2551 w 30.9.86. 1892 C. 21.5.86.
2789 w 21.11.85 2489 w 21.11.85.
660 w 13.3.85 2689 w 11.11.85.
2214 w. 22.9.85
2012 w 31.8.85 3324 C 27/9/86

No. 2700 W of 14th Octr/86

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Recd 11.10.86

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15/10

P.W.C. No 7775

Government Telegraph Department

P. W. D.

From

The Chief Superintendent

Madras Division

To,

The Under Secretary

to the Govt of Madras

Public Works Department

Dated Madras 5 Dec. 1886.

Recd: 6.10.86

No. 3592.

No. 2700 W dated 14th Octr/86

abstract

Precis

Asks when the Est for fitting an
experimental charcoal tray inter-
-cepting senders which passes along
the Post & Tele Building be passed

W No. With

*Proceedings of the Madras Government, Public Works Department, 3rd May* 1875.

Read the following:—

No. 56. From the Drainage Engineer, Madras, dated 3rd April 1875, No. ——.

No. 57. ORDER THEREON, 3rd May 1875, No. 1,244.

CIVIL WORKS, No. 3-A.

MR. CLARK alludes to Major Tulloch's Report as being so full and complete as to the nature of the district to be drained as to dispense with description from him.

2. He concurs with Major Tulloch in excluding provision for carrying off rain water from his scheme; in the position of his main drainage out-fall, *viz.*, into the sea 2 miles north of the Railway Station; and as to the necessity of lifting the sewage at some one point. He has simplified and cheapened the project as a whole, by dealing with Saint Thomé separately. This has enabled him to lay his sewers at much less depth and cost; but it would seem that Saint Thomé will be exposed in a minor degree to the evils inseparable from having two out-fall sewers, one north and one south, similar to the two out-falls of Black Town drain, described at page 5 of the Report.

3. Mr. Clark excludes altogether from his scheme the suburban districts of Tondiarpetta on the north in No. 1 Municipal Division, with a population of 35,240, spread over $4\frac{1}{2}$ square miles; and the whole of Municipal Divisions Nos. 4 and 6. The former comprising Veysurpady, Perambore, and the Powder Mills, with a population of 9,791, scattered over $3\frac{3}{4}$ square miles; and the latter Kilpauk, Chetput, Nungumbaukum, and Mackay's Garden, with a population of 19,390 on an area of $4\frac{1}{4}$ miles. The population of Alwarpettah, Meer Sahib Pettah, Kistnampett, and Teynampett in No. 8 Division, aggregating 15,652 on an area of 3 square miles are excluded from the Saint Thomé scheme, which includes only 20,575 on an area of 1 square mile. Total population excluded 80,073. Total provided for 317,479. Entire population of the Municipality 397,552.

4. Mr. Clark proposes to carry off all fluid, filth, or house-drainage, subsoil water near the surface, and excreta, by a system of main and outfall sewers of brick or laterite in mortar plastered with cement inside, and laid in concrete, or of concrete blocks cast to the required shapes; and of subsidiary stone ware drain pipes, laid in concrete. All concentrating at a pumping station near the Elephant Gate Bridge, where a couple of engines of 35-H. P. each will lift the discharge of the main sewers a height of $19\frac{1}{2}$ feet, to gravitate through the outfall sewer into the sea, if no arrangements can be made to utilize the sewage for the irrigation of land. To facilitate such use it is proposed to leave open 1,300 yards in length of the outfall sewer. Including Rupees 1,08,325 on account of the separate Saint Thomé project, the total cost of the drainage scheme is set down at Rupees 23,48,000, Major Tulloch's estimate having been $33\frac{1}{2}$ lakhs.

5. His Excellency the Governor in Council cannot but accept the scheme, elaborated during four months continued devotion to the subject on the spot, by an Engineer of Mr. Clark's extensive practical Indian experience, as the most satisfactory solution of the problem of draining Madras that is likely to be attained. He observes, however, that Mr. Clark bases the details of his proposals in a great measure on the local water-supply; and considers that their efficiency is likely to be commensurate with

the development of the latter. The Government as well as the Municipality being financially and otherwise interested in its complete development, which is now retarded owing as much to want of engineering knowledge and experience as to lack of funds, it would appear desirable that arrangements should be entered into for placing both the water-supply and drainage in the hands of a competent Engineer-in-Chief, such as Mr. Clark.

6. It is remitted to the Financial Department to arrange with the Municipality the manner in which the interest of the loans and the working expenses of both schemes can best be met; the cost of draining the Fort and Black Town only, with pumping station and outfall complete, and that of the separate Saint Thomé project being raised in the first instance.

(True Extract.)

(Signed) G. W. WALKER, Colonel, R.E.,
*Secretary to Government.*

To the Financial Department.

Exd. S. T. Austin.
Spare Copies

Govt. of {1875} Madras.

PUBLIC WORKS,

To

THE FINANCIAL DEPARTMENT,

&c., &c., &c.

*Dated* May 3rd.

*Issued*

*Recd.*

*Encl.*

*G. O., 3rd May 1875, No. 1,244.*

MAY.

Nos. 56-57

*Drainage of Madras.—Passing orders on the report of the Drainage Engineer.*

*Proceedings of the Madras Government, Financial Department, 29th July 1875.*

**Municipal—Drainage.**

No. 192. Read the following letter from L. R. BURROWS, Esq., Acting President of the Municipal Commission, Madras, to the Hon. D. F. CARMICHAEL, Officiating Chief Secretary to Government, Fort St. George, dated Madras, 19th July 1875, No. 267-G. :—

I have the honor to report, for the information of the Honorable the Governor in Council, that Mr. May, the Engineer of the Madras Harbour Works, addressed a letter to me a few days ago recommending, on sanitary grounds, that the sewer which discharges its contents into the sea about 150 yards to the south of the point where the stone embankment for the new harbour will be commenced should be extended by a pipe through the embankment so as to allow its contents to be discharged outside the harbour.

2. I replied that I had no objection to the extension of the sewer provided Government would guarantee expenses, and that, as it would be necessary to get piping of the required dimensions out from England, it would be necessary to obtain the sanction of Government without delay.

3. To-day Mr. May paid me a visit at my office and informed me that he is of opinion that the sewer could not be extended by means of a pipe. He suggested that it should be diverted by land so as to discharge itself at a point north of the stone embankment; but as this would be an expensive operation, and as the sewer will be rendered innocuous by the carrying out of Mr. Clark's system of drainage, which will shortly be put in hand, he thought the sewer might be left alone altogether. At Mr. May's request I report the result of our negotiations on the subject of the sewer.

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No. 193. ORDER THEREON, 29th July 1875, No. 1562.

Communicated to the Public Works Department. It will in any case be necessary eventually to prevent any discharge of sewage into the enclosed harbour, and the cost will fall on the Municipality.

(True Extract.)

D. F. CARMICHAEL,
*Officiating Chief Secretary.*

To the Public Works Department.
,, Acting President of the Municipal Commission, Madras.

Exd. A. S. Rodgers.

Govt. of 1875 Madras

FINANCIAL.

To

THE PUBLIC WORKS DEPARTMENT,

&c.,

Dated July, 29th.

Issued

Read

G.O., 29th July 1875, No. 1562.

**JULY.**

**Nos. 192193.**

*Municipal—Drainage.*—Letter from the Acting President, Madras Municipality, reporting result of his negotiations with Mr. May, the Harbour Engineer, respecting the sewer which discharges itself into the sea at a point within which harbour works are to commence, communicated to the Public Works Department.

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*Proceedings of the Madras Government, Public Works Department, 23rd August 1875.*

No. 365. Read the following Proceedings of the Madras Government in the Financial Department, dated 29th July 1875, No. 1,562 :—

ABSTRACT.—*Municipal Drainage.*—Letter from the Acting President, Madras Municipality, reporting result of his negotiations with Mr. May, the Harbour Engineer, respecting the sewer which discharges itself into the sea at a point within which the Harbour Works are to commence, communicated to the Public Works Department.

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No. 366. ORDER THEREON, 23rd August 1875, No. 2,407.

CIVIL WORKS, No. 28.

COMMUNICATED to the Superintendent, Madras Harbour Works. It is understood that besides the main drain alluded to, there are several minor drains which discharge within the limits of the new Harbour.

(True Extract.)

(Signed) G. W. WALKER, Major-General, R.E.,
*Secretary to Government.*

To the Superintendent, Madras Harbour Works.
" Financial Department.

Exd. E. C. Shunker.
Spare Copies

Govt. of [1875] Madras.

PUBLIC WORKS.

To

The SUPERINTENDENT, MADRAS

HARBOUR WORKS,

&c., &c., &c.

Dated August 23rd.

Issued

Recd. Encl.

G. O., 23rd August 1875, No. 2,407.

AUGUST.

Nos. 365-366

*Madras Harbour.*—Proceedings of the Financial Department reporting the result of a negotiation between the President, Madras Municipality, and Mr. May, the Harbour Engineer, respecting the sewer which discharges itself into the sea at a point within which the Harbour Works are to commence, communicated to the Superintendent, Madras Harbour Works, with remarks.

*Proceedings of the Madras Government, Public Works Department,*
*12th October* 1875.

Read the following :—

No. 172. MEMORANDUM.

The Superintendent of the Madras Harbour Works appears, by Financial Order, No. 1,562, of 29th July, to have had a correspondence with the President of the Municipal Commission, in which he urged the necessity of at once extending the Black Town Main Sewer through the new pier embankment, or diverting it by land so as to discharge at a more northern point than at present.

2. The expense of either operation, unless guaranteed by Government, was at first objected to as barring action ; subsequently it seems to have been agreed that action in either direction was unnecessary, as Mr. Clark's scheme of drainage would be put in hand so soon that no evil was likely to arise from matters being left in *statu quo*.

3. It is submitted that very great evils may arise in a very short space of time from the saturation with filth of the area confined between the commencement of the northern pier and the beach into which the main drain discharges itself, and which will doubtless be liable to silt up to a certain extent, until the southern pier is taken in hand to counteract entirely the deposition of sand within harbour limits.

4. It is suggested, therefore, that instructions issue in the Financial Department for immediate action in the matter of raising a loan for carrying out Mr. Clark's scheme.

5. That Mr. Clark be written to, to advise how the main drain and others debouching within harbour limits be dealt with, so that no nuisance occur while his plans are being worked out ; and the Harbour Superintendent be called on to proceed with the southern pier, if not *pari passu* with the northern, at least to such an extent as to obviate any silting up of the beach within harbour limits.

Ootacamund, (Signed) G. W. WALKER, Major-General, R.E.,
11*th September* 1875. *Chief Engineer, Public Works Dept.*

No. 173. Order thereon, 12th October 1875, No. 2,910.

CIVIL WORKS, No. 11.

Ordered that the Chief Engineer's memorandum be communicated to the Financial Department, together with the despatch of the Secretary of State for India recorded with Public Department Order, No. 1,122, of 8th September, with a view to immediate steps being taken to ascertain from the Government of India on what terms they will grant a loan of the necessary amount for carrying out Mr. Clark's scheme for the drainage of Madras.

2. The Superintendent of the Madras Harbour Works will prepare alternative plans and estimates for carrying out either proposal made by him for preventing deposit of sewage within the harbour, alluded to in the letter from the President of the Municipal Commission recorded with Financial Department Order, No. 1,562,* of of 29th July. It will then be decided whether either of them shall be carried out with or without previous reference to Mr. Clark for advice.

* Public Works G. O., No. 2,407, 23rd August 1875.

3. The Harbour Superintendent will also be so good as to report when he expects to be able to commence with the southern pier, the construction of which, to at least a sufficient extent to intercept sand-drift, appears to be necessary simultaneously with an equal portion of the northern pier.

(True Extract.)

(Signed) G. W. WALKER, Major-General, R.E.,
*Secretary to Government.*

To the Financial Department.
„ Superintendent of the Madras Harbour Works.

Exd. S. T. Austin.

Spare Copies

Govt. of [1875] Madras.

PUBLIC WORKS.

To

THE FINANCIAL DEPARTMENT.

&c., &c., &c.

Dated October 12th.

Issued

Recd.

G. O., 12th October 1875, No. 2,910.

OCTOBER.

Nos. 172-173

*Drains debouching within the limits of the Madras Harbour.*—Ordered that the Chief Engineer's memorandum on the subject of the —, be communicated to the Financial Department together with the despatch of the Secretary of State for India recorded with Public Department Order, No. 1,122, of 8th September, with a view to immediate steps being taken to obtain a loan from the Government of India for the purpose of carrying out Mr. Clark's scheme for the drainage of Madras. Instructions issued to the Harbour Superintendent regarding the commencement of work on the southern pier.

*Proceedings of the Madras Government, Public Works Department, 22nd November* 1875.

No. 478. Read the following letter from J. MAY, Esq., Superintendent of the Madras Harbour Works, to Major-General G. W. WALKER, R.E., Secretary to Government, Public Works Department, dated Madras, 8th November 1875, No. 26 G :—

REFERRING to several conversations with you last week on the subject of the town sewers which fall into the sea within the lines of the proposed Harbour, and particularly of the main sewer, 10 feet in diameter, of which the outfall is 106 yards north—north-east of Clive's Battery at Royapooram, I have the honor to report as follows :—

2. I have no particular information of the circumstances which first induced Mr. Parkes to propose the lines of piers defined on a small lithographed plan, accompanying his printed report of 4th November 1873 to the Government, "on the formation of a Harbour at Madras." Without doubt, he considered the advantages of having the Harbour closely connected with a first-class railway leading into the interior and all over the country. At Royapooram Terminus the main line of the Madras Railway ends at the exact point where the Harbour Works begin. Nothing was required at Royapooram except to extend the Company's metals, level across the beach, into the sea, such extension being the commencement of the North Pier and of the Harbour.

3. A plan of the Royapooram station-yard accompanies this to your address. It will be seen from the plan that there are four lines of railway, colored *blue*, leading into the platforms at the station. These four lines converge into three lines at a point 457 yards west of the terminus, and into a single line at a point 1,000 yards west. Thence the line is single to Vasarpaudy Junction, about $2\frac{1}{2}$ miles west; thence double for 1 mile to Perambore, $3\frac{1}{2}$ miles west; and thence a single line of railway throughout.

4. The laterite quarries at Ambatoor are situated on the north side of the Madras Railway, 10 miles from Royapooram, and it was understood from the beginning that the Ambatoor quarries should be opened to produce the rubble stone deposits required for the Harbour. That was my first instruction. It was also arranged from the beginning that the stone for the Harbour should be conveyed by the Railway Company along their main line, in their own wagons, and delivered at Royapooram to the Harbour authorities. This last arrangement is a bad one, and for various reasons, but chiefly because the conveyance of large quantities of rubble stone, to be deposited in the open sea, cannot be conveniently adapted to the time-tables of a railway, which is also used for carrying goods and passengers.

5. The delivery of stone in Railway Company's wagons at Royapooram being thus a first condition, the next step was to consider which pair, if any, of the four lines of metals leading into the terminus was to be given over for the delivery of the Harbour stone. This was discussed at my first meeting with the Railway authorities (the Consulting Engineer, the Agent, the Chief Engineer, and the Traffic Manager) on 19th June last. One point connected with it appeared to be of some importance : the Ambatoor quarries are on the north side of the railway, and it would therefore be best, if possible, to have the stone delivered on the same side, in order to avoid crossing the passenger line.

6. Besides the main line running into the platform at the terminus, there are several branches to other points in the station-yard. Four of them are approached from the westward by a double road through an arched bridge of bricks under Munnauroosawmy Covil Street. Of these branches, two are employed for the coal and coke department, and the other two for the service of the Engineer's workshops. The Company's requirements prevented me from approaching the North Pier through the coal-yard.

7. These are the considerations which led to the selection of the northernmost pair of metals at Royapooram Terminus for the commencement of this Harbour, and ground was broken on 12th July last at point A on the accompanying plan. The outer end of the laterite surf bank, 30 feet in width on the top, with natural slopes to the bottom, level with the beach tramway, and 13 feet above mean sea level, is now in salt water at B, 643 feet from A. B is 200 feet short of the mouth of Black Town sewer C; and, advancing at the rate of 10 feet per day, the bank would have been opposite the sewer four weeks hence. This may be prevented without stopping the laterite train from Ambatoor, by applying the rubble to widen the shore end of the bank, as defined by *pink* color on the Pier approach, with the understanding that A B must one day be the permanent road on to the Pier after the Black Town sewer may be got rid of.

8. I saw the mouth of the Royapooram sewer in June last on first landing in India, and I have since seen the periodical operation of cleaning the sewer on the block-ground by a series of man-holes in the crown of the arch, through which the contents are brought up in buckets and buried in the vicinity. I have also waited several times on the President of the Municipal Commission with reference to the pressing difficulty of the sewer.

9. The first remedy we thought of was to extend the sewer 300 feet in its present direction into the sea, that its mouth might be outside the North Pier surf bank. That would have involved the construction, by Divers, of a 10 feet arch in the heavy sea of this coast, and on a foundation which is a quick-sand. The extension of the arch would have been too complicated a work in the time allowed for it.

10. Another suggestion was to extend the sewer through the surf bank by an iron pipe, some 3 or 4 feet in diameter. This, if practicable at all, would only have been half a remedy.

11. A third suggestion appears on the plan, and it consists in diverting the sewer to the northward along the shore on the line L M N O. This may yet be done without interrupting the Harbour Works, because the diversion of the sewer might be carried on under the Pier approach by a bridge. The difficulty in lengthening the sewer is want of fall, which applies to all the sewers in this low-lying city. It would seem that any extension of the Royapooram sewer must be periodically cleaned from the top in the manner described.

12. In view of an early commencement of the general scheme for draining Madras, there are several ways of bringing the North Pier Works, at least for a time, to the south of the Royapooram sewer, and thus to let it fall into the open sea as at present. Three of these are drawn on the plan.

*Proceedings of the Madras Government, Public Works Department,*
22*nd November* 1875.

13. It is assumed that the surf bank A B, now in progress, may be temporarily stopped at point B. The letters E F D, show a proposed new railway, colored *pink*, joining one of the Madras Company's lines in the coal-yard at E. If the Railway Company would deliver the laterite at E instead of at A, the line and approach E F D may be made at once crossing the beach road and tramway on the level and joining the original line of the Pier Bank at D. A road in the direction of F D will soon be required at any rate for conveying blocks from the block-ground to the Pier, and this road formed a part of the scheme from the beginning. The Railway authorities will object to the use of their coal-yard and the branch E, which is employed for sending coals to the points required on their line.

14. The letters D F P G define an alternative approach, colored *yellow*, which, if made, would avoid the eastern part of the station-yard, cut off a triangle K, measuring an English acre in area, at the south-west corner, and join the sidings of the station-yard at G under the bridge which carries the traffic of Munnauroosawmy Covil Street. The Railway authorities will also object to this branch, in respect of the corner cut off from the coal-yard at K.

15. There is yet a third way of approaching the Pier D F P H (P H colored *green*) by running up from the beach parallel to the Railway Company's south boundary wall, and parallel to the Royapooram sewer, through the proposed block-ground, avoiding the station-yard altogether, crossing Munnauroosawmy Covil Street on the level, and joining the Company's branch at H. The level crossing at this street also formed a part of the original scheme, because the street is on the road for conveying granite from Tirutany to the block-ground. There is no reason to apprehend much inconvenience to the public from the level crossing of Munnauroosawmy Covil Street, and I hear no complaints of the level crossing made four months since over the beach road and tramway—a still more crowded thoroughfare—opposite Royapooram Terminus.

16. These three methods of approaching the Pier, pending the difficulty of the main sewer, are submitted for the consideration of Government. Objections to the first and second of them will be raised by the Railway Company, and the objection to the third is the level crossing of the street. Any one of the three branches would answer the purpose, and there is no difficulty in constructing them. On the question of economy for the Harbour Works, the first of the three is the best, and the third the worst, proportionally to the lengths of new railways required, stated below:—

| | New Railways required. |
|---|---|
| No. 1, Pink, D F E... ... ... ... | 800 Lineal yards, single line. |
| „ 2, Yellow, D F P G ... ... ... | 1,200 „ „ |
| „ 3, Green, D F P H ... ... ... | 1,600 „ „ |

No. 479. ORDER THEREON, 22nd November 1875, No. 3,326.

CIVIL WORKS, No. 32-A.

HIS EXCELLENCY the Governor in Council has no doubt whatever as to the necessity for adoption of the course proposed by the Master Attendant for avoidance of the nuisance that would be caused by

including the main sewer within the new Harbour pending the execution of Mr. Clark's drainage works.

2. The bank at present in progress will, therefore, be temporarily stopped, and one of the three alternative new lines of rail adopted for conveyance of the Harbour material. His Excellency the Governor in Council would prefer that described in paragraph 14 of Mr. May's letter, as avoiding an additional level road crossing. But in deference to the interests of the Madras Railway Company, through whose coal-yard it would run, will accept the third line described in paragraph 15; arrangements for laying which he requests may be carried out without delay.

(True Extract.)

(Signed) G. W. WALKER, Major-General, R.E.,
*Secretary to Government.*

To the Consulting Engineer for Railways.
„ Superintendent of Harbour Works.
„ Public Department.

Exd. E. C. Shunker.

Spare Copies

# Govt. of {1875} Madras.

## PUBLIC WORKS.

*To*

THE CONSULTING ENGINEER
FOR RAILWAYS,
&c., &c., &c.

*Dated November 22nd.*

*Issued*

*Read.* *Encl.*

*G. O., 22nd November 1875, No. 3,326.*

**NOVEMBER.**

**Nos. 478-479**

*Madras Harbour.*—Passing orders on letter from the Superintendent of Works — reporting on the town sewers which fall into the sea within the limits of the proposed Harbour.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

---

28th February 1878, No. 984 W.

**Buildings and Roads.**

**Civil Works.**

Read the following papers :—

No. 310. Endorsement of the Chief Secretary to Government, Marine Department, dated Fort St. George, 29th November 1877, No. 2,218.

No. 310-A. From Mrs. C. SADLER, to the Chief Secretary to Government, dated Royapoorum, 28th November 1877.

I HAVE the honor to forward for the merciful consideration of His Grace the Governor in Council some particulars and correspondence regarding a case of very great hardship from which I am suffering.

I am the proprietrix of a piece of land near the sea beach at Royapooram, consisting of four grounds, the greater portion of which was enclosed by a wall and from its convenient position and security was used for storing timber and other cargo, and also being a very eligible building site. Since the construction of the north groyne of the Harbour, as His Grace is well aware, the sea has attacked the whole beach to the northward, damaging the Railway property, also Mr. Coleman's, and ultimately reaching mine, which has been more than half washed away and the remainder rendered valueless. There can be no moral doubt that the Harbour Works is responsible for this action of the sea. Several groynes have been run out to protect the roads and buildings nearest the works, but they were not carried far enough to secure mine, and my prayer is that His Grace the Governor in Council will grant me compensation for my heavy loss.

The Municipal Commissioner threatens to issue warrant of distress for the tax upon this unproductive piece of ground, a tax which I have hitherto always paid under the impression that I was under the same protection as other land-holders in this city, but as will be seen by his letter he refuses to be accountable for my loss.

The Harbour Works Superintendent without denying his obvious responsibility pleads no authority for giving me compensation, although the amount is small and would be almost invisible among such large expenditure, yet it is of the greatest importance to a distressed widow with a large family, the widow of a very meritorious public servant, the late Mr. Sadler, the Pier Master, through whose unremitting exertions the Pier was restored when abandoned by the Public Works Department as impossible to be repaired.

There is no doubt the Pier has proved during the famine the salvation of the lives of thousands by the facilities it has afforded for landing grain.

The sums quoted are those actually paid for the land and its belongings, and I respectfully ask of His Grace the Governor in Council that my just claim may be entertained and the compensation granted.

---

TRANSFERRED to the Public Works Department for disposal.

(Signed) D. F. CARMICHAEL,
Chief Secretary.

No. 310-B. Endorsement of the Chief Secretary to Government, Marine Department, dated Fort St. George, 9th February 1878, No. 223.

From A. MACKENZIE, Esq., Chairman, Chamber of Commerce, to the Chief Secretary to Government, dated Madras, 7th February 1878.

THE part of the foreshore enclosed by the two arms of the Harbour being in front of many banks and mercantile offices, its condition is a matter of interest to the members of the Chamber, and on this ground I am desired to do myself the honor of moving the Government to give the insanitary condition of the locality their attention.

2. It will be known to the Government that there has been a large accumulation of sand between the two groynes, extending far beyond the extremity of the pipes from which the town's sewage used to be discharged direct into the sea. But no measures have been taken to divert the flow of sewage, and the pipes now discharge their contents on to the sand, which being saturated with the filth emits under a hot sun disgusting and dangerous effluvia. The idea of extending the pipes to the present limit of the sea, and allowing the sewage to be there discharged into the water has doubtless not commended itself to the Government, since it is a matter of great importance that the water within the Harbour walls should be kept as free as possible from pollution. But the Chamber, and probably the public, would be glad to learn that measures will be immediately taken for intercepting the sewage, and for arranging for its discharge at some point or points north or south of the Harbour. The expense of this diversion must be incurred some day, and it is thought by the Chamber that as the ultimate execution of the work is only a question of time it should not be delayed any longer.

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TRANSFERRED to the Public Works Department in continuation of endorsement, No. 125, dated 24th January 1878.

(Signed) D. F. CARMICHAEL,
Chief Secretary.

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No. 310-C. NOTE.

THE Chief Engineer has ascertained from the Superintendent of the Madras Harbour Works that of the several drains that discharge into the Harbour between the Piers only one, viz., the most southerly, has any flow of consequence, the whole of the remainder together not discharging more than one-tenth of this flow. From this he believes that under existing circumstances it is not necessary to incur the great expense of constructing an intercepting sewer along the whole length of the base of the Harbour, but would simply divert the principal drain noticed by taking it in pipes through the surf bank of the south pier which would comparatively speaking cost but little. The small discharge from the remaining drains will not, he thinks, cause any appreciable inconvenience to the Harbour, and therefore he recommends their not being interfered with at present. He further remarks that in Mr. Clarke's proposed system of draining Madras it is arranged that all the drains in question shall discharge into sewers landwards leading to the pumping wells.

2. In regard to the measures ordered to be undertaken to secure property in the vicinity of the beach north of the Harbour Works, he notes that further erosion may be arrested by the construction of a group of six or eight more groynes north of the existing group; and later in the year if found necessary that short groynes be inserted between each of the existing groynes. He has carefully inspected the beach and from the papers in his office on the subject records his conviction that the erosion cannot be solely attributed to the construction of the Harbour piers as years ago such took place and had to be arrested by the existing groynes. However on the same principle that then induced the Government to sanction them it appears desirable that the additional group be constructed.



3. To admit of lengthening the principal pipes discharging the Black Town main drain immediately north of and close to Fort St. George into the sea, the Chief Engineer recommends that the temporary pier lately built by the Master Attendant, now of no use, be dismantled and its materials used for taking the drain pipes further out to sea.

(Signed) E. A. FOORD, Colonel, R.E.,
16th February 1878. Chief Engineer and Secy. to Govt., P.W.D.

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No. 311. ORDER THEREON, 28th February 1878, No. 984 W.

CONCURRING with the Chief Engineer's remarks, the Governor in Council directs that estimates be without loss of time prepared for a fresh group of six groynes to be placed north of the existing groynes on the north side of the Harbour Works, and to be composed of the same materials as those of the existing groynes.

2. The Superintendent, Madras Harbour Works, will also estimate for diverting the principal drain referred to by the Chief Engineer through the surf bank of the southern Harbour groyne in the manner proposed in the second paragraph of his memorandum above recorded.

3. The Government also approve the Chief Engineer's suggestion regarding the utilization of Captain Taylor's temporary pier, the materials of which will be jointly valued by the Master Attendant and the District Engineer, Presidency, and the sum realized credited to Port Funds; and the District Engineer, Presidency, will arrange for extending the pipes of the Black Town drain immediately north of Fort St. George. In connection with this point the Government observe that while the temporary evil will be averted by this device the drain mouth will also have to be kept clear in case of rainfall.

4. Separate orders will be passed regarding the claims for compensation on receipt of the Chief Engineer's further report.

(True Extract.)

(Signed) E. A. FOORD, Colonel, R.E.,
Secretary to Government, P.W.D.

To the Superintendent, Madras Harbour Works.
" District Engineer, Presidency.
" Marine Department.
" Examiner of Public Works Accounts.
" Financial Department.
" Chief Engineer, Public Works Department.

Exd. S. T. Austin.
Spare Copies

BUILDINGS AND ROADS.
CIVIL WORKS.

# Govt. of {1878} Madras.

## PUBLIC WORKS.

*To*

THE SUPERINTENDENT,
MADRAS HARBOUR WORKS,
&c., &c., &c.

*Dated February 28th.*

*Issued*

*Recd.* *Encl.*

*G. O., 28th February 1878, No. 984 W.*

**FEBRUARY.**

**Nos. 310-311.**

*Madras Harbour Works.*—Estimates to be prepared and submitted for a fresh group of six groynes to be placed north of the existing groynes on the north side of the —, also an estimate for diverting the principal drain referred to by the Chief Engineer, and Captain Taylor's temporary pier to be utilized for extending the pipes of the Black Town drain north of Fort St. George.

GOVERNMENT OF MADRAS.

## PUBLIC WORKS DEPARTMENT.

10th April 1878, No. 1,766 W.

