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MADRAS RECORD OFFICE

Government of Madras

Public Works DEPARTMENT

G.O. No.	852	Press	<i>Original</i>
~~B.P. No.~~		~~Mis.~~	
Dated	31 - 3 -	1875	
		495	

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*Proceedings of the Madras Government, Public Works Department,
31st March 1875.*

Read the following letters:—

No. 651. From Lieutenant-Colonel J. GODDARD, R.E., District Engineer, Presidency, to Colonel G. W. WALKER, R.E., Secretary to Government, Public Works Department, dated Fort St. George, 17th February 1875, No. 6,253.

With reference to the orders of Government as per margin, I have the honor to submit, for consideration and selection, two plans, estimates, and specification reports for widening the General Hospital Bridge, one amounting to Rupees 53,200, and another to Rupees 1,27,800.

G. O., No. 1,756, dated 8th July 1873.
" " 1,855-A, " 10th July 1874.

2 Plans.
2 Abstract Estimates.
2 Specification Reports.

No. 652. From the same Officer, dated Fort St. George, 5th March 1875, No. 6,546.

I HAVE the honor to submit a revised estimate, amounting to Rupees 1,15,000, accompanied by a plan and specification report, for widening the General Hospital Bridge, in which the centre arch is retained in obedience to verbal orders.

1 Plan.
1 Abstract Estimate.
1 Specification.

2. It will probably be found, when executing the work, that the temporary bridge provided for in the estimate may be dispensed with consequent upon the retention of the centre arch.

No. 653. ORDER THEREON, 31st March 1875, No. 852.

CIVIL WORKS, No. 39.

In accordance with the Orders of the 8th July 1873, and 10th July 1874, Nos. 1,756 and 1,855-A, the District Engineer, Presidency, submits designs and estimates for the improvement of the bridge over Cochrane's Canal near the General Hospital. On consideration of the several proposals brought forward, His Excellency the Governor in Council resolves, looking to the present condition of the Provincial finances, to sanction the lowest of the estimates, amounting to Rupees 53,200, which provides for widening the existing bridge with masonry on the present plan.

2. A sum of Rupees 25,000 has been provided for the work in the Budget of 1875-76, and the District Engineer will accordingly lose no time in putting it in hand.

(True Extract.)

Colonel, R.E.,
Secretary to Government.

To the District Engineer, Presidency.
" Consulting Engineer for Railways.
" Controller of Public Works Accounts.
" Financial Department.

Exd. S. T. Austin.

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*Proceedings of the Madras Government, Public Works Department,
12th December 1860.*

No. 165. Read the following letter from Lieutenant-Colonel W. H. HORSLEY, Chief Engineer, to J. D. SIM, Esq., Acting Secretary to Government, dated Chepauk, 26th November 1860, No. 7,333:—

SIR,

1. In paragraph 5 of my predecessor's letter, No. 7,130, dated 11th November 1859, it was reported that Plans and Estimates for repairing, or more properly improving, the Bridges over Cochrane's Canal near the General Hospital and the Basin, were called for by this Office. These Plans and Estimates were forwarded by the late Civil Architect on the 12th January and 11th February last, but owing to the restriction on expenditure it was considered inexpedient to send them up for sanction at that time, and I have now the honor of submitting them to Government for entry in the Budget of 1861-62, if approved of.

1 Letter from the District Engineer, Presidency (late Civil Architect), No. 29, 12th January, 1860.
1 Abstract Estimate Rupees 17,400.
1 Letter from the late Civil Architect, No. 138, dated 11th February 1860.
1 Abstract Estimate Rupees 17,950.
1 Plan of General Hospital Gate Bridge.
1 Plan of the Basin Bridge.

2. Of the accompanying two Estimates, one amounting to Rupees 17,400, provides for widening the General Hospital Road Bridge from 25 to 40 feet, and reducing the slope of the two approaches to 1 in 40 feet, and the other amounting to Rupees 17,950, for widening the Basin Bridge from 17½ to 40 feet, and reducing the slope of the approaches to the same extent. All that has been said in the letter above quoted, respecting the traffic on the Elephant Gate Bridge, and the danger to which the public are exposed by the narrowness of its roadway and the steepness of its approaches, is applicable to the bridges for the improvement of which estimates are now submitted. The traffic over the Hospital Bridge is believed to be even greater, while a large portion of the traffic coming down the canal is carried over the bridge at the Basin. I, therefore, consider the proposed improvements, for widening their roadway and reducing the steepness of their approaches, to be very necessary, and I would recommend them to be carried into effect. The Estimate for the improvement of the Elephant Gate Bridge, amounting to Rupees 15,330 was sanctioned by Government in their orders No. 2,735, dated 23rd November 1859.

3. The want of additional waterway to these bridges has been very perceptible during a heavy monsoon and especially since the construction of the Lock and Calingulah at Shadien-coopum, by which the escape of the flood water to the north is obstructed. I have, therefore, allowed for increasing the two side arches from 20 to 32 feet with proportionate elevation.

4. The Plans and Estimates now submitted have undergone the usual scrutiny and examination in this Office, and, with the Estimate for the Elephant Gate Bridge, have been entered in the Budget for 1861-62, for which I have to request the sanction of Government.

No. 166. ORDER THEREON, 12th December 1860, No. 2,559.

The Governor in Council approves of these works, but considers that they may with propriety be executed from the proceeds of that portion of the Madras Income Tax collections which is to be devoted to public works. The Estimates will therefore be excluded from the Budget.

(Signed) J. D. SIM,
Acting Secretary to Government.

