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MADRAS RECORD OFFICE

Government of Madras

Public Works

DEPARTMENT

G.O. No.

B.P. No.

Press

Mis.

Dated

21-6-

CX75

195

Not to be folded or roughly handled

No. 450.

Read the following :—

No. 608.

MEMORANDUM.

IN Proceedings Madras Government of the 29th January 1875, No. 256, particulars were given of the damage sustained by irrigation works in Tinnevely by the floods of the latter end of November 1874, and among the works destroyed was the Yeral under-tunnel, which passes the drainage of a moderately large area of country under the north main channel from the Streeviguntum anicut. The destruction of this under-tunnel was occasioned, it was believed, by water entering at breaches in the river embankment, and by overflow from the Perunkulam surplus channel. The area*

* 92 square feet.

of waterway of the tunnel as built allowed a large increase on that† of the original design, but it was considered that in rebuilding it such further capacity as might be found to be required should be given, and accordingly, on the information previously given as to the area drained by it, the required dimensions were found to be about 165 square feet, and the design submitted by the District Engineer was so far modified as to secure a waterway of 162½ square feet, capable of discharging, with a maximum velocity of 10 feet a second, 1,622½ cubic feet. Approval was given to the revised design in the memorandum as per margin, and the tunnel has been nearly completed on an estimate of Rupees 9,450.

No. 156, 17th January 1875.

No. 191, 15th February 1875.

No. 380, 13th April 1875.

2. From the report made by the Assistant Engineer in charge of the District Engineer's Office, it now appears that the area of country drained through this under-tunnel is 11¼ instead* of 5 square miles, and it is not at all satisfactory that an essential circumstance, which ought to have been originally investigated completely, was not properly inquired into until after the reconstruction of the tunnel had so far advanced as to make any radical alteration of dimensions impracticable. It must be mentioned, however, that the fact that the area is so much larger than that formerly reported has been ascertained during the inquiry into the conditions of future safety of this part of the canal.

* 11¼ and 11½ in Mr. Hughes' letter, paragraph 5, 11¼ in Mr. Grant's letter.

3. It has been explained in these later papers that the drainage after heavy falls of rain spreads over a wide extent of country, and that it may be assumed, therefore, that time will be available for its discharge. Probably then the dimensions allowed will suffice, if care be taken that the channel banks are of ample height to allow of a head of 5¾ feet, and they will be certainly more than of sufficient height for this if they be made safe for the Perunkulam surplus.

12½ feet a second or a discharge of 2,000 cubic feet a second as a maximum equal to 6·6 inches from whole area drained.

4. With regard to the disposal of the Perunkulam surplus, it must be noticed, with reference to paragraph 4 of the Range Officer's letter, that it seems to be doubtful

*Proceedings of the Madras Government, Public Works Department,
21st June 1875.*

whether there are natural facilities for passing a part of this surplus out at the west end of the Streeviguntum tank direct into the Tambrapurny, but the distance is shown by the Revenue Survey map to be small, and if this arrangement be found on investigation to be feasible, it will be an undoubted advantage to keep the water out of the

10.40 square miles $C = 450$.

Streeviguntum system of irrigation. In that case $2,893\frac{1}{2}$ cubic feet a second would be passed into the river above the anicut, and $3,964\frac{1}{2}$ cubic feet a second would have to be passed across the north main channel

26.16 square miles.

by increasing the discharging capacity of the surplus weir and sluices a short distance below the Yeral under-tunnel. When upland drainage is admitted to a canal or channel it is usually desirable to consider what difference between ordinary full supply level and maximum water level may be deemed admissible, and in the delta canals 2 feet has been fixed as the difference. If the channel banks in the present case will at present, or by moderate alterations, allow of the adoption of a similar difference, it will probably be convenient to so fix it because then a large part of the surplus will be got rid of by a weir requiring no regulation, whereas were the ordinary supply level not to be exceeded all discharge would need to be provided for by sluices, and these would require very careful attention. In ordinary seasons the discharge will not exceed one-third of the maximum, and if, therefore, one-half of the latter be provided for by a weir, and the other moiety by sluices, safety will be secured in a manner which will allow of the Conservancy Establishment having plenty of time to attend to the water levels and regulate the sluices accordingly, while only occasionally will it be necessary to allow the water in the channel to exceed its ordinary level.

