New No. Sectt. I (i)-1—Old No. M.R.O. 1—10,006—10-6-63.

(1) Number of pages 4.

(2) Date of repair 3-3-70.

(3) Initials of the Referencer

MADRAS RECORD OFFICE

GOVERNMENT OF MADRAS

Revenue DEPARTMENT

G.O. No.	2546	Press
B.P. No.		Mis.
Dated	1-11-1876	196

Not to be folded or roughly handled

Read the following :—

No. 218-W.

No. 263. *Note by the Chief Engineer for Irrigation.*

THE supply channel from the Cortiliar of the Cholaveram Tank, Madras Waterworks, having been extensively breached in 1870 by the land drainage brought into the channel by two streams called the Katankal and Boosykal respectively, estimates for the additional works required were directed to be prepared, and in G.O., 20th March 1871, No. 824, the immediate construction of a weir to discharge the flood water of the Katankal was authorized.

Proceedings of the Madras Government, 18th November 1870, No. 2,774.

2. The channel again suffered very considerably in October 1874, and advantage was taken of an inspection made in March—April 1875 to go into the requirements more completely with the Superintending Engineer, and the leading features of the necessary arrangements were then settled.

Notes of Inspection, paragraph 13, Proceedings of Madras Government, 15th July 1875, No. 2,011, corrected by Proceedings of Madras Government, 25th August 1875, No. 2,428.

3. Looking to the level to which floods in the Cortiliar rise and to the corresponding level to which water in the channel at such times must attain owing to the outfall at a lower level being blocked it was determined that in the channel M.W.L. should be fixed at $4\frac{1}{2}$ feet above ordinary full supply level or at $10\frac{1}{2}$ feet above bed, and the drainage basin of the Katankal being estimated at 62 square miles and that of the Boosykal at 44 square miles, the lengths of weir required would be 280 and 216 feet respectively, and designs and estimates were to be prepared accordingly.

4. Captain A. C. Smith then proposed that instead of constructing weirs with their crests throughout at channel F.S.L., or in the case of the Boosykal weir some 10 inches higher as was found to be necessary, the Cholaveram F.T.L. being 6 feet 10 inches above channel bed, it would be more economical and convenient to insert sluice vents in the weirs and to furnish these with self-acting shutters. Such shutters having not been successful elsewhere, this proposal was not at first favorably entertained; but Captain Smith, with a perseverance which does him much credit, set to work to experiment on a revolving shutter, and after many trials he succeeded in demonstrating that arrangements which will fulfil the necessary conditions could be designed, and as those conditions are in the case of these weirs specially favorable, seeing that a head of water considerably in excess of that necessary to open the shutters can be allowed, it is believed that they are very likely to answer.

5. As a result of adopting weirs with sluice vents the lengths of the former will be reduced as follows:—

	Without vents.	With vents.
Katankal escape	280	144
Boosykal escape	293*	135

The estimates are for the—

	Rs.
Katankal escape	18,400
Boosykal escape	16,900

* 216 originally, but the greater length would have been needed for a crest 10 inches higher than was then supposed to be necessary.

G.O. No.
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Some of the [illegible]ective details of the design, with which the Range Officer has evidently taken much pains, will be the better for modification. The alterations considered desirable have been noted on the plan of the Katankal weir and they will effect some reduction in the cost of the work.

6. It is desirable that it should be understood that while these weirs will be of sufficient capacity to relieve the channel of land drainage when the river is not higher than $4\frac{1}{2}$ feet above canal bed level,* a higher rise will affect the discharging capacity, and as a maximum fresh in the river will stop all discharge, should that occur concurrently with a maximum rainfall over the country, the water in the channel will continue to rise until the banks give way somewhere. There is no help for this except an inordinate raising of the M.W.L. in the channel with a corresponding height for the left bank of the channel, and the alternative of breaches perhaps once in thirty years will be preferable to the great expense of providing against such a contingency. The roadway over the weir will be $5\frac{3}{8}$ feet above M.W.L. in the channel and $3\frac{1}{2}$ feet above M.F.L. in river, and in view of the above contingency the channel banks at convenient places not within quarter of a mile of the surplus works should be made up to 2 feet only above M.F.L. in river, so that the breaches may take place where they will do least harm, and that all risk of breaches at or near the weirs may be avoided. The Superintending Engineer should give special attention to this matter.

* At Katankal weir.

7. The Range Officer has over-estimated the discharges, apparently from taking for the sluice discharge the head to the sill instead of to the centre of the vents, and from neglecting the diminution of depth passing over the weir due to the 6-inch sill bar of the swing shutters. An accurate calculation of discharge is difficult, but it is thought that for the Katankal weir 5,664† cubic feet a second as noted in pencil on the plan is approximately right, and this is equivalent to 3·4 inches draining off the whole catchment basin in 24 hours. The channel when running $10\frac{1}{2}$ feet deep will carry off a large quantity in addition, and it is believed that the total waterway available will be sufficient.

† Instead of 8,811 C = 360 in Ryves' formula
= 256 in Dickens' formula.

8. It appears to the undersigned that the weirs, independently of the alterations made in details, ought to be built for considerably less than the estimates. The rate for archwork in chunam is 7-12-0 a cubic yard, against 4-2-0 for wall work, and the difference is far too great. Rupees 2,000 are allowed in each estimate for coffer dams and baling, and certainly, if the executive arrangements be good and the weather for getting in the foundations favorable, about one-fourth of this item should suffice.

9. The weir estimates will form items in the revised estimate for the Madras Water-works Project now under preparation. But for the instruction of the Government of India to postpone all expenditure on the project not absolutely unavoidable, until the revised estimate has been submitted and sanctioned, the early carrying out of these improvements would have been recommended. As it is, seeing that the requirements of the channel have already been waiting to be attended to for several years, it may be considered advisable to postpone the construction of the weirs until the general estimate has been passed. That estimate has been long awaited.

OOTACAMUND,
11*th October* 1876.

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

To the Secretary to Government, Public Works Department.

Proceedings of the Madras Government, Public Works Department,
17*th October* 1876. *No.* 2,785.

[illegible]264. ORDER THEREON, 17th October 1876, No. 2,785.

IRRIGATION, No. 3[illegible]A.

HIS GRACE the Governor in Council approves of the entry of the estimates for surplus works for the Katankal and [illegible]oosykal drainages, on the [illegible]olaveram tank supply channel, in the revised general estimate for the Madras Water-works Project, and if possible the former estimates should be altered with reference to the remarks of the Chief Engineer for Irrigation.

2. The delay in the submission of the general estimate has been so great that His Excellency in Council regrets the necessity for postponing the carrying out of these improvements to the channel until orders on the estimate have been passed.

(True Extract.)

[illegible] Major-General, R.E.,
Secretary to Government.

[illegible]e Superintending Engineer, Chingleput.
Collector of do.
Chief Engineer for Irrigation.
Examiner of Public Works Accounts.
Revenue Department.

Exd. E. C. Shunker.

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