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*Proceedings of the Madras Government, Public Works Department,
2nd October 1862.*

No. 31. Read the following letter from Captain E. HEMERY, R. E., Acting Deputy Chief Engineer, Central Circle, to Colonel W. I. BIRDWOOD, R. E., Secretary to Government, Public Works Department, dated Chepauk, 25th September 1862, No. 259 :—

SIR,

- 1 Letter from the District Engineer, Presidency, No. 1,312, dated 15th September 1862.
- 1 Letter from the District Engineer, Presidency, No. 891, dated 30th July 1862.
- 1 Abstract Estimate.
- 1 Plan.
- 1 Comparative Statement.

1. I have the honor to submit for sanction a revised estimate amounting to Rupees 21,900 for widening the General Hospital Bridge.

2. The original estimate amounting to Rupees 17,400 was approved of by Government in their Order No. 2,559 of the 12th December 1860. It bears date the 12th January preceding, but owing to the rise in the price of materials during the past two years, the District Engineer, Presidency, has taken the precaution of revising it prior to the commencement of the work.

3. The excess of the revised over the original estimate, Rupees 4,500, as shown in the accompanying Comparative Statement, is chiefly in the items for centerings, coffer dam, and removing masonry; Lieutenant-Colonel Hitchins also proposes to plaster with three instead of two coats as originally intended, the former process being in his opinion the more economical for buildings within two or three miles of the sea.

4. In the Budget of 1862-63, Rupees 10,000 have been entered for expenditure on this bridge, and a similar sum is sanctioned for widening the Elephant Gate Bridge, distant about half a mile from the former. These works have now been transferred to the Local Fund Budget and the allotment for each reduced to 5,000 Rupees.

5. Lieutenant-Colonel Hitchins points out the very great inconvenience that will be caused by closing both bridges at the same time, and suggests that the total amount allotted for the two works should be expended in widening one bridge only. I am of opinion that his request may be complied with, more especially since the sanctioned amount for this year has been so much reduced that little progress could be made on either work with its small allotment.

No. 32. ORDER THEREON, 2nd October 1862, No. 2,361.

1. Under the explanation afforded the Government sanction the revised estimate amounting to Rupees 21,900 for widening the General Hospital Bridge.

2. The suggestion contained in paragraph 5 is approved.

* Rs. 15,830.

3. The Government would wish to be informed whether the estimate* for the Elephant Gate Bridge is likely to be exceeded, and if so, by what amount.

(Signed) W. I. BIRDWOOD, Colonel, R. E.,
Secretary to Government.

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*Proceedings of the Madras Government, Public Works Department,
8th May 1863.*

No. 132. Read the following letter from Lieutenant-Colonel H. W. HITCHINS, R. E., Acting Deputy Chief Engineer, Central Circle, to Colonel W. I. BIRDWOOD, R. E., Secretary to Government, Public Works Department, dated Chepauk, 23rd April 1863, No. 609:—

SIR,

1 Estimate.
1 Specification
1 Plan.

1. I have the honor to forward a revised Plan and Estimate amounting to Rupees 11,070, for widening the General Hospital Bridge and improving the road-way over the same and its approaches.

2. The present road-way being considered insufficient for the very heavy traffic that passes over the bridge and the gradient too steep, it is proposed to widen the bridge $2\frac{1}{2}$ feet on each side by laying granite slabs $6\frac{1}{2}$ feet long and substituting a line of cast iron railing similar to that put up at the Government House Bridge in lieu of the present parapet walls, so that there may be a space of $3\frac{1}{2}$ feet nearly for a foot-path on each side in addition to the present width of the road-way, viz., 25 feet. It is also proposed to reduce the gradient by raising the present road-way to a slope of 1 in 50 feet and re-metalling the whole.

3. The old plan for widening the bridge and which was estimated to cost 21,900, sanctioned by Government in October 1862, provided also for increasing the water-way to a great extent and which is now considered unnecessary.

No. 133. ORDER THEREON, 8th May 1863, No. 1,169.

1. The Government approve of the plan for widening the General Hospital Bridge. They accordingly sanction the revised Estimate of Rupees 11,070, received with the foregoing letter, in supersession of the one sanctioned in Proceedings dated 2nd October 1862, No. 2,361.

2. The Superintending Engineer 4th Division is requested to report from what funds it is proposed to execute the work, and how much of the 10,000 Rupees made available for it in the current year has been laid out and in what manner.

(Signed.) W. I. BIRDWOOD, Colonel, R. E.,
Secretary to Government.

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*Proceedings of the Madras Government, Public Works Department,
19th February 1873.*

Read the following papers :—

No. 441. From the President of the Municipal Commission, Madras, to the Secretary to Government, Public Works Department, dated Madras, 4th February 1873, No. 1,107.

I HAVE the honour to bring to your notice that the only work now remaining to be done in completing the system of pipes for the water-supply of Madras is the carrying of one of the mains across Cochrane's Canal at the General Hospital Bridge; but, before submitting for your sanction a plan of the method proposed for accomplishing this, I should very much wish the consideration of the following subject by Government.

2. In 1868* I addressed Government, and in 1869† the Consulting Engineer

* In letter No. 375, dated 23rd April 1868.

† " " — " 13th July 1869.

for Railways, on the desirability of widening the General Hospital Bridge, and adduced the location of the new

Railway terminal buildings as a powerful reason for not deferring the work any longer. So far back as 1863, with a very limited traffic, this bridge was pronounced too narrow, and Government sanctioned foot-ways, 4 feet wide, to be constructed on each side, so that the whole of the road-way over the arches may be available for heavy traffic; but it has long been felt that even this improvement was not sufficient to accommodate the rapidly increasing traffic over this road, and it is but fair to infer that, on the opening of the new passengers' station, an enormously increased wheeled traffic will be drawn towards it.