5. The District Engineer should, therefore, arrange for discharging about 2,000 cubic feet a second over a weir having its crest at ordinary full supply level, and if 2 feet be the difference between this and maximum water level a weir 210 feet long will be needed. If also the tail water be assumed to be about flush with channel ordinary F. S. L., and if the sluice sills be flush with the bed of the channel, the velocity of discharge will be about $7\frac{1}{2}$ feet a second, and the area of the sluice vents will be, say, 270 square feet and nine vents 5×6 will suffice. The details will have to be further considered by the District Engineer, the above particulars being intended to show in a general way how the subject should be dealt with.

6. The papers show clearly how necessary it is that the question of the disposal of the drainage from this considerable area should be treated comprehensively, and that the numerous tanks concerned should be put in order and provided with adequate escapes. Before the Revenue Survey Map was available the information needed was not readily accessible, but now there is nothing to prevent the irrigation works of this part of the taluk being made perfectly safe.

7. The Yeral under-tunnel will be rebuilt from repair funds; the extensive modification of the Perunkulam surplus works will be a capital charge against the Streeviguntum Anicut Project.

OOTACAMUND,
7th June 1875.

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

*Proceedings of the Madras Government, Public Works Department,
21st June 1875.*

No. 451.

ORDER THEREON, 21st June 1875, No. 1,745.

IRRIGATION, No. 43.

The papers submitted by the Officiating Chief Engineer throw further light on the causes of the extensive damage sustained by the north main channel near Yeral, and now that the conditions of future safety have been investigated, no time must be lost in providing adequately for the discharge of surplus, and for rendering all the tanks in the tract of country drained by the Perunkulam surplus channel perfectly safe.

2. Under the circumstances noticed in paragraphs 2 and 6 of the foregoing memorandum, the Government will refrain from commenting on the inadequate arrangements of the north main channel, but it is hoped that the lesson derived from the damage sustained will be made good use of, that the safety of the irrigation works of the district generally will be carefully provided for, and that the information obtainable from the Revenue Survey Maps will be turned to good account.

(True Extract.)

Major, R.E.,

Offg. Joint Secretary to Government.

To the District Engineer, Tinnevely.
„ Chief Engineer for Irrigation.
„ Revenue Department.

Ed. S. T. Austin.
Spare Copies

Irrigation.

No 608.

Memorandum.

In Pro: Madras Government of
the 29th January 1875, No 256 particulars
were given of the damages sustained by
irrigation works in Tinnevely by the
floods of the latter end of November
1874 and among the works destroyed
was the Zeral under tunnel which
passes the drainage of a moderately
large area of country under the north
main channel from the Strisiguntam
ancient. The destruction of this under
tunnel was occasioned it was believed
by water entering at breaches in the
river embankment and by overflow
from the Perumkulam surplus chan.

92 square ft. - The area of waterway of the tunnel
as built allowed a large increase on
that of the original design, but it was
considered that in rebuilding it such
further capacity as might be found to be
required should be given, and accordingly

± about 20
square feet
has been 19 of note
in D.M. S. No. 2
1498-8 June 1874.

on

on the information previously given as to the area drained by it the required dimensions were found to be about 165 square feet and the design submitted by the District Engineer was so far modified as to secure a water way of 162½ square feet, capable of discharging with a maximum velocity of 10 feet a second 1622½ cubic feet. Approval was given to the revised design in the Memo: as per margin, and the tunnel has been nearly completed and an estimate of Rupees 9,450.

3. From the report made by the Assistant Engineer in charge of the District Engineer's Office it now appears that the area of country drained through this under tunnel is 11¼ instead of 5 square miles, and it is not at all satisfactory that an essential circumstance which ought to have been originally investigated completely, was not properly enquired into until after the reconstruction of the tunnel had so far

advanced

advanced as to make any radical alteration of dimensions impracticable. It must be mentioned however that the fact that the area is so much larger than that formerly reported has been ascertained during the enquiry into the conditions of future safety of this part of the Canal. It has been explained in these later papers that the drainage after heavy falls of rain spreads over a wide extent of country and that it may be assumed therefore that time will be available for its discharge. Probably then the dimensions allowed will suffice, if care be taken that the Channel bank are of ample height to allow of a head of 5¾ feet, and they will be certainly more than of sufficient height for this, if they be made safe for the Perant Ralam surplus. With regard to the disposal of the Perant Ralam surplus, it must be noticed with reference to para 4 of the Range Officer's

12½ feet a second or a discharge of 2000 c. ft. a second as a maximum equal to 6.6 inches from whole area drained.

x 11¼ and 11½ in last paragraph letter para 4 11½ in last paragraph letter.

