Public Works (1898) Department.

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G.O., No. 450 I

DATED 13 June 98

[Despatch Abstract.]

Kanigiri Reservoir: Approving the proposals of the Supt'g: Engineer, II circle, in regard to the limit of filling the ——, Nellore dt:

[P. W. 26.
1,000—12-2-98.]

Indexed. ✓

BACK PAPERS.

G.O.	No.	Department.	Date.	G.O.	No.	Department.	Date.

FURTHER PAPERS.

G.O.	No.	Department	Date.	G.O.	No.	Department.	Date.

IRRIGATION.

Government {1898} of Madras.
PUBLIC WORKS.

Recd. } 1898. *Enclosures*

Regd. *Spare copies*

G.O., No. 450 I., 13th June 1898.

JUNE.

Kanigiri Reservoir

Approving the proposals of the Superintending Engineer, II Circle, in regard to the limit of filling the —, Nellore district.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.

Read—the following papers :—

From J. HANNAN, Esq., Superintending Engineer, II Circle, to the Chief Engineer for Irrigation, dated Camp Vinukonda, 9th April 1898, No. 42 C.

I recently inspected the Kanigiri reservoir and beg to submit the following report :—

I found, as already reported demi-officially, that the margin between the top of the revetment and the top of the bund 5 feet vertical was thickly covered with a fine plantation of kakirellu reeds which were planted about two years ago. These reeds had everywhere attained a height of from 4 to 7 feet and, in my opinion, afford as good, if not better, protection to the slope than the revetment recently sanctioned for Rs. 9,000. This plantation extends from the southern channel head sluice round the bay for a distance of 1 mile and 7 furlongs. Beyond this again, the margin is covered with nanal grass which has grown well and affords a sufficient protection for this less exposed portion of the bund. I have therefore, subject to your approval, ordered the revetment work not be proceeded with; but as it is desirable to have some stone in reserve along the more exposed portion of the bund in the bay and as the contractor had opened quarries and also brought some material to site, I ordered 10,000 cubic feet of stone to be brought to site as a reserve to meet possible contingencies.

I inspected the tank revetment carefully and am of opinion that it is in a satisfactory state and not likely to suffer any serious damage from wave action. From this you will note that I do not concur with views expressed by my predecessors Mr. Martin and Major Baddeley endorsed as they are by the late Chief Engineer for Irrigation, Colonel Drake-Brockman, and that I agree with the opinion expressed by the late Chief Engineer Mr. Walch in his inspection notes printed with G.O., No. 192 I., dated 24th March 1890, that all that was required to the revetment was to repair it with thicker and better stones in accordance with the instructions contained in his memo., No. A./N.L., dated Sangam, 24th February 1890. This was accordingly done at a cost of Rs. 7,500, and subsequent repairs executed at a cost of Rs. 3,820 in 1895; so that, altogether, since the cyclone of 1889, over Rs. 11,000 have been spent in improving this revetment. I think the time has now come for modifying the restrictions as regards water level imposed by Mr. Walch in his inspection notes quoted above for the following reasons, since Mr. Walch's inspection :—

1. The revetment has been greatly strengthened at a cost of Rs. 11,000.
2. The margin between top of revetment and top of bund adequately protected as described above.
3. Powerful surplus sluices at a low level capable of discharging 7,000 cubic feet per second have been constructed.
4. The first 4 miles of the Maldevi drain have been widened and deepened to a discharging capacity of 1,787 feet per second.

The estimate for Rs. 7,500 for repairing the revetment allowed for re-building the revetment for a length of 3,600 feet and to an average width measured a slope of 11 feet. It was built 2 feet thick $\frac{1}{3}$ new headers from 1 foot 6 inches to 2 feet long used. The backing averaged 9 inches thick of gravel, over which was placed on average 6 inches of small stone. I have not the figures of the subsequent estimate, but about half as much work must have been done on this estimate on the same lines; so that, altogether, over 1 mile in length of mostly the top portion of the revetment must have been reconstructed for a width on slope of an average of 11 feet.

