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MADRAS RECORD OFFICE.

Government of Madras.

Public Works DEPARTMENT.

G.O. No. 2893 Press Mis.

101-102.

Dated 7-10-1864.

Not to be folded or roughly handled

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Proceedings of the Madras Government, Public Works Department, 7th October 1864.

No. 101. Read the following letter from Captain J. MULLINS, R. E., Consulting Engineer, Irrigation and Canal Company, to Colonel C. A. ORR, R. E., Secretary to Government, Public Works Department, dated Madras, 26th September 1864, No. 109 :—

SIR,

1. I have the honor to transmit, for the information of Government, the Agent Irrigation and Canal Company's letter No. 1,270, of the 20th instant, together with its accompanying letter No. 752 of the 13th idem, from the Chief Engineer, having reference to those paragraphs of my report to which his attention was called in Proceedings Madras Government No. 2,438 of the 24th August 1864.

No. 40 of the 2nd July.

2. Only a few words need be said in answer to Colonel Cotton's remarks.

Report, paragraph 10. Chief Engineer's letter paragraph 2. Under-sluice shutters.

3. I have been unable to trace any misconception, the report mentions defects and Colonel Cotton says the valves are not properly finished.

Do. paragraph 26. Do. paragraph 5. Embankments near Hindry Aqueduct.

4. The Chief Engineer says these banks are of very good material; if so it was a sad waste of money to construct the costly masonry walls which have been built. It is gratifying however to find that the walls and earthwork together have stood well.

Report, paragraph 35. Chief Engineer's letter paragraph 9.

5. There is no material difference between the two accounts.

Do. paragraph 65. Do. paragraph 12.

6. The work referred to in my report as requiring to be done was a few yards only in length, and no doubt it was done after my inspection. Judging from the repor[illegible] rain fall and damage in the Nagatoor Division, the canal as a canal has not been tried, though much water found its way into and out of it at the various gaps.

Forwarded to Government, with letter No. 103 of the 24th September 1864.

Report, paragraph 78. Chief Engineer's letter, paragraph 14.

7. The Chief Engineer refers, I think, to a different part of the line; in the present Nagatoor Division I remember no rocky spurs, and it is in the lower part of the 2nd and in the 3rd sections of the Hindry Division that alterations of the kind mentioned were contemplated. What I said would have been a better line as regards submerged land, would have been just as good as the present line for navigation. What Colonel Cotton here states is an insufficient answer, and paragraph 18 is not quite correct; the main canal below the surplus works cannot carry safely 1,00,000 cubic yards of water, but less than half that quantity; the calingulah will not be 10 feet above the canal bed, for if so it would not discharge at all until the water had risen above the maximum level intended. However, as the Chief Engineer says the subject has been fully investigated, I have asked the Agent to obtain the surveys and levels connected with the investigation, and of course if these show that no additional precautions are necessary, it will not be needful to make the examination again.

Do. paragraph 90. Chief Engineer's letter, paragraphs 17, 18 and 36.

Report, paragraph 150. Chief Engineer's letter, paragraph 30.

8. Unless the Chief Engineer has misunderstood my meaning it is to be regretted that he should consider that economy in the execution of work is impracticable in the way referred to. There is no good reason why when labour is equally costly and materials are obtainable with equal facility, rates should greatly differ as they have done. It is not right that while the careful management of a subordinate in one part of a section provides a material at a cheap rate, a careless and inefficient man's insufficient excuses should pass a rate very much higher a mile or two further down the same section. Certain data make certain rates fair and proper, and the margin allowed beyond the results thus arrived at should not be too large.

Report, paragraph 151. Chief Engineer's letter paragraph 31.

9. The observations in the report are quite explicit, and the buildings at Puggydial and Iyalore are, the Chief Engineer must be well aware, not on the margin of the canal or relatively in the same position to the canal as a railway station is to the line of rails.

Do. paragraph 153. Do. paragraph 33.

10. The Chief Engineer is mistaken; I took the best means of ascertaining what was being done, viz., seeing it, and it appeared to me desirable that there should be concentrated effort rather than the simultaneous prosecution of works in many different sections, making it difficult to finish any, and bring the canal into use.

1864.	Coolies daily average.
January	13,364
February	14,128
March	14,135
April	17,075
May	19,649
June	14,566*

* Falling off due to Cholera.

11. Chief Engineer's remark about the falling off of labour has no meaning where it stands, for I referred to the expectations entertained by him as late as February last, and the labour returns give the information shown marginally and this labour was scattered over 136 miles.

Do. paragraph 154. Do. paragraph 34.

