M.R.O. 1—77,006—8-6-37.

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(2) Date of repair 18-11-42

(3) Initials of the Referencer

MADRAS RECORD OFFICE.

Government of Madras.

Public Works DEPARTMENT.

G.O. No. 1198 Press ~~Mis.~~

68-69

Dated 3-52 1865.

Not to be folded or roughly handled

1C

Proceedings of the Madras Government, Public Works Department, 3rd May 1865.

No. 68. Read the following Proceedings of the Madras Government in the Military Department :—

Approving of the estimate, amounting to Rupees 53,780, for laying down a new set of pipes from the Seven Wells to Fort Saint George, and for extending the pipes from the Sea Custom House to the Commissary General's Office. } (Here enter 24th April 1865, No. 1,515.)

No. 69. ORDER THEREON, 3rd May 1865, No. 1,198.

MILITARY WORKS, No. 9.

1. Communicated to the Superintending Engineer, 4th Division.

2. No provision has been made for the work in the Budget for 1865-66, but if the Superintending Engineer can provide funds for its commencement by transfers from the allotments for New Works or Repairs in his Division, the Government will be prepared to apply* for the sanction of the Government of India to its immediate execution.

* Vide para. 20 of G. O No. 361, dated 7th February 1865.

(True Extract.)

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

To the Superintending Engineer, 4th Division.
,, Accountant General.
,, Controller of Public Works Accounts.
,, Military Department.

Exl. S. T. Augustin.

3C

MILITARY DEPARTMENT.

PROCEEDINGS OF THE MADRAS GOVERNMENT.

Read the following papers :—

From Captain H. W. Wood, R. E., Assistant Engineer, Fort Saint George, 17th March 1865, No. 811 ; to the Superintending Engineer, 4th Division, Madras.

With reference to your Memorandum, No. 4820, dated 29th January 1864, I have the honor to submit a Report on the state of the water-pipes within and without the Fort.

2. I will commence by mentioning that the new line of piping laid down three years ago, connects the Cistern at the Seven Wells with the Flag Staff Cistern in the Fort ; the various branch pipes within the Fort are still supplied from the old main and not from the new main.

3. I recently had a conversation with Dr. Wyndowe, who has been engaged in analyzing the Seven Wells water ; he mentioned that the water which he had taken from the Seven Wells Cistern was a very good and pure water, but that which he had taken from the Fort Cistern was very much depreciated by a large admixture of saline and earthy matters. It appears to result therefore from this statement that the water in its passage from the Seven Wells to the Fort is much deteriorated and the fault is most probably in the pipes. My own experience tends to confirm this theory, as I have seen at various times large roots of trees and other foreign substances extracted from the old main.

4. In my own opinion therefore this old main which was laid down in 1772 should be taken up and the water allowed to find its way to the Fort, through the new main only. If this project should be approved and executed, it will become necessary to attach the various service and branch pipes to the new main, and as most of them are in a bad state of repair, it would be necessary at the same time to renew them.

5. Since the Fort has ceased to be a Military Establishment under Military law, a great increase in the expenditure of water has taken place. I have no figures by which this statement can be proved, but I think it may safely be affirmed that the present large Establishments of the various Civil and Military Offices were not in former times (as at present) allowed such free access to the various water taps about the Fort. This has grown to such an extent that it appears worthwhile to consider whether the free access to Seven Wells water within the Fort should not be to some extent put a stop to. At present, every owner of a shigram or coach uses the water in the Fort for watering their pony or horse and for cleansing their vehicles.

6. I beg to submit a list of the various branch pipes within the Fort. Most of these give endless trouble on account of the necessity of repairing and binding the numerous cracks which occur in them. I beg to suggest that all the pipes which branch from the main be in future of iron instead of lead : they will not be so expensive and at the same time will be more durable and permanent. Before submitting an Estimate of the cost of these new pipes, I should wish to be favored by your opinion regarding the number of water-cocks which you deem necessary to be placed in various parts of the Fort. A brief inspection will enable you to settle this point.