letter that it seems to be doubtful whether there are natural facilities for passing a part of this surplus out at the west end of the Strivigantum tank direct into the Sambrapurny but the distance is shown by the Revenue Survey map to be small, and if this arrangement be found on investigation to be feasible it will be an undoubted advantage to keep the water out of the Strivigantum system of irrigation. In that case $2893\frac{1}{2}$ 10.60 square miles C & S a second would be passed into the river above the anicut, and $3964\frac{1}{2}$ 26.16 square miles C & S a second would have to be passed across the North Main Channel by increasing the discharging capacity of the surplus weir and sluices a short distance below the Goral under tunnel. When upland drainage is admitted to a canal or channel it is usually desirable to consider what difference between ordinary full supply level and maximum water level may be deemed admissible, and in the Delta Canals 2 feet has been fixed as the difference.

If

If the channel banks in the present case will at present, or by moderate alterations, allow of the adoption of a similar difference it will probably be convenient to so fix it, because then a large part of the surplus will be got rid of by a weir requiring no regulation, whereas were the ordinary supply level not to be exceeded all discharge would need to be provided for by sluices, these would require very careful attention. In ordinary seasons the discharge will not exceed one third of the maximum, and if therefore one half of the latter be provided for by a weir and the other moiety by sluices, safety will be secured in a manner which will allow of the conservancy establishment having plenty of time to attend to the water levels and regulate the sluices accordingly, while only occasionally will it be necessary to allow the

water in the channel to exceed its ordinary level.

5. The District Engineer should therefore arrange for discharging about 2000 C.F. a second over a weir having its crest at ordinary full supply level, and if 2 feet be the difference between this and maximum water level a weir 210 feet long will be needed. If also the tail water be assumed to be about flush with channel ordinary F.S.L. and if the sluice sills be flush with the bed of the channel the velocity of discharge will be about $7\frac{1}{2}$ feet a second and the area of the sluice vents will be say 270 square feet and 9 vents 5×6 will suffice. The details will have to be further considered by the District Engineer the above particulars being intended to show in a general way how the subject should be dealt with.

6. The papers show clearly how necessary it is that the question of the disposal of

Feb 28/81
the drainage from this considerable area should be treated comprehensively and not that the numerous tanks concerned should be put in order and provided with adequate escapes. Before the 175. Revenue Survey map was available the information needed was not readily accessible but now there is nothing to prevent the irrigation works of this part of the Taluq being made perfectly safe.

The general under tunnel will be rebuilt from repair funds; the extensive modification of the Perumkulam surplus works will be treated as a capital charge against the Strivinguntum Anicut project.

Ootacamund
4th June 1895

Leutjoll R.C. for
offg. Chief Engineer

The Offg. Secretary of Government
D.H.O.

P. W. 1895 Sept
No: 3983.

~~From~~

The Offg Chief Engr.

Dated 7 June
Recd 17 June 1895.

E. 6. No: 608.

Memorandum on the
rebuilding of the Goral
under
channel, Coimbatore Dist.

Returned to
the Chief Engr.
for Engr.

N 450

J. H. Kept
Proceedings of the Madras Government
Read the following.

From the Offg Chief Engineer (M.S. No 608 d/7 June/95).

G.O. No: 1745 of 24th June/95

The papers submitted
by the officiating Chief
Engineer throw further
light on the causes
of the extensive damage
sustained by the North
Main Channel near
Goral and now that
the conditions of future
safety have been in-
vestigated no time
must be lost in pro-
-viding adequately for
the discharge of surplus
and for rendering all
the tanks in the tract
of

M.S.
10/6

[A]

of country drained by the
Perumbulam surplus
Channel perfectly safe.

2. Under the circum-
stances noticed in paras

2 and 6 of the foregoing

Memo: the Government

will refrain from com-

-menting on the inade-

-quate arrangements

of the North main chan-

nel, but it is hoped

that the Government

from the damage sus-

-tained will be made

good use of and that

the safety of the irriga-

-tion works of the

District generally will

be carefully provided

for, and that the informa-

-tion obtainable from

the

the Revenue Survey
maps will be turned
to good account.

To DE Timmavelli with 6 enclosures.
- Chng. Secy
- Rev. Secy
SC - 1-7-75

3983

Govt. of Madras.
PUBLIC WORKS.

The Lt. Engr.
Trinacvelly

21 June No. 1745

No. 450 - 451

Yeral under tunnel,
Trinacvelly District.

Passing orders on Memo.
of the Officiating Chief
Engineer for Irrigation
in the subject of the
building of the —

No 450/57