

GOVERNMENT OF MADRAS.

LOCAL AND MUNICIPAL DEPARTMENT.

READ—the following paper :—

From Lieutenant-Colonel J. PENNYCUICK, R.E., Officiating Chief Engineer for Irrigation, to the Secretary to Government, Public Works Department, dated Chepauk, 28th January 1887, No. 2 W.

In accordance with the instructions conveyed in G.O., No. 2085 W., of 20th November 1886, I have carefully inspected the Madras drainage works, and have the honor to submit the following report on the subject :—

2. The questions to be considered appear to range themselves under the following heads :—

1st.—The leakage into No. 2 main sewer.

2nd.—The necessity for a revision of the original estimate for the whole drainage project.

3rd.—The sufficiency of the revised estimate.

4th.—The quality and economy of the work already executed.

3. With regard to the first point, it was found on my inspection that the water was running with a depth of three inches in a sewer two feet in diameter with a fall of 1 in 1,320; it was kept at this depth by an eight-horse-power engine, working at not more than a third of its nominal power, and driving an eight-inch centrifugal pump at about one-third full bore. Even this power was not used constantly, the engine being obliged to stop frequently, in order to allow of sufficient accumulation of water for the pump to work.

4. The actual quantity of water being lifted did not exceed one-fourth of a cubic foot per second, and the lift being thirteen-and-a-half feet, the useful power exerted in pumping was about one-third of a horse power; the actual average work being done by the engine was probably one-and-a-half horse power, as there is notoriously considerable waste of force in working pumping or any other machinery much below its full power, but the smaller quantity is the additional pumping power which would be rendered necessary by the leakage, when the latter is added to the sewage at the main pumping station instead of being separately pumped up.

5. These figures are in themselves sufficient to show the insignificance of the leakage, which is about what would be discharged by an aperture of one inch in diameter under a head of twenty feet. It must be borne in mind that this is the accumulated leakage from a length of two thousand feet of sewer, of which fully one-half is laid at a depth of from 15 to 25 feet under ground, in a heavily water-charged stratum. I myself saw this sewer during its construction, and was struck with the enormous amount of sub-soil water which had to be pumped from the excavation.

6. It was not practicable for me at the time of my visit to make a thorough examination of the interior of the sewer, but Mr. Jones informed me that this had previously been done, and that there were no signs of a crack or of settlement of any

kind, but that the leakage was distributed over the whole surface of the sewer,—was, in fact, what is known as “sweating.” It may be taken as certain that this is the case; in such soil as that in which the sewer is laid, if there were anything in the shape of a crack or a deformation of the sewer itself, the discharge would probably be fifty-fold what it actually is.

7. About 200 feet of the length of this sewer has been opened and laid in puddle, and Mr. Jones suggested for my consideration the advisability of extending this puddle for a further distance from No. 7 to No. 9 man-hole. I am of opinion that this is not necessary, and that it will be better to leave the sewer as it is. It would probably be quite impossible to stop the leakage entirely by any amount of puddling, and the quantity is at present so insignificant that any possible reduction would not be worth the trouble, expense and risk of injury by opening out the excavation in order to get at the outside of the sewer.

8. In a word, so far as this point is concerned, I am of opinion that the leakage is, in itself, not worth noticing, and that, considering the nature of the ground and the conditions under which the sewer had to be constructed, the work has been most excellently done, and that the Commissioners have every reason to be satisfied therewith.

9. With regard to the revised estimate, it appears that the latter amounts to Rs. 9,41,000, being Rs. 1,33,500 in excess of the original estimate. Of this excess, Rs. 64,022 is due to the change of site of the pumping station and to the necessity for purchasing new engines and boilers, instead of taking over those belonging to the Harbour Works as originally intended, and Rs. 16,981 to a change in the site of the outfall station—contingencies which the Engineer could not have foreseen, and for which he is in no way responsible.

10. The balance of Rs. 52,497 may be said broadly to be due to increased cost of pumping and excavation in the construction of the main sewers,—other minor excesses on some items being balanced, as always happens in large works, by savings on others.