7. With regard to the pipes without the Fort, I beg to submit the following remarks.

8. The old main pipe (laid down in 1772) connecting the Seven Wells with the Fort should be removed. The line running from Seven Wells to the Arrack Distillery should be examined and renewed.

9. The line from Seven Wells by the Bullet Factory to Clive's Cistern should be examined and renewed. The branch pipes from this main to the Jail and the School opposite should also be renewed.

10. The branch from the Monument Esplanade to Parry's Cistern should be renewed, if it is deemed necessary to continue this Cistern in its present locality. This I think is problematical.

11. All these pipes are in very bad order : they are composed of every description of iron and lead flange and socket pipes. This is a mere out-line, but still I trust a tolerably clear one of the work which will require to be executed, and I have thought it better to submit this statement to you previously to compiling an Estimate for work which you may or may not consider necessary.

12. With this letter I have the honor to submit copy of a letter which I addressed in November 1862, to the District Engineer, on the subject of the Seven Wells and the water distribution generally.

13. A memorandum of the various pipes, their dimensions and the dates on which they were laid down, is also appended to this letter.

MEMORANDUM of pipes outside Fort Saint George, belonging to Seven Wells Establishment.

Date.	Condition.	Description of locality.	Dimensions. 4½"	3"	1½" 1"
			Feet.	Feet.	Feet.
1836	Bad... ...	From the Seven Wells to the Arrack Distillery Verandah with a cock of 4½" to the main and 2 T 4½" pipe, &c.	1,337		
	Good... ...	From the Verandah to the Cistern with a cock and T 3" pipe	...	36	
	Do. ...	From the cock to the spout 10 feet of 1½" and 62 of 1" pipe	...	...	10'-1½" 62- 1"
		This line has been laid down in 1836.	1,337	36	10'- 1½" 62- 1"
1805	Bad... ...	From Seven Wells to the Bullet Factory, cock 4½" pipe	1,616		
1857	Good... ...	From the cock to the Engine Cistern No. 1, 1 cock 1 T.	165		
1805	Good... ...	From the cock to Cistern No. 2, 25 feet 1 cock 1 T 4½".	25		
	Good... ...	From do to the outlet pipe opposite the Jail 4½" ...	720		
1822	Bad... ...	From the outlet pipe to the Jail Cistern 1 cock, 1T 3"	...	185	
1825	Do. ...	To the School Cistern 1C 1T 3" pipe	...	605	
1805	Good... ...	From the outlet Pipe to Clive's Cistern 1C 4½"	2,310	...	
1805	Good... ...	From the main of Clive's Cistern to the cock 1C 1T 4½"	219		
	Good... ...	From the cock to the shipping Cistern 3" P...	...	12	
1836	Do.... ...	From Clive's Cistern to Custom House junction 4½".	1,612	...	
1858	Good... ...	From the junction to Custom house Cistern 3" pipe renewed by Captain Rawlins	...	140	
		The main from the Seven Wells to Clive's Cistern require to be relaid, although it was cleaned and put up in 1838 and 1855.	6,667	942	.....
			5"	5"	
			Feet.	Feet.	
1810	Bad... ...	From the Monument Esplanade to Parry's Cistern 2 cock 5"	2,430	...	
1821	Bad... ...	Monument Esplanade No. 1, 2 spouts 25 feet 3" pipe and 1T	...	25	
	Do. ...	Do. No. 2, 2 do. 60 feet do. do. 1T.	...	60	
	Do. ...	Do. No. 3, 1 Cattle Cistern 60 feet do. do. 1 C. 1 T	...	60	
			2,430	145	.....

FORT SAINT GEORGE,
17*th March* 1864.

(Signed) H. W. WOOD, Captain, R. E.,
Assistant Engineer.

[*Statement*

MEMORANDUM of pipes inside the Fort, belonging to Seven Wells Establishment.