12. I informed the Chief Engineer in letter No. 4 of the 2nd July 1864, exactly what information I had asked his Executive Engineers to give me, and Colonel Cotton replied to that letter (No. 5, dated 6th July 1864). I had and have no monthly certificates to refer to, and no information as to the expenditure on works except to a date much in arrears.

From F. H. HENSLOWE, Esq., Agent and Manager, Madras Irrigation and Canal Company, to Captain J. MULLINS, R. E., Consulting Engineer, Madras Irrigation and Canal [illegible] Madras, 20th September 1864, No. 1 [illegible].

SIR,

No. 752 of 13th September 1864.

No. 40 of 2nd July 1864.

I have the honor to transmit copy of a communication from the Chief Engineer remarking upon your report to Government on the progress of the Company's works.

From Colonel H. C. COTTON, Chief Engineer, Madras Irrigation and Canal Company, to F. H. HENSLOWE, Esq., Agent and Manager, Madras Irrigation and Canal Company, dated Kurnool, 13th September 1864, No. 752.

SIR,

* No. 2,438.

I have the honor to acknowledge receipt of the Government Order,* 21st ultimo, drawing my attention to certain paragraphs of a report from the Consulting Engineer, accompanying the order. I will notice them *seriatim*.

1. Paragraphs 4 and 5, 7 and 9.—The Soonkasala Anicut will be reported on when the floods of the season subside.

2. Paragraph 10—Is written evidently under some misconception with respect to the sluice valves. They are not properly finished, and will be put in working order next season.

3. Paragraph 13.—The shutters work quite easily with the arrangement already provided.

4. Paragraph 15.—The rough stone pitching was imperfectly done last year as a temporary protection. It failed a little, but proved that it was scarcely necessary. This season's use of the sluice will show if any thing further than has been since done is required, but I expect not.

5. Paragraph 26.—The bridge originally built for the Bellary road will be used for communication with the Kurnool traffic station and Engineering head quarters, which is proposed to be placed at this spot on the west side of the canal. Plans and estimates are under preparation. The embankments referred to are of very good material, and having now been some weeks under proof of upwards of 20 feet pressure of water I see no reason to anticipate damage.

6. Paragraph 27.—The construction of revetments to unsettled banks is decidedly objectionable, but the course of our operations has driven us to this. There has not been sufficient rain to settle the banks, and last year when I would have brought down a gradual supply of water for the purpose an accident prevented it. Ramming would have been an alternative, but its general adoption would have checked the progress. The state of the canal this year is testing the banks. Leakage is very trifling, and as far as Kurnool all seems satisfactory. Of this I shall make further report in about December.

7. The rates paid for some parts of the works have been too high. The Division was in temporary charge of an Assistant while the Executive Engineer was absent on sick certificate (an unavoidable circumstance in an establishment maintaining no supernumeraries), and he had not influence or tact to keep down the prices.

8. The self-acting shutter alluded to was not in the original plan of the work. Its necessity and efficiency will be decided on at the end of the season. "The intention to attach a counterpoise" has never come to my knowledge. If found to be necessary the valve will be properly constructed.

9. Paragraph 35.—This history of this work is not quite correct. Three 10 feet arches were first planned for the water course and the foundations and piers so built. Some fears were expressed by the people of the village that in great floods, the water would be held back, and incommode the village, and objections were at the same time made that the communications were [illegible]t; the water-way was therefore increased to 50 feet, and the Consulting Engineer [illegible] a third arch was added for a road-way. The foundations, I am sorry to say, have [illegible]t according to the plan. They will require to be secured. The charge for masonry [illegible]ation will be revised and noted in a future supplemental estimate. I am aware that the alteration was not managed with economy.

10. Paragraph 51.—Ulloor Aqueduct. This question has been fully arranged, the small water course mentioned is to be closed.

11. Paragraph 63.—This has been replied to above, except that rammers though not generally used are not ignored when time and circumstances admit. The state of the revetments already tried are proof of their being fairly constructed, considering that the banks with or without the partial ramming suggested must settle and in some degree discompose the revetments first built.

12. Paragraph 65.—The 44th mile has had a most remarkable trial since the Consulting Engineer made his tour, not merely an unequalled flood has taken place but two tanks above burst at the time. The banks are well constructed and appear perfectly sound and secure.

13. Paragraph 68.—The report upon the recent flood as far as it at present goes, though scarcely subsided, indicates the sufficiency of this and all the culverts in this Division except one at Puggydial. It will also show if the protection suggested by the Consulting Engineer is necessary.

