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CONCERNS BOTH BRITISH INDIA
AND INDIAN STATES.

MADRAS RECORD OFFICE.

Government of Madras.

Public Works DEPARTMENT.

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*Proceedings of the Madras Government, Public Works Department,
23rd July 1864.*

No. 429. Read the following letter from Captain J. MULLINS, R. E., Consulting Engineer for Irrigation and Canal Company, to Colonel C. A. ORR, R. E., Secretary to Government, Department Public Works, dated Camp, Cuddapah, 5th July 1864, No. 32:—

SIR,

1. I have the honor to return, as directed, the papers on the Mauri Canvai Tank, which were received with the Order of Government No. 1,489 of the 21st May 1864, and to submit at the same time a printed letter* of the 14th ultimo from the Chief Engineer of the Irrigation Company, which was received with a covering letter of the 24th idem, No. 486, from the Agent.

* The only copy received.

2. The Agent in a letter of the 21st ultimo, No. 445, asks for two copies of the papers now returned for transmission to the Board of Directors, and for record in his Office, and if obtainable I should be glad of a copy for this Office.

From Colonel H. C. COTTON, Chief Engineer, to F. H. HENSLOWE, Esq., Agent and Manager Madras Irrigation and Canal Company, dated Madras, 14th June 1864.

SIR,

1. I have received by the favor of the Chief Commissioner in Mysore a copy of a Report by Major Sankey, on my plan and estimate for a Dam at the Mauri Canvai. This Report appears to be the same as that referred to in the Government Order, dated 21st May 1864, No. 1,489, as to be forwarded to you by the Consulting Engineer, but which did not accompany the Order.

2. In the Proceedings of Government 8th August 1863, No. 2,231, it will be seen that Mr. Bowring wished me to furnish a plan and estimate of the work I had proposed and described in a former communication, with a view to its being referred to competent professional judgment with Major Sankey's Plan, and in requesting to be informed of the result of such reference I hoped to receive, not Major Sankey's own remarks, but those of some unprejudiced judge. These remarks of Major Sankey's apparently profess to be his judgment in the matter, but he deals with previous questions as a portion of this, and makes assumptions to argue upon which are not in my plan but in fact opposed to it.

3. Had I found this to be a pure professional opinion on my plan, I should have considered it to be what Mr. Bowring proposed, and should not have replied to it, but there is in fact one part of the work only on which an opinion is given, viz., the sluice valves, paragraphs 17 and 18, of which in a former part of the letter he truly says I have furnished no plan.

4. I will remark on each paragraph of the report separately to show that the plan and estimate I have furnished is dealt with unfairly not professionally, and not disinterestedly.

5. The 2nd paragraph states that in the Abstract to the estimate there are nine items, of which only three are calculated on reliable data, and that this in itself would invalidate any deductions drawn from it and prevent the possibility of any comparison with Major Sankey's own project. Let it be observed that the three items named are the entire Dam and Sluices estimated at Rupees 11,74,211 out of the total estimate of Rupees 12,66,520. This in itself would be sufficient for a comparison of the two dams, but there are other items also closely reliable. The sluice valves although plans are not given have been entered at an average price, which would not be disputed by a disinterested Engineer. As all the sluices are under different pressures a separate plan would be required for each to give minute details of their form and cost, a most unnecessary labour not affecting the principles of the plan, unless it be true that they must necessarily rot before they are accessible for repair. This is a professional opinion, and it is the only one applying to my plan in the whole paper.

6. The next item is Rupees 5,000 for buildings. This is not questionable but fixed and limited. There is no reason why it should be exceeded, and it is perfectly unnecessary in the estimate to do more than determine the maximum sum to be allowed.

Consulting Engineer H.C.

*Proceedings of the Madras Government, Public Works Department,
23rd July 1864.*

7. For excavating and baling no Engineer can give more than an approximate estimate. I have not now before me Major Sankey's estimate, but in all probability there is a similar item in it, for such is the universal practice.

8. For supervision and contingencies there is also invariably an approximate estimate intended to cover uncertain expenses, and the Engineer's own experience is taken as a fair warrant for it. There are only two items of Rupees 5,000 each which are not in fact such detail estimates as might be given, viz., levelling on the shoulder which forms an escape weir, and levelling and walling below the sluices, to form safe channels for the water clear of the dam.