Date.	Condition.	Description of locality.	Dimensions. 3"	2½"	2"
			Feet.	Feet.	Feet.
1772	Very Bad...	From the Choultry gate to the Mint Bastion Cistern 1 cock 1 T 3" pipe	204	...	...
...	Good.....	From the Choultry gate to the Sea-face 12 Cisterns 1 cock 1 T. 2½" pipe	...	500	...
...	Good.....	From do. to the Lavatory 1 C. 1 T. 3" pipe 1).	162	...	...
...	Good.....	From the Lavatory to 5 water cock 1 C. 5 T. 2" pipe	...	...	58
		From do. to the proposed new Cook-room, 1 C. 1 T. 2" Pipe	...	...	200
1858	Good.....	From the East face of the Barrack to the Regimental School 1 C. 1 T. 3" Pipe	100	...	...
1856	Good.....	From do. to the Wash-house 1 C. 2 T. 3" pipe	292	...	...
...	Good.....	From do. to the Verandah junction to the old Cook-room 1 C. 1 T. and 3 feet 1½" pipe	...	...	120
1859	Good.....	From the east face of the Barrack to the South Lavatory Room, 1 C. 2 T. 1)	142		
...	Good.....	From the 1st to the 4th cock post 4 T. 1). 2½" pipe.	...	36	...
1782	Bad	From east face of the Barrack to the 24 Cisterns 3" pipe 1 C. 1. T.	522	...	...
1862	Good.....	Junction to the new Mess House door 2" pipe 1 C. 1 T.	...	...	100
...	Good.....	From the Door to the Post 1½" 10 feet 1" 9 feet			
1856	Bad	From the east face to the south west angle of the Barrack 1 C. 1 T.	...	195	...
1782	Bad	From do. to the north of the Adjutant General's Office 3" pipe 2 C 3 T.	355	...	...
	Bad	From the north of the Adjutant General's Office to the west of the Medical Store gate 2 T. 3" pipe 1 C.	300	...	...
1835	Good.....	From the Medical Store gate to the spout 1½" 60 ft.	...		
...	Good.....	From do. to the Quarter Master General's Office, do. 1½" 25 feet.			
1782	Good... ...	From Medical Store gate to the Arsenal cock 1 C. 1 T. 1). 3" pipe	378		
...	Bad...	From the south east of the Adjutant General's Office, to the Brigade Major's Quarters, 2½" 1 C. 1 T.	...	259	...
...	Good.....	From the door of the Brigade Major's Quarters, to the spout 1½" feet 74			
...	Good.....	From do. to the Pay Office cock 1 T. 1) 1½" feet 90.			
1782	Bad..... ...	From the south angle of the new Barrack to the Artillery Barracks 1 C. 1 T.	...	512	...
1845	Good.....	From the south face of the above to the cock in the yard 1 C. 1 T. 2"	...	...	220
1782	Bad...	From the south of the Government Office to the 25 Cisterns in the Sea face 1 C. 1 T 2½" P	...	200	...
1782	Bad...	From the east angle of the Main Guard to the S. E. Demi-Bastion 15 Cisterns 2½" 1 C. 1 T. 2½".	...	1,096	...
1859	Bad...	From the south east Demi-Bastion junction to Shot Shed 1 T. 1 C. 1½" feet 240			
1859	Bad Zinc Pipe.	From the Shot Shed to the Dispensary, 1 T. 1½" feet 60			
		571	2,455	2,798	698

FORT SAINT GEORGE,
17*th March* 1864.

(Signed) H. W. WOOD, Captain, R. E,
Assistant Engineer.

From Lieutenant H. W. Wood, R. E., First Assistant District Engineer, Presidency, Fort Saint George, 14th November 1862, No. 773; to the District Engineer, Presidency.

I have the honor to submit, for your consideration, the following remarks on the present system of water distribution from the Seven Wells to the various Cisterns within and without the Fort.

2. The water works belonging to the Government at Madras may be briefly described as follows:—

3. Water is raised at the Seven Wells by means of Pecottahs to a height of 20 feet, from which height it is distributed by a main and branch pipes to a variety of Cisterns: the main pipe eventually ends in two Cisterns built on the Ramparts of Fort Saint George. It must not, however, be considered that these last mentioned Cisterns are the reservoirs of supply for the water required by the Fort, this is not the case—the main pipe does not supply the water to the Cisterns to allow them in turn to distribute it through service pipes to the various points in the Fort; but the main simply opens into the bottom of the Cisterns so that there is no reserve of water in the supply Cisterns for every day's ordinary use—there *is* a reserve supply in the water galleries for extraordinary use, but this is beside the question of every day supply. The object the Cisterns serve seems to be that, whilst water is being abstracted from the pipe at remote points from the Fort, the head of water contained in them (the Cisterns) should cause a plentiful and quickly flowing supply to those parts when it is required within the Fort.