14. Paragraph 78.—The line of the canal was considered with Colonel Rundall, and it was shown that any deviation to reduce the extent of the submerged land would inconvenience the navigation at first, and interfere with future improvements contemplated in cutting through rocky spurs, when the profits of the canal warrant the expenditure and the present expense would have been much increased.

15. The work will be carried on as quickly as labor for it can be obtained. The cost of revetments has risen with all other things. If shingle anywhere can be found it will be used, but I know of none near these tanks.

16. Paragraph 84.—Objection is made to the section of the canal in the 67th mile. The section referred to does not appear in the printed Proceedings of the Government, but the excavation of earth for the bank in the cutting instead of in the flat between it and the bank would have increased the distance for carrying the earth, as the bank would have been removed but a few feet. The navigation is amply provided for, and for up-traffic this broad berm will be a decided advantage, as the current will then be at a minimum.

17. Paragraph 90.—The capacity of the Caulee has been well considered, and the fact of its flooding has not been lost sight of. The addition of 3,00,000 cubic yards of water to the Caulee flood is not in the scheme. It is only when the river does not carry that body of water that the supply will be made up by the canal water through the cut. The water required in the Caulee is less than half what it carries in the rains, and no embanking on account of our operations is required.

18. The arrangement for turning off the water in the rains is complete above, and quite within reach, but the seasons are known, and will always be considered at the head sluice also. The channels leading from the same spot into the Koondaur direct would carry 1,00,000 cubic yards of water per hour out of 3,40,000, away from the Caulee if necessary, but the calingulah is 10 feet high above the bed of the canal and about 1¼ mile above there is a sluice which will keep the surface below that level if the water should pass the calingulah sluices above. I consider that abundant arrangement has been made for the control of the water at all times. There will be no check to navigation in these arrangements.

19. Paragraph 91.—The surplus and head sluice are planned as without foundation to be built on rock, and the rock is considered sufficient apron in front and rear. The site is not quite as originally arranged, but I am not aware that there is any difference as to the level of the rock. If further defences are upon enquiry found to be necessary they will be added.

20. The lock valve is not iron but wood. The plan was sent to the Consulting Engineer in England, and with other plans of valves has been judged satisfactory. There is a mis[illegible] in this paragraph, 18 feet being written for 18 inches. The arrangement of quick adj[illegible] water is not new. I saw it at Samulcottah, and I hear it has proved satisfactory the

21. Paragraph 100.—Black cotton soil is by no means bad for banks provi[illegible] are properly protected. They are the most water-tight banks generally, but protec[illegible] or lengthened slopes, and this will be attended to.

22. Paragraph 101.—I think Captain Mullins over-rates the amount of drainage crossing the canal in the 88th mile, but I will have it investigated. I am not aware of any contemplated alteration in Lock No. 8, have but written to the Executive Engineer for explanation.

23. Paragraph 104.—The current in the Caulee will be trifling, except in heavy rains when navigation will be suspended. The immediate proximity of the Anicut will render a warp necessary for vessels crossing the river, and this will facilitate their leaving the canal.

24. Paragraph 105.—Revetments are not provided for in this still-water canal, but protection of some kind will be provided; when water carriage is available, as this is not a supply channel, it can be treated more systematically and finished more economically than where, to force on the irrigation, the channels must be completed as quickly as possible. The irrigating branch channels will be completed as quickly as possible. The wants and wishes of the people must be considered in laying them out, and for the most part they will be carried on simultaneously with the requirements of the people. The masonry works for them are of a trifling character and will scarcely interfere with the locks. The suggestion at the close of this paragraph will have due consideration.

25. Paragraph 106.—Captain Mullins suggests improvements which shall be considered.

26. Paragraph 119.—This aqueduct will not be constructed as the Government has now consented to an arrangement with respect to the Nundial tank which will admit of a much more simple mode of crossing the water course. The original work was delayed in anticipation of this happy result of a long correspondence.

27. Paragraph 125.—The drainage will be re-considered.

28. Paragraphs 148 and 149.—These paragraphs relate to communications. The culverts which have been enlarged to facilitate the communication across the canal were not planned originally for the purpose, but for drainage only. The bridge and ferries were considered sufficient and the plans were sanctioned, but the facility of turning them to the further account of communications induced their being enlarged in width and drained. They are certainly

deserving of more favorable notice than they receive from the Consulting Engineer. Passing places for cattle will be made as the canal will divide an irrigated from a dry country there will be exceedingly little from traffic across it.

29. The boats will be adapted to their positions. Their ends will be square. I quite agree to the suggestion that a system of roads should be laid out as soon as possible in connection with the means provided for passing the canal.

