections showing the exact state of each part of each ancient on the discontinuance of work for the freshes should be prepared, as also longitudinal sections of the several walls showing the depths at which the foundations have been laid, the nature of the soil &c.

10 After the heavy freshes water level may be raised to supply the channels taking off from the Poney ancient in the manner suggested for the Palar ancient.

Palar Ancient } Wm. H. Collins Esq. Coll. R.E.
18th October 1875 } Chief Engineer for Irrigation

To
The Secretary to Government
Public Works Department

P.S. Should the river rise before the
works at the Boiey Ancient have been
so far advanced as to be reasonably
safe, there should be no hesitation
in cutting down the 200 feet of crest
wall at the West end of the breach
to 3 courses above top of foundation.

[Faint, mostly illegible handwritten notes]

2/1/22
P.T.O.

W.S.

[Faint handwritten notes]

[Faint handwritten notes]

[Faint handwritten notes]

[Faint handwritten notes]

O. W. 1875 Depd.
No: 6791.

From

The Chief Engr.
for Irrigation

Dated 18th. Decr. 1875
Recd. 22nd in 1875

No: 1223

Notes on the Palace
and Poirey Ancient,
North Arcot Dist.

N^o 522

Dec 23-10-75

G.O. No 3082 . 30-10-75

No 3082 } Under the Dept
Proceedings of the Madras Government
30 Oct/75
Read the following:-

From

The Chief Engineer
for Irrigation

No 1223 d/ 18 Oct/75
Recd

Recorded and com-
-municated to the District
Engineer, North Arcot, who
will report the state of
each ancient on the fresher
putting a stop to the work.
The Government notice
with anxiety the present
necesse circumstances
of the Poirey ancient. It
should be reported by the
District Engineer when
arrangements were first
made for the supply of
materials for the restoration
of

Mo/ 24/75

1/11

of these two animals, what
there were as regards time
of supply, and what steps
were taken, and when, to
obviate delay and ensure
due progress

Aug 21/10

Chm

Chief North West
Chief for Immigration

D. S. North West
Chief for Immigration

75

6017: Jan 15/75 No 491-492
" 17: Feb 17 " " 403-404
" 16: Sept " " 440A-440B.
" 26: May " " 518-519
" 20: Sept " " 417-418.

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Col. of 1875: 1 adms.

PUBLIC WORKS.

108. H. Arcot

3/11/75

D. 13

E. 13

F. 13

E. 13

C. O. 30th Oct 1875, P. 3082

Vol. 522-523

Public & Private. North
West District - Building
on the site of the Chief
In Irrigation on the
to be recorded &
located to the S. & N. North
the will be the State of each
Point on the border
to the road