

MADRAS RECORD OFFICE.

Government of Madras.

Revenue DEPARTMENT.

G.O. No.	2004	Press Mis.
367-68 Dated	21-7-	191868

Not to be folded or roughly handled

Proceedings of the Madras Government, Revenue Department,
21st July 1868.

No. 367. Read the following Proceedings of the Madras Government in the
Public Works Department :—

Authorizing Mr. McIvor to proceed with the
construction of the embankment across the
Bhowany river below the junction of the
Avelanche and Porty Nullahs. } (Here enter 16th July 1868, No. 2,271.)

No. 368. ORDER THEREON, 21st July 1868, No. 2,004.

Irrigation, No. 11.

Communicated to the Revenue Board.

(True Extract.)

(Signed) H. SEWELL,
Acting Under Secretary to Government.

To the Board of Revenue, with Proceedings Public Works Department, No. 2,271.

Ed. F. R. Bantleman.

*Proceedings of the Madras Government, Public Works Department,
16th July 1868.*

No. 381. Read the following letter from the Superintending Engineer, 7th Division, to the Secretary to Government, Department Public Works, dated Camp at Chinna Dharapoorum, 3rd July 1868, No. 79:—

* Letter No. 95 of 30th June.

1. In submitting Mr. McIvor's explanations* called for in G. O., No. 1,872, of 13th June, I have the honor to remark that they provide for no alteration of plan and estimate, except as to the dimensions of his under-sluice which, in deference to Colonel Anderson's remarks, he proposes to increase from a sectional area of 16 to one of 24 feet, at an extra cost of Rupees 2,000, making Rupees 25,000 in all. He proposes to commence cutting this out of the solid rock in August, completing it by December, and carrying out the rest of the work by April next year.

2. The water that Mr. McIvor would employ for silting purposes, I believe to be that of two nullahs, one of which falls into the river below, the other above the dam site. Of the sufficiency of the supply to effect his purpose within the time he proposes, he is the best judge, being alone cognizant of the practical details of the silting process. He does not appear to apprehend any difficulty in getting rid of it when it shall have done its work.

3. I have requested Major Farewell to take measures for gauging the discharge of the stream, as recommended by Colonel Anderson.

4. In the event of Government declining to allow Mr. McIvor to carry out the Bhowany valley dam as designed by him, even at his own risk and cost, or on the terms proposed in Colonel Anderson's 13th paragraph, I would suggest his being allowed to make the 60 feet bund across the Nunjanaad valley, alluded to in paragraph 2 of my letter, printed with G. O., No. 1,635, of 23rd May, on payment at the rate proposed by him, viz., 50 cubic yards per rupee; to pay for which and the bridge in connection with it, an appropriation of only Rupees 6,000 need be made.

From W. G. McIVOR, Esq., Superintendent of the Government Chinchona Plantations, to the Superintending Engineer, 7th Division, dated Ootacamund, 30th June 1868, No. 95.

1. With reference to the Order of Government under date 13th June 1868, No. 1,872, I have the honor to inform you that, during the process of constructing the embankment by silting, it may be found necessary to deviate in some degree from the particulars detailed in the plans previously submitted. Any alteration which may appear desirable will of course be made during the progress of the work, the principle being maintained.

2. I have carefully considered the points recorded by Colonel Anderson in the Proceedings of Government, and feel indebted to that gentleman for the care and minuteness with which he has entered into the matter. Especially by his pointing out, what he conceives to be, the several weak points in the system proposed.

3. The culvert shown in the plans is 4×4 feet, and would, I believe, be quite sufficient to carry off the water of the river during the time the work is in progress, even if performed during the monsoons. The flow of water in the river during the dry season has a sectional area of 3 feet, measured when it passes over a steep incline of about 6 feet in height. From this it appears that with a pressure of 6 feet a culvert 2 feet square would be more than sufficient to carry off the water of the river during the dry season (*i. e.*, from December to June). The culvert in the plan gives 16 square feet, and under a pressure of 120 feet, would convey. I believe, the whole of the water of the river during floods. The culvert is to be cut through the solid rock, and as increasing