9. Of these I will remark further as I proceed. But the fact that in an estimate of 12½ lacs of Rupees a sum of 10,000 is entered too vaguely, cannot reasonably be said to prevent a professional comparison of the two plans.

10. In the third paragraph Major Sankey says that I originally estimated the cost of the work at 6½ lacs. My original estimate was a comparative estimate showing that a high dam on my plan would cost less than a low dam on the plan proposed by Colonel Lawford. The only way of comparing their cost was by estimating on the same data, and it was on Colonel Lawford's data I made that estimate. Major Sankey's present rates are nearly double, and I have adopted them nearly, upon enquiring into prices on the spot. The remark that the many "omissions" in the estimate would raise the cost to near 20 lacs, is a statement altogether unsupported; nothing is omitted in my estimate and the rates are ample.

11. In the 4th and 5th paragraphs Major Sankey states that no provision is made for a waste weir, and that no allusion is made to such a work, but in the 9th paragraph of my letter. He might refer to the 4th and 11th also, and to the special character of the project which clearly provides for the escape over the *northern* not the *southern* saddle. It is provided that the saddles shall *not*, as Colonel Lawford proposed, be cut down, and the dam is raised expressly to the height which shall turn the course of the river without lowering them, and so retain the greatest possible supply of water. The fifth paragraph says I have taken no levels, but the ground of that statement does not appear. I have determined the height of the dam by that of the saddle as stated in the 9th paragraph of my letter, and in the 11th paragraph, I have explained that Rupees 5,000 is entered in the estimate not for lowering but for "any excavation and paving which may be required," in other words levelling the surface of the "broad flat plain" as this saddle is described by Major Sankey.

12. The 6th and 7th paragraphs quote a pamphlet by Sir A. Cotton to show the importance of a sufficient escape, but nothing is brought forward to indicate that it is insufficient. The 7th paragraph intimates that Sir A. Cotton proposed this very saddle as the waste weir for the tank. The principles of the work he had in view in writing that pamphlet were the same as those on which my plan is projected, viz., that the saddle provided by nature shall be made the outlet. Reliable levels had not then been taken, and Sir A. Cotton proposed to *raise* the saddle to give greater capacity to the Basin, but the levels given to him by Colonel Green, as not proved, were found incorrect, and the fall of the river appeared much greater than it really is. But this error only affected the capacity of the tank, not the principle of giving of the waste water at the northern saddle.

13. Major Sankey in his 8th paragraph and 9th gives an estimate for cutting down *another* saddle to show what would be the expense of lowering *this* and condemns my estimate on that ground. I cannot admit that it shows any thing with regard to my project, the first principle of which expressly disallows all reduction of the capacity of the tank by lowering the natural hills.

14. The 10th, 11th, 12th, 13th, and 14th paragraphs comment on the capacity of the tank quoting again Sir A. Cotton's pamphlet concluding that "the bund must be made at least 180 feet high on his own data" to contain 4,600 million cubic yards. It is not clear what data are here alluded to. Sir A. Cotton gives in his pamphlet a rough calculation of the capacity of the

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tank on the data given to him, this can have no bearing on the case under accurately taken levels, the argument is in fact founded on nothing, and further, the capacity of the tank has no bearing on the present question. I have made no reference to it because it is allowed that the high dam ought to be constructed if the cost is not greatly in excess of that of a low dam. The capacity makes no difference to the Mysore country, further than that it is in excess of its requirements. The capacity will be *greater* if the tank is filled to the height of the saddle, than if the saddle were cut down as proposed by Colonel Lawford, or if Major Sankey's fall over the dam were adopted.

15. Paragraphs 15, 16 and 17, 18 and 19, 20 and 21 contain a calculation to show that my sluice shutters will be so long submerged, that they will rot. Major Sankey at the beginning complains that I have given no plan of these shutters, and how he comes to this conclusion without it, does not appear. We see teak ships afloat for 100 years not decayed, but if my plan is fairly considered, and it be allowed that floods occur to fill the tank only once in five years, it is clear that all the sluices will be accessible every fifth year for the renewal if necessary of the shutters, and for partial repair or strengthening; they are accessible always from the outside. But why are these valves to be spoken of as "perishable machinery" while the patent sluices adopted by Major Sankey are considered secure. Only because Major Sankey himself is drawing the comparison. The patentee himself does not advise their use under such great pressure as would be necessary in the dam I propose, and Major Sankey in order to raise them in his project, has mis-calculated their effect, for he evidently cannot draw by them a sufficient supply for 50,000 Acres of land when the tank is less than half full.