**Buildings and Roads.**
**Civil Works.**

Read the following paper:—

No. 93. Endorsement of the Chief Secretary to Government, Financial Department, dated Fort St. George, 15th March 1878, No. 462.

From L. R. BURROWS, Esq., Acting President of the Municipal Commission, to the Chief Secretary to Government, dated Madras, 14th March 1878, E.No. 1,409.

I HAVE the honor to observe as follows, for the information of His Grace the Governor, with reference to G.O., No. 984 W, of 28th February 1878, and more particularly with regard to the first paragraph of the Chief Engineer's Note:—

1. That if Mr. Clarke's scheme for the drainage system be carried out all the sewage will be brought landward, and that in that case the diversion of the southmost sewer through the south pier of the Harbour Works will be unnecessary.
2. That if Mr. Clarke's scheme is not carried out (as it has been condemned by the Commissioners, and will only be carried out by the pressure of Government, it is improbable that it will be so) an intercepting sewer along the beach will be necessary.
3. That, therefore, in either case it will be waste of money to carry the sewer through the surf bank as proposed.

TRANSFERRED to the Public Works Department.

(Signed) D. F. CARMICHAEL,
Chief Secretary.

No. 94. ORDER THEREON, 10th April 1878, No. 1,766 W.

THE Government direct that the diversion of the principal drain through the surf bank of the Southern Harbour Groyne be at once carried out in accordance with the orders already issued.

(True Extract.)

(Signed) E. A. FOORD, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Superintendent, Madras Harbour Works.
" District Engineer, Presidency.
" Examiner of Public Works Accounts.
" Financial Department.

Exd. T. D. Ryan.
Spare Copies

BUILDINGS AND ROADS.
CIVIL WORKS.

# Govt. of [1878] Madras.

## PUBLIC WORKS.

*To*

THE SUPERINTENDENT,
MADRAS HARBOUR WORKS,
&c., &c., &c.

*Dated April 10th.*

*Issued*

*Recd.* *Encl.*

*G. O., 10th April 1878, No. 1,766 W.*

**MAY.**

**Nos. 93-94.**

*Madras Harbour Works.*—The diversion of the principal drain through the surf bank of the Southern Harbour Groyne of the —, ordered.

GOVERNMENT OF MADRAS.

## PUBLIC WORKS DEPARTMENT.

8th May 1878, No. 2,088 W.

**Buildings and Roads.**

**Civil Works.**

Read the following papers :—

No. 84. From A. MACKENZIE, Esq., Chairman, Chamber of Commerce, to the Secretary to Government, Public Works Department, dated Madras, 12th April 1878.

I HAVE the honor to acknowledge receipt of the Proceedings of Government, Public Works Department, 28th February, from which the Chamber have learnt that the Government have directed the Superintendent of the Harbour Works to prepare an estimate for diverting the principal drain between the two piers through the surf bank of the southern harbour groyne, and that no steps are to be taken for the present to intercept the outfall of sewage from the smaller drains.

2. It is observed that His Grace the Governor in Council has been informed that there is no flow of consequence from these smaller drains ; but the Chamber would respectfully remark that this is not the case during rainy weather, when the drains in the town are flushed and the accumulations of months are washed through the pipes to their outlet. It seems to the Chamber that the discharge of any sewage in the space enclosed by the harbour groynes may fairly be deprecated on sanitary grounds, and that danger to the public health, as well as a very appreciable inconvenience to the harbour, may be expected to result from the neglect of means that readily suggest themselves for preventing the pollution of the foreshore and the still water of the harbour.

3. The diversion of the chief drain through the surf bank of the southern groyne will doubtless, at comparatively small cost, shift the nuisance and danger complained of a few yards seawards, but the southern angle formed by the surf bank with the shore will (especially during the south-west monsoon, when still water will be found there) become little better than a cess-pool, and the beach for some little distance may become most objectionable in consequence. The Chamber venture to think that, as public health is concerned, it would be more economical in the long run to employ efficient means for grappling with the difficulty which has arisen from the Harbour Works. The re-arrangement of the drainage of the foreshore is a costly necessity arising from, and fairly debitable to, the harbour scheme.

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No. 84-A. From L. R. BURROWS, Esq., Acting President, Municipal Commission, Madras, to the Secretary to Government, Public Works Department, dated 30th April 1878, E. No. 315.

WITH the view of supplying the information required in your memorandum, No. 1,884, dated 24th instant, I have the honor to forward a plan* of the area drained into the sea between the new Harbour Works groynes. The blue lines represent

* Per Sample Post.

the open street drains. The red lines 1, 2, 3, and 4 are underground drains. These drains carry drainage from houses as well as storm water. The other thin red lines are drains for storm water only. The number of inhabitants living within this drainage area is estimated as being below 20,000. The area is about one-third of the 3rd Municipal Division, the population of which, according to the last census, was 50,957.

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No. 85. ORDER THEREON, 8th May 1878, No. 2,088 W.

THE harbour piers having advanced to a point when drainage must be stopped from flowing into the harbour or saturating the accumulated sand, the diversion of the outlet through the south pier should have been completed before this. Action should be taken at once in the matter by the Superintendent of the Madras Harbour Works, who will also devise means of diverting *all* flow of sewage from the harbour.

2. Early report will be made as to what has already been done and when what is requisite will be accomplished.

(True Extract.)

(Signed) E. A. FOORD, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the District Engineer, Presidency.
" Superintendent, Madras Harbour Works, with Plan.
" Chamber of Commerce.
" Financial Department.

Exd. T. D. Ryan.
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BUILDINGS AND ROADS.
CIVIL WORKS.

# Govt. of {1878} Madras.

## PUBLIC WORKS.

*To*

THE DISTRICT ENGINEER,
PRESIDENCY,
&c., &c., &c.

*Dated May 8th.*

*Issued*

*Recd.* *Encl.*

*G. O., 8th May 1878, No. 2,088 W.*

**MAY.**

**Nos. 84-85.**

*Madras Harbour Works.*—The Superintendent of the — to devise means for diverting *all* flow of sewage from the —, and calling for early report of what will be necessary to effect this.

GOVERNMENT OF MADRAS.

## PUBLIC WORKS DEPARTMENT.

22nd July 1878, No. 2,963 W.

**Buildings and Roads.**
**Civil Works.**

Read the following paper :—

No. 227. From A. MACKENZIE, Esq., Chairman of the Chamber of Commerce, to the Secretary to Government, Public Works Department, dated Madras, 5th July 1878.

THE Chamber are indebted to the Government for the attention that has been given in Proceedings, Public Works Department, 8th May, No. 2,088 W, to their representation of the 12th April of the necessity of rearranging the drainage of the foreshore. They are, however, disappointed to find that, as yet, only one of the eleven sewers which have their outlets between the two groynes has been taken in hand and diverted through the southern surf bank. It seems to the Chamber that, as none of the sewers referred to can be permitted to discharge themselves into the Harbour when that work is completed, it is expedient to at once intercept the whole of them by a drain running parallel to the beach road. This intercepting drain might have two outlets, one south of the southern groyne, at the point where the steam pump is now working, and the other at a similar distance north of the northern groyne, at a point where a corresponding pumping station may be established. The outfall from the two ends would then be sufficiently far from the Harbour groynes to prevent any of the sewage being washed into the Harbour, or accumulated in the outer elbow, or angle, formed by those groynes with the beach. Near the shore end of the screw pile pier, at a point about midway from the extremities of the intercepting sewer, picottahs might be erected for raising sea water and discharging it into the drain in order to flush it daily.

The Chamber venture to impress upon Government the importance of dealing in a comprehensive manner with the drainage question that has arisen from the Harbour Works, since it appears to them that, as the beach enclosed between the two groynes is now protected from the influence of the littoral currents, there is far less opportunity than formerly for the sea, by an occasional overflow, to cleanse the sand from sewage pollution. Some of the ten drains that have their outlets in the space referred to are probably more useful for the escape of storm water than of actual sewage ; but during heavy rain there is not much difference in the character of the discharge from any of the sewers. Owing to the imperfect system of drainage in the town, and the infrequency of flooding rain, the sewage accumulates for months, and must emit, during hot weather, gases that are inimical to public health. At length rain falls in abundance, and the putrid accumulations are washed down, and at last are discharged either into the sea when the tide is unusually high, or on to the sand where it forms a permanent lake of the most poisonous matter. Thus the beach, in the busiest part of the port, is already more or less saturated with sewage, and the shipping operations are conducted by crowds of coolies, boatmen, &c., while exposed to the danger of inhaling the effluvia from the filthy pools at the mouths of the drains. Not only are the persons engaged in the several mercantile offices and banks exposed to the danger arising from the evaporation from the beach, but the health of the

Judges, officers and clients of the High Court, as well as of the officers and persons doing business at the Custom House, Stamp Office, Commissariat Office, &c., is seriously endangered by the same cause. Under these circumstances the Chamber are of opinion that no time should be lost in affording public health better protection against a risk which has been aggravated by the Harbour Works.

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No. 228. ORDER THEREON, 22nd July 1878, No. 2,963 W.

THE Chamber's letter will be communicated to the Superintendent of the Madras Harbour Works who will, in communication with the President of Madras Municipality, draw up a scheme for intercepting all the drainage referred to. The cost of the project, together with the cost of subsequent maintenance, should be given. The project should be accompanied by such remarks as the President of the Municipality may have to offer.

(True Extract.)

(Signed) E. A. FOORD, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Superintendent, Madras Harbour Works.
" President, Madras Municipality.
" Chairman, Chamber of Commerce.
" District Engineer, Presidency.
" Financial Department.

Exd. T. D. Ryan.
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BUILDINGS AND ROADS.
CIVIL WORKS.

# Govt. of {1878} Madras.

## PUBLIC WORKS.

*To*

THE SUPERINTENDENT, MADRAS
HARBOUR WORKS,
&c., &c., &c.

*Dated July 22nd.*

*Issued*

*Recd.* *Encl.*

*G. O., 22nd July 1878, No. 2,963 W.*

**JULY.**

**Nos. 227-228.**

*Drainage of the Foreshore between the Groynes of the Madras Harbour.*—Passing orders on the letter of the Chamber of Commerce regarding the rearranging of the —.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

25th November 1878, No. 4,489 W.

**Buildings and Roads.**
**Civil Works.**

Read the following paper :—

No. 274. Endorsement of the Acting Chief Secretary to Government, Financial Department, dated Madras, 19th November 1878, No. 2,132.

From A. MACKENZIE, Esq., Chairman of the Chamber of Commerce, to the Chief Secretary to Government, dated Madras, 16th November 1878.

THE Chamber beg to call your attention to the Proceedings of Government, Public Works Department, No. 2,963 W, dated 22nd July last, in which it was intimated that the Superintendent of Harbour Works would, in communication with the President of the Municipality, draw up a scheme for intercepting the drainage on the foreshore. Though more than three months have passed since the date of that order, nothing has been done to remove the nuisance of which the members of the Chamber have had so much reason to complain. The Chamber recently called the attention of the President of the Municipality to the delay that has occurred in carrying out the orders of Government, and that officer has replied that the plans for improving the foreshore drainage had been submitted to Government on the 18th September, but that no orders for executing the proposed work had yet been received. Mr. Burrows adds :—"As the Harbour Works Superintendent declines to do anything for alleviating the nuisance caused by sewage stagnating on the strand, and as there will probably be considerable delay before the sewer proposed by Mr. Thorowgood is completed, I have given orders for the hollow places being filled up and the sewage confined as well as possible to channels dug through the sand."

It is not probable that the temporary expedient proposed by the President of the Municipality will serve the desired purpose. The nuisance can only be abated by the drain pipes being carried out to the water; and as drains cannot, when the Harbour is finished, be allowed to discharge themselves into the Harbour basin, the pipes should at once be diverted to outside the Harbour walls.

With reference to Mr. Burrows' statement that the Harbour Works Superintendent "declines to do anything for alleviating the nuisance caused by sewage stagnating on the strand," the Chamber would beg reference to the following sections in the new Municipal Act for Madras, Section 250 runs—

"The Commissioners shall cause the sewers and drains belonging to them to be so constructed and *maintained* as not to be a nuisance or injurious to health, and to be properly cleared, cleansed and emptied."

Section 269 runs—

"All *branch drains*, as well within as without the lands or buildings to which they belong, and all private latrines, privies and cess-pools within the city shall be under the survey and control of the Commissioners, and shall be *altered*, repaired and *kept in proper order* at the costs and charges of the owners of the lands and buildings to which the same belong, or for the use of which they are constructed or continued."

It seems clear from the above sections that if the Harbour Works were being carried out by a contractor or firm, instead of by Government, the President of the Municipality would have it in his power to insist on the present nuisance being removed. The Chamber submit that under these circumstances the Government should not hesitate to carry out a work which the law would compel a private individual, under heavy penalty, to undertake without delay.

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FORWARDED to the Public Works Department for consideration and disposal.

(Signed) C. G. MASTER,
Acting Chief Secy.

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No. 275. ORDER THEREON, 25th November 1878, No. 4,489 W.

THE Chamber of Commerce will be furnished with a copy of the instructions issued to the Superintendent of the Harbour Works in regard to this question of drainage.

(True Extract.)

(Signed) E. A. FOORD, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Chairman, Chamber of Commerce,
with copy of Chief Engineer's Memorandum
No. 5,119, dated 12th November 1878.

Exd. E. C. Shunker.
Spare Copies

BUILDINGS AND ROADS.
CIVIL WORKS.

# Govt. of {1878} Madras.

## PUBLIC WORKS.

*To*

THE CHAIRMAN, CHAMBER
OF COMMERCE,
&c., &c., &c.

*Dated November 25th.*

*Issued*

*Recd.* *Encl.*

*G. O., 25th November* 1878, *No.* 4,489 W.

**NOVEMBER.**

**Nos. 274-275.**

*Drainage of the Foreshore between the Groynes of the Madras Harbour.*—The Chamber of Commerce furnished with a copy of the instructions issued to the Superintendent of the Harbour Works in regard to the —.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

17th December 1878, No. 4,774 W.

**Buildings and Roads.**
**Civil Works.**

No. 178. Proceedings of Government, dated 17th December 1878, No. 4,774 W.

THE attention of Government having been called to the nuisance arising from the efflux of the Black Town, Main Drain, immediately north of Fort St. George, which last year was overcome by the efficient arrangements carried out by the Municipal Engineer now rendered void by the accumulation of sand from the Harbour Works, His Grace the Governor in Council directs that the Superintendent of the Madras Harbour Works, in communication with the President of the Madras Municipality and the Municipal Engineer, will take prompt and energetic measures to remove (temporarily at all events) the evil complained of, the additional charges being met by the Harbour Works.

2. The attention of the President of the Municipal Commission is called to the condition of the mouths of the Triplicane and Kistnampett drains, which do not appear to receive sufficient attention. The experience of last year shows that with care the nuisance (which a few nights ago was very great) is easily controlled. It would therefore appear desirable that the persons in immediate charge of the drains should be punished when nuisance is permitted to arise from them.

(True Extract.)

(Signed) E. A. FOORD, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Superintendent, Madras Harbour Works.
" President, Municipal Commission.
" Financial Department.
" Military Secretary to His Grace the Governor.

Exd. E. C. Shunker.
Spare Copies

BUILDINGS AND ROADS.
CIVIL WORKS.

Govt. of [1878] Madras.

PUBLIC WORKS.

To

THE SUPERINTENDENT, MADRAS
HARBOUR WORKS,
&c., &c., &c.

*Dated December 17th.*

*Issued*

*Recd.* *Encl.*

*G. O., 17th December 1878, No. 4,774 W.*

DECEMBER.

No. 178.

*Black Town, Main Drain, immediately north of Fort St. George.*—The Superintendent of the Madras Harbour Works, in communication with the President of the Madras Municipality and the Municipal Engineer, to take prompt measures for removing the nuisance arising from the efflux of the —; the attention of the President of the Municipal Commission called to the condition of the mouths of the Triplicane and Kistnampett drains.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

11th March 1879, No. 718 W.

Buildings and Roads.
Civil Works.

Read the following papers:—

No. 128. From W. PARKES, Esq., M.I.C.E., Engineer-in-Chief, Madras Harbour Works, to the Secretary to Government, Public Works Department, dated Madras, 15th February 1879, No. 4 W.

A plan and section on one sheet.

In accordance with the memorandum of the Chief Engineer, dated 12th November 1878, to the effect that Government had decided to defer the general question of the drainage of the foreshore of the Harbour till my arrival at Madras, I have now the honor to inform you that I have given the subject my best consideration, and have had the advantage of two interviews with His Grace the Governor and several consultations with Mr. Jones, the Municipal Engineer, as well as the assistance of Mr. Thorowgood and Mr. Beardmore.

2. I think there can be no doubt that it will be ultimately necessary to intercept from the Harbour all possible vents for storm water, but there is certainly much force in the suggestion that in the present undecided state of the question of the general drainage of the Black Town, and of the ultimate arrangement of that portion of the foreshore which faces the Harbour, it is hardly possible to foresee what particular mode of carrying out that interception will be most convenient. During the short interval that will elapse before these questions are decided, the storm waters may without much evil be permitted to escape as at present, and the works of interception be adapted only for the daily flow of house drainage.

3. The discharge to be dealt with is that of a population of about 20,000.

4. There are altogether thirteen sewers carried under the Beach Road between Messrs. Parry and Co.'s and Clive's Battery, but of these, only four bring down house sewage, the others being merely surface drains from the premises immediately facing the beach, and if they receive sewage at all, it may be more easily diverted to some of the open Black Town drains at the back, and thus conducted into the intercepting sewer, than by making connections directly with the latter.

5. The quantity of sewage which actually reaches the present mouths of the above four sewers is very much less than that which must be delivered from the houses, as by some gaugings made by Mr. Beardmore in January 1878 the daily flow amounted to little more than $2\frac{1}{2}$ gallons per head of the population. An improved drainage and water-supply may be expected greatly to increase the flow and the consequent necessity of interception. Mr. Jones is of opinion that when these improvements which are urgently required are carried out, the flow may amount to 15 gallons per head per diem, of which one-half will run off in six hours, and for this I propose therefore to make provision.

6. I think that the whole of the foreshore between Fort St. George and Royapooram must be considered as unavailable for drainage outfalls. The Harbour frontage about one-half of the length is obviously so, and the remainder will be always liable to annual fluctuations of the line of beach, which will render it impossible to maintain the mouth of a drain in any fixed position. This fact will I expect soon force itself on the attention of Government as an additional reason for making a better provision for storm waters, than is afforded by the southern mouth of the great Black Town sewer.

7. We are thus led to Royapooram as the nearest site for the outfall of the intercepting drain, and fortunately it has certain advantages for the purpose. It is entirely free from changes of the shore line of the same kind as those which are taking place south of the Harbour, and the surf which is constantly beating upon it will prevent any foul deposit on the foreshore. The artificial beach of laterite which protects the face of the north surf bank of the Harbour Pier will form an excellent bed for the outlet pipe.

8. The disadvantage of the site is that it is in the neighborhood of a dense population, to whom the northern outfall of the Black Town sewer is already a nuisance, which is sometimes intolerable. I believe, however, that the nuisance is due to preventible causes, and it has been materially reduced by the addition made under Mr. Thorowgood's direction of an iron pipe from the mouth of the sewer to a point 155 feet further seaward, which carries off the sewage in a constant discharge instead of its being permitted to accumulate in the sewer, where it fermented and in turn re-absorbed its own foul gases. The sewer, however, is still a reservoir of the foul gases for which there is no proper means of escape provided, and it is to the absorption of these gases by the fresh sewage, rather than to the inherent foulness of the sewage itself, that the remaining nuisance is due.

9. I feel sure that these evils may be avoided in the outlet of the proposed intercepting sewer, so that the present nuisance shall at least not be aggravated. The gases should have as free an exit at the upper end of a sewer as the liquids have at the lower end. If this is effectually provided for, there is no reason why the outlets of the sewers should be offensive.

10. I therefore propose that the junctions of the four existing drains with the new drain should be made airtight, but recommend that the upper ends should be trapped to prevent the escape of gases at the points where they receive the contents of the open town drains, and that each "dead end" so formed should be connected with a ventilating shaft carried up to at least 15 feet above the tops of the neighboring houses.

11. The junctions with the intercepting drain must be so constructed that while they do not permit the escape of gas they will permit the escape of an excess of storm water. This may be effected by making the storm overflows in the form of traps, which will have to be kept supplied with water.

12. I propose that the four existing drains should not be directly connected with the intercepting drain, but that the junction be made to wells of brickwork 4 feet internal diameter, sunk 8 feet into the sand. These will serve as catch-pits for the grosser solid particles brought down from the town drains, which may be removed periodically. The wells will be covered with granite slabs in which the trapped arrangement for the storm overflow will be made.

13. The drain will be laid out in a straight line between its junctions with the two extreme town drains No. 10 and No. 2 on the plan, passing under the screw pile pier as close to the abutment as practicable. From the junction with No. 2 it will be carried direct under the north surf bank to the laterite foreshore where it will discharge at about mean sea level.

14. The inclination will be 1 in 700 throughout. I propose to form the lower half of the section of Portland cement concrete deposited in situ in a trench dug for the purpose, the upper half to be of brickwork, set and jointed in cement mortar. The last 50 feet will be of cast iron pipes.

15. If the capacity of the drain be made sufficient to carry only the discharge of the four drains it is intended primarily to intercept, a diameter of 12 inches would be sufficient; but I would strongly recommend that it be made sufficient to carry also the sewage now being pumped up near the fort, which by a little modification of the present pumping arrangements might be delivered into an extension of the intercepting drain at the same inclination. Thus the constant daily discharge at the fort and the nuisance caused by it would be done away with, but the storm water would be left to discharge as at present into the sea.



16. This extension of the scheme would, however, of course be carried out by the Municipality. The liability of the Harbour Works will terminate at drain No. 10.

17. In order to obtain sufficient inclination for the sewer, it will have to be laid for a portion of its length at a depth so little below the present surface of the ground that it will not be covered sufficiently to be protected from injury. It will therefore be necessary to raise the level of the ground in this part nearly to that of the adjoining Beach Road. This in itself will be an improvement, and only an anticipation of what would ultimately be required on other accounts.

18. The cost of the whole work I estimate at Rupees 13,603 if adapted for the local sewage only; or Rupees 17,811 if enlarged to receive the fort outfall, both including 10 per cent. for contingencies. This amount includes the cost of forming junctions with the present sewers as they exist, but does not include any allowance for improvement in those sewers above their outlets, or for ventilating shafts at the upper ends. These I have presumed would be borne by the Municipality.

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No. 128-A. From the same Officer, dated Madras, 25th February 1879, No. 8.

IN reply to your memorandum, No. 752, of yesterday's date, I have the honor to state that in the event of the extension of the canal to the Harbour being carried out, the intercepting drain, whether conveying sewage only or storm waters also, may without difficulty be constructed below the bed of the canal as an inverted syphon culvert.

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No. 128-B. From the same Officer, dated Madras, 1st March 1879, No. 9 W.

YOUR memorandum of yesterday's date requests further explanation relative to the "improvement in the present sewers above their outlets," allowance for which is stated not to be included in the estimated sums of Rupees 13,603 and Rupees 17,811.

2. My estimate includes making junctions with the present drains as they exist, but assumes that they either are or will be made at the expense of the Municipality in a suitable state for conveying the sewage to those junctions.

3. It is admitted that the covered drains ought to be trapped and ventilated at their upper ends in any case, but in order to do this effectually it may be necessary to put them in a state of complete repair throughout their whole length and perhaps to close some subsidiary openings. I have not thought it within my province, however, to make such an examination of the drains as would enable me to specify what works are necessary for this purpose. They ought to be carried out in any case, but the urgency for them will be increased by the connection with a further length of half a mile of covered drain. That connection may bring imperfections in the existing drains to notice, but it will not be the cause of them, and they should be remedied at the expense of the authority in whom the maintenance of the drains is vested and not at that of the Harbour Works.

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No. 129. ORDER THEREON, 11th March 1879, No. 718 W.

IN these letters Mr. Parkes explains his proposals for dealing with the town sewage which at present finds its way into the Harbour enclosure; and, upon the understanding that those proposals have been approved by the Municipal authorities, they are sanctioned for immediate execution.

2. His Grace the Governor in Council cannot, however, accept the statement in paragraph 16 of Mr. Parkes' letter to the effect that the liability of the Harbour Works will terminate at drain No. 10. In a previous paragraph Mr. Parkes expresses the opinion that the entire foreshore as far south as Fort St. George will be liable to annual fluctuations of the line of beach, which will render it impossible to maintain the mouth of a drain in any fixed position. In this latter opinion the Government concur; and those fluctuations in the beach line, which will probably become more marked from year to year, are without doubt due solely to the action of the Harbour Works.

3. For these reasons His Grace in Council is of opinion that the proposed intercepting drain should be made of sufficient capacity to receive the sewage which has hitherto been discharged into the sea to the north of the fort, alluded to in paragraph 15 of Mr. Parkes' letter, as well as the discharge of house sewage from the four drains mentioned in paragraph 4.

4. The larger of the two estimates submitted by Mr. Parkes, amounting to Rupees 17,811, is accordingly accepted; but the Government are of opinion that the proposed intercepting drain should be extended to the south sufficiently to receive the fort outfall; the entire work forming a charge against the Harbour Works.

5. The ventilating shafts alluded to in paragraph 10 of Mr. Parkes' letter should be constructed by the Municipality; and the President will be requested to take the necessary measures for this purpose, in communication with the Superintendent of the Harbour Works. Any improvement which may be necessary in the existing sewers should also be carried out at the expense of the Municipality; except so far as an alteration in their levels may be rendered necessary to effect a junction with the intercepting drain, in which case the cost of such alteration should be borne by the Harbour Works.

6. It is observed that, in the event of Cochrane's Canal being extended to the Harbour, the intercepting drain can be carried below the bed of the canal; and it may be well for the Superintendent of the Harbour Works to consider the expediency of constructing the necessary syphon in the first instance.

(True Extract.)

(Signed) J. H. M. SHAW-STEWART, Colonel, R.E.,
Ag. Secy. to Govt., P.W.D.

To the Superintendent, Madras Harbour Works.
,, Financial Department.
,, Superintending Engineer, Third Circle.

" Mr. Parkes. No. 1. C. C.

Exd. T. D. Ryan.
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BUILDINGS AND ROADS.
CIVIL WORKS.

# Govt. of {1879} Madras.

## PUBLIC WORKS.

To

THE SUPERINTENDENT,
MADRAS HARBOUR WORKS,
&c., &c., &c.

*Dated March* 11*th.*

*Issued*

*Recd.* *Encl.*

*G. O., 11th March 1879, No. 718 W.*

**MARCH.**

**Nos. 128-129.**

*Drainage of the Foreshore between the Groynes of the Madras Harbour.*—Orders on correspondence from Mr. Parkes on the subject of the —.

GOVERNMENT OF MADRAS.

## PUBLIC WORKS DEPARTMENT.

7th May 1879, No. 1,310 W.

**Buildings and Roads.**
**Civil Works.**

Read the following paper:—

No. 39. Note by the Deputy Chief Engineer, Public Works Department, dated 24th April 1879.

From the President of the Municipal Commission, Madras, through the Financial Department, dated 25th March 1879, No. 656.

ABSTRACT.—Brings to notice that the Superintendent, Harbour Works, has stopped the construction of the groyne to the south of the main drain mouth near the Fort, the certain result being that the delivery pipe will be closed up by the sand accumulation in a fortnight's time.

From the Military Department, dated 17th April 1879, No. 2,077.

ABSTRACT.—Transferring letter from the Quartermaster-General, stating that anything tending to increase the foreshore is objectionable from a military point of view, and that the eventual cost of moving the batteries in consequence of the accumulation to the south of the harbour must be debited against the Harbour Works.

No. 40. ORDER THEREON, 7th May 1879, No. 1,310 W.

THE site of the groyne in question has been inspected by the officers noted in the margin, who report that the construction of the groyne will be the most effective as well as the cheapest and simplest method of preventing the stoppage of pumping by sand accumulation at the mouth of the pipe.

Colonel J. H. M. Shaw-Stewart, R.E., Consulting Engineer for Railways.
Major J. Pennycuick, R.E., Ag. Deputy Chief Engineer, Public Works Department.

2. They point out that the extension of the foreshore caused by the construction of the groyne will be trifling compared with that certain to be caused by the Harbour Works themselves, and that at the most the effect of the groyne will only anticipate slightly this inevitable extension.

3. The intercepting drain, the immediate commencement of which was directed in the marginal Proceedings, will render the groyne superfluous after the present season, but immediate measures are necessary in order that the pumping of sewage may be carried on, and the course recommended by Colonel Shaw-Stewart and Major Pennycuick is practically the only one available.

G.O., No. 718 W., dated 11th March 1879.

4. Concurring in their opinion, the Governor in Council has directed the construction of the groyne to be immediately resumed.

5. These Proceedings will be communicated by the Military Department for the information of His Excellency the Commander-in-Chief with reference to the Quarter-master-General's letter of the 9th April last.

(True Extract.)

(Signed) R. H. SANKEY, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Superintendent, Madras Harbour Works.
" Military Department.
" Finiancial do.

Exd. G. Freeman.
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BUILDINGS AND ROADS.
CIVIL WORKS.

# Govt. of {1879} Madras.

## PUBLIC WORKS.

*To*

THE SUPERINTENDENT,
MADRAS HARBOUR WORKS,
&c., &c., &c.