According to Mr. Walch's rules—

Site of southern channel head sluice = 73·0 = zero of gauge.

(b) The reservoir is not to be filled above 88·0 (F.T.L. = 94·45) between 10th October and 15th November.

(c) Between 15th November and 25th December, not above 90·0.

(d) After 25th December to 94·45 = F.T.L.

These rules were to be rigidly enforced till they are replaced under proper authority by any modification which future experience may prove to be advisable. They have been, I believe, rigidly enforced for the last seven years. Now what experience have we gained?

A cyclone—a mild one—was experienced by this reservoir in November 1893. Mr. Marjoribanks was the Divisional-officer. I enclose copy of his inspection notes, which appear to be the only report he made about it. The notes are not as full as one would like on such an important matter, but one satisfactory point to note is, that although the water rose to 19·6 on gauge = 92·6, the revetment sustained no damage. Both head sluices were closed at 6 A.M. on the 3rd with 15·5 on gauge. Between 6 A.M. on 3rd and 6 A.M. on 11th the registered rainfall was 22·1 inches and the water rose gradually in the reservoir from 15·5 = 88·5 to 18·5 = 91·5. The capacity of the reservoir between these two contours is 1,438 mills cubic feet (*vide* table of capacities printed with G.O., No. 131 I., dated 10th February 1885). This would give a run off for the C. B. of 70 square miles of 8·8 inches or $\frac{2}{5}$ the rainfall. The average rate of discharge from the C. B. for the eight days would be 2,083 feet per second. The new low level sluices are capable of discharging 7,000 feet per second, whilst water is rising to 18 feet on gauge. The first 4 miles of the Maldevi drain have been dug out, as pointed out above, to a discharging capacity of 1,787 per second.

Had these facilities for surplussing, therefore, been in existence in 1893, the water might have stood at 18·5 on the gauge on the 3rd November instead of 15·5 without water being allowed to rise any higher than it rose then: or, in other words, if a fall of 22·1 inches in 8 days may be taken as the probable maximum which is likely to occur during a cyclone, then we may, I think, without incurring any unreasonable risk, raise the water level from the limit fixed by Mr. Walch of 15 feet to 17 feet from 10th October to 15th November and to 18 feet from 15th November to 25th December instead of 17 feet.

Of course, the proper and safe thing would be to carry out the Pyderu surplus, but there seems at present to be no hope of obtaining the necessary funds, although it has been shown by my predecessor Mr. Martin in his No. 354 N.L., dated 30th August 1893, that there is a probable loss of revenue, owing to our inability to fill this tank, of something like Rs. 35,000 a year.

Enclosure.

Copy of Progress Report of works in charge of C. H. D. MARJORIBANKS, Esq., Executive Engineer, Sangam Sub-division, from 11th to 20th November 1893.

Buchireddypalam—11th to 17th.—The week was spent in watching the Kanigiri reservoir and endeavouring to reduce the water, which notwithstanding that the surplus sluices were fully opened, steadily rose from $18\frac{1}{2}$ to $19\frac{1}{2}$ feet on the southern head sluice floor. The effect of surplussing down the Maldevi was to swamp the fields adjacent, and endanger the village of Buchireddypalam, some of the houses being inundated. Fortunately, the cyclone which ended on the 16th was a very mild one, or the reservoir must have breached its bund.

Public Works (1898) Department.

CURRENT No. 4845

From the Chief Engr for Irrgn

Order

No. 1659

Dated 27-5-98
Received }
Registered } 7-6-98
Enclosures 2
Spare copies

SUBJECT.

Kanigiri Reservoir Nellore
Note recommending S.E's proposals about the revetment of —

BACK PAPERS.

No.	Date.

FURTHER PAPERS.

No.	Date.

A/

A/E

PUBLIC WORKS DEPARTMENT,
IRRIGATION BRANCH.

PROCEEDINGS OF THE MADRAS GOVERNMENT.