11. With regard to this latter item, I am of opinion that, considering the known nature of the ground and the difficulties likely to be experienced in sinking the excavations, Mr. Jones would have done well to make a larger provision for the pumping and excavation than that provided in his original estimate, but the difficulty of estimating charges of this kind with any approach to accuracy is notorious, and it may safely be said that no serious blame would be ascribed to an officer of the Public Works Department for an excess of similar amount under similar circumstances.

12. The sufficiency of the revised estimate is not a point on which I am qualified to speak with confidence, but, as far as can be judged from an examination of the detailed estimates and a comparison of them with the actual cost of completed work, the estimate appears to be sufficient.

13. Looking, however, to the fact that unforeseen contingencies constantly arise in the execution of works of this kind, it would seem desirable to include in the estimate, as is now invariably done in the Public Works Department for all large projects, a certain sum for “unforeseen works,” from which separate estimates for individual works can be sanctioned as occasions arise. Probably Rs. 59,000 would be enough for this purpose, making the total up to Rs. 10,00,000.

14. With regard to the fourth point mentioned in paragraph 2 of this report, I can only say that I consider the quality of the work done and in progress to be excellent and its cost remarkably moderate.

15. Mr. Jones’ proceedings in connection with these works appear to have been subjected to no small amount of hostile and exceedingly unfair criticism, and I therefore think it desirable to say in conclusion that, in my opinion, these proceedings leave nothing to be desired; that the work is being carried out in a most efficient and economical manner; and that the Commissioners have every reason to be satisfied with the manner in which the funds provided by them are being expended.

No. 379-C.

Transferred to the Local and Municipal Department, with reference to G.O., No. 1144 M., dated 17th November 1886.

(Signed) J. O. HASTED, Col., R.E.,
Secretary to Govt., P.W.D.

ORDER—dated 10th February 1887, Mis. No. 120 M., Local and Municipal.

Communicated to the President, Municipal Commission, Madras.

(True Extract.)

H. E. STOKES,
Ag. Chief Secretary.

To the President, Municipal Commission, Madras.
„ Public Works Department.

W. 600 W of 28 Feb. 1887
Recorded
W. 600 W of 28 Feb. 1887
W

Gobt. of (1887) Madras.
LOCAL AND MUNICIPAL.

Issued

Recd.

Encl.

G.O., 10th February 1887, No. 120 M.

B. W. 600 W of 28-2-87

FEBRUARY.

Ch. Engr for Irr.

Drainage Works.

Communicating to the President, Municipal Commission, Madras, endorsement of the Public Works Department, forwarding report from the Chief Engineer for Irrigation on —.

With order

10TH FEBRUARY 1887, No. 120 M., LOCAL AND MUNICIPAL.

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No. 379-C.

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(Signed) J. O. HASTED, Col., R.E.,
Secretary to Govt., P.W.D.

ORDER—dated 10th February 1887, Mis. No. 120 M., Local and Municipal.

Communicated to the President, Municipal Commission, Madras.

(True Extract.)

H. E. STOKES,
Ag. Chief Secretary.

To the President, Municipal Commission, Madras.
„ Public Works Department.

Exd. A. Raitt.

22600 W a/28 July/87

Recorded

May 1887

Govt. of (1887) Madras.

LOCAL AND MUNICIPAL.

Issued

Recd.

Encl.

G.O., 10th February 1887, No. 120 M.

22600 W a/28 July/87

FEBRUARY.

Drainage Works.

Communicating to the President, Municipal Commission, Madras, endorsement of the Public Works Department, forwarding report from the Chief Engineer for Irrigation on —.

With order

Cr 8376

For Order.

The Madras Municipality has that a competent Engineer Officer be deputed to examine & report on the Black Town Drainage works.

The works will probably take up the whole time of the Officer deputed, & he will therefore apparently have to be placed on special duty until he completes the work.

Cr
28.10.86

2 too tra/28 July/87

Recorded

Ref Jost

W

Enough for Linn



C

No. 3907C of 8-11-86

note.