*Dated May 7th.*

*Issued*

*Recd.* *Encl.*

*G. O., 7th May 1879, No. 1,310 W.*

**MAY.**

**Nos. 39-40**

*Groyne South of the Pumping Station near the Fort, Madras.*—Directs the construction of the —.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

21st May 1879, No. 1,419 W.

**Buildings and Roads.**
**Civil Works.**

Read the following paper:—

No. 141. From F. N. THOROWGOOD, Esq., M.INST. C.E., Superintendent, Madras Harbour Works, to the Secretary to Government, Public Works Department, Buildings and Roads, dated Madras, 28th April 1879, No. 6 W.

I HAVE the honor to state that I am about to commence work at the intercepting drain along the beach, ordered in G.O., No. 718 W, of 11th March 1879.

2. It is probable that from May to August work at the Harbour Piers will often be retarded and prevented by bad weather, and as I shall shortly have enough cement to spare save for the sewer, the present is a good time for starting the work.

3. Before doing so, however, I would respectfully ask to be informed further on paragraph 4 of the Government Order above mentioned, whether the drain should be carried southward to take in the fort drain in the first instance, or whether it should be commenced at the present pumping station and carried along towards Royapooram with a diameter of 18 inches. This diameter was held to be sufficient by Mr. Parkes for carrying off the discharge from the drain by the pumping station, but I do not think he allowed for the drain farther south.

4. With reference to paragraph 6 of the Government Order, I would remark that the construction of the syphon culvert under the canal could be quite easily carried out at a future date when its position might with greater advantage be fixed upon.

---

No. 142. ORDER THEREON, 21st May 1879, No. 1,419 W.

BY the expression "fort outfall" in the 4th paragraph of Government Proceedings, No. 718 W, of the 11th March 1879, nothing further was meant than the pumping station to the north of the fort. No interference with the drains within the fort limits was contemplated.

2. It is observed that the Deputy Chief Engineer has authorised the commencement of the work at the pumping station.

3. The construction of the syphon can be deferred until the line of canal extension has been determined on.

(True Extract.)

(Signed) R. H. SANKEY, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Superintendent, Madras Harbour Works.
„ Financial Department.

Exd. S. T. Austin.
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BUILDINGS AND ROADS.
CIVIL WORKS.

Govt. of {1879} Madras.

PUBLIC WORKS.

To

THE SUPERINTENDENT,
MADRAS HARBOUR WORKS,
&c., &c., &c.

*Dated May 21st.*

*Issued*

*Recd.* *Encl.*

*G. O., 21st May 1879, No. 1,419 W.*

**MAY.**

**Nos. 141-142.**

MADRAS HARBOUR.
Construction of the intercepting drain along the beach.

GOVERNMENT OF MADRAS.

MARINE DEPARTMENT.

---

27th May 1879, No. 284.

**Madras Harbour.**

Read the following paper:—

No. 59. *Report of Proceedings of the Harbour Works Committee, Monday, 19th May 1879.*

PRESENT:

Honorable P. Macfadyen.
Major J. Pennycuick.
R. C. Walker, Esq.
Captain J. H. Taylor.

Read a letter from Major Conway-Gordon, Examiner, Public Works Accounts, No. 14-B, 14th May 1879, referred to the Committee by Government for consideration and report with reference to G.O., No. 1311, dated 17th April 1877.

Resolved that Mr. Thorowgood be authorised to compile a stock list twice a year from the Store-keeper's books.

Mr. Thorowgood having reported that in the present scheme for stopping the outfall of drains, &c., into the Harbour no adequate provision is made for intercepting the outflow of storm-water which is always heavily charged with sewage, the Committee quite approve of the Superintendent's again drawing the attention of Government to this important matter, and hope that it will be reconsidered with a view to a more complete scheme being adopted.

(Signed) P. MACFADYEN,
( ,, ) J. PENNYCUICK,
( ,, ) R. C. WALKER,
( ,, ) J. H. TAYLOR.

---

No. 60. ORDER THEREON, 27th May 1879, No. 284.

Recorded.

(True Extract.)

C. G. MASTER,
*Acting Chief Secretary.*

To the Master Attendant, Madras.
,, Public Works Department.

Exd. F. R. Bantleman.

Govt. of Madras
MARINE.

To THE MASTER ATTENDANT,
Madras,
&c., &c.,
&c.

Dated May, 27th.
Issued
Recd.
Encs.

G.O. 27th May 1879, No. 284

MAY.
Nos. 59-60.

*Madras Harbour.*—Report of Proceedings of the Harbour Works Committee, dated 19th May 1879, recorded.

Mis N 1584 Dd 12th June 79.

Communicated to the Supt Madras H. Works & Exr P.W. Accts.

S. of J.O.

Supt M.H. Works
Exr P.W. Accts.
H. Works Committee

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

19th July 1879, No. 1,908 W.

General.
Account.

Read the following paper :—

No. 116. From Major H. M. VIBART, R.E., Acting Superintending Engineer, Third Circle, to the Chief Engineer, Public Works Department, dated Chepauk, 2nd July 1879, No. 3,872.

I HAVE the honor to bring to your notice that on the receipt of G.Os., Nos. 558 W and 984 W, dated 4th and 28th February 1878, ordering the execution of the extension of the main drain pipe, Madras, the late District Engineer, Presidency, made arrangements with the Executive Engineer of the Madras Municipality for carrying out the work. These arrangements the District Engineer reported to you in his No. 119, dated 5th April 1878, and requested instructions. In reply he was requested in your memorandum No. 1,826, dated 13th April 1878, to proceed with the work utilizing all available material and adopting the least expensive mode of effecting the object in view, and to submit an estimate of the cost of the work for sanction and appropriation of funds. On the receipt of this memorandum the District Engineer again placed himself in communication with the Executive Engineer of the Municipality and requested him to prepare an estimate. An estimate amounting to Rupees 4,507-11-5 for lengthening the drain 150 feet was submitted on the 26th April 1878 by the latter officer, whose inquiry if he could go on with the staging in anticipation of sanction, was replied to in the affirmative by the District Engineer in his No. 752, dated 8th May 1878. Inquiries were mean time being made as to whether any materials were available in the district and in the Public Works Stores for the work at rates lower than those entered in the Municipal Engineer's estimate, as the materials of Captain Taylor's pier, which it was proposed in G.O., No. 984 W, dated 28th February 1878, to utilize on this work had been found to be unserviceable. No materials, however, were available either from the District or the Public Works Stores, and the work appears to have been proceeded with by the Municipal Engineer till October 1878, when the District Engineer in his letter No. 4,299, dated 21st October 1878, desired that officer to stop it and to supply a statement showing the expenditure incurred up to date. The bills of the cost of work done amounting to Rupees 3,100-3-6 and Rupees 45-2-2 submitted by the Municipal Engineer, are enclosed. The Executive Engineer, Presidency Division, reports that on the date of the stoppage of the work, the pipes had been extended 100 feet; that in December last the staging which cost the greater portion of the money was destroyed; and that the pipes were damaged, and that at present nothing of the work can be seen as all is covered over with sand.

2. The bills have been checked as far as possible in this office. The rate for casuarina poles is high, and there are no details for the amount charged for labor. Considering the nature of the work, it is not possible to apply any check to the bills.

3. As the Municipal Engineer has applied for the early settlement of bills, I have the honor to request sanction and appropriation of the necessary funds to enable payment of the bills being made to the Municipality.

No. 117. ORDER THEREON, 19th July 1879, No. 1,908 W.

UNDER the explanation furnished, the Superintending Engineer is authorised to disburse the amount of the bills, Rupees 3,145, to the Municipality.

2. As ruled in G.O., No. 558 W, dated 4th February 1878, the charge will be debited to the Harbour Works.

(True Extract.)

(Signed) R. H. SANKEY, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Superintending Engineer, Third Circle.
" Superintendent, Madras Harbour Works.
" Examiner of Public Works Accounts.

Exd. E. C. Shunker.
Spare Copies

GENERAL.
ACCOUNT.

# Govt. of {1879} Madras.

## PUBLIC WORKS.

*To*

THE SUPERINTENDING ENGINEER,
THIRD CIRCLE,

&c., &c., &c.

*Dated July 19th.*

*Issued*

*Recd.* *Encl.*

*G. O., 19th July 1879, No. 1,908 W.*

**JULY.**

**Nos. 116-117.**

*Main Drain, Madras.*—Authorises the disbursement to the Municipality of the cost of extending the — the charge to be debited to the Harbour Works.

GOVERNMENT OF MADRAS.

## PUBLIC WORKS DEPARTMENT.

7th April 1880, No. 900 W.

**Buildings and Roads.**
**Civil Works.**

Read the following papers :—

No. 20. From Supt., Madras Harbour Works, dated 26th May 1879, No. 11 W.
No. 20-A. From do. do. ,, 14th June ,, ,, 17 W.

No. 20-B. Proceedings of Harbour Committee, dated 7th July 1879.

No. 20-C. From Sanitary Commissioner for Madras, dated 8th July 1879, No. C 12.

No. 20-D. From President, Municipal Commission, Madras, dated 13th February 1880, No. 201.

No. 20-E. From Supt., Madras Harbour Works, dated 24th March 1880, No. 69 W.

No. 21. ORDER THEREON, 7th April 1880, No. 900 W.

HIS GRACE the Governor in Council sanctions the construction of a catch-water drain according to the design submitted with the Superintendent's letter No. 69 W. of 24th March 1880, for intercepting the outflow of storm water, at an estimated cost of Rs. 7,000, in addition to the closed intercepting sewer sanctioned in G.O., No. 718 W. of 11th March 1879.

2. It is understood that there is no difficulty about sand northwards, but at the southern end no doubt sand tracks will be found, as at the main sewer and Fort drains, which probably a very small amount of daily labor will keep open.

(True Extract.)

(Signed) R. H. SANKEY, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Superintendent, Madras Harbour Works.
,, Financial Department.
,, Sanitary Commissioner.
,, Harbour Works Committee.

Exd. S. T. Austin.
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BUILDINGS AND ROADS.
CIVIL WORKS.

# Govt. of {1880} Madras.

## PUBLIC WORKS.

*To*

THE SUPERINTENDENT, MADRAS HARBOUR WORKS,
&c., &c., &c.

*Dated April, 7th.*

*Issued*

*Recd.*

*Encl.*

*G. O., 7th April* 1880, *No.* 900 W.

**APRIL.**

**Nos. 20-21.**

*Catch-water Drain, Madras Harbour Works.*—Sanctions with remarks the construction of a — for intercepting the outflow of storm water at an estimated cost of Rs. 7,000 in addition to the closed intercepting sewer sanctioned in G.O., of 11th March 1879, No. 718 W.

GOVERNMENT OF MADRAS.

## PUBLIC WORKS DEPARTMENT.

11th October 1880, No. 2,335 W.

**Buildings and Roads.**
**Civil Works.**

Read the following paper :—

No. 46. From F. N. THOROWGOOD, Esq., M. INST. C.E., Superintendent, Madras Harbour Works, to the Secretary to Government, Public Works Department, dated Madras, 2nd October 1880, No. 44 W.

I HAVE the honor to submit the following report of the progress on these works during the past month of September in which no less than 447 lineal feet of deep sea piers have been constructed, being 90 feet more than was built in the previous month of August.

2. *North Pier Superstructure.*—The weather in September was favorable for work (excepting heavy rains in the early part of the month) and every advantage was taken of the quiet sea to push the construction on rapidly. There were 360 blocks set in the north pier, advancing the work by a length of $210\frac{3}{4}$ lineal feet, and making the total length from the point B on 30th September $3{,}512\frac{1}{2}$ feet. A length of 163 feet in advance of the present termination brings the work to the commencement of the pier head.

3. The large number of blocks set in the north pier during August and September (viz. 680) has severely taxed the supply, and a few days' delay is unavoidable in order to insure the use of no blocks that are not thoroughly hardened.

4. *North Pier Rubble Base.*—The deposit of stone in the rubble base was as great as could be managed, but not nearly such as I could wish. The failing supply of laterite at Ambatúr, together with the laying up of the two Steamers *Hobart* and *Salisbury* for repairs, seriously interfered with rapid progress under this head. There were 12,445 tons of stone deposited in September, of which the steam hoppers conveyed only 3,935 tons. The blockwork has now run rather close on the end of the rubble bank which extends 215 feet in advance of the last block, but is not fully made up for more than half this distance. The enforced stoppage of blocksetting for eight or ten days will give an opportunity for completing the base as far as the pier head, and at the same time will restore the proper amount of advance of base over blockwork.

5. *Concrete Blockmaking.*—Unfortunately during September, although the rapid and constant making of blocks was most important, the heavy rains in the early part of the month prevented any work being done on many days. And when with much difficulty the blockmaking gangs could be kept at work the rain at the Pallávaram quarries interfered with a sufficient supply of suitable stone. Every exertion has been made since the rain ceased to make up for the lost days, and 483 blocks were turned out during the month, but I had hoped to be able to make 70 or 80 more than that number. The work done in the last two months has been so much in excess of the estimated rate of advance of 150 feet a month that I hope it need not be a matter of surprise that we should have used up all the thoroughly seasoned blocks for one pier. There is no want of blocks for the south pier.

6. The special blocks for the north pier head are now being made, and of these sufficient are ready for the first 50 feet of that portion of the work.

7. *Quarries.*—The rain already referred to interfered much with work at the quarries in the early part of September, but every exertion has been made to keep the

supply up to the requirements. From Ambatúr 14,812 tons of laterite were received, and from Pallávaram 18,365 tons of granite, giving a total for the month of 33,177 tons, which is about 7,000 tons less than we require to keep all branches of the works going at full speed.

8. At Pallávaram the Contractor Kazim Ali Nakry Sahib has completed a separate line at his own cost (the harbour works lending the rails) which was passed for traffic throughout on 27th September. The despatch of stone from this quarry will be much assisted by the opening of this line.

9. *South Pier Superstructure.*—At the south pier I have the pleasure to report a greater rate of advance than I myself ever anticipated and I believe than has ever been reached before in any deep sea work. There were set in September 416 blocks, advancing the pier by a length of 236¼ feet, and bringing the total length from the point E to 2,972½ feet. There now remains only a length of 51 feet to complete the curved work of this pier.

10. *South Pier Rubble Base.*—The supply of stone to the south pier base was below the usual amount as at the north pier. During September 12,823 tons were deposited, of which the steam hoppers only conveyed 2,923 tons. At this pier also the blockwork is following rather too closely on the base which extends only 220 feet in advance of the last block, and is made up fully for 120 feet of that length. Every exertion will now be made to hasten the completion of the two bases as rapidly as possible, the feeble condition of the two steamers having thrown this branch of the work back unavoidably.

11. *Protective Works to the Beach.*—The sea continues to encroach to the north of the Police tannah, and it has become a difficult matter to supply sufficient stone to protect the shore without seriously impeding the progress of the harbour works themselves. I have made arrangements for putting on a greater force at the protective works at this spot, and I hope that by constructing a good revetment in the next ten days to prevent any damage to property before the wind changes to the north-east. With a change of wind a change of effect from the wave action may be relied on. In September 900 tons of boulders were used in protective works.

12. *Intercepting drain along Beach.*—The intercepting drain from the Fort to Ráyapuram has worked very well hitherto. The heavy rains at the beginning of September taxed it pretty severely and obliged me to make some alterations in the storm overflows which are not yet completed. The only danger to be apprehended seems to be that the Municipal authorities may surcharge the sewer by excessive pumping at the southern end, but over their operations I have no control. The size and gradient of the sewer was approved by their Engineer at the commencement.

13. *Steam Hopper Barges.*—I have twice referred to the laying up of the *Hobart* and *Salisbury*. This had to be done in order to replace their boiler tubes, a task which, owing to the peculiar construction of the vessels, involved shifting the boilers bodily. At some risk I ventured to carry on these repairs at Madras in the open sea and the result has been satisfactory. The new tubes were procured from Bombay and the *Hobart's* repairs were completed on 23rd September. The *Salisbury* was laid off on 22nd September and the renewing of the tubes is still in hand. The work was in the immediate charge of the Engineers of the vessels, to whom much credit is due for its successful carrying out under particularly inconvenient circumstances. The bottoms of both vessels are very foul from barnacles, &c.

14. *Stores received on works from England.*—The following vessels have arrived with stores from home during the past month. It will be observed that amongst them are some of the articles mentioned by me in my letter to Government, No. 40 W., of 10th September, on which G.O., No. 2,158 W., of 14th September, was passed. I had no advice of the despatch of the articles when I wrote :—

S.S. *Duke of Argyll*—45 bolts of canvas.
18 stone-crusher jaws (20 ordered).
1 case India-rubber washers.

S. *Latona*—1,982 casks of Portland cement (of which 1,370 are landed).



15. *Expenditure.*—The expenditure during the month of September (subject to correction in detail) has been Rs. 1,53,971, and the total expenditure up to date, exclusive of outstanding accounts, has been Rs. 45,23,045.

16. *Plans and Sections.*—The usual lithographed plan on a scale of 200 feet to 1 inch accompanies this report, showing the Harbour Works line on 30th September in brown edged with blue. The Harbour Works line of 31st August is shown in green. Two sections showing the blockwork built in the month and the extent of the two rubble bases also are forwarded.

17. *General Remarks on Progress.*—With September terminates the third quarter of the year 1880, during which quarter the advance of the north pier has been 487·6 and of the south pier 572·3 ; this is the greatest amount of work done in any three months up to the present date. The remaining three months of the year cannot be reckoned upon for much progress, as in the deep water now reached only a slight sea from the north will interfere with operations. But the concrete blocks for the north pier head may be completed and there seems to be no reason why the north pier should not be finished before the end of the financial year 31st March 1881.

---

No. 47. ORDER THEREON, 11th October 1880, No. 2,335 W.

THE Government note with much satisfaction the rapid rate of progress at both piers.

2. The Superintendent's remarks in regard to the danger to be apprehended from over-pumping at the southern end of the intercepting beach drain will be communicated to the President of the Municipal Commission in the Financial Department.

(True Extract.)

(Signed) R. H. SANKEY, Colonel, R.E.,
Secretary to Govt., P.W.D.

(Signed) R. H. SANKEY, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Superintendent, Madras Harbour Works.
" Secretary, Harbour Works Committee.
" Financial Department.
" Marine do.
To General Morgan.

Exd. E. C. Shunker.
Spare Copies

BUILDINGS AND ROADS.
CIVIL WORKS.

# Govt. of {1880} Madras.

## PUBLIC WORKS.

*To*

THE SUPERINTENDENT OF THE
MADRAS HARBOUR WORKS,

&c., &c., &c.

*Dated October, 11th.*

*Issued*

*Read.* *Encl.*

*G. O., 11th October* 1880, *No.* 2,335 W.

**OCTOBER.**

**Nos. 46-47.**

*Progress Report of the Madras Harbour Works for September* 1880.—The rapid rate of progress at both piers noted with satisfaction.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

22nd December 1880, No. 2,938 W.

**Buildings and Roads.**
**Civil Works.**

Read the following paper:—

No. 87. From F. N. THOROWGOOD, Esq., M. Inst. C.E., Superintendent of Madras Harbour Works, to the Chief Engineer, Public Works Department, dated Madras, 7th December 1880, No. 67 W.

IN reply to your memorandum, No. 2,618, of 22nd November, I have the honor to forward a tracing of a channel for carrying off the rain water from the drain close to the south pier of the harbour.

2. There will not be much difficulty in keeping the mouth of it clear, and it will confine the rain overflow within proper limits instead of allowing it to run wild as at present, and as you observed on the 22nd November when inspecting the works.

3. The cost of this channel built in cement would be about Rs. 893, and if it were thought desirable afterwards it could be arched over and extended right into the water.

No. 88. ORDER THEREON, 22nd December 1880, No. 2,938 W.

THE estimate amounting to Rs. 893, prepared in the Chief Engineer's office on the plan submitted by the Superintendent, Madras Harbour Works, for a channel to carry off the rain water from the drain close to the south pier of the harbour into the sea, is sanctioned.

(True Extract.)

(Signed) R. H. SANKEY, Colonel, R.E.,
Secretary to Government, P.W.D.

To the Superintendent, Madras Harbour Works.
„ Examiner of Public Works Accounts.

Exd. E. C. Shunker.
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BUILDINGS AND ROADS.
CIVIL WORKS.

Govt. of {1880} Madras.

PUBLIC WORKS.

To

THE SUPERINTENDENT, OF
MADRAS HARBOUR WORKS,

&c., &c., &c.

*Dated December, 22nd.*

*Issued*

*Recd.* *Encl.*

*G. O., 22nd December 1880, No. 2,938 W.*

**DECEMBER.**
**Nos. 87-88.**

*Channel to carry off the Rain water from the drain close to the South Pier of the Harbour into the sea.*—Sanctions the estimate for s —.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

28th January 1881, No. 234 W.

**Buildings and Roads.**
**Civil Works.**

Read the following paper:—

No. 153. Proceedings of the Madras Harbour Works Committee, Monday, 17th January 1881.

*Present:*

Honorable P. MACFADYEN.
Captain J. H. TAYLOR.
R. C. WALKER, ESQ.
Major J. PENNYCUICK, R.E.
W. PARKES, ESQ.
F. N. THOROWGOOD, ESQ.

RESOLVED that Captain Taylor be asked to draft a letter for submission to Government to be circulated to Harbour Committee embodying his proposals for the improvement of the beach and the erection of jetties.

Resolved also that Government be informed that, in the opinion of the Harbour Committee, it is of great importance that a Port Trust Bill for Madras be passed with as little delay as possible.

(Signed) P. MACFADYEN.
( ,, ) J. H. TAYLOR.
( ,, ) J. PENNYCUICK.

---

SUBMITTED to the Secretary to Government, Public Works Department, for orders with letter from Captain J. H. Taylor referred to herein.

MADRAS,
19th January 1881.

(Signed) J. H. TAYLOR,
Secretary.

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From J. H. TAYLOR, Esq., Lieutenant, R.N.R., Secretary, to the Harbour Committee, dated Madras, 19th January 1881.

THE proposals referred to in the resolution passed yesterday in committee have received the approval of Colonel Sankey, Chief Engineer and Secretary to Government, Department Public Works, and of Mr. Parkes and Mr. Thorowgood, on the part of the harbour. It is briefly to level up the beach from a line 200 feet from the sea to its junction with the municipal road. The materials being sand taken from low water mark, covered with one foot of road material, partly obtainable on the spot, and partly from Ambatoor by rail, the whole having a slope towards the sea, in order to carry off storm water and relieve the beach road, which is now inundated in rainy weather. From the broad causeway thus obtained, I propose to run out two jetties, 40 feet in width, and carried out into 6 feet of water M.S.L., the platform to be also 6 feet above M.S.L., and the extreme length to 100 feet of screw pile construction, the piles for which are already at hand. Mr. Parkes also suggests, and I strongly approve the suggestion, that the inner half of the present pier be cut down half way, or say 9 feet above M.S.L., by which addition the trade of the port can be conveniently carried off by these three jetties, to be added to if occasion requires. The facility thus afforded will admit of a much cheaper and quicker shipment and discharge of cargo, and relieve the port of its chief grievance. On the formation of a Port Trust, or such legislative enactment as will admit the levy of dues on goods departmentally, I propose that the whole trade of the port, with all its charges of boat hire,

cooly hire, &c., be taken in hand by the trustees or authorities, and a rate of Rs. 2-8-0 per ton levied upon all cargo landed or shipped. I calculate that 1 rupee, or at most, Rs. 1-4-0 will represent the outlay, and the remainder, Rs. 1-8-0 or Rs. 1-4-0, be credited to the Port Fund for the interest of the capital sum expended on the harbour and the upkeep and establishment.

2. The simplicity of this arrangement will, I hope, recommend it to the Government and the public. The trade certainly can have no reason to complain if the advantages of the harbour are secured to them at no higher charge than it is now subjected to, and the increased security to property and the relief from the oppressive charges of dubashes, &c., will be a very great boon. I need not enter into detail upon the present unsatisfactory method under which the port is worked, the facts are very generally known, and the remedy is, I submit, at hand as soon as legislation is effected.

3. Meanwhile, as no time should be lost and a large amount of work has to be carried out, I would propose that the present balance of Port Funds to the actual credit of Madras itself be utilized by a simple order of Government. A sum of Rs. (1,38,010-9-5) one lakh thirty-eight thousand and ten annas nine and pies five is thus available for the most imperative requirements of the new order of things, to which I have drawn attention above.

4. It will be observed that the proposal does not include any extra tonnage dues on shipping. I would strongly deprecate any attempt to press upon the ship-owner for advantages which he has very little to do with; his duty ends when his vessel reaches Madras, or as near to it as he can safely approach. The harbour cannot be considered one of refuge, and despatch, which is the chief desideratum, is even now on as favorable terms here as at either Calcutta or Bombay. The charges of moorings, pilotage, towage, &c., will of course be legitimate taxes on the ship, and should be calculated to meet all expenses under those heads.

5. The plans and estimates of the proposed works are necessarily incomplete, the levelling and making of the beach causeway will be nearly all pure daily labor, to be carried out by a contractor. For the shore portions of the jetties, the DeHavilland bulwark can be utilized, it is entirely of large granite blocks brought from the Adyar, and the quantity available will be sufficient. The screw pile estimate I submit with the remark that, while the timber is calculated at 2 rupees per cubic foot, I can obtain it from the Gun Carriage factory at on very much more reasonable rate. I consider the two new jetties could be completed for less than 40,000 rupees, and the beach operation for 20,000, making a total of 60,000 rupees.

6. No doubt it will be found ere long necessary or advisable to build warehouses on the beach and transfer all Sea Custom work to them. There will still be ample use for the present Sea Custom godown for the inland work.

7. At present, however, my proposals are limited to the bare necessaries of the situation. I would recommend that Government be asked to sanction the commencement of this work from Port Funds, a monthly account being furnished as a guide to expenditure, duly checked and countersigned by myself.

---

Seen and approved.

(Signed) P. MACFADYEN.

Ditto. The position of the jetties should be fixed with reference to the easy transfer of goods between them and the custom house or future warehouses.

(Signed) R. C. WALKER.

I think it will be found that the work will cost rather more than the Rs. 60,000 estimated by Captain Taylor, but it will be desirable to carry it out, the funds being available, even if it costs as much as Rs. 1,00,000.

(Signed) J. PENNYCUICK, Major, R.E.

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No. 154. ORDER THEREON, 28th January 1881, No. 234 W.

THE proposals in the paper above recorded have been submitted to Government in a very crude form, but what is proposed has been for some time in contemplation and is unquestionably necessary, while funds are available for the work.

2. The Right Honorable the Governor in Council sanctions the reclamation of the strand between the harbour groynes, and the construction of the two pile jetties or boat piers, the outlay being met from the accumulated Port Funds at credit of the Madras port, but somewhat more formal estimates (to be prepared without delaying commencement of the work) should be submitted to Government as early as possible.



3. The suggested cutting down of the iron screw pile pier, which is not urgently needed, will be postponed for the present, and meanwhile the Government desire to be furnished with more detailed information as to what is proposed to be done. The work is not included in the estimate now submitted, as indeed is not the strand reclamation project.

(True Extract.)

(Signed) R. H. SANKEY, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Secretary, Madras Harbour Committee.
" Superintendent, Madras Harbour Works.
" Marine Department.
" Legislative Department.

Exd. E. C. Shunker.
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BUILDINGS AND ROADS.
CIVIL WORKS.

Govt. of [1881] Madras.

PUBLIC WORKS

To

THE SECRETARY, MADRAS
HARBOUR COMMITTEE,

&c., &c., &c.

*Dated January*, 28*th*.

*Issued*

*Recd.* *Encl.*

*G. O., 28th January* 1881, *No.* 234 W.

JANUARY.

Nos. 153-154.

*Improvement of the Beach and the erection of Jetties in the Madras Harbour.*—Passing orders on proposals for the —.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

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3rd November 1881, No. 2721 W.

**Buildings and Roads.**
**Civil Works.**

Read the following papers :—

No. 19. Endorsement of the Chief Secretary to Government in the Financial Department, dated 15th August 1881, No. 1,384.

From A. T. ARUNDEL, Esq., President, Municipal Commission, Madras, to the Officiating Chief Secretary to Government, dated Madras, 26th July 1881, No. 895.

I HAVE the honor to forward, for the consideration of Government, a memorandum with plans and estimate by the Vice-President Mr. Jones regarding the seaward extension of the southern main drain near the Fort, and also a copy of a letter on the same subject from Colonel Ross Thompson, the Superintendent of Works, Presidency.

2. The Government are aware that the south main drain, the outfall of which is near the Fort, receives the drainage of a large portion of Black Town. To prevent the great nuisance caused by the daily discharge of this sewage into the sea, the harbour intercepting sewer was constructed, and now by the aid of a powerful engine and centrifugal pump the sewage is raised out of the main drain and shot into the harbour intercepting sewer which carries the sewage away to an outfall in the sea north of the harbour.

3. But, although the ordinary daily flow of sewage is thus disposed of, the main drain must still discharge into the sea the storm waters received from every heavy fall of rain in the town. Such storm waters are of course mixed with the sewage, and the opening of the gates of the main drain reproduces the intolerable nuisance which at ordinary times is got rid of.

4. If the nuisance thus caused lasted no longer than the time required for the discharge of the storm waters through the open gates, it would have to be endured and little would remain to be said.