UNDER date the

READ the following

Proposals about the revetment of the Kanigiri Reservoir in Nellore Dt.

Print into Case.

From the Supg. Engineer 2d Circle (Ar. No 42.C. d/ 11th April 1898)

Print

Note by the Chief Engineer for Irrigation - - - - - - - - (Ar. No 165 I " 27th May 1898)

Irrigation

Issue

W.H.

2.6.98 I

A.G.H.

Flagged W.

Owing to the weakness of portions of the revetment of the Kanigiri reservoir, in the portion of the embankment which is exposed to severe wave action in storms, and to the insufficiency of the escapes, the Chief Engineer for Irrigation in his Inspection Notes of Feby 1890 laid down certain rules prohibiting the filling of the reservoir above certain levels within certain dates. These rules were approved in G.O. No 192. I dated 24th March 1890 and have since continued in force. In compliance with the rules the reservoir can be filled to only half its capacity between 10th October and 15th November, to two thirds capacity between 15th November and 25th December, and it is only after the latter date that it is permitted to raise it to its full level. There never is much water in the river after 25th December so that virtually only two thirds of the capacity is being utilized and the project suffers greatly; not merely is extension of cultivation impossible but what there is, is starved. The Supg. Engineer recounts the improvements of the bund and Escapes which have been carried out since 1890 and recommends that it be permitted to fill the tank to 17 ft on sluice sills (or 4½ ft below F.S.L.) from 10th October to 15th November and to 18 feet from 15th Nov. to 25th December. The undersigned, after consideration of the further information now given, has modified the views expressed in the note printed with G.O. No 927. I. of 19th Oct 1897 and recommends the Superintending Engineer's proposals for sanction. When the additional Escape into the Ryderu which is being begun this year is completed, it will be safe to remove still further the present restrictions.

Flagged F.

2. The Superintending Engineers' reports that the slope of the bund above the revetment is thickly planted with reeds which are likely to be more efficient in

Flag M.

× Flag. F.

resisting the wash of waves than the revetment sanctioned in G.O. No 927. I. dated 19th October 1897. Under these circumstances the estimate for the revetment might be closed after providing a reserve of stone for use in case any portion of the planting gets damaged or in any unforeseen emergency.

N-450 Ig 13.6.98.

Order thereon

A.S.H.
31.5.98

The proposals of the Superintending Engineer which are supported by the Chief Engineer for Irrigation are approved.

27.5.98 WH

To The Chief Engineer for Irrign
" Supg. Engr 2d Circle
" Exr of P.W. Accts

D 27/6/98

154/78

E. I. Form No. 1—500—14-6-95

Public Works (1898) Department.

CURRENT No. 46 N.L.

1009

Order

From J. Hannan Esquire
Superintending Engr.
Circle

No. 42-C

Dated 11th April 98
Received 14 — Do —
Registered
Enclosures 1
Spare copies

SUBJECT.

Kanigiri Reservoir —
Submitting report about
the —

DEI
Some of the correspondence on this subject was sent to C.E. on 9 March/98 who wrote a D.O. to Mr Hannan. The papers were probably taken away by the Ooty Clerk from the C.E.'s Table

[illegible]

P DEI

16/4/98

15/4/98

BACK PAPERS.

No.	Date.
R60NL dy	1-9-93
I3hL	15-1-74
I11hL	24-2-90
R3hL	2-1-94

FURTHER PAPERS.

No.	Date.
R68hL	19-8-98

Buchireddypalem
11th - 17th

Copy of Progress Report of works in charge of Capt Marjoribanks Executive Engr. Sangam Sub Division from 11th to 20th November, 1893.