3. I therefore think the time has arrived for Government to take the subject in hand, and, as the bridge cannot be widened on the south side without interfering with the water-main, I beg to be favoured with the orders of Government, so that the proposed crossing of the Municipal water-main may be so planned as not to necessitate the work being re-done on the bridge being widened.

No. 442. From the President of the Municipal Commission, Madras, to the Secretary to Government, Public Works Department, dated Madras, 15th February 1873, No. 1,164.

WITH reference to my letter No. 1,107, dated 4th February 1873, about the widening of the General Hospital Bridge, I have now the honour to forward a plan showing the road-way over the bridge and the breadth of the approaches, from which it will be observed that the space between the walls of the General Hospital and the Railway Station is nearly 100 feet.

No. 443. ORDER THEREON, 19th February 1873, No. 550.

CIVIL WORKS, No. 23.

THE subject of this letter will be taken up by the Inspecting Engineer for Buildings, in the absence of the Inspect-

ing Engineer for Communications, who will ascertain from the District Engineer what, if anything, has been done in the way of planning an extension of the width of the Hospital bridge in conformity with verbal orders given to the Superintending Engineer, 4th Division, by His Excellency the late Governor. He will then proceed

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19th February 1873.*

without delay to a further investigation of the subject, and determination of the exact width to be given, and of the details of the manner in which it shall be worked out, consulting the Municipal Commissioners, the Consulting Engineer for Railways, and the officials connected with both railways on the subject.

2. The result of their consultations will be communicated to Government, who will then be in a position to authorize the Inspecting Engineer for Communications to proceed with detailed plans and estimates for carrying out such proposals as may be approved.

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

To the Inspecting Engineer for Buildings.
" " " for Communications.
" Consulting Engineer for Railways.
" District Engineer, Presidency.
" President of the Municipal Commission.
" Public Department.

*Proceedings of the Madras Government, Public Works Department,
16th October 1873.*

No. 231. Read the following endorsement of the Consulting Engineer for Railways, dated Madras, 6th September 1873, No. 471:—

From J. T. FISHER, Esq., Agent and Manager of the Carnatic Railway Company, to Lieutenant-Colonel J. H. M. SHAW-STEWART, R.E., Consulting Engineer for Railways, dated Madras, 5th September 1873, No. 280.

WITH reference to your endorsement, No. 243, dated the 1st instant, covering the Order of Government, dated the 20th August 1873, No. 2,071, on the subject of the re-construction of the Hospital bridge, I venture to trouble you with some additional observations upon this subject which, if you deem opposite, I request you will be good enough to submit to Government, and to urge that they may be pleased to reconsider their decision upon this matter.

2. As you are doubtless aware the Commissioners of the Municipality at a recent meeting unanimously resolved to solicit His Excellency in Council to adopt measures for improving the gradient of the bridge solely on account of the very serious inconvenience which is now and must increasingly continue to the road traffic.

3. As respects the Railway Terminus you will probably agree with me that, in the absence of some improvement in the gradient of the approaches to the proposed new station, it will most likely be necessary that passengers will have to descend from the booking offices to the railway platforms, the inconvenience of which I think can scarcely be exaggerated, and in these circumstances it will become a grave question whether it would be worthwhile erecting a building of so handsome a character as that proposed in the design prepared by Mr. Chisholm.

4. Apart, however, from the consideration of the Railway Terminus, I trust I may not be deemed to be transgressing beyond my province in venturing to express an opinion different from that assigned in the Government Order, as to the inconvenience likely to be occasioned to boats navigating the canal by a reduction of the head-way of the bridge. I am of opinion, and I trust you will agree with me, that even with all the reduction in the head-way asked for, barges loaded with an article of as light and bulky a nature as hay or straw might be passed through without inconvenience, and such can only be required to pass on rare occasions, and further if I am correctly informed there is another bridge over the canal higher up with less head-way than the Hospital bridge; I believe, moreover, that it will be found quite practicable by an alteration in the design to reduce the crown of the bridge without materially diminishing the head-way.

5. I would instance further a case in England where barges are navigated on one of the main canal arteries of the country, viz., the Huddersfield and Manchester Canal, through a tunnel about three miles long, where there is only head-way sufficient to admit of the boats being propelled by the bargemen lying on their backs and pushing with their feet against the top of the tunnel, and I think it will be conceded that if the trade of a Canal Company in England can so be carried on, there can be no difficulty in passing barges through a bridge with limited head-way only 60 feet wide in this country, and if I am not much mistaken the head-way of the Hospital bridge is much higher than canal bridges generally are in England.

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16th October 1873.*

6. In presence therefore of the very little inconvenience, if any, which can be occasioned to the canal traffic on the one hand, and to the immense inconvenience which must be occasioned to the Railway Company and continued to the road traffic on the other, I trust there is a sufficient warrant for my asking that the Government may be respectfully solicited to reconsider their order.

SUBMITTED for the consideration of Government with reference to their Proceedings, dated the 20th August 1873, No. 2,071.

(Signed) J. H. M. SHAW-STEWART, Lieut.-Colonel, R.E.,
Consulting Engineer for Railways.

No. 232. ORDER THEREON, 16th October 1873, No. 2,524.

CIVIL WORKS, No. 16.

His EXCELLENCY the Governor in Council is not prepared to reverse his decision on the subject of the Hospital bridge, recorded in G. O., No. 2,071, of 20th August, without more definite information as to relative levels. A proposal of this nature should be laid before him, with statements of the head-way afforded by the Hospital bridge, compared with that of the Madras Railway bridge; and of the height of the Hospital bridge road-way, compared with that of the existing station approach, with rail level and highest Cooum flood. And in submitting for approval his design for the passenger station, there is no objection to the Consulting Architect including in it the treatment of the Hospital bridge with a head way not lower than that afforded by the Railway bridge.