The new harbour has, however, entirely altered the condition of the shore, and whereas before the commencement of the harbour the sea washed up to the gates of the main drain, it is now separated from them by a belt of sand, 350 feet in breadth, which is increasing at a present rate of about 15 feet a month.

5. The result is that the storm waters when discharged from the main drain are spread out over the sand depositing a layer of liquid filth and giving rise to noxious exhalations, and at times, instead of finding their way into the sea, they rush north between the sand and the road towards the battery leaving deposits of filth in their course.

6. A gang of lascars is maintained night and day at the outfall of the main drain to open the gates and clear a passage to the sea in time of rain, but the distance to the sea is now too great for them to accomplish the latter task satisfactorily when the emergency arises.

7. Colonel Ross Thompson has been good enough to meet Mr. Jones and myself on the spot to discuss the means of remedying the present evils, and from his letter it will be seen that he concurs in the opinion that the only method of relief is by extending the main drain itself over the belt of sand, so that it may once more discharge its contents into the sea.

8. Mr. Jones has drawn up an estimate for this work which, inclusive of new gates or shutters, amounts to Rs. 13,663.

As the work in question has been rendered necessary solely by the extension of the foreshore caused by the new harbour, the cost would seem to be a proper charge against the harbour, and, if the Government concur in this view, I beg that orders may be issued for the execution of the work, or that the amount of the estimate may be placed at the disposal of the Municipality and the work carried out by the Municipal Engineer.

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Memorandum regarding the Southern or Fort Outfall of Black Town Main Drain.

EVER since the commencement of the harbour works the work of keeping clear the outfall of this drain has been one of considerable difficulty and expense, so much so that eventually it became almost impossible to discharge the ordinary daily collection of sewage, and the harbour intercepting sewer was extended under G.O., No. 718 W., of 17th May 1879, up to the main drain mouth, where the Municipality erected a pumping engine, pumps, &c., to raise the sewage into that sewer. This so far has been a success as regards the ordinary *sewage* discharge.

2. The main drain, however, is the main duct for discharging the storm waters of Black Town, and it is therefore necessary, notwithstanding the diversion of the ordinary sewage flow, to maintain at all times an open channel between the mouth of the drain and the sea. This mouth is now 350 feet from the sea, and from the section hereinafter referred to it will be seen that the increase of sand between the 20th March and 28th June was about 50 feet.

3. The sand, in fact, is extending so quickly in front of the drain that a channel can hardly be cleaned out, for the drain after one tide before the next tide comes and fills it up again.

4. The necessity of always having a free outfall in a country which experiences sudden and heavy rainfalls need hardly be pointed out, and were there no other reasons than this it behoves that something be done to improve the outfall.

5. There are, however, other reasons, and two of these are that the storm water running over this large expanse of sand leaves a deposit of sewage over a considerable area, and at other times the rainfall is so sudden that the outfall cannot be cleared sufficiently before it is imperative to open the doors, and the drain flows not to the sea but along a valley formed by the sand between the road and the sea. In both cases a large amount of sewage is deposited; the nuisance is very great and complaints are loud and long.

6. It has now become necessary to do something to get rid of this great and increasing nuisance, and it is to be remembered that although the main drain on completion of the drainage scheme will not ordinarily receive sewage, it will still remain the main artery for the discharge of storm waters, and these will not be altogether free from sewage.

7. No temporary expedient therefore ought to be adopted; permanent works are a necessity. Attached to this memorandum are plans and estimates for the works considered necessary, and it will be seen from Colonel Ross Thompson's letter No. 1,351, dated 13th July 1881, with reference to a meeting with him at the outfall of the drain, that he concurs with the undersigned in thinking that the nuisance can be cured only by the extension of the drain.

8. The plans have been carefully designed, and the estimates, amounting to Rs. 13,663, looking to the size and position of the new drain, cannot be considered large.

9. An alternative section of less expensive design accompanied by an estimate is given for the extension with the floor formed of 3 inches depth of concrete on a rubble base. This, however, is not recommended, as the scour caused by a sudden discharge of a large and confined body of water is very great which it is doubted such a floor being able to withstand.

10. The doors for which a large detailed plan is forwarded are designed so as to be perfectly water-tight and so that they can be opened even if a considerable body of sand be in front of them; to prevent which, however, a separate flap door is provided. One self-opening and closing door is placed in each of these main doors to relieve the drain when the water reaches within 1½ feet of top of the drain. The main doors are not proposed to be self-acting; such would probably be ineffective in case of sand lodging in front of them, and the doors will have to remain permanently closed until the main drain is relieved of sewage altogether. This will not yet be for some time to come. The present doors are ineffective and being much out of order are of little use.



11. A model has been made of the proposed door in the Public Works Department Workshop, and Mr. Baddeley, R.E., has estimated the cost at Rs. 2,000. This amount may perhaps be reduced during construction.

12. As the sand is gradually increasing in amount and the difficulty of keeping open the outfall becomes proportionately greater daily, early sanction for the prosecution of the work is requested.

MADRAS,
19th July 1881.

(Signed) J. JONES, C.E.,
Vice-President, Municipal Commission.

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From Lieutenant-Colonel ROSS THOMPSON, R.E., Superintendent of Works, Presidency, to the President, Municipal Commission, Madras, dated Bangalore, 13th July 1881, No. 1,351.

IN reply to your letter No. 808 of 8th July 1881, I have the honor to state that I fully concur with Mr. Jones in thinking that the nuisance in question can only be remedied by extending the drain as the land or shore in front forms.

2. The south arm of the harbour causes sand from the south to deposit in front of the drain, and I believe will continue to cause it to do so for some years to come. Even, though the drainage of Madras may be extended and improved, I believe the drain in question must be retained as an outlet for *storm* water, and consequently the mouth of the drain must be kept in free communication with the sea, otherwise water will "back up" in the drain and flood parts of Madras.

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TRANSFERRED to the Public Works Department.

(By Order.)

(Signed) R. DAVIDSON,
Chief Secretary.

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No. 389.

REFERRED to the Superintendent of the Madras Harbour Works for such remarks (at an early date) as he may wish to offer.

OOTACAMUND,
18th August 1881.

(Signed) R. H. SANKEY, Col., R.E.,
Secy. to Govt., P.W.D.

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No. 19-A. From F. N. THOROWGOOD, Esq., M. INST. C.E., Superintendent, Madras Harbour Works, to the Secretary to Government, Public Works Department, dated Madras, 23rd August 1881, No. 37 W.

IN returning herewith the papers and drawings which accompanied your endorsement No. 389 of 18th August, I have the honor to submit a few remarks on the subject of the Fort outfall drain as invited,

2. The scheme submitted by Mr. Jones of a covered brick channel terminating with a double set of doors near the present edge of the sand, at a cost of Rs. 13,663, would certainly remedy the evil complained of for a time. But it is perfectly certain that the shore will advance steadily seaward, and I cannot believe that in three years time the proposed outfall would be of much service.

3. There is one point mentioned by both Mr. Arundel and Mr. Jones which in a great degree surprises me, viz., the filthy condition of the storm water overflow. It appears that the great nuisance complained of arises entirely from the overflow during and after heavy rains, and I cannot help believing that it would be possible to prevent the admixture of sewage with this storm water except to a very small extent.

4. In the harbour area and going out from the intercepting drain, there are three channels for carrying off storm water from the large town drains; these channels do not flow until the drain is full nearly to the top, they then take away the surplus water due to the rainfall. It is conspicuous how free from unpleasant smell these channels are when overflowing, the discharge being almost entirely muddy water. If it were possible to keep down the average level of the sewage in the Fort drain and

let the outfall only run when the drain is nearly full of rain to the top, I think the present nuisance might be lessened.

5. Between July 1878 and July 1881 the sand has advanced 225 feet at the Fort drain, and, allowing that the advance will be at an annually decreasing rate, I think it not unreasonable to expect that by 1884 the shore will be 180 feet beyond the outer door proposed by Mr. Jones, and by 1885 the present state of affairs will be repeated.

6. It appears to me that the only permanent and effectual remedy (always supposing that the whole drainage and storm water cannot be diverted from the Fort) will be to build a really substantial groyne about 200 feet south of the outfall extending to 3 fathom water. This would effectually prevent sand from gathering at the outfall, and would be capable of extension in fifteen years' time if necessary, but this would be a most expensive work to carry out.

7. There seems no doubt that for the money named in the estimate Mr. Jones' plan would be as good as any that could be thought of, but it is a thing to be regretted that in re-organising the Madras drainage the situation of the outfall cannot be changed altogether.

8. With regard to the incidence of the cost of whatever is proposed, that would of course be entirely decided by Government; but I would mention that when I proposed and wished to build an intercepting drain large enough to carry off the storm water, the Municipality declined to share any portion of the expense.

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No. 20. ORDER THEREON, 3rd November 1881, No. 2721 W.

THE letter from the Superintendent of the Harbour Works, No. 37 W., dated 23rd August 1881, will be communicated to the President of the Municipal Commission, who will, with special reference to the observations contained in paragraphs 3 and 4, furnish at an early date an explanation as to the reasons for the excess proportion of sewage which is found to be mixed with the storm water from the Fort outfall drain, and report whether arrangements cannot be adopted for so far reducing this as to render the surplus water at least as inoffensive as with other surplus drains discharging within the harbour limits.

(True Extract.)

(Signed) R. H. SANKEY, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the President, Municipal Commission, Madras.
" Superintendent, Madras Harbour Works.
" ~~Superintendent of Works, Presidency~~. S.E. 5th Circle.
" Public Department.

Exd. E. C. Shunker.
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BUILDINGS AND ROADS.
CIVIL WORKS.

# Govt. of {1881} Madras.

## PUBLIC WORKS.

*To*

THE PRESIDENT, MUNICIPAL
COMMISSION, MADRAS,

&c., &c., &c.

*Dated November, 3rd.*

*Issued*

*Recd.* *Encl.*

*G.O., 3rd November 1881, No. 2721 W.*

NOVEMBER.

Nos. ~~19 20.~~
19 & 20

*Fort Outfall Drain.*—The President, Municipal Commission, requested to explain the reasons for the excess proportion of sewage found to be mixed with the storm water from the —, and to report if arrangements could be made for reducing this.

GOVERNMENT OF MADRAS.

## PUBLIC WORKS DEPARTMENT.

24th December 1881, No. 3187 W.

**Buildings and Roads.**
**Civil Works.**

Read the following paper :—

No. 97. Endorsement of the Chief Secretary to Government, Marine Department, dated 19th December 1881, No. 2042.

From J. H. TAYLOR, Esq., Lieutenant, R.N.R., Master Attendant, Administrative Department, to the Chief Secretary to Government, Marine Department, dated Madras, 16th December 1881, No. 11226.

WITH reference to the Government Orders as per margin, I have the honor to recommend that the beach improvements, the carrying out of which has been entrusted to the Superintendent of the Madras Harbour Works, may be stopped, until we can see our way clear as to what is to be done in regard to the reconstruction of the harbour.

G.O., Public Works Department, No. 234 W., dated 28th January 1881.
G.O., Marine Department, No. 197, dated 21st April 1881.

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TRANSFERRED to the Public Works Department, with reference to the Government Order in that department quoted by the Master Attendant.

(Signed) R. DAVIDSON,
Chief Secretary.

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No. 3097.

REFERRED to the Superintendent, Madras Harbour Works, for remarks.

(Signed) R. H. SANKEY, Colonel, R.E.,
Secretary to Govt., P.W.D.

20th December 1881.

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No. 97-A. From F. N. THOROWGOOD, Esq., M. INST. C.E., Superintendent of Madras Harbour Works, to the Secretary to Government, Public Works Department, dated Madras, 21st December 1881, No. 76 W.

IN reply to your endorsement No. 3097, of 20th December, upon the Master Attendant's letter of 16th December, No. 11226, I have the honor to state that I consider it very desirable that the beach improvement works should be stopped.

2. I have already on my own responsibility almost stopped them, as it was impossible to throw any spirit into work which really seemed to offer no advantages.

3. I therefore entirely am in favor of Captain Taylor's suggestion.

No. 98. ORDER THEREON, 24th December 1881, No. 3187 W.

THE works in question will be deferred till further orders on renewed representation.

(True Extract.)

(Signed) R. H. SANKEY, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Superintendent, Madras Harbour Works.
" Marine Department.

Exd. S. T. Austin.
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BUILDINGS AND ROADS.
CIVIL WORKS.

# Govt. of {1881} Madras.

## PUBLIC WORKS.

*To*

THE SUPERINTENDENT OF THE
MADRAS HARBOUR WORKS,

&c., &c., &c.

*Dated December, 24th.*

*Issued*

*Recd.* *Encl.*

*G.O., 24th December* 1881, *No.* 3187 *W.*

**DECEMBER.**

**No. 97-98.**

*Beach Improvement Works, Madras.*—The question of the stoppage of the ... deferred till further orders on renewed representation.

GOVERNMENT OF MADRAS.

## PUBLIC WORKS DEPARTMENT.

30th January 1882, No. 250 W.

**Buildings and Roads.**
**Civil Works.**

Read the following paper:—

No. 133. From D. C. GORDON, Esq., Examiner of Public Works Accounts, to the Secretary to Government, Public Works Department, dated Madras, 26th January 1882, No. 202 W.

WITH reference to G.O., No. 3180 W., dated 22nd December 1881, sanctioning an estimate for the "extension seaward of the southern main drain near the Fort," the cost of which, Rs. 13,663, is to be met from the estimate for the Harbour Works, I have the honor to point out that the sanction of the Government of India appears necessary to the estimate, since the total charges, omitting liabilities to end of December 1881, is Rs. 58,43,221, against the revised estimate of Rs. 58,45,165.

2. In the amount of the revised estimate quoted above, the deduction of Rs. 1,00,000 on account of probable recoveries due to sales of tools and plant is not taken into account, as the value of stock on 31st December 1881, viz., Rs. 62,247, and the amounts outstanding in the miscellaneous advance schedule, Rs. 6,137 (which will be adjusted principally by debits to the work), have been considered as a set off against the estimated recoveries.

3. Further, in the statement of payments made in England for September 1881—*vide* G.O., No. 2799 W., dated 10th November 1881—the purchase money of the steamer *Undaunted*, viz., £5,500, appears, and this is also to be charged to the Harbour Works, and should, it is thought, be sanctioned likewise by the Government of India.

4. I also notice that during November and December a sum of Rs. 2,698 has been debited for "repairs to sea damages," which was not provided for in the estimate.

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No. 134. ORDER THEREON, 30th January 1882, No. 249 W.

IT is not considered necessary to refer each item of outlay connected with the Madras Harbour Works separately to the Government of India. The whole question of expenditure on the works will be laid before that Government in due course, and final orders obtained.

2. Confirmation of these Proceedings will now be applied for.

(True Extract.)

(Signed) R. H. SANKEY, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Examiner of Public Works Accounts.
" Superintendent of Madras Harbour Works.

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No. 135. (DOCKET No. 250 W., dated 30th January 1882.)

COPY of the above forwarded to the Government of India with copy of G.O., No. 3180 W., dated 22nd December 1881.

(Signed) R. H. SANKEY, Colonel, R.E.,
Secretary to Govt., P.W.D.

Exd. S. T. Austin.
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BUILDINGS AND ROADS.
CIVIL WORKS.

# Govt. of {1882} Madras.

## PUBLIC WORKS.

*To*

THE SECRETARY TO THE
GOVERNMENT OF INDIA.

*Dated January, 30th.*

*Issued.*

*Recd.* *Encl.*

*30th January* 1882, *No.* 250 *W.*

## JANUARY.

## Nos. 133—135.

FORWARDING the cost of the extention of the Southern Main Drain near the Fort being debited to the Madras Harbour Works.

also G.O. 677 W&P/83-8
4C. No. 3121 of 82



GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

General.
Account.

No. 123.

READ—the following papers :—

| | | | | | |
|---|---|---|---|---|---|
| From the | Master Attendant, Madras, | dated | 28th February | 1882, | No. 1672. |
| ,, | Superintending Engineer, Fifth Circle, | dated | 9th March | 1882, | No. 1246. |
| ,, | President, Municipal Commission, Madras, | ,, | 29th ,, | ,, | ,, 469. |
| ,, | Superintendent, Madras Harbour Works, | ,, | 18th April | ,, | ,, 3 W. |
| ,, | President, Municipal Commission, Madras, | ,, | 28th ,, | ,, | ,, 607. |
| ,, | ,, ,, | ,, | 11th May | ,, | ,, 655. |

No. 124.

ORDER—dated 22nd May 1882, No. 1290 W., Public Works.

In his letter of the 28th February 1882, No. 1672, the Master Attendant, Madras, complained of the offensive smell emitted from one of the Black Town drains opening out near the Pier and Marine Police Offices. The cause of the nuisance is explained in the correspondence noted above to the raising of the beach within the harbour limits, whereby the natural outfall of the drain, hitherto discharging into the sea, has been blocked.

2. The remedy proposed is a connection between the outfall of the drain and the harbour intercepting sewer.

3. The liability for the cost of the work has been fully discussed with the President of the Municipality ; and Mr. Arundel's proposal, that the cost of the work should be shared in equal portions by the Municipality and the Harbour Works, is sanctioned. The work will be at once carried out by the Harbour Superintendent, and on completion will be vested in the Municipality, who will thereafter bear all charges for maintenance.

4. Funds will in the first instance be provided by the Superintendent of the Harbour Works, who will, as soon as possible, submit a regular estimate for the formal sanction of Government.

(True Extract.)

(Signed) R. H. SANKEY, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Superintendent, Madras Harbour Works.
,, Master Attendant, Madras.
,, Superintending Engineer, Fifth Circle.
,, President, Madras Municipal Commission.
,, Financial Department.
,, Examiner of Public Works Accounts.

Exd. A. F. Goodall.
Spare Copies

GENERAL.
ACCOUNT.

# Govt. of {1882} Madras.

## PUBLIC WORKS.

*Dated May, 22nd.*

*Recd.* *Encl.*

**G.O., 22nd May 1882, No. 1290 W.**

**MAY.**

**Nos. 123-124.**

**Drain near the Pier, Madras.**

*Remedial measures for removing the nuisance caused by the* —. Sanctions, with remarks as to the incidence of the charge, the —.



GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

**Buildings and Roads.**
**Civil Works.**

No. 22.

READ—the following letter from N. ST. B. BEARDMORE, Esq., C.E., Acting Superintendent, Madras Harbour Works, to the Secretary to Government, Public Works Department, dated Madras, 23rd June 1882, No. 16 W.:—

I have the honor to forward an estimate for the construction of a drain to connect No. 5*c* drain with the Harbour Works intercepting sewer as requested in G.O., No. 1290, of 22nd May.

2. With reference to the remark in the first paragraph of the order, as to the necessity of connecting this drain being due to the raised beach, may I ask if I am to charge any share of the cost to the contingencies of the Harbour or to the Port Funds, as it was to those funds that all the other costs of the raised beach and subsequent extension of drains have been charged.

No. 23.

ORDER—dated 3rd July 1882, No. 1674 W., Public Works.

The estimate, amounting to Rs. 350, is sanctioned. The Superintendent of the Harbour Works will place himself in communication with the Master Attendant, Madras, in regard to the incidence of the charge as affecting the Harbour Works and Port Funds.

(True Extract.)

(Signed) R. H. SANKEY, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Superintendent, Madras Harbour Works.
" Master Attendant, Madras.
" President, Madras Municipal Commission.
" Examiner of Public Works Accounts.
" Financial Department.

Exd. A. F. Goodall.
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BUILDINGS AND ROADS.
CIVIL WORKS.

# Govt. of {1882} Madras.

## PUBLIC WORKS.

*Dated July, 3rd.*

*Recd.* *Encl.*

**G.O., 3rd July 1882, No. 1674 W.**

**JULY.**
**Nos. 22-23.**

**Madras Harbour Works.**

*Constructing a drain in connection with the* — . Sanctions estimate for — .



GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

**Buildings and Roads.**
**Civil Works.**

No. 24.

READ—the following papers :—

From Colonel W. S. TREVOR, R.E., Secretary to the Government of India, Public Works Department (Civil Works—Miscellaneous), to the Secretary to the Government of Madras, Public Works Department, dated Simla, 9th May 1882, No. 169 M.

I am directed to acknowledge the receipt of your letter, No. 677 W., of the 16th March last, asking for a reconsideration of the orders of the Government of India deciding that the cost of extending the southern main drain across the sands north of Fort St. George should be borne by Provincial Funds.

2. In reply I am to say that, under the circumstances mentioned by you, the incidence of this and other charges will be finally considered as soon as the estimate for the whole of the charges to be incurred on the Harbour Works (including both direct and all incidental charges) is submitted for the sanction of the Government of India, and when the manner in which the further outlay that may be sanctioned is to be dealt with is determined. Until this is done the cost of the extension of the drain and all other similar incidental charges should be met from Provincial Funds.

No. 24-A.

From D. C. GORDON, Esq., Examiner of Public Works Accounts, to the Secretary to Government, Public Works Department, dated Madras, 5th June 1882, No. 40 W.

With reference to Government of India No. 169 M., dated 9th May 1882, to Government [copy received under Accountant-General's (Public Works Department) endorsement No. 266 G., dated the 18th idem], stating that the cost of extending the southern main drain across the sands north of Fort St. George and all other indirect charges against the Harbour should be met from Provincial Funds till such time as the revised estimate for the Harbour shall have been fully considered by the Government of India, I have the honor to request that a list of such indirect charges, as have already been sanctioned, may be furnished to me for guidance in making the necessary adjustment, and to inquire whether such adjustment should be made in the accounts for the past or current official year.

No. 24-B.

From N. St. B. BEARDMORE, Esq., C.E., Acting Superintendent, Madras Harbour Works, to the Chief Engineer, Public Works Department, dated Madras, 6th June 1882, No. 11 W.

I have the honor to forward the statement requested in your memorandum, No. 144 E., dated 23rd May 1882.

2. I regret there has been some delay in sending this statement, but I did not understand what Item No. 2, "Share of drain lately ordered to connect with intercepting sewer," meant until I had inquired for, and received yesterday, G.O., No. 1290 W., of 22nd May, explaining it.

Enclosure.

Incidental Expenses in connection with Harbour in reply to Memorandum No. 144 E. of Chief Engineer, Public Works Depatment, dated Ootacamund, 23rd May 1882.

| No. | Particulars of Charge. | Amount. Rs. | A. | P. |
|---|---|---|---|---|
| 1 | Expenses of setting Memorial Stone by His Royal Highness the Prince of Wales in November 1875 ... ... ... ... | 8,654 | 0 | 0 |
| 2 | Channel to carry off rain-water from the drain close to the south pier of Harbour ... ... ... ... ... ... ... | 893 | 0 | 0 |
| 3 | Law charges in connexion with the barque *James Aiken* .. ... | 690 | 9 | 4 |
| 4 | Gratuities awarded to relatives of men who died from accidents by the cyclone, &c , of 12th November 1881 ... ... .. | 5,858 | 0 | 0 |
| 5 | The cost of a pipe to carry sewage from Main Drain near the Fort by the Municipality in July 1879 ... ... ... ... | 3,145 | 5 | 8 |
| 6 | North Beach Protective Works at Ráyapuram and Cassemode to 31st March 1881 ... ... ... ... ... ... | 1,10,616 | 8 | 5 |
| 7 | Extension of outfall sewer near Fort as now being carried out by the Municipality .. ... ... ... ... ... ... | 13,663 | 0 | 0 |
| 8 | Purchase of Mrs. Sadler's land at Ráyapuram ... ... ... | 1,400 | 0 | 0 |
| 9 | Theft from cash-chest at office ... ... ... ... ... ... | 50 | 0 | 0 |
| 10 | Compensation for loss and purchase of remaining land at Ráyapuram under G.O., No. 601 W., dated 8th March 1882 ... ... | 51,341 | 9 | 2 |
| 11 | Compensation for loss of four months' rent to Kathir Saib at Cassemode under G.O., No. 1037 W., dated 27th April 1882 ... ... | 240 | 0 | 0 |
| 12 | Probable cost of revetment work north of Harbour ... ... | 36,000 | 0 | 0 |
| 13 | Cost of land at Cassemode proposed in Mr. Parkes's report of 4th February 1882 to be bought in order to save expense of protecting it from encroachment of the sea. *Note.*—There will probably be interest in shape of rent on this sum ... ... ... ... | 2,08,149 | 0 | 0 |
| 14 | Half cost of connecting Drain No. 5c, near High Court, with intercepting sewer, as directed in G.O., No. 1290 W., of 22nd May 1882, 30 yards ... ... .. ... ... ... ... | 200 | 0 | 0 |
| | Total ... | 4,40,901 | 0 | 7 |

(Signed) .N St. B. BEARDMORE, C.E,
Ag. Superintendent, Madras Harbour Works.

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No. 24-C.

*Approximate general estimate for the Madras Harbour Works.*

*Reference.*—Government of India letter No. 166 W., dated 9th May 1882.

REPORT.

The annexed estimates giving in abstract as far as possible the approximate total outlay required for the completion of the Madras Harbour Works are based on the actuals of past outlay, and as regards the rest on the best available details.

2. To meet the views of the Government of India the General Abstract divides the whole outlay, past and prospective, into two main heads—

(1) The Harbour Works proper.
(2) Incidental or Contingent works.

3. As regards the first head it may be observed that the original estimate for the work sanctioned by the Secretary of State amounted to Rs. 62,80,000, and though containing one item not provided by Mr. Parkes, viz., 2 lakhs, on account of extra rubble required for the bases of the piers, and the usual percentage allowance for "Contingencies," no specific sub-heads were separated under the latter.

4. The amount of estimate No. 1, which provides for the whole of the Harbour Works proper, amounting to Rs. 75,58,735, is, as will be observed, chiefly made up of the two items, (1) booked outlay to end of the last official year, and (2) 18¼ lakhs—Mr. Parkes's maximum estimate for completing the work after the storm of the 12th November 1881. If Mr. Parkes's minimum estimate be accepted, the total would be Rs. 72,83, 735.



On the Chief Engineer's rough estimate of 25 lakhs for finishing the work, the outlay would be Rs. 82,33,735, and by Mr. Molesworth's of 27 lakhs, Rs. 84,33,735.

5. Estimate No. 2, amounting to Rs. 4,50,000, which is the first of the estimates for the incidental works, is for the protective operations found necessary north of the Harbour. The necessity for the works here has shown itself more and more as the Harbour Works advanced seaward, the effect of the south-west monsoon being to occasion such a set of the alongshore current, as to erode the shore and endanger property to nearly 2 miles north of the Harbour.

6. At first the cost of the works here was debited to ordinary contingencies, Rs. 1,13,624 being the total amount thus booked up to end of last official year. Since then, as will be observed from G.O., 17th March, No. 698 W., the subject has called for separate and careful consideration, the result of which has been that while it has been decided to carry the longitudinal revetment to a certain point north of the Harbour, the sea is to be allowed to act freely on the shore in advance of this—it being clear that it would be cheaper to acquire the rights in the land here than to execute protective works. Hence it will be seen that whereas Items 1 and 5 amount to Rs. 1,46,616, the remaining five items are for compensation.

7. Estimate No. 3 deals with another incidental charge not provided for in the original estimate, viz., the moorings.

8. The actual outlay debited to this head to end of last official year against supposed savings on the general sanction was Rs. 1,74,970, and the remainder of the estimate will have to be met for completion of the work.

9. Estimate No. 4, amounting to Rs. 45,000, for the intercepting sewer provides for a work also not entered specifically in the original estimate. The outlay, Rs. 34,352, as booked up to end of last official year, was treated as debitable to general contingencies of the work, the drain in question owing its origin entirely to the Harbour, for the sole use of which it has been constructed. This drain carries the whole of the sewage (not the storm waters) which formerly discharged into the sea south of, and along the present base of, the Harbour, and delivers it clear of the work to the north.

10. Estimate No. 5, amounting to Rs. 15,000, provides for a work of precisely analagous character and no less intimately connected with the Harbour scheme. It provides for the discharge of the storm waters not entered in Estimate No. 4, but no less essential. The booked outlay to end of last official year was Rs. 13,500, and though at first charged against the general contingencies of the Harbour Works, was not specifically provided for in the original estimate, as sanctioned by the Secretary of State.

(Signed) R. H. SANKEY, Colonel, R.E.,
23rd June 1882. Chief Engineer, P.W.D.

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MADRAS HARBOUR WORKS.

**Harbour Works Proper.**

Abstract Estimate No. 1.

| Item No. | Particulars. | Cost. Rs. | A. | P. |
|---|---|---|---|---|
| 1 | Booked Outlay up to end of 1881-82 ... ... ... ... ... | 57,17,640 | 0 | 0 |
| 2 | Mr. Parkes's maximum estimate for restoring the Harbour on his monolithic system ... ... ... ... ... ... ... ... | 18,25,000 | 0 | 0 |
| 3 | Expenses of setting Memorial Stone by His Royal Highness the Prince of Wales in November 1875 ... ... ... ... | 8,654 | 0 | 0 |
| 4 | Channel to carry off rain-water from the drain close to the south pier of Harbour ... ... ... ... ... ... ... | 893 | 0 | 0 |
| 5 | Law charges in connection with the barque *James Aiken* ... ... | 690 | 9 | 4 |
| 6 | Gratuities awarded to relatives of men who died from accidents during the cyclone of 12th November 1881 ... ... ... | 5,858 | 0 | 0 |
| | Total ... | 75,58,735 | 9 | 4 |

**Incidental or directly Contingent Works not provided for in the Original Estimate.**

Abstract Estimate No. 2.