The Municipal Commissioners desire that a competent Engineer should examine & report on the Black Town Drainage works executed by their Engineer, and also on the engineering or otherwise of the leased Salween River Sub. intended for the completion of the scheme.

The original estimate was, as may be seen from the correspondence the subject of much discussion & was generally approved by Col. Leavelle, who with whom I inspected the work in progress some time ago. The ^{revising of this} ~~revised~~ estimate has not been submitted to the Department.

The late President of the Council thinks it is advisable that a small commission of Engineers should be appointed to examine the works. After



Govt. agree ^{to} the Commission
 request to have the work & estimate
 examined I would expect that
 Col. Perry could act as Ch. Insp.
 & Engineer, an officer of considerable
 standing & experience should be nominated.
 I think this would be a more satis-
 factory than a committee of
 junior officers. Col Perry
 is expected to return from India
 about the 11th inst.

E.W.
 No 3908 of 8-11-86

Forwarded to the Financial Dept
 with reference to the estimate No 637
 dated 25th ult.

Done
 6/11/86
 W

+ L. No 8376 requesting to
 depute an officer to examine
 & report on the Black Town
 Drainage Works as requested
 by the Municipal Commissioners

To the Finl Dept
 with origl papers
 returned } despd 8-11-86,

PROCEEDINGS OF THE MADRAS GOVERNMENT.

READ the following papers.

Letter from the ag. President, Municipal Commission,
Madras, 29th October 1886 P.W. No. $\frac{2}{251}$.

Memorandum from the Secretary to Govt. P.W.D.
28th November 1886 No. 3908 C, suggesting that
Colonel Pennycook R.E. acting Chief Engineer for
Irrigation, be appointed to examine the Black
Town Drainage works.

Order thereon 27th November 1886 No. 1144 M.

The Chief Engineer's suggestion is approved.
Orders will be issued accordingly in the Public
Works Department.

(True Extract)

W. Meyer
Asst. Secretary

To

The Public Works Department
President, Municipal Commission,
Madras

No. 2846 of 30-10-82
- 7422 - 14-9-82
- 6382 - 25-8-82

No. 3907 of 8-11-86
3908

3907 4.11.86.
2845-6 36.10.02.
742 14.9.02.
6388 25.8.02.

P.W.C. No 900

Govt. of (188) Madras.

B
Communicated with
Communicated, with
a copy of the Chief Eng's
a copy of the Chief Eng's
note No 3907 C dated
note No 3907 C dated
8th Nov 1886 to the
8th Nov 1886.
Chief Eng for Irrigation
Chief Eng for Irrigation
for information &
for information &
guidance
guidance

2. Lt Col Pennycook
should obtain direct
information direct from
from the President Madras
the President
Municipal Commission
Municipal
any information or
any information or
papers he may require
papers he may require

Wm
20.11.86

See
20/11/86.

The Chief Eng for Irr
The Chief Eng for Irr
" Spint (Ch) Dept
" Spint (Ch) Dept
" Spint (Ch) Dept

To

The Public Works Dept



By 18-11-86

Proceedings, dated 17th November 1886
No. 1144 M.

Subject.

No 3085 W a 20th Nov 86
Approving the
suggestion of the Chief
Engineer to appoint Colonel
Pennycook R.E. to examine
the Black Town Drainage works

1887

P. W. DEPARTMENT.

Current No. 694-

From

The Chief Engineer for
Irrigation

ENCLOS.—

No. 2 W

Dated 28th January 1887

Received 31st Do

SUBJECT.

Report on Madras Rain-
age Works.

DISPOSAL.

No 3907 Dated 3rd February 1887

Transferred to the
Local and Municipal
Department, with reference
to G.O. No 1144 M. dated
17th November 1886.

Signed / J. S. Harted Col R.E.
Secy to Govt PWD

2845-164 26.10.02
742 14.9.02
6308 25.8.02

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„ Public Works Department.

Exd. A. Raitt.

Lu 2572157

Issued

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Chief Engineer for Iron
Works of the U.S. for
the Iron Works

~~East~~ or der
West or der

P. H. C. No. 6530 ✓

Oct 77/8. red muskrat

Witt