2. But since the difficulty stated to hamper the design of a handsome passenger station has really arisen from the rail level having been fixed very low to allow of the use of an over-bridge for the adjacent road crossing, His Excellency the Governor in Council considers that perhaps the best, and certainly the least costly expedient to obviate it, will be the substitution of a level crossing with corresponding raising of the rail level to which he has no objection. For a long time to come at least two departures from and arrivals at the passenger station per diem will meet all wants; and the inconvenience and danger incident to a level crossing can, in His Excellency's opinion, by proper management, be reduced to a minimum; while the greatly increased height of rail which it will afford will most effectually conduce towards showing off the elevation of the building to advantage.

(True Extract.)

(Signed) G. W. WALKER, Colonel, R.E.,

Secretary to Government.

To the Consulting Engineer for Railways.

.. District Engineer, Presidency.

.. Financial Department.

.. Consulting Architect.

.. Inspecting Engineer for Communications.

Exd. E. C. Shunker.

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*Proceedings of the Madras Government, Public Works Department,
8th July 1873.*

No. 124. Read the following letter from Lieutenant-Colonel W. FAREWELL, Inspecting Engineer for Ports and Communications, to Colonel G. W. WALKER, R.E., Secretary to Government, Public Works Department, dated Camp at Cochin, 12th June 1873, No. 100 A. :—

With reference to G. O., No. 550, dated 19th February 1873, I have the

honour to report nothing has been done by this department in the way of planning an extension of the width of the Hospital Bridge in conformity with verbal orders said to have been given to the Superintending Engineer of the 4th Division by His Excellency the late Governor, regarding which the District Engineer of the Presidency states nothing whatever is known in his office.

No. 1.—Survey of Bridge site.

" 2.—Plan of Bridge.

" 3.—Plan of borings.

" 4.—Letter from the Consulting Engineer for Railways with three enclosures.

" 5.—Letter from the President, Municipal Commission, Madras, with Plan.

" 6.—Return of traffic taken on the Hospital and Government House Bridges in February 1873.

2. The project of extending the width of the Hospital Bridge is by no means a new one; so far back as 1860 Government in their Order No. 2,559, of the 12th December of that year, approved of an estimate submitted by Colonel Horseley, R.E., amounting to Rupees 17,400, for widening the hospital bridge from 25 to 40 feet; this estimate was revised by Captain Hemery, R.E., and Government in their Order No. 2,361, of 2nd October 1862, sanctioned the amount, viz., Rupees 21,900; the work was taken in hand by the then District Engineer, Colonel Hitchens, R.E., who appears to have found great difficulty in clearing the foundations of water, upon which he spent Rupees 2,734-10-2, and then recommended the work should be abandoned, submitting a project for merely extending the footways, the estimate for which amounted to Rupees 11,070, which on the 8th of May 1863, in G. O., No. 1,169, was sanctioned by Government, and carried out to completion.

3. Having, as directed, consulted the Consulting Engineer for Railways and the Municipal Commissioners for the town of Madras as to the exact width to be given to the bridge, I enclose their replies, by which you will observe that all concerned agree that the width of the bridge, including footways, should not be less than 60 feet, or a little under double what it is at present.

4. The bridge as it stands gives a carriage road-way of 25 feet and trottoirs for passengers on either side of 3' 6", making a total of 32 feet between side rails at the centre of the bridge; in the original plan the bridge is shown to be constructed on wells of 6 feet diameter and sunk only 8 feet, the enclosed plan of borings made at my suggestion shows that 35 feet below water line only sand and black mud are met with.

5. With the other papers submitted, I beg to forward a plan of the mode in which the Municipal Commissioners propose to take the city water-supply main across the canal at the bridge site; the design, in my opinion, is both unstable and unsightly.

6. Should Government direct that the extension of the bridge be carried out, by adding to it a rib or ribs of the same description as the existing structure,

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8th July 1873.*

supposing the width is doubled, this would provide footways for passengers on either side of 7 feet, and a carriage way of 50 feet, which could be added in two separate ribs of 16 feet each, north and south of the present bridge, the southern rib, reduced to 13' 6" in width, being constructed at a distance of 2 feet 6 inches from the present structure, thus leaving a space for the reception of the city main, supported on stone or iron girders between the new rib and old structure, the opening above being covered by granite slabs; the main would thus be very accessible and out of sight; should, however, the difficulty of obtaining good and secure foundation for these masonry ribs really exist, the necessary extension might be effected with screw piles and iron girders, so arranged on either side as to hide the original masonry structure.

7. The cause of the delay that has taken place in regard to the submission of this report is, that the President of the Municipal Commission only replied to my queries on the 31st May, and his letter was not received by me until the 5th instant, and the District Engineer's report on the foundations only reached me on the 8th instant.

No. 125. ORDER THEREON, 8th July 1873, No. 1,756.

CIVIL WORKS, No. 8A.

His Excellency the Governor in Council approves of the scheme for increasing the width of the Hospital Bridge to 60 feet, of which 45 shall be devoted to the carriage way, and 15 to the foot-paths and parapets, by additions on each side, between which and the original structure sufficient space will be left to pass water and other mains. And he directs the preparation of the necessary plans and estimates, towards carrying out which an allotment from Provincial Funds will be made in the Financial Department on report of the sum which can be utilized in the current official year.

(True Extract.)

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

- To the Inspecting Engineer for Ports and Communications.
.. District Engineer, Presidency.
.. Financial Department.
.. Officiating Controller of Public Works Accounts.
.. Consulting Engineer for Railways.
.. President of the Municipal Commission.