*North Protective Works.*

| Item Nos. | Particulars. | Cost. RS. | A. | P. |
|---|---|---|---|---|
| 1 | Booked Outlay on the North Beach Protective Works at Ráyapuram and Cassemode up to 31st March 1881 ... ... .. ... | 1,10,616 | 8 | 5 |
| 2 | Purchase of Mrs. Sadler's land at Ráyapuram ... ... ... | 1,400 | 0 | 0 |
| 3 | Compensation for loss and purchase of remaining land at Ráyapuram under G.O., No. 601 W., dated 8th March 1882 ... ... ... | 51,341 | 9 | 2 |
| 4 | Compensation for loss of four months' rent to Kathir Saib at Cassemode under G.O., No. 1037 W., dated 27th April 1882 ... ... | 240 | 0 | 0 |
| 5 | Probable cost of revetment north of Harbour ... ... ... | 36,000 | 0 | 0 |
| 6 | Cost of land at Cassemode proposed in Mr. Parkes's report of 4th February 1882 to be bought, to save the expense of protecting it from encroachment of the sea ... ... ... ... ... | 2,08,149 | 0 | 0 |
| 7 | Add for compensation and works not included in the above ... | 42,252 | 14 | 5 |
| | Total ... | 4,50,000 | 0 | 0 |

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Abstract Estimate No. 3.

*Moorings.*

| Item Nos. | Particulars. | Cost. RS. | A. | P. |
|---|---|---|---|---|
| 1 | Booked outlay on moorings up to end of 1881-82 ... ... | 1,71,310 | 6 | 8 |
| 2 | Repairs to do. up to end of 1881-82 ... ... | 3,659 | 15 | 10 |
| 3 | Balance of estimate amounting to Rs. 2,20,750 ... .. ... | 45,780 | 0 | 0 |
| 4 | Amount assumed for contingencies ... ... ... ... ... | 14,250 | 0 | 0 |
| | Total ... | 2,35,000 | 6 | 6 |

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Abstract Estimate No. 4.

*Intercepting Drain.*

| Item Nos. | Particulars. | Cost. RS. | A. | P. |
|---|---|---|---|---|
| 1 | Booked Outlay on the Intercepting Sewer up to 31st March 1882 ... | 34,352 | 0 | 0 |
| 2 | Cost of a pipe to carry sewage from Main Drain near the Fort by the Municipality in July 1879 ... ... .. | 3,145 | 5 | 8 |
| 3 | Half cost of connecting Drain 5*c* near High Court with intercepting sewer as directed in G.O., No. 1290 W., dated 22nd May 1882... | 200 | 0 | 0 |
| 4 | Add for completion and one or two minor junctions and other unforeseen work connected with the intercepting sewer ... ... | 7,302 | 10 | 4 |
| | Total ... | 45,000 | 0 | 0 |



Abstract Estimate No. 5.

*Outfall Sewer, north of Fort St. George.*

| Item Nos. | Particulars. | Cost. RS. | A. | P. |
|---|---|---|---|---|
| 1 | Extension of outfall sewer near Fort as now being carried out by the Municipality ... ... ... ... ... ... ... | 13,663 | 0 | 0 |
| 2 | Estimated outlay to complete ... ... ... ... ... ... | 1,337 | 0 | 0 |
| | Total ... | 15,000 | 0 | 0 |

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**Approximate General Estimate for the Madras Harbour Works.**

| Item Nos. | Particulars. | Cost. RS. | A. | P. |
|---|---|---|---|---|
| | *Harbour Proper.* | | | |
| 1 | Probable ultimate cost as detailed in Abstract Estimate No. 1 ... | 75,58,735 | 0 | 0 |
| | *Incidental or Contingent Works.* | | | |
| 2 | Protective Works north of the Harbour ... .. ... ... | 4,50,000 | 0 | 0 |
| 3 | Moorings .. ... ... . ... ... ... ... ... | 2,35,000 | 0 | 0 |
| 4 | Intercepting, Drain ... ... ... ... ... ... ... | 45,000 | 0 | 0 |
| 5 | Fort Outfall Drain ... ... ... ... ... ... ... | 15,000 | 0 | 0 |
| | Grand Total ... | 83,03,735 | 0 | 0 |

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No. 25.

Order—dated 3rd July 1882, No. 1675 W., Public Works.

Ordered that the following letter be sent to the Government of India.

(Here enter No. 1676 W., dated 3rd July 1882.)

(True Extract.)

(Signed) R. H. SANKEY, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Superintendent, Madras Harbour Works, } with copy of letter to
„ Examiner of Public Works Accounts, } Government of India.

Exd. A. F. Goodall.
Spare Copies

BUILDINGS AND ROADS.
CIVIL WORKS.

# Govt. of {1882} Madras.

## PUBLIC WORKS.

*Dated July, 3rd.*

*Recd.* *Encl.*

**G.O., 3rd July 1882, No. 1675 W.**

**JULY.**

**Nos. 24-25.**

## Madras Harbour Works.

*Completion of the* —. The approximate estimate (in abstract) for the —, submitted with remarks, for the information and orders of the Government of India.



## PUBLIC WORKS DEPARTMENT.

**Buildings and Roads.**
**Civil Works.**

No. 26.

LETTER—from

COLONEL R. H. SANKEY, C.B., R.E.,

*Secretary to Government, Public Works Department,*

*Madras,*

To

THE SECRETARY TO THE GOVERNMENT OF INDIA,

PUBLIC WORKS DEPARTMENT.

SIR,

Adverting to your letter, No. 169 M., dated 9th May 1882, I am desired to submit, for the information and orders of the Most Honorable the Governor-General in Council, the annexed approximate estimate (in abstract) for the completion of the Madras Harbour Works, accompanied by a General Report by the Chief Engineer.

Proceedings of Government, No. 1675 W., dated 3rd July 1882.

2. Your letter under reply directs that the expenditure on the southern outfall drain shall be borne by "Provincial" pending orders in regard to the whole of the charges to be incurred on the work, and this has, I am to say, been provisionally arranged for.

3. The Examiner of Public Works Accounts requires, however, that the other similar incidental charges adverted to at the close of your letter under reply shall now be defined, being of opinion that none of these should be debited against the provision of 2 lakhs sanctioned in your telegram dated 19th April 1882.

4. From the report herewith submitted it will be observed that in addition to the cost of the Harbour proper no less than $7\frac{1}{2}$ lakhs are required for directly incidental or contingent works. Of this amount, Rs. 3,36,440 (including Rs. 13,500 for the work specifically under reference), the booked outlay to end of last official year, has already been debited against the general contingencies of the Estimate.

| | | Rs. |
|---|---|---|
| Estimate No. 2 | ... ... ... | 4,50,000 |
| „ „ 3 | ... ... ... | 2,35,000 |
| „ „ 4 | ... ... ... | 45,000 |
| „ „ 5 | ... ... ... | 15,000 |
| | Total ... | 7,45,000 |

5. By the ruling contained in your letter under reply, the difference between the estimated and booked outlay, viz., Rs. 4,08,556, would have now to be met from Provincial assignments, but, with reference to this, I am to submit that, with the numerous pressing demands on Provisional Funds to meet the ordinary requirements

nial

of the Presidency, it is impossible for this Government to make the necessary provision, and the Right Honorable the Governor in Council therefore trusts that the Government of India will be pleased, on further consideration, to allow the whole of the charges for the incidental works directly connected with the Harbour, to be met as heretofore from Imperial.

6. No decision having as yet been received from the Secretary of State as to the plan of operations to be eventually followed in completing the works, it is out of the power of this Government to do more than furnish the best information at its disposal, and this has now been done.

7. To exhibit clearly the possible cost of completing the work, I am to submit the following table of estimates prepared by the officers named :—

| Estimates for completing the works by different Authorities. | Total Probable Cost of works excluding the Incidental Charges. | Total Probable Cost of works including all Incidental Charges. | Remaining Outlay to be met after deducting from last column Total Booked Outlay to end of 1881-82. |
|---|---|---|---|
| | RS. | RS. | RS. |
| Mr. Parkes's minimum, 15½ lakhs ... ... | 72,83,735 | 80,28,735 | 19,74,649 |
| Do. maximum, 18¼ ,, ... ... | 75,58,735 | 83,03,735 | 22,49,649 |
| Colonel Sankey's rough approximation, 25 lakhs. | 82,33,735 | 89,78,735 | 29,24,649 |
| Mr. G. L. Molesworth's rough approximation, 27 lakhs. | 84,33,735 | 91,78,735 | 31,24,649 |

8. From the above it will be observed that in order to complete the whole of the works by the end of 1884-85, an average annual provision of funds, varying from 6½ to about 10 lakhs will have to be made, and, pending final orders of the Secretary of State, the Right Honorable the Governor in Council requests that a further grant of 3½ lakhs may be made to meet the incidental charges of the current year.

I have the honor to be,

Sir,

Your most obedient servant,

(Signed) R. H. SANKEY, Colonel, R.E.,
Secretary to Govt., P.W.D.

OOTACAMUND,
3rd July 1882.

Exd. A. F. Goodall.

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BUILDINGS AND ROADS.
CIVIL WORKS.

# Govt. of {1882} Madras.

## PUBLIC WORKS.

*Dated July, 3rd.*

*Recd.* *Encl.*

**3rd July 1882, No. 1676 W.**

**JULY.**

**No. 26.**

**Madras Harbour Works.**

COMPLETION of the —. The approximate estimate (in abstract) for the —, submitted, with remarks, for the information and orders of the Government of India.

PUBLIC WORKS SECRETARIAT MADRAS



GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Buildings and Roads.
Civil Works.

No. 156.

READ—the following papers:—

Telegram from N. St. B. BEARDMORE, Esq., Madras, to the Secretary to Government, Public Works Department, Ootacamund, dated 19th October 1882.

Of grant two lakhs only twenty thousand remains. Must have money or prepare to close works end of this month.

No. 157-A.

G.O., dated 18th October 1882, No. 1508, Financial.

*Read*—the following letter from the Government of India, Department of Finance and Commerce, dated 7th September 1882, No. 3601:—

I am directed to acknowledge receipt of Colonel Sankey's letter to the Secretary to the Government of India in the Public Works Department, No. 26, dated the 3rd July 1882, in which it is requested that, pending the final orders of the Secretary of State as to the future operations to be undertaken in connection with the Madras Harbour Works, a further grant of $3\frac{1}{2}$ lakhs of rupees may be made to enable the Government of Madras to meet the incidental charges of the current year.

2. In reply, I am desired to say that the state of the finances precludes the Government of India from imposing any additional burden on Imperial revenue in the present year in excess of what has been already sanctioned, but that, for the purpose of meeting the incidental charges, as well as the cost of stores indented for from England during the current year on account of the Madras Harbour, the contribution of Rs. 5,67,000 from Local Funds to Imperial, which, by an oversight, was transferred to credit of Provincial Funds in the estimates of the current year, may be treated as an Imperial grant for the Madras Harbour Works. The sum of Rs. 5,67,000 will therefore be credited to Imperial in the accounts of the year and the Public Works grant to Madras increased by an equal amount.

*Order*—dated 18th October 1882, No. 1508, Financial.

Recorded; and communicated to the Public Works Department with copy of G.O., No. 436, dated 8th of June 1882. The Board of Revenue will expedite the report called for in the last mentioned order.

(True Extract.)

(Signed) C. G. MASTER,
Chief Secretary.

26
No 1676

No. 157.

Order—dated 24th October 1882, No. 2761 W., Public Works.

Communicated to the Superintendent, Madras Harbour Works, and to the Examiner, Public Works Accounts, with reference to G.O., No. 1675 W., dated 3rd July 1882.

(True Extract.)

(Signed) J. SHAW-STEWART, Colonel, R.E.,
Offg. Secy. to Govt., P.W.D.

To the Superintendent, Madras Harbour Works.
" Examiner, Public Works Accounts.

Exd. S. T. Austin.
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BUILDINGS AND ROADS.
CIVIL WORKS.

# Govt. of {1882} Madras.

## PUBLIC WORKS.

*Dated October, 24th.*

*Recd.* *Encl.*

**G.O., 24th Oct. 1882, No. 2761 W.**

**OCTOBER.**

**Nos. 156-157.**

## Madras Harbour Works.

*Letter from the Government of India expressing inability to make a further grant of 3½ lakhs of rupees from Imperial Funds for the* —, but sanctioning the contribution of Rs. 5,67,000 from other sources, communicated to the Superintendent, Madras Harbour Works, and the Examiner, Public Works Accounts.

PUBLIC WORKS SECRETARIAT MADRAS



GOVERNMENT OF MADRAS.

FINANCIAL DEPARTMENT.

READ—the following papers :—

From J. H. TAYLOR, Esq., Lieut., R.N.R., Master Attendant, Madras, to the Chief Secretary to Government, dated 14th October 1884, No. 9648.

Administrative department.

I have the honor to forward copies of correspondence, as per margin, relative to a proposal from the Vice-President of the Municipal Commission, Madras, to carry the outfall of a drain into the artificial harbour for the discharge of storm water, and to state that Mr. Jones was informed that I did not consider it advisable to agree to it, in consequence of the danger of its being the means of introducing sewage into the harbour, as the overflow of surface drains of the town are carried away with storm water.

From Vice-President, Municipal Commission, Madras, No. 1263, 1st October 1884.
To Vice-President, Municipal Commission, Madras, No. 9311, 2nd October 1884.
From Vice-President, Municipal Commission, Madras, No. 1288, 3rd October 1884.
To Vice-President, Municipal Commission, Madras, No. 9482, 8th October 1884.
From Vice-President, Municipal Commission, Madras, No. 350-D, 10th October 1884.
To Vice-President, Municipal Commission, Madras, No. 9586, 13th October 1884.

2. It was also pointed out to that gentleman that the beach line was extending very significantly, the low water-mark on the pier a year and half ago being now high water-mark, *and the first line of buoys were rendered useless.* The silt that would come down by the proposed drain would be a powerful factor in reducing the harbour space, to say nothing of its danger to health.

3. The Government will remember that an intercepting drain was constructed by the Harbour Works Superintendent at a large expenditure from Port funds to carry away drainage outside the harbour, which I am led to believe is a failure. Mr. Jones was told, if such was the case, the best plan would be at once to draw the attention of Government to the matter.

4. In his last letter, Mr. Jones threatens that the work will be carried out under the provisions of the Municipal Act, but he has apparently overlooked the fact that port limits are beyond municipal jurisdiction. However, it is my duty to urge strongly the serious objections which exist against the measure, and respectfully to solicit the early orders of Government thereon.

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From J. H. TAYLOR, Esq., Lieut., R.N.R., Master Attendant, Madras, to the Chief Secretary to Government, dated 18th October 1884, No. 9746.

Administrative department.

In continuation of my letter, No. 9648, dated 14th instant, I have the honor to forward a further letter from Mr. Jones, Vice-President of the Municipality, regarding the extension of a drain into the artificial harbour, and to state that I still adhere to the views urged in my last letter, also to draw special attention to Mr. Jones' remarks about the power of the municipality to carry out operations within port limits under the Municipal Act independent of the port authorities. For obvious reasons, such power cannot but prove prejudicial to the interests of the port and harbour, and if it really exists, I earnestly solicit that the Government will be pleased to take steps to remove the same.

2. Referring to the drain question, an intercepting sewer was purposely built by the Harbour authorities at great expense to Port funds, *in order to avoid all interference of the municipality within harbour limits*, and any attempt now to claim a right to do what the municipality likes within such limits, should, I respectfully submit, be promptly put down.

---

From A. T. ARUNDEL, Esq., President of the Municipal Commission, Madras, to the Chief Secretary to Government, dated Madras, 12th November 1884, No. 1502.

In returning the enclosures of your endorsement, No. 2384, dated 21st October, I have the honor to report as follows.

2. The harbour intercepting sewer, to which reference is made by the Master Attendant, was constructed in 1879-80 by the Harbour Works Superintendent in order to catch all the sewage that formerly fell into the sea within the present limits of the harbour, and to discharge it into the sea north of the harbour. The sewer was never intended to carry off storm water as well as sewage, but only the latter.

3. Captain Taylor is quite correct in considering that the storm water should not be allowed to flow into the harbour, but is under a misapprehension in thinking that the present intercepting sewer was constructed to divert it.

4. G.O., No. 718 W., dated 11th March 1879, Public Works department, states in distinct terms that "the proposed intercepting sewer should be made of sufficient capacity to receive the sewage which has hitherto been discharged into the sea to the north of the fort, alluded to in paragraph 15 of Mr. Parkes' letter, as well as the discharge of house sewage from the four drains mentioned in paragraph 4."

5. In paragraph 2 of his letter just referred to, Mr. Parkes says: "I think there can be no doubt that it will be ultimately necessary to intercept from the harbour all possible vents for storm water, but * * it is hardly possible to foresee what particular mode of carrying out that interception will be most convenient." In G.O., No. 900 W., dated 7th April 1880, Public Works department, sanction is given for "the construction of a catch-water drain according to the design submitted with the Superintendent's letter for intercepting the outflow of storm water, at a cost of Rs. 7,000, in addition to the closed intercepting sewer sanctioned in G.O., No. 718 W., dated 11th March 1879, Public Works department."

6. This catch-water drain, which was intended to relieve the harbour of all the ill-effects pointed out by Captain Taylor as the result of the discharge of storm water into it, was never built, but why the order of Government was not carried out or whether it was cancelled, I am unable to say.

7. The special work which the Vice-President, Mr. Jones, desires to carry out, and which the Master Attendant objects to, is an additional overflow for storm water to be built from the intercepting sewer to the sea. Captain Taylor thinks that this additional work will cause an additional amount of storm water (or storm water and sewage mixed together) to fall into the harbour and thus add to the silting-up process now going on. In this opinion, however, Captain Taylor is under a misapprehension. There are already four storm overflows within the harbour limits, two of them *below* (*i.e.*, to the north of) the place where Mr. Jones proposes to build the new one. Whenever during rains the water rises to a certain height in the sewer all the surplus passes over the overflow into the sea. It is thus clear that any additional number of overflows at the same level would only *distribute* the overflow, but could not possibly *increase* it. The proposed overflow is required for this purpose, and to relieve the intercepting sewer from the internal strain caused in times of flood by the junction of a tributary drain at this spot.

8. I have been with Captain Taylor over the course of the intercepting sewer, and as he is still sceptical on the subject of the storm overflows, I would suggest that, if Government think it necessary, an Engineer of the Public Works department may be deputed to examine the present and one or two other similar alterations which



Mr. Jones considers it will eventually be advisable to make. The engineering question is very simple and will not take five minutes to decide. At the same time, I would again refer to the fact that Captain Taylor's objections would be met and the evils he complains of abated by the construction of the catch-water drain sanctioned by Government as noted in paragraphs 5 and 6 above.

9. With regard to the point Captain Taylor raises about the municipal limits there is no doubt that the harbour and the port to the margin of the sea are within municipal limits. If the port were excluded troublesome questions as to the conservancy of the shore, &c., from the Adyar to Ráyapuram would at once arise, and confusion would ensue if gates were established to collect toll on carts coming out of the raised beach within the harbour. I see no reason, however, for such a change. The municipality, of course, cannot carry out drainage works within harbour limits except with the concurrence of Government. The Municipal law cannot be allowed to conflict with the Port law, and the Master Attendant it seems to me may not unnaturally require that his consent or that of Government should be given before the proposed operations are carried out.

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No. 2633.

Forwarded to the Public Works department, for remarks, with reference to the suggested deputation of an officer of the department to report on the matter. It is understood that the work sanctioned in G.O., No. 900 W., dated 7th April 1880, was not carried out.

Fort. St. George,
25*th November* 1884.

(Signed) E. F. WEBSTER,
*Chief Secretary.*

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No. 1974-C.

Re-transmitted to the Financial department, with remark that an officer of the Public Works department can be deputed to inspect and report on the proposed drainage outfall.

2. The work sanctioned in G.O., No. 900 W., dated 7th April 1880, has not been carried out.

Chepauk,
2*nd December* 1884.

(Signed) C. BOWEN, Major, R.E.,
*Under Secy. to Govt., P.W.D.*

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Order—dated 15th December 1884, No. 2915, Financial.

Communicated to the Master Attendant and to the President, Municipal Commission, Madras. The officer deputed should also report on the necessity for constructing the catch drain referred to in paragraphs 5, 6 and 8 of the Prsident's letter for the non-construction of which no reason has been assigned.

2. In regard to the question raised by the Master Attendant, the Government agree in the view taken by the President in paragraph 9 of his letter.

(True Extract.)

*Chief Secretary.*

To the Public Works department.
" President of the Municipal Commission, Madras.
" Master Attendant, Madras.

Exd. J. Wright.

Rcd 10618

Govt. of (1884) Madras.

FINANCIAL.

8 S.C

R. No. 3157. W. a/26 Dec: 84

By

Communicated to the Supg: Engineer, V Circle who will submit the required Report

CB. 23-12-84

2.C. 296 C. 10-2-85.

1924 C 7 7/12/84
5100 W 7 3/4/00
7150 W 7 11/3/79
752 C 7 14/2/79
5119 C 7 12/11/80
4752 C 7 11/10/80
2963 W 7 22/7/80
2412 W 7 12/8/80
2880 W 7 0/5/80
1966 W 7 10/4/80
984 W 7 W/2/80
5000 W 7 42/80

Issued

Recd. 22/12/84 Enc

G.O., 15th December 1884, No. 2915.

R. No. 3157. W. a/26 Dec: 84

DECEMBER.

C 10656/85

**Municipal—Drainage.**

Passing orders on correspondence relating to a proposal to carry the outfall of a drain to the artificial harbour for the discharge of storm water at Madras.

29/12/84

L. E. V Circle.

GOVERNMENT OF MADRAS

No. 4027 a/ 5th February 1885.

To

The Chief Engineer P.W.D.

Sir,

With reference to G.O. No 3157 W a/ 26th Dec.r/84 I have the honor to report that when the Executive Engineer on the 8th January 1885, in Company with the Municipal Attendant and the Vice-President of the Municipality inspected the Municipal drains and the Intercepting sewer, the latter was in full working order, and the sewage in it was running Northwards with great velocity, but the sewage was about 15" below the level of the surplus cross drains already built and which are directed towards the Harbour foreshore.

2. No catchwater drains has been con

been built such as that sanction-
=ed in G.O. No 900W d/7th April/80
at a cost of Rs 7000. It is not
likely that a satisfactory one
is feasible; and the want of
such a drain will not be felt.

If the proposed Municip-
=al drains are all built, or
changed so as to discharge
into the intercepting sewer, and
provided with arrangements for
surplusing at a level of 12 inches
above the crown of the arch of the
intercepting sewer, then no evils
will result therefrom to the
Harbour, the 2 Municipal drains,
which now cross the intercepting
sewer, should discharge into it
and the state of the Harbour foreshore
will then be distinctly improved.

30/ H. L. P.

1885.

**P. W. DEPARTMENT.**

Current No. 1065

From

S. E. V Circle

ENCLOS.—

No. 4127

Dated 31st February 1885

Received 6th.

SUBJECT.

Municipal Drains Madras

Submitting report on the —

DISPOSAL.

No. 2766 Dated 10th February 1885

Transferred to the Finl. Dept. with reference to the orders in that Dept. No. 2915 dy. 15th Decr. 1884.

(Sd) C Bowen Major R.E.
D.W

To The Finl. Dept. (Draft) 10-2

31ST AUGUST 1885, No. 2012 W., PUBLIC WORKS.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Buildings and Roads.
Civil Works.

READ—the following papers :—

From G. T. MACKENZIE, Esq., President, Municipal Commission, to the Chief Secretary to Government, dated Madras, 1st July 1885, No. 199 P.W.

I have the honor to acknowledge G.O., Mis. No. 210, dated 19th June 1885.

2. I beg permission to place on record a concise statement of the question concerning these drains.

3. Drainage flowed into the sea at this portion of the shore before the harbour was commenced. If it is necessary to divert this drainage, the harbour must bear the cost. This was decided by G.O., No. 718 W., dated 11th March 1879, which laid upon the harbour the burden of diverting not only the drainage which flowed into the harbour, but also the drainage entering the sea to the south, between the harbour and the fort. Accordingly the Harbour Superintendent constructed an intercepting sewer which now runs northwards from the fort to Ráyapuram. In constructing this intercepting sewer, the Harbour Superintendent provided storm-water channels opposite to certain drains which had been led into the intercepting sewer. This was in accordance with Mr. Parkes' suggestion, contained in his letter printed in G.O., No. 718 W., dated 11th March 1879. At the present moment three of these storm-water channels from the intercepting sewer flow into the harbour. In addition to these drains which were led into, that is to say, were intercepted by the intercepting sewer, there were four drains which crossed the sewer and flowed into the harbour. Three of these continue to flow into the harbour to this day. The fourth formed the subject of G.O., No. 1290 W., dated 22nd May 1882, which directed the Harbour Superintendent to connect the drain with the intercepting sewer. This was done, but no storm-water channel was provided by the Harbour Superintendent opposite this drain. The proper course for the municipality to have then adopted would have been to have called upon the Harbour Superintendent to supply this omission ; but, instead of doing so, the Municipal Vice-President proposed to construct the storm-water outlet at the expense of the municipality, whereupon the correspondence arose.

4. Mr. Parkes contemplated that even the storm-water should be diverted from the harbour, and a catch-water drain for this purpose was sanctioned in G.O., No. 900 W., dated 7th April 1880. No explanation appears to be forthcoming to show why this work has never been carried out by the Harbour Superintendent.

5. Colonel Burton, who was deputed by Government to report on this matter, in paragraph 3 of his letter read in G.O., dated 19th February 1885, Mis. No. 351, F.D., suggests that the drains which now cross the intercepting sewer and flow into the harbour be changed so as to discharge into the intercepting sewer and provided with storm-water channels. This, of course, must be done by the Harbour Superintendent. It in no way concerns the municipality. All we contend for is that the drain which the Harbour Superintendent did connect with the intercepting sewer in accordance with G.O. of 22nd May 1882 be now provided with a storm-water escape. Captain Taylor, in paragraph 3 of his letter, dated 12th May 1885, No. 3817, appears to imagine that Colonel Burton's suggestion is that the municipality should completely intercept drainage and storm-water, and this appears to have misled Government who, in G.O., dated 19th June 1885, No. 210 M., evidently suppose that the changes suggested by Colonel Burton in paragraph 3 of his letter, No. 4127, dated

5th February 1885, are to be carried out by the municipality. This is not so. It is the business of the Harbour Superintendent to make these changes and to intercept storm-water, if that is considered to be necessary.

6. It is thus evident that the Master Attendant has completely misunderstood this matter, and that there is no intention on the part of this municipality to "multiply" the drains which flow into the harbour. I may also remark that Mr. Thorowgood, if he is correctly reported by Captain Taylor, has changed his views since he wrote paragraph 4 of his letter, No. 37 W., dated 23rd August 1881, printed with G.O., No. 2721 W., dated 3rd November 1881. In that paragraph he assures Government that the three storm-water channels flowing from the intercepting sewer into the harbour are conspicuously free from unpleasant smell. But this does not concern the municipality. If, as Captain Taylor maintains, the drains are silting up the harbour, the evil must be rectified at the cost of the harbour and not by the municipality.

7. I have, therefore, the honor to ask that Government will now call upon the Harbour Superintendent to construct a storm-water escape opposite to the drain which he connected with the intercepting sewer, in accordance with G.O., No. 1290 W., dated 22nd May 1882. Until this is done there will be danger of the storm-water bursting open the intercepting sewer at that point. Whether the storm-water escape flows into the harbour or into the catch-water drain sanctioned by G.O., No. 900 W., dated 7th April 1880, is a matter which does not concern the municipality.

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No. 227, Financial.

Transferred to the Public Works Department, who will be requested to obtain and communicate any remarks Mr. Thorowgood may wish to make upon the President's letter.

(By Order.)

Madras, 22nd July 1885.

(Signed) M. HAMMICK,
Acting Under Secretary.

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No. 1705 D.

Referred to the Superintendent, Madras Harbour Works, for remarks.

(By Order.)

25th July 1885.

(Signed) C. BOWEN, Major, R.E.,
Under Secy. to Govt., P.W.D.

To the Public Works Department.

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From F. N. THOROWGOOD, Esq., M. Inst. C.E., Superintendent, Madras Harbour Works, to the Secretary to Government, Public Works Department, dated Madras, 29th July 1885, No. 24 W.

I have the honor to submit herewith my remarks upon the letter (returned) from the President of the Municipality, dated 1st July, No. 199 P.W., forwarded with your endorsement, dated 25th July 1885, No. 1705 D.

2. It must be distinctly borne in mind that the intercepting sewer along the shore of the harbour was designed to carry away the discharge of sewage as it was in the year 1880, and for this purpose it was deemed sufficient by all parties. If, since its construction the municipal authorities have made great alterations in the town drainage, so that more sewage and water runs into the intercepting sewer than was at first intended, clearly the municipality will be responsible for any additional work that may be necessary to provide accommodation for a larger body of sewage or flood-water.

3. Before constructing the sewer and during its construction the discharge from every drain was carefully measured and the quantities of storm-water due to a



rainfall of $\frac{1}{2}$ inch per hour were calculated. These preliminaries were carried on with frequent communication with Mr. Jones, Vice-President of the Municipality.