4. This is evidently an uneconomical and in point of fact objectionable plan of water distribution; for any leakage of the main at any point in its course causes the supply in the Cistern in the Fort to be diminished. This indeed amounted to so great an evil that a new line of pipes has been laid down from the Seven Wells to the Fort, so that there are two mains, one of which supplies all the Cisterns without the Fort and terminates in the Fort Cisterns, the other and new line which discharges directly into the Fort Cistern and supplies these Cisterns only. But in the event of any accident happening to the mains, the same evil, as before, would happen and the supply of water within the Cisterns would at once diminish and could not again be renewed till the communication through the pipe was made good. It appears very desirable that this be remedied by the new pipe being taken up to a height of 14 feet or so within the Cistern discharging its contents at that height instead of as now discharging on the floor of the Cistern. It is true there is a stop-cock at the interior foot of the Cistern by which the communication of the water within the Cistern with the point of leakage might be cut off, and the water thus retained; but it must be remembered that probably the first indication of a leak in the pipe would be the decrease or total exit of the water from the Cistern, and it would then be more or less late to turn the stop-cock and cut off the communication; moreover, this cock would have to be opened at intervals (during which the leakage would come into operation) to allow of the water service within the Fort being carried on. There can be no doubt therefore I think that the pipe should discharge, as I have pointed out, *viz.*, at or near the top, not the bottom of the Cistern.

5. The next step which appears to be requisite is that from the Fort Cisterns a new set of service pipes should be laid to the various points of supply in the Fort. By what I have said before, it may be gathered that the water at present is conducted to the required points through the old pipe; this old pipe is so bad and leaky that frequent repairs are necessary, and it is only a matter of surprise that the late Garrison Engineer omitted to provide new service pipes as well as the new main, because the same reasons which rendered a new main necessary apply to a renewal of the service pipes which are but a continuation of the old main. It is true that when laying the the new main T pieces with blank flanges were placed at the joints where the service pipes should have branched from, but then the matter stopped, and I think it to be but my duty to point out the necessity of preparing an estimate for completing and putting the whole system of water supply in order. I must remind you that this is a matter quite independent of the question now engaging the attention of the Deputy Chief Engineer, as to whether the water shall be raised by means of Pecottah or by means of Steam power. The following then is an Abstract of what I would propose should be done to improve the present system of water supply.

1*st*. That the Flag Staff and Mint Bastion Cisterns in the Fort, shall be made the reservoirs of supply for the Fort. These two Cisterns together, hold about 98,000 Gallons.

2*nd*. That iron service pipes of dimensions suited to the quantities of water required at the various points in the Fort should be laid down in lieu of the present lead ones.

3*rd*. That a fresh line of pipes branching from the large main at the Monument Esplanade be laid down to Messrs. Parry's Cistern on the Beach.

4*th*. That a new main from the Seven Wells be laid down to Clive's Battery Cistern, and

5*th*. That new iron service pipes be laid branching from this main to supply the Grand Jail.