Exd. S. T. Austin.
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*Proceedings of the Madras Government, Public Works Department,
29th December 1873.*

No. 43000. Read the following letter from Lieutenant-Colonel J. H. M. SHAW-STEWART, R.E., Consulting Engineer for Railways, to Colonel G. W. WALKER, R.E., Secretary to Government, Public Works Department, dated Madras, 8th December 1873, No. 658:—

ADVERTING to the Proceedings of Government, dated the 16th October 1873, No. 2,524, I have the honour to submit, for the consideration of His Excellency in Council, a letter* from the Agent of the Carnatic Railway Company, with

* No. 366, dated 4th December 1873.

enclosure from the Chief Engineer, and to recommend that sanction be accorded to the proposed substitution of level crossings for over-bridges at Sydenham's road and Whannell's road, at the points where the railway crosses those roads, upon the undertaking of the Company to replace either or both of the level crossings by over-bridges should the change be hereafter considered desirable by the Government.

2. Upon receipt of the Proceedings of Government under acknowledgment, I took advantage of Mr. Logan's visit to Madras to discuss the subject with him and with the President of the Municipal

* To President, Municipal Commission, No. 1,027, dated 25th October 1873.

From President, Municipal Commission, No. 338, dated 8th November 1873.

Commission, and I beg to enclose two letters* which subsequently passed between the last-named officer and my-

self. It will be seen that the proposal to substitute level crossings meets with the approval of the Municipality, and I trust that the measure will be sanctioned by Government, subject to the condition that the over-bridges will be provided hereafter should the change be deemed advisable.

From W. S. BETTS, Esq., Agent and Manager of the Carnatic Railway Company, to Lieutenant-Colonel J. H. M. SHAW-STEWART, R.E., Consulting Engineer for Railways, dated Negapatam, 4th December 1873, No. 366.

WITH reference to the attached copy of a letter from the Chief Engineer, and to your letter No. 301, of the 25th of October last, I have now the honour to request that you will be good enough to obtain the sanction of Government to the substitution of level crossings for over-bridges at Sydenham's road and at Whannell's road at the points where the railway crosses those roads. On behalf of this Company I undertake to replace the level crossings by over-bridges should the change be hereafter considered desirable by Government.

Letter from the Chief Engineer, to the Agent of the Carnatic Railway Company (Limited), dated Trichinopoly, 1st December 1873.

YOUR Nos. C 189-1161 and C 329-1229, re level crossings vs. over-bridges in Madras.

2. I note that Government have withdrawn their objections to a level crossing at Sydenham's road, and that the Municipality do not object to one at that point or at Whannell's road provided the Railway Company undertake to construct over-bridges should the crossings be found to interfere with the free circulation of the street traffic.

3. The over-bridge at Sydenham's road, as proposed by my predecessor, would, I think, have proved a very great inconvenience to the public traffic, to the Railway Company, and to the sanitary condition of the locality, as is clearly set forth in the Consulting Engineer's letter (No. 1,027) to the President of the Municipal Commission. For much the same reasons I would ask you to obtain sanction of Government to the substitution of a level crossing at Whannell's road for the over-bridge at present proposed. The traffic along this road is, I believe, so light that I doubt if it

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would justify the large expenditure necessary to build an over-bridge with its long and heavy approaches, which would very seriously affect public access to our proposed goods yard, along one side of which one of the approaches would run.

4. I am not, as a rule, in favour of level crossings in the midst of a town like Madras, and eventually I believe that as the railway traffic develops, one, if not both, of the over-bridges now proposed to be done away with will have to be built; but in that case the work will be more economically executed after the opening of the railway, and we shall have had practical demonstration of the best points at which to place the bridges and their approaches. I say the work will be less costly to execute after the railway is opened, because all the material for the masonry and embankments of the bridge approaches can then be run in by train instead of as at present, or in the absence of a line of rail, having to be carted.

5. The leaving of this work over for the present will also set free superintendence and labour for the works which are absolutely required before the railway can be opened.

6. From your No. C 350-1254, I note that the Municipality of Madras consider a clear width of 30 feet sufficient for the river-side road, that being the road which has to be diverted along the side of the river Cooum between it (the river) and the line of railway up to the north end of Colonel Law's Bridge.

From Lieutenant-Colonel J. H. M. SHAW-STEWART, R.E., Consulting Engineer for Railways,
to J. C. LOCH, Esq., President of the Municipal Commission, Madras, dated Madras,
25th October 1873, No. 1,027.

WITH reference to our conversation of to-day, when I had the pleasure of meeting you and Mr. Logan, the Chief Engineer of the Carnatic Railway Company, I have the honour to enclose a copy of the Proceedings of Government, dated the 16th instant, No. 2,524, and to request that you will let me know whether there would be any objection on the part of the Municipality to the suggestion made in the second paragraph of the Order of Government, viz., that Sydenham's road should, for the present at least, be carried across the line of railway by means of a level crossing, instead of by an over-bridge, as at first proposed. Should the level crossing be approved of the Railway Company will of course undertake to replace it by an over-bridge, if hereafter the latter is considered desirable; but you will remember that Mr. Logan explained that the level crossing would tend to the general convenience of the public in several ways, as, for instance, (1) by allowing the traffic along the Poonamallee Road and Sydenham's Road to be carried as at present, instead of being subjected to an ascent and descent of some 16 feet; (2) by causing no interference with the free circulation of air, such as would inevitably result from the high earthen ramps which an over-bridge would necessitate; (3) by allowing free access to the houses opposite the south-west corner of the People's Park, which the other arrangement would interfere with; (4) by not obstructing the approach to the Napier Water Pandal; (5) by facilitating the course of the tramway towards Law's Bridge, etc., etc. I do not anticipate that the hindrance to the road traffic which would result from a level crossing at this point would be nearly so great as that which we have already experienced at the Elephant Gate Road crossing on the Madras Railway; in the first place because the traffic along Sydenham's road is not nearly so great as that along the Elephant Gate Road, and, in the second place, because the passage of trains along the railway will not be so frequent as upon the Madras Railway.