16. I consider complicated machinery most objectionable in such works in India, and on this ground I have planned sluices to work under moderate pressure, and to be closed by simple shutters, which can be repaired or re-placed promptly and at a trifling expense.

17. In the 21st paragraph Major Sankey again quotes Sir A. Cotton's pamphlet which calls the attention of professional men to the importance of a full consideration of the subject of large discharges under great pressure, concluding that as Sir A. Cotton does not mention these patent valves, he had never heard of them. Let Major Sankey refer that matter to the patentee or any other competent authority, and he will find that they are not suitable to such pressure and such discharges as Sir A. Cotton referred to. At all events I do not adopt or recommend them, and with this professional opinion Major Sankey is most welcome to contrast his own. It is the object of this correspondence to obtain if possible disinterested professional opinions on the two plans.

18. In the 22nd paragraph Major Sankey meets the objection I raised to the form of his Dam. I stated that in my judgment the over-fall as planned is a vital objection to the work. In my opinion the arches built to receive the over-fall could not stand, and their failure I consider fatal to the whole work. Major Sankey says "in case the rock at foot is sufficiently unyielding this feature may be omitted altogether." "It is *only* essential in case of the rock being of a different texture" so that all depends upon the nature of the rock, and that nature is not ascertained. But I go further and state as my opinion that if the rocks withstood the power of the over-fall, the pressure against the dam in its reduced section, would destroy it.

19. The 23rd and 24th paragraphs again refer to the supply, which I have not considered it necessary to touch upon. I certainly cannot allow that I consider Major Sankey's calculations correct where cubic feet are converted into quasi cubic yards by dividing by nine, and necessary as it may be to our Company to know what the supply is likely to be, it is no part in the question before the Mysore Government, it having already been decided that the greater reservoir, and therefore a high dam and the escape of surplus water over the northern saddle is preferable, if only the plan and estimate are approved.

20. With reference to the 28th and last paragraphs I must be allowed to say that so far from Major Sankey's criticism being from any point of view the same as mine, I see no single point in which our views agree. I trust as originally intended, the two plans will be referred to some Engineer authority unconnected with their projectors.

*Proceedings of the Madras Government, Public Works Department,
23rd July 1864.*

No. 430. ORDER THEREON 23rd July 1864, No. 2,122.

Ordered that the letter from the Chief Engineer, Irrigation and Canal Company, received with the foregoing communication, be forwarded to the Commissioner of Mysore, to whom application will be made at the same time for three copies of the papers asked for in the last paragraph.

(True Extract.)

(Signed) J. H. M. SHAW STEWART, Major, R. E.,
Deputy Secretary to Government.

To the Consulting Engineer, Irrigation and Canal Company.
Agent for do. do.

Exd. S. T. Augustin.

MADRAS IRRIGATION AND CANAL COMPANY,
Madras 14th June, 1864.

From

COLONEL H. C. COTTON,
Chief Engineer.

To

F. H. HENSLOWE, Esquire,
Agent and Manager.

SIR,

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I have the honor to be,

Sir,

Yours most obedient Servant,

H. C. COTTON,

Chief Engineer.

N^o 32.

Irrigation & Canal Company
Consulting Engineer's Office
Camp at Cusapah 5th July 1864
Rec^d 9th July 1864

From

Captain J. Mullins P. E.

Consulting Engineer for U.S.

To

Colonel C. A. Orr P. E.

Secretary to Government, D. P. M.

Sir,

I have the honor to return as directed the papers on the Maudy Camori Bank which were received with the order of Government N^o 1489 of the 21st May 1864, and to submit of the same a printed list of the 11th Altimo from the Chief Engineer of the Irrigation Company, which was received with a covering letter of the 26th idem N^o 486 from the Agent.

the only copy received

2. The Agent in a letter of the 21st Altimo N^o 445 asks for 2 Copies of the papers now returned for transmission to the Board of Directors, and for record in his Office and, if obtainable, I should be glad of a Copy for this Office.

I have the honor to be,

Sir

Your most obedient servant

J. Mullins Captain P. E.

Consulting Engineer U.S.

E. J. Mullins

12/10/1864

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CONCERNS BOTH BRITISH INDIA
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