The week was spent in watching the Kanigiri Reservoir and endeavouring to reduce the water which notwithstanding that the surplus sluices were fully opened steadily rose from 18½ to 19½ feet on the Southern Head Sluice floor. The effect of surplussing down the Maldey was to swamp the fields adjacent and endanger the village of Buchy: some of the houses being inundated. Fortunately the cyclone which ended on the 16th was a very mild one, or the

the

the Reservoir must have breached its bund. The wind for the time it was at all strong was from the East, a safe quarter. From the West and North-East it blew very fitfully and moderately, but whenever it did so, the waves washed up slowly to the top of the revetment. It was quite evident that that more ~~th~~ surplussing power is needed (a new set of sluices with sills at least two feet below the present surplus sills). Had the Duvour tank breached, all would have been over, even in the absence of a cyclone and I was making arrangements to blow up the masonry dam as the safest way

way

way of saving the Reservoir when the rain moderated.

Owing to the general flooding of the country the drains in rear of the bund got choked & I was apprehending danger (which could not be guarded against) from the bund slipping behind, the earth being so saturated that in one place I sank to my knees in slush. It was a great mistake in the Project Engineers allowing pits to be dug so near the bund. The revetment stood well and I carefully examined it.

18th & 19th Inspected checkmeasured about 1000 Rs worth of work done on turfing the Kanejiri Reservoir bund from Dewool camp

The widening and deepening of the Maldevi drain which has since been carried out would obviate this if the discharge is limited to 1787 ft. per second.

J. H.

Supy: Engr

H Coils.

presented

for 1/4 miles. The turfing has been a splendid success and has saved the bund from gullying.

Handed over charge of the Sub-Division to Mr. Mildred in forenoon.

20th

I hope that my suggestion about the extra surplus sluices will be listened to.

Sanctioned in G.O. No 689 I d/ 27.8.95

It was not so much the danger to all in Delta that was so unnerving all the time the cyclone lasted, but the feeling that nothing could be done to avert the disaster that made all concerned feel they were like rats on a doomed ship. To be at the mercy of 20 ft head of water twenty square miles in extent, held up by an insecure dam & the sea by 20 miles was a state of things only tolerable by determining not to think of it. It is nevertheless apt to be demoralizing.

Sd/ C H D. Marjoribanks
21.11.93 Exe. Engr.

JH
10.4.98

CHIEF ENGINEER FOR IRRIGATION.
14 APR. 1898
No. 46 N.L.

Superintending Engrs. Office II Circle, Dated 9th April 98
No. 42-C Camp Vinukonda.

From
J. Hannan Esquire,
Superintending Engr.,
II Circle.

To
The Chief Engineer,
for Irrigation.

Encl: 1

Sir,

I recently inspected the Kanigiri Reservoir and beg to submit the following report:-

I found as already reported and especially that the margin between the top of the revetment and the top of the bund[x] 5 ft vertical was thickly covered with a fine plantation of Kakirella reeds which were planted about 2 years ago. These reeds had everywhere attained a height of from 4 to 7 ft and in my opinion afford as good ~~and~~ if not better protection to the slope than

× RL top of bank is 103.45 – this makes top of revett. 98.45 – Mr. Martin in report of 1883 says top of revett. is 99 – These levels are appear from Mr. O'Connell's levels according to his report of 1890 than the revetment recently sanctioned for Rs 9000 this plantation extends from the Southern Channel Head sluice round the bay for a distance of 1 mile and 7 furlongs. Beyond this again, the margin is covered with Nanal grass which has grown well and affords a sufficient protection for this less exposed portion of the bund. I have, therefore, subject to your approval, ordered the revetment work not be proceeded with, but as it is very desirable to have some stone in reserve along the more exposed portion of the bund in the bay and as the contractor had opened quarries and also brought some material to site, I ordered 10,000 cubic feet of stone to be brought to site at a reserve to meet possible contingencies.