4. The result of these considerations was that it became clearly only necessary to provide storm overflows to three intercepted drains, the other drains being so inconsiderable that they could discharge all their contents into the intercepting sewer, or be passed by altogether as described in Mr. Mackenzie's letter.

5. I think in February 1885 Colonel W. H. Burton, R.E., consulted me verbally about the construction of another drain into the harbour; he did not go into details, but no doubt it is the drain now referred to by Mr. Mackenzie. My remarks at the time were to the effect that, if the overflow from the proposed drain was likely to be large, the drain must not be constructed. Later on I had some correspondence with Captain Taylor on the same subject, and expressed myself more strongly against any additional discharge into the harbour, as I had found appreciable silting in my last survey.

6. In May 1882, when by G.O. of 22nd May 1882, No. 1290 W., the harbour works were ordered to extend a certain drain and connect it with the intercepting sewer, the amount of discharge down this drain had always been most insignificant. It was a drain that had been watched with the others previous to constructing the intercepting sewer, and so very slight was the discharge (being, indeed, but an outlet for water from the High Court buildings) that to construct an overflow then for storm-water from it would have been ridiculous. It was connected with the intercepting sewer as directed in the Government order above quoted.

7. But it seems that this drain must now have more work to do than was ever anticipated by myself or than was the case in 1882, for Mr. Mackenzie states that, unless an overflow for storm-water be provided, the main drain runs a chance of being burst open. Most assuredly such a contingency could never have occurred unless since the intercepting sewer was finished more water and sewage have been turned into this drain now under discussion.

8. To provide for storm overflow, and one of such size as to threaten the main sewer with destruction if not carried out, would be most injurious to the harbour, and I must beg that it be not sanctioned. During heavy rains the three existing overflows carry a large amount of sand with their discharge to the damage of the harbour, and against another one of considerable size, one which most certainly was not required four years ago, I must protest.

9. There are two other points in Mr. Mackenzie's letter which it will be well to refer to. First, with reference to the non-construction of the open channel sanctioned in G.O., dated 7th April 1880, No. 900 W. As a matter of fact this design was found to be almost impracticable, as it involved keeping a clear waterway to the *south* of the south pier, where the sand was continually accumulating during eight months of the year. I therefore allowed the matter to stand till Mr. Parkes should arrive in 1880, and when he arrived the alterations and levelling up of the beach became the main object of attention, the carrying out of which effectually prevented the construction of an open channel as sanctioned. But there is no doubt in my mind that all drainage and storm-water should be intercepted, nor have I ever changed my opinion since in 1878 I submitted a design for a sewer which would be large enough to meet these requirements.

10. Another point in Mr. Mackenzie's letter which I wish to remark upon is in paragraph 6, wherein he refers to me as having changed my opinion on a certain point. I do not know what I am represented as having said, but I in no way have altered my opinion about the discharge from the storm overflows during rain being nearly free from smell. The discharge is practically nothing but muddy water, and the evil to the harbour is the amount of sand which is washed away and into the harbour by these overflows.

11. In conclusion, I have to state that the subject of what to do with the storm-water is one that I have already recently drawn the attention of Mr. Parkes to, with a view towards preventing its flowing into the harbour area.

*Note by the Chief Engineer, Public Works Department.*

Adverting to the controversy raised in these papers relative to the construction of an additional storm-water escape to the intercepting sewer along the base of the Madras harbour, the undersigned has the honor to state his opinion, after careful consideration of all papers bearing on the question, that the time has arrived when the existing intercepting sewer should be replaced by one of dimensions sufficient to carry off both sewage and storm-water.

2. It is clear that an additional storm-water outlet is necessary for the safety of the intercepting sewer; but the Superintendent of the Harbour Works protests against the construction of such an overflow as being decidedly injurious to the harbour; and the Master Attendant apparently concurs in Mr. Thorowgood's views. It is shown that the discharge of flood-water by the existing outlets appreciably silts up the harbour, while the sewage which escapes with the storm-water necessarily contaminates the confined space.

3. In February 1879 Mr. Parkes* admitted that it would be "ultimately necessary to intercept from the harbour all possible vents for storm-water," although he did not at that time see his way to recommend any special plan for carrying out such interception. It was then seen that the difficulty which has now arisen would have to be faced sooner or later, and it is considered that the adoption of half measures now will probably lead to greater expenditure hereafter.

* *Vide* paragraph 2 of his letter, dated 15th February 1879, printed in Proceedings of Government, under date 11th March 1879, No. 718 W.

4. The construction of an intercepting sewer, such as that now recommended, will probably cost about Rs. 60,000; and if it be constructed, the outlay on the existing sewer will become thrown away; but if a further expenditure now of Rs. 60,000 will prevent an appreciable silting up of the bed of the harbour and the fouling of its water, the money will clearly be well spent.

5. As to incidence of cost, it is thought that the charge will be a fair one against the harbour. The proposals submitted by Mr. Parkes in 1879, which dealt solely with sewage, were admittedly incomplete; and now that, as Mr. Parkes then foresaw, it has become necessary to deal with the question of intercepting storm-water also, it seems to the undersigned that the subsidiary or alternative scheme of drainage should in like manner form a charge against the harbour.

Ootacamund,
17th August 1885.

(Signed) J. SHAW-STEWART, Colonel, R.E.,
~~Secretary to Government~~, P.W.D.
Chief Engineer

Order—dated 31st August 1885, No. 2012 W., Public Works.

The Government concur in the views expressed by the Chief Engineer in his note above recorded, and accordingly direct the Superintendent, Madras Harbour Works, to submit, as soon as possible, in communication with the President of the Madras Municipality, plans and estimates for replacing the intercepting sewer along the base of the Madras harbour by one of dimensions sufficient to carry off both sewage and storm-water.

(True Extract.)

(Signed) J. SHAW-STEWART, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Superintendent, Madras Harbour Works.
" Examiner, Public Works Accounts.
" Financial Department.
" Marine Department.

Exd. J. Henricus.
Spare Copies

BUILDINGS AND ROADS.
CIVIL WORKS.

# Gobt. of {1885} Madras.

## PUBLIC WORKS.

*Dated August*, 31*st*.

*Recd.* *Encl.*

**G.O., 31st Aug. 1885, No. 2012 W.**

**AUGUST.**

**Intercepting Sewer**

Plans and estimates for replacing the — along the base of the Madras harbour by one of dimensions sufficient to carry off both sewage and storm-water, ordered to be submitted.



GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Buildings and Roads.
Civil Works.

READ—the following papers :—

From R. F. CHISHOLM, Esq., Consulting Architect to Government, to the Chief Engineer, Public Works Department, dated Chepâk, 2nd July 1885, No. 507.

I have the honor to submit herewith the plan and estimate called for in G.O., No. 1455 W., dated the 23rd June 1885, for providing exhaust ventilators to the sewer at the back of the Telegraph office and Post office.

No. 1142 C.

Referred to the Public Department with advertence to No. 1455 W., dated 23rd June 1885.

(By Order.)

CHEPÂK,
4th July 1885.

(Signed) C. BOWEN, Major, R.E.,
Under Secretary to Govt., P.W.D.

From P. V. LUKE, Esq., Chief Superintendent, Government Telegraphs, Madras Division, to the Under Secretary to Government, Public Department, dated Madras, 14th August 1885, No. 2527.

I have the honor to return the plan and estimate for ventilating shafts to the sewers on the west and south of the new Telegraph office building.

2. In my opinion the scheme will have only a very partial effect in remedying the evil complained of, since the main sewer on the east face is the principal offender, and the shafts to be erected will only be connected with side drains.

3. During the last two days the smell from the main sewer has been most offensive in the afternoon as I can myself testify.

No. 1529, Public.

Transferred to the Public Works Department. A committee will be appointed to report whether, in the present state of things, residence on the premises is prejudicial to health, and what is likely to be the effect of the proposed ventilating shafts.

(By Order.)

OOTACAMUND,
27th August 1885.

(Signed) M. HAMMICK,
Acting Under Secretary.

*Read*—the following G.O., dated 14th September 1885, No. 2151, Public :—

From P. V. LUKE, Esq., Chief Superintendent, Government Telegraphs, Madras Division, to the Chief Secretary to Government, dated 4th August 1885, No. 2339.

With reference to G.O., P.W.D., No. 1455 W., dated 23rd June, and Public Department, 2nd July 1885, Mis. No. 1502, I am desired by the Director-General of Telegraphs to ask the Madras Government to appoint a committee to examine the new Telegraph office, with the view of giving an opinion as to whether residence on the premises is prejudicial to health; and to request the matter may be considered, first, with reference to the present state of the evil and, secondly, after the ventilating shafts, for which the estimates are now with the Director-General, have been fitted.

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Letter from the Surgeon-General, Madras, No. O.-393, dated 3rd September 1885.

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*Order*—dated 14th September 1885, No. 2151, Public.

The *Consulting Architect* to Government.
The *Vice-President*, in charge of Public Works and Conservancy, *Madras Municipality*.
Dr. Porter.
„ Sibthorpe.
„ McNally.

The Government resolve to appoint a committee consisting of the officers noted in the margin, with the Sanitary Commissioner as President, to consider and report on the matter referred to in this letter.

(True Extract.)

(Signed) W. WILSON,
*for* Chief Secretary.

---

ORDER—dated 22nd September 1885, No. 2214 W., Public Works.

Communicated to the Consulting Architect to Government, who will resubmit for sanction the plan and estimate for providing exhaust ventilators to the sewer at the back of the Post and Telegraph offices, if the same be approved by the committee.

2. The harbour intercepting sewer is stated to be the principal contributor to the evils complained of; but in G.O., No. 2012 W., dated 31st August 1885, the Superintendent, Madras Harbour Works, was directed to submit proposals for replacing the present intercepting sewer by one of larger dimensions. In preparing plans and estimates for the new sewer, the Superintendent will consult the Consulting Architect to Government and the Executive Engineer to the Madras Municipality as to whether, in providing for ventilators, anything can be done to mitigate the nuisance reported in these papers.

(True Extract.)

(Signed) J. SHAW-STEWART, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Consulting Architect to Government, with three enclosures.
„ Superintendent, Madras Harbour Works.
„ Public Department.
„ Chief Superintendent of Telegraphs, Madras Division.
„ Postmaster-General.

Exd. J. Henricus.
Spare Copies

BUILDINGS AND ROADS.
CIVIL WORKS.

# Govt. of {1885} Madras.

PUBLIC WORKS.

*Dated September, 22nd.*

*Recd.* *Encl.*

**G.O., 22nd Sept. 1885, No. 2214 W.**

**SEPTEMBER.**

**New Post and Telegraph Offices, Madras**

Orders on Proceedings in the Public Department appointing a committee to report whether residence on the premises is prejudicial to health owing to the nuisance arising from the sewer in the back of the buildings.

P. W. No. 627.

MUNICIPALITY OF MADRAS.

Public Works Department,
Municipal Office,
30th October 1885.

From G. T. Mackenzie Esqr
President, Municipal Commission.

To
The Superintendent
Harbour Works.

Sir,

I have the honor to forward a letter No 609 dated 22nd October 1885 from the Vice President in charge of Public Works which has reference to your letter No 308-M dated 17th September 1885.

I have the honor to be
Sir
Your most obt. Servant

Sd/ I A Jones
for President
Municipal Commission

True Copy

G. T. MacKenzie
President
Mun. Commission

lcls

P. W. No. 609.

MUNICIPALITY OF MADRAS.

Public Works Department,
*Municipal Office,*
22nd October 1885.

From J. A. Jones Esqre
Vice President, Municipal Commission.

To G. T. Mackenzie Esqre
President Municipal Commission

Sir,

With reference to the Superintendent of the Madras Harbour Works' letter No 308 M dated 17th September 1885, I have the honor to forward herewith for Mr. Thorowgood's information a plan shewing the drains falling from the eastern slope of the town, and attached to this letter is a table shewing (1) the sewage discharge (2) the discharges through storm overflows due to a rainfall of 1/2" per hour, and also (3) the amount those storm overflows would discharge if running full.

It will I think be sufficient to take (2) as the basis of calculation in estimating the necessary size of the storm Outlet Sewer, as the open street drains are calculated to discharge only 1/2" per hour, and the size of the Storm Outlets are therefore in excess of requirements.

I presume from Mr. Thorowgood's letter that this Storm Outlet Sewer will be separate and independent of the present sewer altogether and I think this is a preferable plan, to constructing one

the sewer for both sewage & storm water.

The storm sewer should in my opinion be commenced at the inlet at Darry Hill & there will always be a current caused by the seperate storm water & provide the Flushing Tanks near the new Petroleum Wharf and at Woolloomooloo the General Outfall Sewer.

The pumping at the Tank will be discontinued when Sewer No 1 and the drains to the west of Upthams Bridge way are complete; some of these have however not yet been taken in hand.

The sewage discharge given in the table above by referred to is calculated from the actual depth of flow and varies from the 2 mean tides formerly given before the drainage works were begun. It is intercepting Sewers to however still large enough to carry off the excess amount as it will discharge about 520 feet per minute. The storm discharge previously given was 2741 it is now put down as 3150 or 13% in excess owing to alterations in the area now drained eastward.

Thos Hellyer C.E.

Sydney 1st October 1885.

Now most obt: Servant
Jno. J. H. Jones
Vice President
Sewerage Commission

The Secty
P.T. Wentworth
President
Sewerage Commission

5

# Table of discharges from the eastern slope of Black Town
## October 1885.

| Area | Area in Square feet | Total area in sq: feet | Outfall drains | Ordinary sewage flow | | Discharges from Rainfall of ½ inch per hour | | Discharges of Storm Outfall Drains flowing full. | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Discharge in cub: feet per minute. | Total discharge in cub: feet per minute. | Discharge in cub: feet per minute. | Total discharge in cub: feet per minute. | Discharge in cubic feet per minute. | Total discharge in cubic feet per minute. |
| | From Pump | | Nos | 112.00 | 112.00 | Nil | Nil | Nil | Nil |
| A | 1,28,195 | 1,28,195 | 1 | 3.56 | 115.56 | 89.67 | 89.67 | 454.11 | 454.11 |
| B.E.C | 21,96,879 | 23,24,574 | 2 | 38.76 | 154.32 | 1525.26 | 1614.93 | 2118.00 | 2572.11 |
| C | 1,11,940 | 24,36,414 | 3 | .10 | 154.42 | 77.73 | 1692.66 | 165.43 | 2737.54 |
| D | 10,60,038 | 34,96,452 | 4 | 19.57 | 173.99 | 736.13 | 2428.79 | 1636.79 | 4374.33 |
| $D^a$ | 36,000 | 35,32,452 | 5 | 2.90 | 176.89 | 25.00 | 2453.79 | 165.43 | 4539.76 |
| $D^b$ | 86,606 | 36,19,058 | 6 | 9.67 | 186.56 | 60.14 | 2513.93 | 454.11 | 4993.87 |
| | Customs House Cistern. | | 7 | .01 | 186.57 | - | - | - | - |
| E | 59,600 | 36,78,658 | 8 | 2.09 | 188.66 | 41.32 | 2555.25 | 454.11 | 5447.98 |
| $E^a$ | 4,46,049 | 41,24,607 | 9 | .94 | 189.60 | 309.75 | 2865.00 | 942.00 | 6389.98 |
| F | 4,10,545 | 45,35,152 | 10 | 26.11 | 215.71 | 285.10 | 3150.10 | 942.00 | 7331.98 |

1885.

# Madras Municipality.

From

The President,
Municipal Commission,
MADRAS.

To

The Secretary to
Government
Public Works Dept

P. W. & C. No. 653

Dated. 6th
Despd. 7th November 1885.
Recd.

Enc. 2.

Subject

Forwarding copy of letter No 627 dated 30th Oct 85 with enclosures to Dupdt: Harbour Works.

P. W. No. 653.

MUNICIPALITY OF MADRAS.

Public Works Department,
Municipal Office,
6th November 1885.

From G. T. Mackenzie Esqre
President, Municipal Commission.

To
The Secretary to Government
Public Works Dept.

Sir,

I have the honor to forward for the information of Government a copy of my letter No 627 dated 30th October 1885 with its enclosures to the Superintendent Madras Harbour Works, with reference to G. O No 2012 W dated 31st August 1885.

I have the honor to be
Sir
Your most obdt: Servant

G. T. MacKenzie
President
Municipal Commission

lll

GOVERNMENT OF MADRAS.

# PUBLIC WORKS DEPARTMENT.

**Buildings and Roads.**
**Civil Works.**

READ—the following letter from R. B. BUCKLEY, Esq., Officiating under Secretary to the Government of India, Public Works Department (Civil Works—Buildings), to the Secretary to the Government of Madras, Public Works Department, dated Fort William, 6th March 1885, No. 121 B. :—

In sanctioning the revised estimate, amounting to Rs. 6,89,679, for the completion of the combined post and telegraph office at Madras, received with your letter, No. 59 W., dated 8th January 1885, I am directed to state that the Government of India hopes that, in future, an endeavour will be made to submit similar projects in a more complete state in the first instance, as the gradual increase in the estimated ultimate cost of such undertakings owing, in a large measure, to the omission of items which might have been at first foreseen, is unsatisfactory in itself and embarrassing from a financial point of view.

2. The necessary provision for the completion* of the work will be made in the budget for 1885-86, the provisional grant made in No. 269 A.G., of 11th November 1884, for the post office at Calicut being cancelled.

| | RS. |
|---|---|
| * Works ... ... ... ... | 42,203 |
| Establishment and Tools and Plant. | 10,129 |

3. This sanction, which is in supersession of all previous sanctions, has been registered as No. 43 B. of 1884-85, and the estimate is returned.

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ORDER—dated 13th March 1885, No. 600 W., Public Works.

Communicated to the Consulting Architect to Government, with advertence to G.O., No. 58 W., dated 8th January 1885.

2. The attention of the Consulting Architect, and of all Superintending Engineers, is drawn to the remarks in the latter part of paragraph 1 of the foregoing letter from the Government of India.

3. The sanction accorded by the Government of India has been registered as Imperial, Other Services, No. 68 W. of 1884-85, and classified as Civil Buildings, Original Works.

(True Extract.)

(Signed) J. SHAW-STEWART, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Consulting Architect to Government, with estimate, &c.
To Superintending Engineers.
To the Examiner, Public Works Accounts, with duplicate abstract estimate.
" Postmaster-General.
" Chief Superintendent of Telegraphs, Madras Division.

Exd. A. Grubert.
Spare Copies

BUILDINGS AND ROADS.
CIVIL WORKS.

# Govt. of {1885} Madras.

PUBLIC WORKS.

*Dated March*, 13*th*.

*Recd.*

*Encl.*

**G.O., 13th March 1885, No. 600 W;**

**MARCH.**

**Combined Post and Telegraph Office at Madras**

Orders on letter from the Government of India sanctioning with remarks revised estimate for —.



GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

**Buildings and Roads.**
**Civil Works.**

Read—the following papers :—

From G. T. MACKENZIE, Esq., President, Municipal Commission, to the Chief Secretary to Government, dated Madras, 1st July 1885, No. 199 P.W.

I have the honor to acknowledge G.O., Mis. No. 210, dated 19th June 1885.

2. I beg permission to place on record a concise statement of the question concerning these drains.

3. Drainage flowed into the sea at this portion of the shore before the harbour was commenced. If it is necessary to divert this drainage, the harbour must bear the cost. This was decided by G.O., No. 718 W., dated 11th March 1879, which laid upon the harbour the burden of diverting not only the drainage which flowed into the harbour, but also the drainage entering the sea to the south, between the harbour and the fort. Accordingly the Harbour Superintendent constructed an intercepting sewer which now runs northwards from the fort to Ráyapuram. In constructing this intercepting sewer, the Harbour Superintendent provided storm-water channels opposite to certain drains which had been led into the intercepting sewer. This was in accordance with Mr. Parkes' suggestion, contained in his letter printed in G.O., No. 718 W., dated 11th March 1879. At the present moment three of these storm-water channels from the intercepting sewer flow into the harbour. In addition to these drains which were led into, that is to say, were intercepted by the intercepting sewer, there were four drains which crossed the sewer and flowed into the harbour. Three of these continue to flow into the harbour to this day. The fourth formed the subject of G.O., No. 1290 W., dated 22nd May 1882, which directed the Harbour Superintendent to connect the drain with the intercepting sewer. This was done, but no storm-water channel was provided by the Harbour Superintendent opposite this drain. The proper course for the municipality to have then adopted would have been to have called upon the Harbour Superintendent to supply this omission ; but, instead of doing so, the Municipal Vice-President proposed to construct the storm-water outlet at the expense of the municipality, whereupon the correspondence arose.

4. Mr. Parkes contemplated that even the storm-water should be diverted from the harbour, and a catch-water drain for this purpose was sanctioned in G.O., No. 900 W., dated 7th April 1880. No explanation appears to be forthcoming to show why this work has never been carried out by the Harbour Superintendent.

5. Colonel Burton, who was deputed by Government to report on this matter, in paragraph 3 of his letter read in G.O., dated 19th February 1885, Mis. No. 351, F.D., suggests that the drains which now cross the intercepting sewer and flow into the harbour be changed so as to discharge into the intercepting sewer and provided with storm-water channels. This, of course, must be done by the Harbour Superintendent. It in no way concerns the municipality. All we contend for is that the drain which the Harbour Superintendent did connect with the intercepting sewer in accordance with G.O. of 22nd May 1882 be now provided with a storm-water escape. Captain Taylor, in paragraph 3 of his letter, dated 12th May 1885, No. 3817, appears to imagine that Colonel Burton's suggestion is that the municipality should completely intercept drainage and storm-water, and this appears to have misled Government who, in G.O., dated 19th June 1885, No. 210 M., evidently suppose that the changes suggested by Colonel Burton in paragraph 3 of his letter, No. 4127, dated

5th February 1885, are to be carried out by the municipality. This is not so. It is the business of the Harbour Superintendent to make these changes and to intercept storm-water, if that is considered to be necessary.

6. It is thus evident that the Master Attendant has completely misunderstood this matter, and that there is no intention on the part of this municipality to "multiply" the drains which flow into the harbour. I may also remark that Mr. Thorowgood, if he is correctly reported by Captain Taylor, has changed his views since he wrote paragraph 4 of his letter, No. 37 W., dated 23rd August 1881, printed with G.O., No. 2721 W., dated 3rd November 1881. In that paragraph he assures Government that the three storm-water channels flowing from the intercepting sewer into the harbour are conspicuously free from unpleasant smell. But this does not concern the municipality. If, as Captain Taylor maintains, the drains are silting up the harbour, the evil must be rectified at the cost of the harbour and not by the municipality.

7. I have, therefore, the honor to ask that Government will now call upon the Harbour Superintendent to construct a storm-water escape opposite to the drain which he connected with the intercepting sewer, in accordance with G.O., No. 1290 W., dated 22nd May 1882. Until this is done there will be danger of the storm-water bursting open the intercepting sewer at that point. Whether the storm-water escape flows into the harbour or into the catch-water drain sanctioned by G.O., No. 900 W., dated 7th April 1880, is a matter which does not concern the municipality.

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No. 227, Financial.

Transferred to the Public Works Department, who will be requested to obtain and communicate any remarks Mr. Thorowgood may wish to make upon the President's letter.

(By Order.)

(Signed) M. HAMMICK,
Acting Under Secretary.

Madras,
22nd July 1885.

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No. 1705 D.

Referred to the Superintendent, Madras Harbour Works, for remarks.

(By Order.)

(Signed) C. BOWEN, Major, R.E.,
Under Secy. to Govt., P.W.D.

25th July 1885.

To the Public Works Department.

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From F. N. THOROWGOOD, Esq., M. Inst. C.E., Superintendent, Madras Harbour Works, to the Secretary to Government, Public Works Department, dated Madras, 29th July 1885, No. 24 W.

I have the honor to submit herewith my remarks upon the letter (returned) from the President of the Municipality, dated 1st July, No. 199 P.W., forwarded with your endorsement, dated 25th July 1885, No. 1705 D.

2. It must be distinctly borne in mind that the intercepting sewer along the shore of the harbour was designed to carry away the discharge of sewage as it was in the year 1880, and for this purpose it was deemed sufficient by all parties. If, since its construction the municipal authorities have made great alterations in the town drainage, so that more sewage and water runs into the intercepting sewer than was at first intended, clearly the municipality will be responsible for any additional work that may be necessary to provide accommodation for a larger body of sewage or flood-water.

3. Before constructing the sewer and during its construction the discharge from every drain was carefully measured and the quantities of storm-water due to a



rainfall of $\frac{1}{2}$ inch per hour were calculated. These preliminaries were carried on with frequent communication with Mr. Jones, Vice-President of the Municipality.

4. The result of these considerations was that it became clearly only necessary to provide storm overflows to three intercepted drains, the other drains being so inconsiderable that they could discharge all their contents into the intercepting sewer, or be passed by altogether as described in Mr. Mackenzie's letter.

5. I think in February 1885 Colonel W. H. Burton, R.E., consulted me verbally about the construction of another drain into the harbour; he did not go into details, but no doubt it is the drain now referred to by Mr. Mackenzie. My remarks at the time were to the effect that, if the overflow from the proposed drain was likely to be large, the drain must not be constructed. Later on I had some correspondence with Captain Taylor on the same subject, and expressed myself more strongly against any additional discharge into the harbour, as I had found appreciable silting in my last survey.

6. In May 1882, when by G.O. of 22nd May 1882, No. 1290 W., the harbour works were ordered to extend a certain drain and connect it with the intercepting sewer, the amount of discharge down this drain had always been most insignificant. It was a drain that had been watched with the others previous to constructing the intercepting sewer, and so very slight was the discharge (being, indeed, but an outlet for water from the High Court buildings) that to construct an overflow then for storm-water from it would have been ridiculous. It was connected with the intercepting sewer as directed in the Government order above quoted.

7. But it seems that this drain must now have more work to do than was ever anticipated by myself or than was the case in 1882, for Mr. Mackenzie states that, unless an overflow for storm-water be provided, the main drain runs a chance of being burst open. Most assuredly such a contingency could never have occurred unless since the intercepting sewer was finished more water and sewage have been turned into this drain now under discussion.

8. To provide for storm overflow, and one of such size as to threaten the main sewer with destruction if not carried out, would be most injurious to the harbour, and I must beg that it be not sanctioned. During heavy rains the three existing overflows carry a large amount of sand with their discharge to the damage of the harbour, and against another one of considerable size, one which most certainly was not required four years ago, I must protest.

9. There are two other points in Mr. Mackenzie's letter which it will be well to refer to. First, with reference to the non-construction of the open channel sanctioned in G.O., dated 7th April 1880, No. 900 W. As a matter of fact this design was found to be almost impracticable, as it involved keeping a clear waterway to the *south* of the south pier, where the sand was continually accumulating during eight months of the year. I therefore allowed the matter to stand till Mr. Parkes should arrive in 1880, and when he arrived the alterations and levelling up of the beach became the main object of attention, the carrying out of which effectually prevented the construction of an open channel as sanctioned. But there is no doubt in my mind that all drainage and storm-water should be intercepted, nor have I ever changed my opinion since in 1878 I submitted a design for a sewer which would be large enough to meet these requirements.

10. Another point in Mr. Mackenzie's letter which I wish to remark upon is in paragraph 6, wherein he refers to me as having changed my opinion on a certain point. I do not know what I am represented as having said, but I in no way have altered my opinion about the discharge from the storm overflows during rain being nearly free from smell. The discharge is practically nothing but muddy water, and the evil to the harbour is the amount of sand which is washed away and into the harbour by these overflows.

11. In conclusion, I have to state that the subject of what to do with the storm-water is one that I have already recently drawn the attention of Mr. Parkes to, with a view towards preventing its flowing into the harbour area.

*Note by the Chief Engineer, Public Works Department.*

Adverting to the controversy raised in these papers relative to the construction of an additional storm-water escape to the intercepting sewer along the base of the Madras harbour, the undersigned has the honor to state his opinion, after careful consideration of all papers bearing on the question, that the time has arrived when the existing intercepting sewer should be replaced by one of dimensions sufficient to carry off both sewage and storm-water.

2. It is clear that an additional storm-water outlet is necessary for the safety of the intercepting sewer; but the Superintendent of the Harbour Works protests against the construction of such an overflow as being decidedly injurious to the harbour; and the Master Attendant apparently concurs in Mr. Thorowgood's views. It is shown that the discharge of flood-water by the existing outlets appreciably silts up the harbour, while the sewage which escapes with the storm-water necessarily contaminates the confined space.

3. In February 1879 Mr. Parkes* admitted that it would be "ultimately necessary to intercept from the harbour all possible vents for storm-water," although he did not at that time see his way to recommend any special plan for carrying out such interception. It was then seen that the difficulty which has now arisen would have to be faced sooner or later, and it is considered that the adoption of half measures now will probably lead to greater expenditure hereafter.

* *Vide* paragraph 2 of his letter, dated 15th February 1879, printed in Proceedings of Government, under date 11th March 1879, No. 718 W.

4. The construction of an intercepting sewer, such as that now recommended, will probably cost about Rs. 60,000; and if it be constructed, the outlay on the existing sewer will become thrown away; but if a further expenditure now of Rs. 60,000 will prevent an appreciable silting up of the bed of the harbour and the fouling of its water, the money will clearly be well spent.