2. I also beg that you will let me know whether, in the event of the Government sanctioning the substitution of a level crossing for an over-bridge to carry Whannell's road over the railway, there would be any objection on the part of the Municipality to the arrangement. The wheeled traffic along Whannell's road is, as you know, very light; and you will remember that Mr. Logan explained that an over-bridge at this point, with its long earthen approaches, would most inconveniently affect the public in the approach to the Carnatic goods yard. In this case also the Company would of course engage to replace the level crossing by an over-bridge should it hereafter be found desirable.

*Proceedings of the Madras Government, Public Works Department,
29th December 1873.*

3. I have also to request that you will let me know whether, in the interests of the Municipality, you consider that a minimum width of 30 feet will be sufficient along river side road. The wheeled traffic along this road is very light; and, as explained by Mr. Logan, every additional foot in the width of the road will render heavy expenditure necessary in reclaiming land from the bed of the Cooum river.

From J. C. LOCH, Esq., President of the Municipal Commission, Madras, to Lieutenant-Colonel
J. H. M. SHAW-STEWART, R.E., Consulting Engineer for Railways, dated Madras, 8th
November 1873, No. 338.

I HAVE the honour to acknowledge the receipt of your letter, No. 1,027, of the 25th ultimo, giving cover to a copy of the Proceedings of Government in the Public Works Department, dated the 16th idem, No. 2,524, and inquiring whether I was of opinion that there would be any objection on the part of the Municipality to the suggestion made in the 2nd paragraph of the Order of Government, and to two others put by you with reference to other matters.

2. With regard to the proposal of Government that Sydenham's road should be carried across the line of railway by means of a level crossing instead of by an over-bridge, I do not think the Commissioners will object to this being done, on the understanding, of course, that if it is found inconvenient to the public in practice it will be replaced by an over-bridge.

3. The substitution of a level crossing for an over-bridge to carry Whannell's road across the railway will be a decided improvement in the opinion of our Executive Engineer, and in this I fully concur with him; but I do not share his further opinion that in the event of this being so arranged the Carnatic Company should construct an over-bridge at the next crossing westwards from Whannell's road.

4. I have to apologize for not having sent you a reply to your letter before now, but Mr. Lee, our Executive Engineer, has been very unwell and absent from Madras until yesterday, and I was anxious to consult him before writing it.

No. 430vv. ORDER THEREON, 29th December 1873, No. 3,081cc.

RAILWAY, No. 53.

His Excellency the Governor in Council sanctions the substitution of level crossings for over-bridges at Sydenham's road and Whannell's road at the points where the railway crosses those roads, on the condition that the level crossings shall be replaced by over-bridges should the change at any future time be considered necessary.

(True Extract.)

(Signed) G. W. WALKER, Colonel, R.E.,

Secretary to Government.

To the Consulting Engineer for Railways.

Exd. S. T. Austin.

Spare Copies.

No. 4430 of 1874/75

Specification to accompany a
design for widening the General Hospital
Bridge Madras.

19

Amount of Estimate Rs 115,000-

The existing roadway over the
Bridge is 28 feet wide the new will be 58
feet in width. The additional width will
be attained by adding 15 feet on each side
as shown in the Plan. The existing arches are
to remain.

Piers

The extension on each side is to
rest on groups of 4 Piles each which are
to be placed immediately in line with the
Piers and these will rest the ends of the lattice
girders of which there are to be three on each
side; each 5 feet $7\frac{1}{2}$ inches in depth. The
length of the piles is to be 50 feet of which 38
feet is to be in the ground. They will be of
Cast iron 10 inches in diameter and one inch
in thickness. Their tops will be finished
and secured in the usual manner.

The shore end of the girders will
rest on the abutments &c.

There will be Cross girders running
from the existing bridge to the lattice girders
all of which are to be of plate iron $1\frac{1}{2}$ inch
depth. The tops of all these girders will
be on the same level. Over them will be
placed teakwood planking 5 inches in
thickness over this planking will be placed
four slender timbers and along side each
lattice girder and another 8 feet from the
for the purpose of forming a pathway for
foot passengers. The whole of the roadway

PRESIDENCY DISTRICT.

For the Fortification General Hospital Bridge

Quantity.	Description of Works.	Price.	Amount.	Total.
29390	Best Brickwork in Cement Portland	1	1621.8	
9335 3/4	Granite stone masonry in Cement	2	16505	
100	Brickwork in Cement Portland	50	11000	
100	Brickwork in Cement Portland	2000		
100	Brickwork in Cement Portland	1000		
100	Brickwork in Cement Portland	350		
100	Brickwork in Cement Portland	510		
100	Brickwork in Cement Portland	11200		32002.5
100	Brickwork in Cement Portland	1000		
100	Brickwork in Cement Portland	300		
100	Brickwork in Cement Portland	1180		

Mr. 1875/75.

will be laid and over the planking will be placed 1 3/4" inches of asphaltum which will be laid the metal of the road. The lattice girders are to have teakwood plating 4" inches in thickness.

All the masonry work is to be laid with Cut Stone as shown in the Plan.

The wing walls are to be of brick and mortar and of the dimensions given in the Plan.

The old abutments which are of brick in mortar, to be prolonged to the extent of 15 feet on each side to receive the ends of the girders. Six lamps with Cast iron lamp posts are to be placed on the Bridge.

Temporary dams to be constructed to a depth of excavation and sinking wells for the foundations of new parts of abutments and wing walls.

In presence of Mr. Col. A.B.

District Engineer Presidency.

For the Fortification
5 March 1875

Col. L. S. B.
Comd. 1875

2-0-82 8229510

Dated 5th March 75.
 Recd
 No. 443 of 1874-75.