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16th July 1868.*

its size to 6 feet by 4 feet will only add about 2,000 Rupees to the cost of the work, I would, therefore, propose that this size be adopted, as Colonel Anderson questions the capacity of a culvert 12½. The culvert 6 × 4 will give a sectional area of 24 feet, and under a pressure of 120 feet would discharge about 2,000 cubic feet of water per second. This would dispose of the whole of the water in the river during the heaviest floods. The culvert, however, is not intended to take the flood water, this will pass over the surplus weir, nor will the flood water, although the rain may fall at the rate of 10 inches in twenty-four hours over an area of 21½ miles, still the flow out of the escapement weir would not reach 2,320 cubic feet per second, because, supposing prior to the flood the lake to be full and flowing out of the escapement weir with a depth of 6 inches, the flood comes and raises the flow of water in the escapement weir to the depth of 3½ feet, before this can be effected, the water has risen over the entire surface of the lake to one yard in depth, and without any discharge at all this rise in the lake would be sufficient in ordinary floods to contain the whole of the rain-fall of a storm of twenty-four hours duration: for this reason the water of a flood never flows out of a lake so fast as it flows into it, in short the lake continues to empty itself of the storm waters for days after the storm has ceased. Calculations of this kind indicate what is necessary, but we must in works of this kind provide four or five times the strength, or capacity, actually required.

4. I have known the locality for years, and have seen the flow of water in the river during the heaviest floods.

5. The cutting of the culvert should be commenced in August, as this work must be completed before we can begin the embankment. The culvert being completed about the beginning of December, the embankment would then be commenced and finished about the beginning of the south-west rains, in fact I anticipate that the whole of the work will be completed by the end of April 1869.

6. From the remarks in paragraphs 7, 8, and 9, it appears that Colonel Anderson does not fully understand the principle on which the bund is to be constructed. Were it necessary to follow the process Colonel Anderson refers to, the formation of embankments by the silting process would be physically impossible. One such channel, as is described, to draw the silting and flood water off the river, would cost at least three times as much as my estimate for the entire work. Such a channel could not be maintained, as it would be constantly over-topped and destroyed by flood water. But even if this channel could be constructed, it would not answer the purpose, because, as Colonel Anderson correctly remarks, no human power could control the water in its fall from an elevation of 120 feet down to the level of the stream; but none of these processes are required in the construction of embankments by the method recommended. We do not use the water from the river for the purpose of silting, nor do we draw off the water by side channels. The silting streams also are altogether independent of the river water.

7. There is a difficulty in explaining how the work is performed so as to be understood by those who have not seen it in operation, and I trust I may in the meantime be excused from entering into full descriptions, which would occupy a volume; but as soon as this work is completed, I shall then proceed to describe and illustrate the process, so as it may be clearly understood.

8. The subject has had my full and serious consideration; I have practically carried out works on the silting principle, with uniform success, and although it is true that these were not on so large a scale as that now proposed yet I can see no cause to doubt that this work will be performed equally successfully, and entirely to the satisfaction of the Government and the Engineer Department.

9. Trusting that I may receive early sanction for the commencement of this work, so as to enable me to complete it before the commencement of the next south-west monsoon, I have, &c.

No. 382.

ORDER THEREON, 16th July 1868, No. 2,271.

IRRIGATION No. 20.

1. Under the explanation now afforded by Mr. McIvor, and in consideration of the desire expressed by the

Secretary of State in his Despatch of the 7th October last, No. 32, for Mr. McIvor

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to be given an opportunity of forming an embankment of sufficiently large dimensions to put the merits of his method of construction to a practical test, the Government resolve to authorize Mr. McIvor to proceed with the construction of the embankment across the Bhowany river below the junction of the Avelanche and Porty Nullahs, for which an estimate of Rupees 23,000 (now increased to Rupees 25,000) was submitted with the Superintending Engineer's letter No. 52 of the 22nd May 1868.

2. As the embankment will form a storage basin in which some 22 millions of cubic yards of water will be held in reserve for application, as it may be required, to agricultural purposes, the work comes within the category of a useful irrigational project, requiring the expenditure upon it to be classed as "Agricultural Ordinary." His Excellency in Council accordingly places Rupees 13,000 from the Reserve under that head at the disposal of the Superintending Engineer of the 7th Division to allow of the work being commenced without delay, and, if necessary, a further assignment will be made as the year advances.

(True Extract.)

Colonel R. E.

Secretary to Government.

To the Superintending Engineer, 7th Division
 „ Controller of Public Works Accounts.
 „ Accountant General.
 „ Revenue Department.
 „ Public Department.

Exd. S. T. Augustin.

84-2130

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Revised 18" }

Ms. A. 9. 2. 2271 -

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Wm. W. Phelps

Furthermore, all children
 to be associated with the
 construction of the
 underground pass
 to the Lower River
 below the junction
 of the two lower wings
 of the structure

88-2054.

Commd to the
Revenue Board-

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