5. As to incidence of cost, it is thought that the charge will be a fair one against the harbour. The proposals submitted by Mr. Parkes in 1879, which dealt solely with sewage, were admittedly incomplete; and now that, as Mr. Parkes then foresaw, it has become necessary to deal with the question of intercepting storm-water also, it seems to the undersigned that the subsidiary or alternative scheme of drainage should in like manner form a charge against the harbour.

Ootacamund,
17th August 1885.

(Signed) J. SHAW-STEWART, Colonel, R.E.,
~~Secretary to Government~~, P.W.D.
Chief Engineer

Order—dated 31st August 1885, No. 2012 W., Public Works.

The Government concur in the views expressed by the Chief Engineer in his note above recorded, and accordingly direct the Superintendent, Madras Harbour Works, to submit, as soon as possible, in communication with the President of the Madras Municipality, plans and estimates for replacing the intercepting sewer along the base of the Madras harbour by one of dimensions sufficient to carry off both sewage and storm-water.

(True Extract.)

(Signed) J. SHAW-STEWART, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Superintendent, Madras Harbour Works.
" Examiner, Public Works Accounts.
" Financial Department.
" Marine Department.

Exd. J. Henricus.
Spare Copies

BUILDINGS AND ROADS.
CIVIL WORKS.

# Govt. of {1885} Madras.

## PUBLIC WORKS.

*Dated August*, 31*st*.

*Read.* *Encl.*

**G.O., 31st Aug. 1885, No. 2012 W.**

**AUGUST.**

## Intercepting Sewer

Plans and estimates for replacing the — along the base of the Madras harbour by one of dimensions sufficient to carry off both sewage and storm-water, ordered to be submitted.



GOVERNMENT OF MADRAS.

PUBLIC DEPARTMENT.

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READ—again the following papers :—

G.O., dated 19th May 1885, Mis. No. 1168, Public.

*Read*—the following papers :—

From P. V. LUKE, Esq., Chief Superintendent, Government Telegraphs, Madras division, to the Chief Secretary to Government, dated Madras, 30th March 1885, No. 7981.

I have the honor to ask that an officer, or, if necessary, a committee may be appointed to examine and report on the sanitary condition of the new Post and Telegraph office and its immediate surroundings, with a view to measures being taken to improve the drainage system and prevent the offensive smells which at present are of frequent occurrence.

2. The two memorandums attached to this letter fully set forth the facts of the case.

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ENCLOSURES.

MEMORANDUM by Chief Superintendent of Telegraphs.

The Telegraph department moved into the new building in March 1884, and the Postal department on 1st May following.

2. The occupiers of the building were frequently annoyed by offensive odours, but in the hope that they would ultimately cease, or at any rate be considerably mitigated, no steps were taken to bring the nuisance to the notice of the Municipal authorities till September 1884 when Mr. Dowson, the Officiating Superintendent of Telegraphs in charge of the Telegraph office, addressed the Vice-President of the Municipality pointing out the annoyance to which he and the other residents of the building were subjected, and asking whether remedial measures were possible.

3. The offensive smells occur at different times of the day and night, and may be described as follows :—

(*a*) Smell occurring during the night or early morning and lasting from two to three hours when the wind is in a southerly direction.
(*b*) Smell occurring about 3 A.M. and lasting about two hours.
(*c*) Smell occurring during the day, duration variable and independent of the direction of the wind.

The contention is that (*a*) is caused by the opening of the main drain near the fort ; (*b*) by the sewage which is pumped along the drain on the east front of the building ; (*c*) by defective drainage in the neighbourhood of the building.

4. The Vice-President in his reply admitted the possibility of the main drain when open during rainfall and the sewer in front of the building being two of the sources of annoyance, and stated that the latter was being arched over to make it less offensive, but as regards the former the opening must continue indefinitely and that there was consequently no probability of its becoming innoxious till the new drainage works are complete which will not be for between one and two years.

5. The Vice-President further admitted that the offensive smells might be due to a ventilator on the North Beach road, and this ventilator he very kindly ordered to be closed.

6. From the date of the above correspondence to about the middle of January 1885 the occupiers of the building were comparatively free from annoyance owing, it is thought, to the abnormal rainfall, but since the latter date the odours have been as frequent and as offensive as before.

It has therefore been decided by the Postmaster-General and the Chief Superintendent, Madras division, that the time has come for a strong representation to the Government of Madras in the interest of those whose duties lie in the new Post and Telegraph office, and they are the more confident that their course of action is the right one, because it coincides with that suggested by the Sanitary Commissioner to whom the case was, in the first instance, referred.

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Memorandum by Presidency Postmaster.

During one of his visits to the new Post-office building while it was yet under construction, the Presidency Postmaster noticed that the stench emanating from the iron grated opening in the sewer right in front of one of the gateways on the west of the building was exceedingly offensive, and he accordingly wrote to the President, Municipal Commission, on the 18th April 1884, to direct "such measures to be adopted as will put a stop to the nuisance." A reply was received on the 22nd idem from Mr. Jones, the Vice-President, promising that the matter should "receive attention and remedy if possible."

2. The Post office was removed into the new building on 1st May 1884, and, seeing that no steps were yet taken to remedy the evil, the attention of the President was drawn to the subject on the 9th idem.

3. In reply, the Vice-President wrote to say that the nuisance complained of arose from the water-closets in the Post office being connected with the public sewer for which no permission had been granted, and that he had addressed the Consulting Architect to Government on the subject. The Vice-President was informed, in reply, that the Post office portion of the building had no water-closets, and that the Presidency Postmaster presumed that the Vice-President referred to those on the Telegraph side.

4. No reply was received to this communication, but a few days afterwards it was observed that in place of closing the opening that this department objected to, another was made right in front of the gateway leading out from the Post office premises and not far from the clerks' tiffin room.

5. This action of the Municipal authorities was brought to the notice of the Consulting Architect to Government in view to his taking such steps as to have both the openings closed. Copies of these correspondence were sent to the Chief Superintendent of Telegraphs.

6. The Consulting Architect stated, in reply, that he had referred the matter to the Government for orders.

7. On the 27th July 1884, the Vice-President was again addressed by this office, informing him that not only the old opening complained of had not been closed, but that another had been opened in front of the clerks' tiffin rooms, causing thereby greater annoyance and inconvenience to the Post office officials. He was also informed in this letter that the water-closets he had referred to in his letter, No. 531, dated 14th May 1884, did not exist in the Post office and those in the Telegraph office had since been closed. But as the stench still continued he was requested to have the openings closed as early as possible or at least to have them removed higher up towards the north and the south.

8. The Vice-President replied that he could "not close the ventilators as the gas must escape somewhere," and he also made the following remarks:—

"I however am informed that the smell is generally worst when the sea breeze blows, and this therefore probably forces the gas up the drain; I am now trying the effect of a door on the mouth of the drain, and I will be glad to hear in a day or two from you as to whether the smell still continues."



9. The Presidency Postmaster then addressed Mr. Arundel, the President, and in doing so reviewed the proceedings of the municipal authorities in this case from the very commencement, and concluded the letter with the following remarks:—

"Having laid all the facts of the case before you it is unnecessary for me to comment upon them. But I cannot help looking upon the whole proceedings of the municipal subordinates as provoking and obstructive. I complained of one opening opposite one of the gateways of the new building. The municipality opened another opposite the other gateway also. For years past the sewer existed, but there was no second opening. It looks because I complained of one they have given me two. I may be mistaken in my opinion of the municipal subordinates in this case, but the fact remains that a new ventilator has been opened in the place where none existed for years past, soon after I complained of the existence of the old ventilator."

10. A suggestion was also made in this letter for the President to visit the locality in person when the Presidency Postmaster would meet him to explain matters more fully.

11. Mr. Arundel invited Presidency Postmaster's attention to the Vice-President's letter, No. 887, and requested a reply to it before he would take any action in the matter.

12. He was informed that as the work promised had not been taken on hand as yet, no reply could be given, and that the stench still continued and was so intense as to disturb people in their sleep on the third storey of the building.

13. The President wrote, in reply, that temporary door had been fitted to the sewer to prevent the escape of the gas, and that a permanent door would shortly be fixed near the sea which he hoped would complete the remedy. He also stated that there was some difficulty in closing the ventilators, but that if the nuisance should continue even after the arrangements, he would make inquiries as to whether the ventilators could not be closed.

14. As the nuisance still continued the President was informed of it and requested to have the ventilators closed.

15. This the President did.

Although these two ventilators have been closed yet the stench continues in other quarters of the building. The fact is that the building is surrounded by no less than seven openings in the sewer. Two of them (one to the west and the other to the south) appear to be ventilators, and the stench emanating from them is very powerful at times. There are also a large number of openings in the main drain running in front of the building from north to south. These openings and ventilators were, I believe, constructed some years ago when the ground now occupied by the Post office was not inhabited and not even much frequented, and now that the place is inhabited and officials of all grade numbering 165 in all work on the spot almost day and night I think it very desirable, nay, an absolute necessity, that the drain should be diverted to some other part of the town less inhabited and less frequented.

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From G. T. MACKENZIE, Esq., President of the Municipal Commission, Madras, to the Chief Secretary to Government, dated Madras, 5th May 1885.

I return the letter of the Chief Superintendent of Telegraphs and its enclosures sent for remarks with your demi-official note of the 1st May.

2. The smell does not come from the main drain near the fort. That is opened only when there is heavy rainfall.

3. An intercepting sewer runs north and south along the beach from the fort to Ráyapuram passing in front of the Post and Telegraph office, and of all the other buildings. It cannot be diverted, and, if any plan can be suggested to carry away the gases from this and two other main sewers in Black Town, the Municipal executive will gladly adopt it.

4. A sewer which passed under the site of the Post and Telegraph office was diverted at the joint cost of Government and the Municipality and now passes round the west and south sides of that office into the intercepting sewer. It carries off the sewage of a low-lying portion of the town to the west of the Post-office and the gas escaped at the highest ventilators at the back of the Post-office until these were closed. The municipal officers would be glad to adopt any feasible method of ventilating this sewer without annoying the neighbourhood. Perhaps Boyle ventilators, carried up above the level of the roofs of the houses, might remedy the evil.

5. I would respectfully suggest that Mr. Jones, the Municipal Vice-President meet the Consulting Architect to Government and discuss the matter.

*Order*—dated 19th May 1885, Mis. No. 1168, Public.

Communicated to the Public Works department, with a request that the Consulting Architect may be directed to meet Mr. Jones, the Municipal Engineer, as proposed by the President, and submit a report upon the subject.

(True Extract.)

(Signed) E. F. WEBSTER,
*Chief Secretary.*

To the Public Works department, with papers, in original, to be returned.
„ President of the Municipal Commission, Madras.
Copy to the Chief Superintendent, Government Telegraphs.

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G.O., dated 2nd July 1885, Mis. No. 1502, Public.

*Read*—the following G.O., dated 23rd June 1885, No. 1455 W., Public Works:—

Read—the following letter from R. F. CHISHOLM, Esq., Consulting Architect to Government, to the Secretary to Government, Public Works department, dated 10th June 1885, No. 365:—

I have the honor to state that, in compliance with G.O., No. 1293 W., dated the 4th instant, I met Mr. Jones, Vice-President of the Municipality, on the evening of the 10th instant, at the Post and Telegraph office, for the purpose of discussing with him the measures to be adopted for preventing the offensive smells of which the inmates of the building complain.

2. There are two main sewers in proximity to the building, one running on the west and south side and the beach intercepting sewer which runs along the east face. Either or both of these are capable under certain conditions of wind and atmosphere of producing the unpleasant smells referred to, although in all probability the intercepting sewer is the great offender.

3. The sewer at the back of the building has three ventilating gratings through which the foul gases escape, and the intercepting sewer has openings at intervals all along the beach. The former may be dealt with by closing the ventilators and fixing a 12″ pipe with an exhaust ventilator on each corner tower of the building. This would have the effect of discharging the gases above the level of the building.

4. With regard to the intercepting sewer, we are sorry to say we can suggest nothing. If at the time the building was being constructed a portion of one of the central towers had been expressly constructed as a ventilator to the intercepting sewer much good would have resulted, but any attempt to do such a thing now would be in the highest degree dangerous. If the openings in the intercepting sewer to windward of the building are closed, the gases will only assume a more noxious and concentrated form, to be eventually discharged on some unfortunates who will get more than their share of the evil. We regret extremely that we have nothing to suggest within the range of practicability.

5. Mr. Jones is under the impression that the ventilating shafts proposed for the sewer to the west and south of the building may from the considerable elevation at which they will discharge, cause a quantity of gas be drawn from the intercepting sewer of which the former sewer is a branch, and it would be well to wait and see whether this anticipation turns out to be a fact before any further measures in regard to the intercepting sewer are considered.

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Order—dated 23rd June 1885, No. 1455 W., Public Works.

Communicated to the Public department, with reference to G.O., Mis. No. 1168, dated 19th May 1885, the enclosures of which are herewith returned.



2. The Consulting Architect will submit an estimate for dealing with the sewer on the west face of the building in the manner proposed in paragraph 3 of his letter.

(True Extract.)

(Signed) C. BOWEN, Major, R.E.,
*Under Secy. to Govt., P.W.D.*

To the Public department, with four enclosures.

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*Order*—dated 2nd July 1885, Mis. No. 1502, Public.

Communicated to the Postmaster-General and to the Chief Superintendent, Government Telegraphs.

(True Extract.)

(Signed) M. HAMMICK,
*Ag. Under Secy. to Govt.*

To the Postmaster-General, Madras.
„ Chief Superintendent, Government Telegraphs.
„ President, Municipal Commission, Madras.

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READ—also the following papers:—

From P. V. LUKE, Esq., Chief Superintendent, Government Telegraphs, Madras division, to the Chief Secretary to Government, dated Madras, 4th August 1885, No. 2339.

With reference to G.O., Public Works department, No. 1455 W., dated 23rd June and Public department, 2nd July 1885, Mis. No. 1502, I am desired by the Director-General of Telegraphs to ask the Madras Government to appoint a committee to examine the new Telegraph office with the view of giving an opinion as to whether residence on the premises is prejudicial to health; and to request the matter may be considered, first, with reference to the present state of the evil; and, secondly, after the ventilating shafts, for which the estimates are now with the Director-General, have been fitted.

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From the Surgeon-General with the Government of Madras, dated Coonoor, 3rd September 1885, No. O-393.

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ORDER—dated 14th September 1885, No. 2151, Public.

The Government resolve to appoint a committee consisting of the officers noted in the margin, with the Sanitary Commissioner as President, to consider and report on the matter referred to in this letter.

The Consulting Architect to Government.
The Vice-President in charge of Public Works and Conservancy, Madras Municipality.
Dr. Porter.
„ Sipthorpe.
„ McNally.

(True Extract.)

W. WILSON,
for *Chief Secretary.*

To the Sanitary Commissioner for Madras.
„ Members of the Committee.
„ Public Works department.
„ Chief Superintendent, Government Telegraphs, Madras.
„ Postmaster-General.
Copy to the Surgeon-General with the Government of Madras.

Exd. J. Wright.

Govt. of {1885} Madras.

PUBLIC.

Pr. & Lc
8247/85

*Issued*

*Recd.* *Encl.*

**G.O., 14th September 1885, No. 2151.**

**SEPTEMBER.**

**New Telegraph Office.**

Appointing a committee to consider and report on the question whether residence on the premises of the — is prejudicial to health, with reference to certain evils previously brought to notice.



See revised copy of Public Dept G O No. 2151 dated 14th Septr 1885

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

**Buildings and Roads.**
**Civil Works.**

READ—the following papers :—

From R. F. CHISHOLM, Esq., Consulting Architect to Government, to the Chief Engineer, Public Works Department, dated Chepâk, 2nd July 1885, No. 507.

I have the honor to submit herewith the plan and estimate called for in G.O., No. 1455 W., dated the 23rd June 1885, for providing exhaust ventilators to the sewer at the back of the Telegraph office and Post office.

No. 1142 C.

Referred to the Public Department with advertence to No. 1455 W., dated 23rd June 1885.

(By Order.)

CHEPÂK, 4th July 1885.

(Signed) C. BOWEN, Major, R.E., Under Secretary to Govt., P.W.D.

From P. V. LUKE, Esq., Chief Superintendent, Government Telegraphs, Madras Division, to the Under Secretary to Government, Public Department, dated Madras, 14th August 1885, No. 2527.

I have the honor to return the plan and estimate for ventilating shafts to the sewers on the west and south of the new Telegraph office building.

2. In my opinion the scheme will have only a very partial effect in remedying the evil complained of, since the main sewer on the east face is the principal offender, and the shafts to be erected will only be connected with side drains.

3. During the last two days the smell from the main sewer has been most offensive in the afternoon as I can myself testify.

No. 1529, Public.

Transferred to the Public Works Department. A committee will be appointed to report whether, in the present state of things, residence on the premises is prejudicial to health, and what is likely to be the effect of the proposed ventilating shafts.

(By Order.)

OOTACAMUND, 27th August 1885.

(Signed) M. HAMMICK, Acting Under Secretary.

*Read*—the following G.O., dated 14th September 1885, No. 2151, Public :—

From P. V. LUKE, Esq., Chief Superintendent, Government Telegraphs, Madras Division, to the Chief Secretary to Government, dated 4th August 1885, No. 2339.

With reference to G.O., P.W.D., No. 1455 W., dated 23rd June, and Public Department, 2nd July 1885, Mis. No. 1502, I am desired by the Director-General of Telegraphs to ask the Madras Government to appoint a committee to examine the new Telegraph office, with the view of giving an opinion as to whether residence on the premises is prejudicial to health; and to request the matter may be considered, first, with reference to the present state of the evil and, secondly, after the ventilating shafts, for which the estimates are now with the Director-General, have been fitted.

---

Letter from the Surgeon-General, Madras, No. O.-393, dated 3rd September 1885.

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*Order*—dated 14th September 1885, No. 2151, Public.

The *Consulting Architect* to Government.
The *Vice-President*, in charge of Public Works and Conservancy, *Madras Municipality*.
Dr. Porter.
„ Sibthorpe.
„ McNally.

The Government resolve to appoint a committee consisting of the officers noted in the margin, with the Sanitary Commissioner as President, to consider and report on the matter referred to in this letter.

(True Extract.)

(Signed) W. WILSON,
*for* Chief Secretary.

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ORDER—dated 22nd September 1885, No. 2214 W., Public Works.

Communicated to the Consulting Architect to Government, who will resubmit for sanction the plan and estimate for providing exhaust ventilators to the sewer at the back of the Post and Telegraph offices, if the same be approved by the committee.

2. The harbour intercepting sewer is stated to be the principal contributor to the evils complained of; but in G.O., No. 2012 W., dated 31st August 1885, the Superintendent, Madras Harbour Works, was directed to submit proposals for replacing the present intercepting sewer by one of larger dimensions. In preparing plans and estimates for the new sewer, the Superintendent will consult the Consulting Architect to Government and the Executive Engineer to the Madras Municipality as to whether, in providing for ventilators, anything can be done to mitigate the nuisance reported in these papers.

(True Extract.)

(Signed) J. SHAW-STEWART, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Consulting Architect to Government, with three enclosures.
„ Superintendent, Madras Harbour Works.
„ Public Department.
„ Chief Superintendent of Telegraphs, Madras Division.
„ Postmaster-General.

Exd. J. Henricus.
Spare Copies

BUILDINGS AND ROADS.
CIVIL WORKS.

# Govt. of {1885} Madras.

PUBLIC WORKS.

*Dated September, 22nd.*

*Recd.* *Encl.*

**G.O., 22nd Sept. 1885, No. 2214 W.**

**SEPTEMBER.**

## New Post and Telegraph Offices, Madras

Orders on Proceedings in the Public Department appointing a committee to report whether residence on the premises is prejudicial to health owing to the nuisance arising from the sewer in the back of the buildings.



GOVERNMENT OF MADRAS.

PUBLIC DEPARTMENT.

READ—the following paper :—

From Deputy Surgeon-General G. BIDIE, M.B., C.I.E., Sanitary Commissioner, President of the Committee appointed under G.O., No. 2151, Public, dated 14th September 1885, to the Acting Chief Secretary to Government, dated Madras, 22nd October 1885, No. 1085.

With reference to G.O., No. 2151, of 14th September 1885, I have the honor to submit to the Right Honorable the Governor in Council the proceedings of the committee appointed to consider whether residence in the new Telegraph Office is prejudicial to health, and to propose some practical remedy for the offensive smells which sometimes escape from adjacent sewers.

ENCLOSURE.

PROCEEDINGS of a Committee appointed by G.O., dated 14th September 1885, No. 2151, Public.

By order of the President, the Committee assembled at the General Post and Telegraph Offices on the 7th October 1885, at 5 P.M.

PRESENT.

Deputy Surgeon-General G. Bidie, M.B., C.I.E.—*President.*
R. F. Chisholm, Esq.,
J. A. Jones, Esq.,
Surgeon-Major A. Porter,
" " C. Sibthorpe,
" " C. J. McNally,
} *Members.*

The premises, including the latrines and the sewer ventilators which are complained of, were examined by the committee.

2. Two ventilators in the main drain which passes near the rear and south end of the building were found to be offensive.

3. The committee are of opinion that shafts with extracting cowls carried from the drain above the highest part of the roof of the building would obviate this nuisance, and it is recommended that these shafts be constructed without delay. The latrines were found in a very unsatisfactory condition, and, being situated inside the building, their use will create a nuisance and be attended with risk unless they be kept scrupulously clean. The best remedy, in the opinion of the committee, to prevent nuisance arising from these, would be to post a sweeper constantly on duty at each latrine to take immediate notice of any improper use or soiling of closets by any person.

4. Mr. Chisholm states that the building was designed for wet, and is unsuited for dry, conservancy ; but wet conservancy is objected to by the municipality.

5. With regard to the ventilators in the intercepting sewer which passes along the beach in front of the building, the committee consider that the offensive smells complained of partly come from these, and are of opinion that ventilators fitted with a system of charcoal trays may be effective in destroying the offensive effluvia, and it is recommended that one such ventilator be first constructed to test the efficiency of the remedy. A plan and estimate for a ventilator of this kind is annexed.

6. There is no evidence before the committee to show that the nuisance complained of is a direct cause of unhealthiness among the Postal and Telegraph employés, and it is intermittent. The question of remedy is therefore mainly an engineering one.

7. It is observed that the ventilator at the southern outfall of Black Town main drain, which has to be opened on all occasions of heavy rainfall, may sometimes be offensive. This is the nuisance to which the residents in the Fort have been exposed for many years, but which has been considerably abated for some time past. No effective plan can be suggested for the radical cure of this nuisance, which, however, will be considerably diminished by the completion of Black Town drainage scheme. The drain will always be required for storm water, and will not be entirely excluded from use.

8. Since completing their report, the committee have received G.O., No. 2214-W., dated 22nd September 1885, Public department, and have the honor to enclose Mr. Chisholm's plan and estimate for the shafts, with extracting cowls, of which they approve.

---

ORDER—dated 6th November 1885, No. 2589, Public.

On paragraphs 3 and 5 of the report read above, orders will be passed by the Department of Public Works, with which the President, Municipal Commission, will place himself in communication.

2. The Chief Superintendent of Telegraphs will be requested to take such action as may ensure satisfactory conservancy with reference to the extra establishment proposed in paragraph 3 of the Committee's report.

(True Extract.)

W. Chisholm

*Acting Chief Secretary.*

To Deputy Surgeon-General G. Bidie, M.B., C.I.E.
„ the Department of Public Works, with specification and estimate and two maps.
„ the President, Madras Municipal Commission.
„ the Chief Superintendent of Telegraphs.

Exd. A. Raitt.

V.

Rec'd 873

# Govt. of {1885} Madras.

PUBLIC.

P.S.C

*Issued*

*Recd.* 14/11/85 *Encl* 6/2 Plans

G.O., 6th November 1885, No. 2589.

No 2789 W. dt Nov 21. 1885

NOVEMBER.

## New Telegraph Office.

Passing orders on proceedings of the committee appointed to consider whether residence in the — is prejudicial to health.

Cir 23 W. dt 6-11-85.

Noted Copy to P.W.D. 10/12/85 Secy

Noth Order

No 2789 W. dt Nov 21. 1885

B

Communicated, in continuation of G.O. No 2214 W. dt 22nd Sept 1885 to the Consg Architect to Govt who will carry out the work recommended in paras 3 and 5 of the Committee's report charging the cost of the exchange works to the estimate for the Telegraph offices, and that of the exchange charcoal trays to the Marine Works.

2 The Consg Architect to Govt will in due course submit to Govt report from the Chief Supts of Telegraphs and the Presidency Postmaster as to the results of the remedial measures now or hereafter

3. The Consg Architect with the Executive Engr to Govt Chief Supts of Telegraphs Postmaster General Superintendent of Works

urgent

No. 2118 D.

GOVT. OF MADRAS. } 1884. { P. W. DEPT.

**SECRETARY.**

Chepâk, 28th November 1884.

OFFICE NOTE.

Ex 1 9946/84

From The Secretary.
P. W. Dept.

To The Supt, Madras
Harbour Works.

Please state whether the Catch drain sanctioned in G.O. 900 W dated 7 April 1880 was constructed; and, if not, why not.

C.S.
28.11.84

D. W.

18 Dated 11 84

GOVT. OF MADRAS. 1884 187 W. DEPT.

Madras Harbour Works

Fort St George, Nov 28. 1884.

OFFICE NOTE.

To Dy. W.

SECRETARIAT TO GOVERNMENT 29 NOV 84 DEPARTMENT MADRAS

The Catchment drain referred to was not constructed. His Grace the Duke of B. & C. & Colonel Saulez visited the spot and His Grace made some suggestions of alterations in the design - It was then agreed to let the matter stand over for a time, and as the storm water has never proved so serious an evil as I had first believed it would be, the catch drain has never been constructed at all -

F. W. Flemyng
Supt. W.W.

28/11/84.

OF 187

8TH JANUARY 1885, No. 58 W., PUBLIC WORKS.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

**Buildings and Roads.**
**Civil Works.**

READ—the following letter from Lieut.-Colonel J. L. L. MORANT, R.E., Officiating Consulting Architect to Government, to the Chief Engineer, Public Works Department, dated Chepâk, 22nd December 1884, No. 1450 :—

Adverting to G.O., No. 2555 W., dated 18th October 1884, and in continuation of my letter, No. 1364, dated 5th December 1884, printed with Public Works G.O., No. 3003 W., dated 8th December 1884, I have the honor to submit, herewith, for approval and sanction, a revised estimate for the combined post and telegraph offices at Madras.

2. The total cost of the whole project in the revised estimate now submitted is Rs. 6,89,679. From the figures given below, it will be seen that the sanctioned estimates for the whole project aggregate Rs. 6,47,854. Thus the excess of the revised over the sanctioned estimate amounts to Rs. 41,825, or less than 7 per cent. :

| Telegraph. | | | | Post. | | | |
|---|---|---|---|---|---|---|---|
| Authority. | Original Estimate. | Revised Estimate. | Difference. | Authority. | Original Estimate. | Revised Estimate. | Difference. |
| | Rs. | Rs. | Rs. | | Rs. | Rs. | Rs. |
| G.O., No. 23 W., dated 6th January 1883 .. .. | 2,91,748 | 3,10,057 | 18,309 | G.O., No. 23 W., dated 6th January 1883 .. .. | 3,13,788 | 3,26,994 | 13,206 |
| G.O., No. 2140 W., dated 4th August 1883 .. .. | 4,335 | .. | —4,335 | G.O., No. 3192 W., dated 12th November 1883 .. | 2,932 | 2,932 | .. |
| G.O., No. 1757 W., dated 17th July 1884 .. .. | 1,757 | 1,757 | .. | G.O., No. 1757 W., dated 17th July 1884 .. .. | 3,854 | 3,854 | .. |
| G.O., No. 1866 W., dated 1st August 1884 .. .. | 6,770 | 6,770 | .. | G.O., No. 1866 W., dated 1st August 1884 .. .. | 7,160 | 7,160 | .. |
| | | | | G.O., No. 2555 W., dated 18th October 1884 .. | 15,510 | 15,510 | .. |
| | | | | G.O., No. 1623 W., dated 27th June 1884 .. .. | .. | 14,645 | 14,645 |
| Total .. | 3,04,610 | 3,18,584 | 13,974 | Total .. | 3,43,244 | 3,71,095 | 27,851 |

| — | Original Estimate. | Revised Estimate. | Excess. |
|---|---|---|---|
| | Rs. | Rs. | Rs. |
| Telegraph office ... ... | 3,04,610 | 3,18,584 | 13,974 |
| Post office ... ... ... | 3,43,244 | 3,71,095 | 27,851 |
| Total for Project ... | 6,47,854 | 6,89,679 | 41,825 |

3. If from this sum be deducted Rs. 14,645, being the amount chargeable to the post office on account of the new Commissariat mule lines to be constructed on the Pudupet maidan (see G.O., No. 1623 W., dated 27th June 1884), a contingency not anticipated when the first estimate was sanctioned, the excess will be only Rs. 27,180, or nearly 4 per cent. This sum is made up of the figures given in the margin, and is duly explained in the two comparative statements accompanying this letter.

| | Rs. |
|---|---|
| Excess on telegraph office ... ... | 13,974 |
| Do. on post office ... ... ... | 13,206 |
| Total ... | 27,180 |

4. For the stables, coach-houses, and latrines to be used by the officials of the telegraph office, two estimates were sanctioned; the latter of which was substituted for and cancelled the first, or Rs. 6,770 took the place of Rs. 4,335 (*vide* Public Works G.O., No. 2140 W., dated 4th August 1883, and Public Works G.O., No. 1866 W., dated 1st August 1884).

| | RS. |
|---|---|
| Telegraph office ... ... ... | 9,414 |
| Post office ... ... ... ... | 32,792 |
| Total ... | 42,206 |

5. As regards funds, the balance of the estimates, viz., Rs. 42,206, will be required for expenditure during the next official year.