6. I have already given my reasons for proposing the first item, as to the second item the present line of service pipes in the Fort being of lead are constantly requiring repair of an expensive description; this item therefore would be an economical expenditure of money, moreover I may remark that its execution follows upon the adoption of the first item. Item No. 3 is not urgently necessary, but it is a part of the original scheme of laying new pipes to every point from which water is required, and in my opinion it is advisable to carry it out, as any stoppage of water supply in the old main would of course effect this Cistern and leave it empty. In addition to what I have said, I must further add that the present line of piping running between the old main and Parry's Cistern is in bad order, and that sooner or later it must be renewed. Item No. 5 is, in my opinion, very necessary. For, on this main depends the supply of water to the shipping; the present line is composed of various kinds of piping which are certainly in pretty fair order, but it is impossible to say at what moment very extensive repairs may not be required to them, the more so, because from all the information which I have been able to collect regarding the old lines of pipes they seem to be composed indifferently of iron flange pipes, iron socket pipes or lead Pipes of different ages and quality, a system which entails a very great loss of economy on account of frequent renewals of, and repairs to, the joints. As I said before, it is therefore impossible to say at what early date extensive repairs to the pipes and consequent disuse of the Cisterns which supplies the shipping may not be necessitated. It is on this account I advocate a renewal of pipes between Clive's Battery Cistern and Seven Wells. As to the fifth item, I consider it very urgent, as the present lead Pipes are so rotten as to necessitate constant repair. I do not propose that the line of pipes between Clive's Battery and the Cistern House be renewed, as it is in good order, being composed of good iron service pipes of one pattern throughout, and which were laid by the late Garrison Engineer at a recent date.

7. In conclusion, therefore, I request you will be good enough to inform me whether, in your opinion, an Estimate should be prepared for submission to Government to obviate the evils I have touched on in this letter. I think it right to ask your instructions first so as to relieve this Office as much as possible from doing unnecessary work.

Endorsement from the Superintending Engineer, 4th Division, Madras, 24th March 1865, No. 6176; to the Secretary to Government, Public Works Department.

Enclosures.

1 *Plan.*
1 *Abstract Estimate, with correspondence.*

The Superintending Engineer having entered in his Budget for 1865-66, an Estimate, Rupees 51,800, for laying down a new set of pipes from the Seven Wells to the Fort, has the honor to submit an Abstract Estimate for the same, amounting to Rupees 53,780. It includes an item, Rupees 1,980 for extending the pipes from the Custom House Cistern to the Commissary General's Office as per accompanying correspondence.

2. The foregoing Reports enter so fully into the question of the Fort water supply and the need of substituting new pipes for those that have been 92 years in the ground; the subject of water supply from the Seven Wells, moreover, being one which the Government have placed in the hands of a Committee to report upon, the Superintending Engineer adds no remarks of his own further than he would recommend the Estimate for at least part execution in 1865-66 out of the Military Reserve.

3. The new pipes required for the work were entered in the Indent for Stores required from England, submitted with the Budget for 1865-66.

4. The old pipes when cleared may be rendered useful in many places in the Division for passing small channels across the various roads.

Referred to the Military Department.

(Signed) C. A. ORR, Colonel, R. E.,
Secy. to the Govt., Public Works Dept.

27th March 1865.

ORDER, No. 1515, 24th April 1865.

The Estimate of Rupees (53,780) fifty-three thousand seven hundred and eighty, submitted with the foregoing correspondence, for laying down a new set of Pipes from the Seven Wells to the Fort, &c., is approved for execution when funds can be spared.

3. It is however very desirable that the work should be undertaken as early as possible.

(True Extract.)

Under Secretary to Government.

To the Public Works Department, with a Plan and Estimate. 120 Spare Copies
„ Quarter Master General.
„ Brigade Major, Fort Saint George.
„ Barrack Master.

Exd. T. Stubbs.

Pro. of Govt. for May 1865 No. 1487.

Pro. of Govt. in the Mily. Depart.

Dy. 24 April

Rec. 28 "

Ex. 2 May 1865

Approving of the estimate amounting to Rs. 53,780 for laying down a new set of pipes from the seven wells to Fort St. George and for extending the pipes from the Sea Custom House to the Commissary Genl. Office.

Wilcox Order.

No. 1198 dated 3rd May 1865

List of Military works No. 1198

Communicated to the Superintending Engineer, 4th Division

2 No provision has been made for the work in the Budget for 1865/66, but if the Superintending Engineer can provide funds for its commencement by transfers from the allotments for new works or repairs in his Division, the Government will be prepared to apply for the sanction of the Govt. of India to its immediate execution.

Fort St. George 3rd May 1865

× Vide paras 20 of GO. No. 861 dated 27th May 1865.

To Mr. Supdg. Engr. 4th Div. Executive
" Accountant Genl. Public Works
" Controller " "
" Military Depts.

No. 68. 69.