Estimate for widening
 General Hospital Bridge
 amounting to Rs 1,15,000.

Mr. 1505/75.
 G. O. No. 852 of 1875-76.

The District Engineer
 Presidency

To,
 The Chief Engineer, and
 Secretary to Government
 P. M. D.

Sir,
 I have the honor to submit a revised estimate amounting to Rupees ⁸⁵⁰⁰⁰ 1,15,000- accompanied by a plan and specification report for widening the General Hospital Bridge, in which the centre arch is retained in obedience to verbal orders.

- Encls. 3.
 1. Plan.
 1. Abst. Est.
 1. Specimen

2. It will probably be found, when executing the work that the temporary Bridge provided for in the estimate may be dispensed with: consequent upon the retention of the centre arch.
 which would reduce the estimate by Rs 30,000 - which would be dispensed with.

I have the honor to be
 Sir,
 Your most obedient servant.

Geo. J. J. J.
 District Engineer
 Presidency

Fort St. George 3
 5 March 1875-3

Geo. J.

And the amount 10-3 as above
 Paid.

7th of 1874/75

Specification to accompany
an Estimate for widening the width
of the General Hospital Bridge
at Madras.

Amount of Estimate Rs 53200-

The existing parapets, wing
walls and railings granite foot paths
&c of the General Hospital Bridge
to be removed and the Bridge widened
by building bridges of 16 feet width one
on each side. Contiguous to the present
structure so as to form a road way 60
feet in breadth.

The foundation throughout
will be 13 feet in depth and the breadth
as follows.

Abutments	10'-3" at top	14'-3" at bottom
Piers	12' Do	16' Do
Wing walls	6' Do	10' Do
	5' Do	9' Do

These will rest on wells 15 feet in
depth by 7 1/2 feet diameter in the
center and will be sunk 6 inches apart.

The retaining walls between
the Piers to be 4 feet thick and 7 feet
in depth and the flooring to be 1 1/2 feet
below the bed of the river and laid
over a Course of Concrete 1 1/2 feet in
depth laid in the form of an inverted

The new portions of abutment on
each side will measure 16 feet in length
and the breadth 10'-3" at bottom and 9
feet.

P. N. 1875 Sept.
Pine, No. 1505
The District Engineer
Madras
To the Chief Engineer
B.M.
Dated 5th March 1875
No. 6546
Encls. 3
Submits Memo to the
Honble the General
Hospital Bridge
and Rs 53200-000
C.O. No. 852. 31. 3. 75

feet at top and height will be 10 feet.

The new portion of Pier will measure 12 feet in breadth and 10 feet in height.

The Cut water at the extremities of each Pier will be 5 feet in length & 12 feet in height including the Caps.

Wing walls to be at right angles to the abutments. Their thickness at bottom will be 7 and 6 feet with a batter of 3 feet on the inner face and the height 25 & 24 feet respectively together with 8 buttresses.

The face walls will be 3 feet in thickness and raised up to the crown of the arches.

Blocking Course or Cordon work throughout will be one foot thick by one foot high.

The parapet wall will be $1\frac{1}{2}$ feet thick and 3 feet high.

The soffits and face walls $\frac{1}{4}$ in to receive two coats of stone lime plaster.

The Municipal Drain is to be suspended on an iron Cradle fixed in granite stones and covered over with granite slabs.

A cut granite stone foot path $7\frac{1}{2}$ feet broad to extend all along the bridge except at the wings.

31
Road to be laid with laterite jelly and gravel 9 inches thick and well rammed.

Dams will be constructed to admit of laying foundations.

The Bridge is to be built of brick in chunam.

Wm. Pearson Esq. Lt. Col. R. E.

District Engineer Presiding

Dist. Engrs Office
Fort Smith George
17 February 1875
Copied by J. P.

Comd. J.

Nov 18 of 1874/75

Specification to accompany a
design for widening the General Hospital
Bridge Prosser.

Amount of Estimate \$127,800.

The middle arch of the existing
bridge to be demolished the other two to remain
as they are. The existing road along over the
Bridge is 28 feet wide the new will be 58
feet in width. The additional width will
be attained by adding 15 feet on each side
as shown in the plan.

The Centre bay which is 60
feet will be spanned by four iron girders,
two of which are to rest on the old piers
and the other two on groups of 4 piles each.
The length of these piles is to be 60 feet, 38 feet
of which is to be in the ground; they will be
of Cast iron 10 inches in diameter and 1
inch in thickness. Their tops will be finished
off and secured in the usual manner.

The outside girders are to be
of the lattice pattern all 5 feet 7 1/2 inches
in depth and the inside of the lattice
pattern. The plate girders for the Centre
bay are to be 4 feet 4 1/2 inches in depth
and those for the other two openings 3 feet
3 inches in depth.

The extra width of the other
two openings is to be spanned by 4 Chan-
nel iron girders, the shore ends of which
will

P.O. 8282 of 31-3-75

P.W. 1098/75

will rest on new abutments on the other
ends on the piles which sustain the
Centre pier.

All the Cross girders are to be
plate iron, 1 foot $1\frac{1}{2}$ inches in depth. The
tops of all these girders will be on the
same level. Over them will be placed
teakwood planking 5 inches in thickness.
Over this planking will be placed four
fender timbers, one along side each lattice
girder and another 8 feet from the side
for the purpose of forming a pathway for foot
passengers. The whole of the woodwork
will be tarred and over the planking will
be placed $1\frac{3}{4}$ inches of asphalt on which
will be laid the metal of the road.

The lattice girders are to
have teakwood Coatings 4 inches in
thickness.

All the masonry work
is to be faced with Cut Stone as shown
in the plan.

The wing walls are to be
of brick and mortar and of the dimension
given in the plan.