30. Paragraph 150.—Rates for work unfortunately cannot be ruled in the manner proposed. There is no want of comparison of rates, but a great difference in facilities for making favorable contracts and in getting labourers. It may be very desirable, but it is not practicable to establish uniform rates.

31. Paragraph 151.—The Bowanassey station was selected before the Canal was planned, and more for present than future operation, but from it there will be water carriage to the main canal. I cannot discover to what other stations the Consulting Engineer refers as not well situated.

32. Paragraph 152.—Captain Mullins' caution is recorded.

33. Paragraph 153.—Captain Mullins discovers that my anticipation last year were not realized, but he seems not to have entered into the question of its cause. There was no reason but the want of an efficient blasting party to prevent the cut as then in operation (one-third its final width) being completed, and had the number of labourers not fallen off from 20,000 on 20 miles of channel to 16,000 on 90 miles, I should not have been disappointed in my expectations. Captain Mullins treats the subject as if no effort is being made to carry out the works to completion. Advice can avail little, but if he will use his influence to induce labourers to come from a distance and swell our working parties we shall not be slow to make use of them. "Writing strongly" can certainly avail nothing in such a case.

34. Paragraph 154.—Captain Mullins states that he has not received from the Divisions the information he asked for. Anything but personal information during his visits to the different Divisions should not be asked or given from the Divisions. I am not aware what is referred to in this paragraph, but I am always ready to give the fullest possible information on any subject when asked. The cost of works compared with estimates will be found in the monthly certificates.

35. In the 2nd paragraph of the Government Order reference is made to the omission of aprons to the calingulahs. The general prevalence of rock near the surface of the ground was the cause of this omission in the original plans. Their sites were not definitely fixed till after the estimates were prepared, and the depth to the rock is greater than was provided for. The supplemental estimates will provide for these when the rock itself does not serve the purpose.

36. Paragraph 3 of the Government Order calls for an investigation in connection with the discharge of the irrigation water into the Caulee. I have shown above in remarking on the Consulting Engineer's paragraph 90, what arrangements are made for the control of the water: the question having been fully investigated in planning the works.

(True Copy.)

(Signed) F. H. HENSLOWE,
Agent and Manager.

No. 102. ORDER THEREON, 7th October 1864, No. 2,893.

1. Ordered to be recorded.

2. The Government would wish to be furnished with a further report on the capacity of the Caulee river.

(True Extract.)

(Signed) CHARLES A. ORR, Colonel, R. E.,
Secretary to Government.

To the Consulting Engineer, Irrigation and Canal Company.
" Manager for do. do.
Exd. S. T. Augustin.

To Inspr 1st Div. Depot
(10 Pro. Steam Launches)
From Insp. Genl. No. 4209
The Asst. Engr. in Chief
To
The Secretary to Government
Dated 26 September 1864.
Received 28 September 1864.
C.S.N. 1-65/64.
Enc. 2 Cy. Letters.
esd. No. 2893 - 7th Octr. 1864 -
Refer an Order
Transmit for information Agent's letter with accompanying letter from Chief Engr. Navy having reference to those paras of Consulting Engr's report to which his attention is called in A.M.G. No. 2638 of 24 Augt 64.

Copy sent as Letter to Engr. D/27 Octr. 1864

No. 101. 102

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Copy of Instructions issued to Ex. Officer

Copy of Report on Steam Launches

Copy of Further Report on Steam Launches

Copy of Report on Steam Launches

Chief Engineer's Office
Navy Yard
Boston 7th Octr 1864

Commr. Navy Yard
Boston

Sir

I have the honor to transmit herewith a copy of a letter from the Inspector of the 1st Division of Depots, dated 26th ult. with enclosures, relative to the Steam Launches, and to request that you will cause the Engineer in charge of the Launches to report upon the matters referred to in the letter of the Inspector.

I am Sir
Very Respectfully
Your Obt. Servt.
Chief Engineer U.S.N.

Recd. 8th Octr. 1864

Navy Yard Boston 8th Octr 1864

Respectfully returned to the Chief Engineer U.S.N. in charge of Steam Launches.

By Order of the Commandant
Clerk

Recd. 8th Octr. 1864

Boston 8th Octr 1864

Sir

In compliance with the request contained in your letter of the 7th inst. I have the honor to report that the Launches under my charge are in good condition, and that I have no suggestions to make in relation to the matters referred to in the letter of the Inspector of the 1st Division of Depots.

I am Sir
Very Respectfully
Your Obt. Servt.
Engineer in charge of Launches

Chief Engineer U.S.N.
Navy Yard
Boston

Sept. 28th 1864. Ch. 3 Doc.