I inspected the bank revetment carefully and am of opinion that it is in a satisfactory state and not likely to suffer any serious

damage

damage from wave action. From this you will note that I do not concur with views expressed by my predecessors Mr Martin and Major Baddeley endorsed as they are by the late Chief Engineer for Irrigation Col: Drake Brockman, and that I agree with the opinion expressed by the late Chief Engineer Mr Walch in his inspection notes printed with G.O. No 1723 dated 24.3.90, that all that was required to the revetment was to repair it with thicker and better stones in accordance with the instructions contained in his memo No 4/NE dated Ganjam 24.2.90. This was accordingly done at a cost of Rs 7500/ and subsequent repairs executed at a cost of Rs 3820/ in 1895. So that, altogether, since the cyclone of 1889, over Rs 11000/ have been spent in improving this revetment. I think the time has now come for modifying the restrictions as regards water

level

I 11 No 180
put up with
I 2038/99 + send
to S.E. Ganj. 9.3.98
with reference to
his requisition

level imposed by Mr. Walch in his inspection notes quoted above for the following reasons:- Since Mr. Walch's inspection

(1). The revetment has been greatly strengthened at a cost of Rs 11000/.

2. The margin between top of revetment and top of bund adequately protected as described above.

3. Powerful Surplus sluices at a low level capable of discharging 7000 cubic feet per second have been constructed.

4 The first 4 miles of the Kaldevi drain have been widened and deepened to a discharging capacity of 1787 feet per second.

The estimate for Rs 7500/. for repairing the revetment, allowed for rebuilding the revetment for a length of 3600 ft. and to an average width measured a slope of 11 ft. It was built 2 ft. thick 1/3 new headers from 1-6 to 2 ft. long and The backing

backing averaged 9" thick of gravel over which was placed on average 6 inches of Small stone. I have not the figures of the Subsequent estimate but about half as much work must have been done on this estimate on the Same lines. So that altogether over a mile in length of mostly the top portion of the revetment must have been reconstructed for a width on slope of an average of 11 ft.

Sill of Sullivan ch.
17° sluice = 73.0
= zero of gauge

According to Mr. Walch's rules

(b) The reservoir is not to be filled above 88.0 (F.T.L. = 94.45) between 10th Octr & 15 Novr.

(c) Between 15th November & 25th December not above 90.0

(d) After 25th December to 94.45 = F.T.L.

These rules are to be rigidly enforced till they are replaced under proper authority by any modification which future experience may prove to be advisable. They have been, I believe, rigidly enforced for the last seven years. Now what experience have we gained

A cyclone, a mild one, was experienced by this reservoir in November,

Mr.

Mr Marjoribanks was the Divisional officer. I enclose copy of his inspection notes which appear to be only report he made about it. The notes are not as full as one would like on such an important matter, but one satisfactory point to note is that although the water rose to 19·6 on gauge = 92·6 the revetment sustained no damage. Both Head-sluices were closed at 6 A.M. on the 3rd with 15·5 on gauge. Between 6 A.M. on 3rd and 6 A.M. on 11th the registered rainfall was ~~[illegible]~~ 22·1 inches and the water rose gradually in the reservoir from 15·5 = 88·5 to 18·5 = 91·5. The capacity of the reservoir between these two contours is 1438 m. c. ft (vide table of capacities printed with G.O. No 1312, dated 10th February 1885) Put up This would give a run off, for the C.B. of 70 square miles of 8·8 inches or [illegible] 2/5 of the rainfall. The average rate of discharge from the C.B. for the 8 days would be 2083 ft per second.

The

The new Low level Sluices are capable of discharging 7000 ft per second whilst water is rising to 18 ft on gauge. The first 4 miles of the Maldevi drain have been dug out as pointed out ~~as pointed out~~ above to a discharging capacity of 1787 per second.

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Of course, the proper and safe thing would be to carry out the Pydere

surplus

but there seems at present to be no hope of obtaining the necessary funds, although it has been shewn by my predecessor Mr Martin in his No. 354 NL. dated 30.8.93. that there is a probable loss of Revenue owing to our inability to fill this tank of something like Rs 35000/. a year.

Q 60 NL/93
flag G

I have the honor to be
Sir,
Your most obdt Servt
W Hemming
Superintending Engineer.
Civil.

CHIEF ... R
FOR IRR... ON.
14 APR 1898
No. 46 NL

[illegible]