The old abutments which
are of brick in mortar to be prolonged
to the extent of 15 feet on each side.

The lamp posts and Cast iron
lamp posts are to be placed on the
bridge.

Temporary dams to be constructed
to

to admit of excavating and sinking
well for the foundations of new piers
of abutments and wing walls.

James Ross Leath Collier

District Engineer Presiding

Pay Master Engineer Office
Fort Saint George
17 February 1876
Copied by B

Comptroller

Abstract of Estimate No. 418 of 1874-75.

PRESIDENCY DISTRICT.

For the Reconstruing General Hospital Bridge

Quantity.	Description of Works.	Price.	Amount.	Total.
29138	Eight 1 Brick Benders Cement Portland Cement	1	72898	
12899 1/2	Do Granite Stone wall in Cement	2	16400 1/2	
96	Do Carrying Lime Bricks to fill about north bridge pier.	50	1800	
	Reinforced under the foundation			
	Constructing temporary dams and forming embankment		2000	
	most piles and showing with masonry for lands		1000	
	Setting up a guide for piers in a line		350	
	Reinforcing foundation and filling in the abutments		842 1/2	
	Reinforcing the existing Centre and side piers.			32700
	and during the work at each pier			
3020 1/2	Boarded floors with leaden wall to land piers	3	11328 1/2	
	with stone walls and the main piers	12		

G.O. No. 852 791-3-35

P. M. 1098/75.

4

No 418 of 1874/75
Revised Estimate
for widening General
Hospital Bridge.
Amounting to Rs 127,800-

Fort St. Paul. 3
17 Feby. 1875. 3

Q. 10. Q. 10.

The District Engineer
Presidency.

De,

The Chief Engineer, and
Secy. to Govt. M. D.

Sir

Sir

With reference to the orders of Govt, as per margin*, I have the honor to submit for consideration and selection 2 plans, estimates, and specification reports for widening the General Hospital Bridge, one amounting to Rs 53,200, and another to Rs 1,27,800.

I have the honor to be
Sir,

Your most obedt. servant

Mr. G. B. East
 District Engineer
 Presidency

PROCEEDINGS of the MADRAS GOVERNMENT.

Under date the

Read the following:—

From
The District Engineer
Residency—

do do

(H.S. No 6253 of 17th Feb/75)
(" " 6546 " 5th March ")

82
In accordance
with the orders of the 2nd July
1873 and 10th July 1874, Nos 1756
and 1855 A, the District
Engineer Residency sub-
mits designs and estimates
for the improvement of
the Bridge over Cochrane's
Canal near the General
Hospital - On consideration
of the several proposals
brought

23-7-75
G.O. No. 1113 of 11-11-75
18-7-75
11-11-75
11-11-75

L. M. 1875 Report
and
No 1098
District Engineer

Residency
to
The Chief Engineer
S.M.

Date 17th Feb 1875
Recd 18th Feb 1875
S.M. No. 6053.

3-8-75
14-10-75
Submit for consid-

eration and select
2 plans, estimates &

Specification reports

for widening the canal

Hospital Bridge

G.O. No. 852 of 2-7-75

69-3-75

brought forward this year.
- being the Governor in Council
- resolves, looking to
the present condition of
the Provincial finances,
to sanction the lowest of
the estimates, amounting
to Rs 53,200, which provides
for widening the existing
bridge with masonry, on
the present plan.

A sum of Rs 25,000
has been provided for the
work in the Budget of
1875-76, and the District
Engineer will accordingly
lose no time in putting it
in hand.

C.M.W.

5 Lt. Insp. Residence
12 Conc. Insp. for Ry.
5 Controller of M. & C. V.
7 Genl. Insp. V.
@ Sep. 1-4-75

47
Improvement of the General
Hospital Bridge -

Four designs submitted
have been submitted for
this work -

Nº 1. Rs 1,44,600, for the
- the removal of the present
stone bridge, & replacing
it with an Iron Superstructure
- true through span - This
- was rejected by the Chief
- Engineer, as unwarranted
by any call of Govt; and
unnecessarily expensive
as the existing stone bridge
arches only required widening,
not replacing.

Nº 2. Rs 1,27,800, which
provides for replacing the
centre arch by a wider
Iron structure, & widening
the land arches with Iron.
This is in accordance with
para 3. of G.O. 11: 1855-A of
10th July 1874 -

Nº 3. Rs 1,15,000, capable
of reduction to Rs 85,000, pro.

= video for widening the
existing structure by iron
wings on each side, sup-
ported on Screw Pile
Piers -

N^o 4. \$53,200 provides
for widening the existing
bridge with masonry, on
the present plan. -

Both N^{os} 3 & 4, are in ac-
cordance with G.O. 12th 1758
of 8th July 1873 - and in
the present state of the pro-
posed increase, the adop-
tion of N^o 4 is a simple
necessity, although it does
involve a difficulty about
foundations which stopped
an attempt to widen the
bridge that was made in
1862-63. But the resources
of the P.W. Dept. are greater
now than then, and the
difficulty will be over-
come without fail -

G. Walker (C. S. S.)
Chief Eng. P.W. Dept.

8.3.75.

Under the circumstances we seem
to have no alternative plan.
4 must be adopted. P.S.E.
See report adopted
plan Melt
15/3

4 is the old plan
but has no character
K. H. 1873

1098
1505

Sbdt. of 1875 Madras.
PUBLIC WORKS.

Ant Engineer
100
1505
23-5

Dated

Recd

Encl. 6

G. O. 21 March 1875. No. 852

Recd 157-653

all Approved Bridges

Estimate amounting to

23,200 for widening

sanctioned, and

Engineer Provisionary

to carry out the

at once —

12657/53

100
1505
23-5

G. O.