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ORDER—dated 8th January 1885, No. 58 W., Public Works.

Ordered to be forwarded for the sanction of the Government of India.

(Here enter No. 59 W., dated 8th January 1885.)

(True Extract.)

(Signed) J. SHAW-STEWART, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Consulting Architect to Government.
" Examiner, Public Works Accounts.
" Postmaster-General.
" Chief Superintendent of Telegraphs, Madras Division.

Exd. E. Fernandez.
Spare Copies

BUILDINGS AND ROADS.
CIVIL WORKS.

# Govt. of {1885} Madras.

## PUBLIC WORKS.

*Dated January, 8th.*

*Recd.* *Encl.*

**G.O., 8th Jan. 1885, No. 58 W.**

**JANUARY.**

**Combined Post and Telegraph Office, Madras**

Revised estimate for —, ordered to be forwarded for the sanction of the Government of India.



## PUBLIC WORKS DEPARTMENT.

**Buildings and Roads.**
**Civil Works.**

LETTER—from

COLONEL J. SHAW-STEWART, R.E.,

*Secretary to the Government of Madras,*

*Public Works Department,*

To

THE SECRETARY TO THE GOVERNMENT OF INDIA,

PUBLIC WORKS DEPARTMENT.

SIR,

Adverting to paragraph 6 of your letter, No. 368 B., dated 1st October 1884, and in continuation of my No. 3004 W., dated 8th December 1884, I am directed to forward, for the sanction of the Government of India, the accompanying copy of a letter from the Consulting Architect to Government, submitting a revised estimate, amounting to Rs. 6,89,679, for the completion of the combined post and telegraph office at Madras.

Proceedings of Government, No. 58 W., dated 8th January 1885.

2. The estimate sanctioned by the Government of India, in your letter, No. 503 B., dated 23rd December 1882, amounted to Rs. 6,05,536, and the supplemental estimates subsequently sanctioned by this Government amount to Rs. 42,318. The present revised estimate is therefore Rs. 84,143 in excess of the estimate sanctioned by the Government of India; and Rs. 41,825 in excess of the latter estimate *plus* the supplemental sanctions accorded by this Government.

3. The causes of excess are explained in the comparative statements and in the Consulting Architect's letter; and I am to add that, if the allotment of Rs. 12,000 applied for in my letter, No. 3004 W., dated 8th December 1884, be sanctioned, the grant to be provided for the work in 1885-86 will amount to Rs. 42,206, exclusive of charges on account of establishment and tools and plant.

I have the honor to be,

Sir,

Your most obedient servant,

(Signed) J. SHAW-STEWART, Colonel, R.E.,
Secretary to Govt., P.W.D.

FORT ST. GEORGE,
8th January 1885.

Exd. E. Fernandez.
Spare Copies

BUILDINGS AND ROADS.
CIVIL WORKS.

# Govt. of {1885} Madras.

## PUBLIC WORKS.

*Dated January, 8th.*

*Recd.* *Encl.*

**8th Jan. 1885, No. 59 W.**

**JANUARY.**

**Combined Post and Telegraph Office at Madras**

Forwarding, for sanction, revised estimate for —.



GOVERNMENT OF MADRAS.

## PUBLIC WORKS DEPARTMENT.

**Buildings and Roads.**
**Civil Works.**

READ—the following letter from R. B. BUCKLEY, Esq., Officiating under Secretary to the Government of India, Public Works Department (Civil Works—Buildings), to the Secretary to the Government of Madras, Public Works Department, dated Fort William, 6th March 1885, No. 121 B. :—

In sanctioning the revised estimate, amounting to Rs. 6,89,679, for the completion of the combined post and telegraph office at Madras, received with your letter, No. 59 W., dated 8th January 1885, I am directed to state that the Government of India hopes that, in future, an endeavour will be made to submit similar projects in a more complete state in the first instance, as the gradual increase in the estimated ultimate cost of such undertakings owing, in a large measure, to the omission of items which might have been at first foreseen, is unsatisfactory in itself and embarrassing from a financial point of view.

2. The necessary provision for the completion* of the work will be made in the budget for 1885-86, the provisional grant made in No. 269 A.G., of 11th November 1884, for the post office at Calicut being cancelled.

| | RS. |
|---|---|
| * Works ... .. ... ... | 42,203 |
| Establishment and Tools and Plant. | 10,129 |

3. This sanction, which is in supersession of all previous sanctions, has been registered as No. 43 B. of 1884-85, and the estimate is returned.

---

ORDER—dated 13th March 1885, No. 600 W., Public Works.

Communicated to the Consulting Architect to Government, with advertence to G.O., No. 58 W., dated 8th January 1885.

2. The attention of the Consulting Architect, and of all Superintending Engineers, is drawn to the remarks in the latter part of paragraph 1 of the foregoing letter from the Government of India.

3. The sanction accorded by the Government of India has been registered as Imperial, Other Services, No. 68 W. of 1884-85, and classified as Civil Buildings, Original Works.

(True Extract.)

(Signed) J. SHAW-STEWART, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Consulting Architect to Government, with estimate, &c.
To Superintending Engineers.
To the Examiner, Public Works Accounts, with duplicate abstract estimate.
" Postmaster-General.
" Chief Superintendent of Telegraphs, Madras Division.

Exd. A. Grubert.

Spare Copies

BUILDINGS AND ROADS.
CIVIL WORKS.

# Govt. of {1885} Madras.

## PUBLIC WORKS.

*Dated March, 13th.*

*Recd.* *Encl.*

**G.O., 13th March 1885, No. 600 W;**

**MARCH.**

**Combined Post and Telegraph Office at Madras**

Orders on letter from the Government of India sanctioning with remarks revised estimate for —.



GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

**Buildings and Roads.**
**Civil Works.**

Read—the following papers :—

From G. T. MACKENZIE, Esq., President, Municipal Commission, to the Chief Secretary to Government, dated Madras, 1st July 1885, No. 199 P.W.

I have the honor to acknowledge G.O., Mis. No. 210, dated 19th June 1885.

2. I beg permission to place on record a concise statement of the question concerning these drains.

3. Drainage flowed into the sea at this portion of the shore before the harbour was commenced. If it is necessary to divert this drainage, the harbour must bear the cost. This was decided by G.O., No. 718 W., dated 11th March 1879, which laid upon the harbour the burden of diverting not only the drainage which flowed into the harbour, but also the drainage entering the sea to the south, between the harbour and the fort. Accordingly the Harbour Superintendent constructed an intercepting sewer which now runs northwards from the fort to Ráyapuram. In constructing this intercepting sewer, the Harbour Superintendent provided storm-water channels opposite to certain drains which had been led into the intercepting sewer. This was in accordance with Mr. Parkes' suggestion, contained in his letter printed in G.O., No. 718 W., dated 11th March 1879. At the present moment three of these storm-water channels from the intercepting sewer flow into the harbour. In addition to these drains which were led into, that is to say, were intercepted by the intercepting sewer, there were four drains which crossed the sewer and flowed into the harbour. Three of these continue to flow into the harbour to this day. The fourth formed the subject of G.O., No. 1290 W., dated 22nd May 1882, which directed the Harbour Superintendent to connect the drain with the intercepting sewer. This was done, but no storm-water channel was provided by the Harbour Superintendent opposite this drain. The proper course for the municipality to have then adopted would have been to have called upon the Harbour Superintendent to supply this omission ; but, instead of doing so, the Municipal Vice-President proposed to construct the storm-water outlet at the expense of the municipality, whereupon the correspondence arose.

4. Mr. Parkes contemplated that even the storm-water should be diverted from the harbour, and a catch-water drain for this purpose was sanctioned in G.O., No. 900 W., dated 7th April 1880. No explanation appears to be forthcoming to show why this work has never been carried out by the Harbour Superintendent.

5. Colonel Burton, who was deputed by Government to report on this matter, in paragraph 3 of his letter read in G.O., dated 19th February 1885, Mis. No. 351, F.D., suggests that the drains which now cross the intercepting sewer and flow into the harbour be changed so as to discharge into the intercepting sewer and provided with storm-water channels. This, of course, must be done by the Harbour Superintendent. It in no way concerns the municipality. All we contend for is that the drain which the Harbour Superintendent did connect with the intercepting sewer in accordance with G.O. of 22nd May 1882 be now provided with a storm-water escape. Captain Taylor, in paragraph 3 of his letter, dated 12th May 1885, No. 3817, appears to imagine that Colonel Burton's suggestion is that the municipality should completely intercept drainage and storm-water, and this appears to have misled Government who, in G.O., dated 19th June 1885, No. 210 M., evidently suppose that the changes suggested by Colonel Burton in paragraph 3 of his letter, No. 4127, dated

5th February 1885, are to be carried out by the municipality. This is not so. It is the business of the Harbour Superintendent to make these changes and to intercept storm-water, if that is considered to be necessary.

6. It is thus evident that the Master Attendant has completely misunderstood this matter, and that there is no intention on the part of this municipality to "multiply" the drains which flow into the harbour. I may also remark that Mr. Thorowgood, if he is correctly reported by Captain Taylor, has changed his views since he wrote paragraph 4 of his letter, No. 37 W., dated 23rd August 1881, printed with G.O., No. 2721 W., dated 3rd November 1881. In that paragraph he assures Government that the three storm-water channels flowing from the intercepting sewer into the harbour are conspicuously free from unpleasant smell. But this does not concern the municipality. If, as Captain Taylor maintains, the drains are silting up the harbour, the evil must be rectified at the cost of the harbour and not by the municipality.

7. I have, therefore, the honor to ask that Government will now call upon the Harbour Superintendent to construct a storm-water escape opposite to the drain which he connected with the intercepting sewer, in accordance with G.O., No. 1290 W., dated 22nd May 1882. Until this is done there will be danger of the storm-water bursting open the intercepting sewer at that point. Whether the storm-water escape flows into the harbour or into the catch-water drain sanctioned by G.O., No. 900 W., dated 7th April 1880, is a matter which does not concern the municipality.

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No. 227, Financial.

Transferred to the Public Works Department, who will be requested to obtain and communicate any remarks Mr. Thorowgood may wish to make upon the President's letter.

(By Order.)

Madras, 22nd July 1885.

(Signed) M. HAMMICK,
Acting Under Secretary.

---

No. 1705 D.

Referred to the Superintendent, Madras Harbour Works, for remarks.

(By Order.)

25th July 1885.

(Signed) C. BOWEN, Major, R.E.,
Under Secy. to Govt., P.W.D.

To the Public Works Department.

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From F. N. THOROWGOOD, Esq., M. Inst. C.E., Superintendent, Madras Harbour Works, to the Secretary to Government, Public Works Department, dated Madras, 29th July 1885, No. 24 W.

I have the honor to submit herewith my remarks upon the letter (returned) from the President of the Municipality, dated 1st July, No. 199 P.W., forwarded with your endorsement, dated 25th July 1885, No. 1705 D.

2. It must be distinctly borne in mind that the intercepting sewer along the shore of the harbour was designed to carry away the discharge of sewage as it was in the year 1880, and for this purpose it was deemed sufficient by all parties. If, since its construction the municipal authorities have made great alterations in the town drainage, so that more sewage and water runs into the intercepting sewer than was at first intended, clearly the municipality will be responsible for any additional work that may be necessary to provide accommodation for a larger body of sewage or flood-water.

3. Before constructing the sewer and during its construction the discharge from every drain was carefully measured and the quantities of storm-water due to a



rainfall of $\frac{1}{2}$ inch per hour were calculated. These preliminaries were carried on with frequent communication with Mr. Jones, Vice-President of the Municipality.

4. The result of these considerations was that it became clearly only necessary to provide storm overflows to three intercepted drains, the other drains being so inconsiderable that they could discharge all their contents into the intercepting sewer, or be passed by altogether as described in Mr. Mackenzie's letter.

5. I think in February 1885 Colonel W. H. Burton, R.E., consulted me verbally about the construction of another drain into the harbour; he did not go into details, but no doubt it is the drain now referred to by Mr. Mackenzie. My remarks at the time were to the effect that, if the overflow from the proposed drain was likely to be large, the drain must not be constructed. Later on I had some correspondence with Captain Taylor on the same subject, and expressed myself more strongly against any additional discharge into the harbour, as I had found appreciable silting in my last survey.

6. In May 1882, when by G.O. of 22nd May 1882, No. 1290 W., the harbour works were ordered to extend a certain drain and connect it with the intercepting sewer, the amount of discharge down this drain had always been most insignificant. It was a drain that had been watched with the others previous to constructing the intercepting sewer, and so very slight was the discharge (being, indeed, but an outlet for water from the High Court buildings) that to construct an overflow then for storm-water from it would have been ridiculous. It was connected with the intercepting sewer as directed in the Government order above quoted.

7. But it seems that this drain must now have more work to do than was ever anticipated by myself or than was the case in 1882, for Mr. Mackenzie states that, unless an overflow for storm-water be provided, the main drain runs a chance of being burst open. Most assuredly such a contingency could never have occurred unless since the intercepting sewer was finished more water and sewage have been turned into this drain now under discussion.

8. To provide for storm overflow, and one of such size as to threaten the main sewer with destruction if not carried out, would be most injurious to the harbour, and I must beg that it be not sanctioned. During heavy rains the three existing overflows carry a large amount of sand with their discharge to the damage of the harbour, and against another one of considerable size, one which most certainly was not required four years ago, I must protest.

9. There are two other points in Mr. Mackenzie's letter which it will be well to refer to. First, with reference to the non-construction of the open channel sanctioned in G.O., dated 7th April 1880, No. 900 W. As a matter of fact this design was found to be almost impracticable, as it involved keeping a clear waterway to the *south* of the south pier, where the sand was continually accumulating during eight months of the year. I therefore allowed the matter to stand till Mr. Parkes should arrive in 1880, and when he arrived the alterations and levelling up of the beach became the main object of attention, the carrying out of which effectually prevented the construction of an open channel as sanctioned. But there is no doubt in my mind that all drainage and storm-water should be intercepted, nor have I ever changed my opinion since in 1878 I submitted a design for a sewer which would be large enough to meet these requirements.

10. Another point in Mr. Mackenzie's letter which I wish to remark upon is in paragraph 6, wherein he refers to me as having changed my opinion on a certain point. I do not know what I am represented as having said, but I in no way have altered my opinion about the discharge from the storm overflows during rain being nearly free from smell. The discharge is practically nothing but muddy water, and the evil to the harbour is the amount of sand which is washed away and into the harbour by these overflows.

11. In conclusion, I have to state that the subject of what to do with the storm-water is one that I have already recently drawn the attention of Mr. Parkes to, with a view towards preventing its flowing into the harbour area.

*Note by the Chief Engineer, Public Works Department.*

Adverting to the controversy raised in these papers relative to the construction of an additional storm-water escape to the intercepting sewer along the base of the Madras harbour, the undersigned has the honor to state his opinion, after careful consideration of all papers bearing on the question, that the time has arrived when the existing intercepting sewer should be replaced by one of dimensions sufficient to carry off both sewage and storm-water.

2. It is clear that an additional storm-water outlet is necessary for the safety of the intercepting sewer; but the Superintendent of the Harbour Works protests against the construction of such an overflow as being decidedly injurious to the harbour; and the Master Attendant apparently concurs in Mr. Thorowgood's views. It is shown that the discharge of flood-water by the existing outlets appreciably silts up the harbour, while the sewage which escapes with the storm-water necessarily contaminates the confined space.

3. In February 1879 Mr. Parkes* admitted that it would be "ultimately necessary to intercept from the harbour all possible vents for storm-water," although he did not at that time see his way to recommend any special plan for carrying out such interception. It was then seen that the difficulty which has now arisen would have to be faced sooner or later, and it is considered that the adoption of half measures now will probably lead to greater expenditure hereafter.

* *Vide* paragraph 2 of his letter, dated 15th February 1879, printed in Proceedings of Government, under date 11th March 1879, No. 718 W.

4. The construction of an intercepting sewer, such as that now recommended, will probably cost about Rs. 60,000; and if it be constructed, the outlay on the existing sewer will become thrown away; but if a further expenditure now of Rs. 60,000 will prevent an appreciable silting up of the bed of the harbour and the fouling of its water, the money will clearly be well spent.

5. As to incidence of cost, it is thought that the charge will be a fair one against the harbour. The proposals submitted by Mr. Parkes in 1879, which dealt solely with sewage, were admittedly incomplete; and now that, as Mr. Parkes then foresaw, it has become necessary to deal with the question of intercepting storm-water also, it seems to the undersigned that the subsidiary or alternative scheme of drainage should in like manner form a charge against the harbour.

Ootacamund,
17th August 1885.

(Signed) J. SHAW-STEWART, Colonel, R.E.,
Secretary to Government, P.W.D.

Chief Engineer

Order—dated 31st August 1885, No. 2012 W., Public Works.

The Government concur in the views expressed by the Chief Engineer in his note above recorded, and accordingly direct the Superintendent, Madras Harbour Works, to submit, as soon as possible, in communication with the President of the Madras Municipality, plans and estimates for replacing the intercepting sewer along the base of the Madras harbour by one of dimensions sufficient to carry off both sewage and storm-water.

(True Extract.)

(Signed) J. SHAW-STEWART, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Superintendent, Madras Harbour Works.
" Examiner, Public Works Accounts.
" Financial Department.
" Marine Department.

Exd. J. Henricus.
Spare Copies

D.W.

For orders solicitor C.A. shall be asked to submit an estimate for fitting the ventilators on the Beach for some distance on either side of the Post and Telegraph office with charcoal trays.

HB.

XIV.V.86.

Yes. it seems from the papers that the necessary estimate can be submitted by C.A

14/5/86

To W

If the additional Charcoal trays now asked for be intended for the intercepting sewer, the cost should apparently be charged to the Harbour Works -

It is a question however whether the provision of the trays is not a matter for the consideration of the municipality.

Estimates for an enlarged intercepting sewer, called for in August 1885, have not yet been received.

C.

17.5.86

The draft memo calling for estimate can issue - Receipt of estimate the question as to incidence of cost can be settled. I am inclined to opinion that it is a fair charge against the Harbour Works -

17.5.86

No. 1892 C dd 21-5-86

Public Works Department

Memorandum

With reference to his No. 197 dated 13th May 1886, the Consulting Architect is requested to submit an estimate for covering the Ventilators ~~attached~~ to the main sewer for some little distance North and South of the Post and Telegraph office with charcoal trays

15/5/86

To

The Consg. Archt. to Govt.

Dated 21/5/86

HB.

17.5.86

B. No 27 Sq W 21.11.85
Gob-ha 221 W. 22.9.85
" " 2012 W. 31.8.85
" " 600 W. 13.3.85

(1)

No. 3324 C.

Government of Madras.

**PUBLIC WORKS DEPARTMENT,**

Chepâk, 27th September 1886.

OFFICE NOTE.

From

The Secy: to Govt. P.W. Dept.

To

The Chairman Madras Harbour Trust Board—

With advertence to your letter No. 508, dy 18th instant, please return the documents forwarded to you with this office reference No. 294 D, dated 24-6-86.

(Sd) D. Mc. Campbell, Major RE
Under Secy: to Govt. P.W.D.

Desd 28/9/86

No. 1892 C dy 21st May 186

B h
21/5

No 480 D of 4-8-86
and the file

No. 3324 C of 27-9-86



GOVERNMENT OF MADRAS.

## PUBLIC WORKS DEPARTMENT.

**Buildings and Roads.**
**Civil Works.**

READ—the following papers :—

From Colonel ROSS THOMPSON, R.E., Executive Engineer in charge of Consulting Architect's office, to the Chief Engineer, Public Works Department, dated Chepâk, 7th June 1886, No. 319.

With reference to your memorandum, No. 1892 C., dated 21st May 1886, I have the honor to submit an estimate, amounting to Rs. 3,750, for providing fifteen deodorizing ventilators over the openings of the Harbour intercepting sewer, between the Lighthouse battery to some distance north of the Post and Telegraph office.

2. The ventilators will be in all respects similar to the one already constructed and found to work satisfactorily.

3. The cost of the work should, it is considered, be debited to the Madras Harbour Works as in the previous case (*vide* G.O., No. 2789 W., dated the 21st November 1885.)

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No. 294 D.

Referred, with a copy of G.O., No. 2789 W., dated 21st November 1885, to the Chairman, Madras Harbour Trust, for favor of report whether the Trust is prepared to accept the charge of Rs. 3,750 against the Harbour Works.

2. In the opinion of the Government the proposed incidence of the charge is a fair one.

24th June 1886. (Signed) J. SHAW-STEWART, Colonel, R.E.,
Secretary to Govt., P.W.D.

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From the Honorable R. W. BARLOW, C.S., Chairman, Harbour Trust Board, Madras, to the Secretary to Government, Public Works Department, dated Madras, 18th September 1886, No. 508.

In accordance with the concluding paragraph of your memorandum, No. 480 D., dated 4th August 1886, I have the honor to return the file of papers therewith forwarded to me having reference to the Harbour intercepting sewer.

2. These papers have been carefully gone into by the Harbour Trustees, and the question has on several occasions been discussed at the Board meetings.

3. In compliance with a resolution passed, I have now the honor to communicate to you the result of a reference to the Acting President of the Madras Municipal Commission, as detailed in a letter to him from the Vice-President, Madras Municipal Commission, No. 209 D., P.W., dated 3rd September 1886, communicated to me under his endorsement, No. 217 D., copy of which letter I herewith forward for your information, together with copy of my letter to the Acting President, Madras Municipal Commission, No. 348, dated 28th August 1886.

4. The Acting President of the Madras Municipal Commission, you will observe, states that the Harbour intercepting sewer vests in the Commission as an integral part of the Madras Drainage System, and the charges for upkeep and for ventilators, if others are required, should be defrayed by the Municipality.

ENCLOSURES.

From the Honorable R. W. BARLOW, C.S., Chairman, Harbour Trust Board, Madras, to the President, Madras Municipal Commission, dated Madras, 28th August 1886, No. 348.

I have the honor to address you with reference to the question of the present Harbour intercepting sewer, and the proposal to build another larger one to carry off storm water which now escapes into the Harbour through the ventilation openings of the existing drain, about which Mr. Pinsent, Secretary to the Harbour Trust Board, called on you on Thursday afternoon last.

2. I understand that, although constructed by the Superintendent of, and at the expense of, the Madras Harbour Works, the intercepting sewer now forms part of the Madras Municipal Sewage System and vests in you.

3. I also believe that, in the original plans of construction, it was provided that certain ventilators should be erected at the cost of the Municipal Commission, and I further gather that the two ventilating shafts, at the north-west corner of Post office, and south-west corner of the Telegraph office, have been so constructed, together with the experimental "Charcoal Tray" opposite the Chartered Mercantile Bank.

4. Mr. Pinsent has, as suggested by you, called on Mr. Dowson of the Government Telegraph Department, and on Mr. Sullen, Presidency Postmaster, with reference to these ventilators, and he informs me that both gentlemen state that the nuisance previously complained of has been greatly abated as regards the Telegraph and Post office buildings by the ventilating shafts; but that occasionally the stench is still very bad when the wind is blowing direct from any one of the open ventilating openings in the sewer. Mr. Sullen adds that the quarters of the Sergeant in charge of the Post office stable are at times quite uninhabitable; and both consider that the remainder of the openings should be covered with the charcoal trays.

5. I have the honor to inquire whether, in reference to paragraph 2 above, I am right in supposing that the present Harbour intercepting sewer is vested in the Municipal Commission. If so, I shall feel obliged if you will kindly inform me under what section of the Madras Municipal Act, and whether I am in any way held responsible for its upkeep and repair.

6. In reference to paragraph 3 of this letter, it would appear that should any more shafts or charcoal trays be required to bring the drain into accordance with original plans that the cost of their construction should be borne by the Municipal Commission, and I have the honor to inquire whether you are prepared to defray the cost of construction, if it be decided that further ventilators or charcoal trays are necessary.

7. As the Superintendent of Harbour Works proposes shortly to commence the construction of the storm water drain, I have the honor further to request that you will be good enough to inform me whether, on its completion, it would vest in you as part of the Municipal Drainage System, and its upkeep be chargeable to Municipal funds, or whether you would consider it exclusively a Harbour work, and look to me to maintain it.

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From J. A. JONES, Esq., Vice-President, Municipal Commission, to the Acting President, Municipal Commission, dated Madras, 3rd September 1886, No. 209 D., P.W.

With reference to the Chairman of Harbour Trust Board's letter, No. 348, dated 28th August 1886, I have the honor to inform you that, under section 254 of the Municipal Act, I consider that the Harbour intercepting sewer vests in the Municipality and it has been so considered to vest and has been repaired and altered at Municipal expense.

2. Two high ventilators have been erected in connection with the sewer, which fall into the intercepting sewer, and on all such sewers ventilators have been fixed at ground level.

3. The charcoal ventilator which has been erected over No. 3 sewer in proximity to the Post office and which is said to be effective, was erected at the cost of Government. I am not prepared to recommend that similar ventilators be fixed over all sewer openings, as I think that ventilators of a different design, but as effective, can be built at much less cost. It is, however, for the Municipality to decide whether such ventilators are required, and this question need not be considered by the Harbour Trust Board.

4. I have before stated in paragraph 1 that I consider that the intercepting sewer is vested in the Municipality; it forms part of the Drainage Scheme and should therefore be maintained from the Municipal funds.

5. The open drain for storm water about to be constructed is, however, not a work which is necessary to the Municipality and will be solely for the benefit of the Harbour. I think, therefore, that it ought to be maintained by the Harbour Trust Board.



No. 217 D.

True copy communicated to the Chairman, Harbour Trust Board, with reference to his letter, dated 28th ultimo, No. 348. The Acting President has nothing to add to the Vice-President's remarks which have his full concurrence.

(Signed) C. F. MAC-CARTIE,
Ag. President, Madras Municipal Commission.

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From the Chairman, Harbour Trust Board, No. 607, dated 28th September 1886.

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ORDER—dated 30th September 1886, No. 2551 W., Public Works.

Recorded.

2. The question of providing the sewers with ventilators will be left to the consideration of the Municipality.

(True Extract.)

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

To the Chairman, Madras Harbour Trust Board.
" Consulting Architect to Government.
" Chief Superintendent of Telegraphs, Madras Division.
" Postmaster-General.
" Financial Department, with estimate.
" Public Department.

Exd. A. Aubert.
Spare Copies

BUILDINGS AND ROADS.
CIVIL WORKS.

# Govt. of {1886} Madras.

PUBLIC WORKS.

*Dated September, 30th.*

*Recd.* *Encl.*

**G.O., 30th Sept. 1886, No. 2551 W.**

**SEPTEMBER.**

## Harbour Intercepting Sewer at Madras

Report from the Chairman, Harbour Trust Board, that, in the opinion of the President, Madras Municipality, the — vests in the Municipality, and that charges for upkeep and for ventilators should be defrayed by the Municipality, recorded.

No 3592

From

The Chief Superintendent,
Government Telegraphs,
Madras Division.

To

The Under Secretary to the
Government of Madras
Public Works Department
Dated Madras 5th October 1886.

Sir,

With reference to Government Order No 2789 dated 21st November 1885 P.W. Don Government Order No 2589 dated 6th idem Regarding an experimental charcoal tray ordered to be fitted on the intercepting Sewer which passes along the beach in front of the Post and Telegraph Building, I have the honor to inform you that I wrote to the Consulting Architect on the 6th May last reporting a decided improvement and suggesting that the remainder of the Ventilators be similarly fitted. He informed

me

me that an Estimate was submitted to Governmens on the 7th June last, but has not yet been sanctioned.

I am anxious that the work be completed as soon as possible and I would feel obliged if you will inform me when orders will be issued.

I have the honor to be,

Sir,

Your most obedient Servant.

J. J. Charles

Chief Superintendent.

Cno. 4359.

A No: 25-51/n

9/30-9-86

In the Press.

2551 w 30.9.86. 1892 C. 21.5.86.
2789 w 21.11.85 2489 w 21.11.85.
600 w 13.3.85 2689 w 11.11.85.
2214 w. 22.9.85
2012 w 31.8.85 3324 C 27/9/86

No. 2700 W of 14th Octr/86

B

Recorded, with reference to G.O. No. 2551 W. dated 30th Sept. 1886.

Recorded, with reference to G.O. No. 2551 W. dated 30th Sept. 1886.

Jole 12/10/86.

P.W.C. No. 7775

Government Telegraph Department

P. W. D.

From

The Chief Superintendent

Madras Division

To,

The Under Secretary

to the Govt of Madras

Public Works Department

Dated Madras 5th October 1886.

Rec'd: 6.10.86

No. 3592.

No. 2700 W dated 14th Octr/86

abstract

Precis

Asks when the Estimate for fitting an experimental charcoal tray intercepting sewer which passes along the Post & Tele Building be passed

Ch. Supt. of Teles: Madras Div.

Ch. Supt. of Teles. Madras Div.

W 15/10

W 7/10

W Mr. Wells