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MADRAS RECORD OFFICE.

Government of Madras.

Public Works DEPARTMENT.

G.O. No.	2892	Press
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Dated	20-2-	18 64.

Not to be folded or roughly handled

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*Proceedings of the Madras Government, Public Works Department,
20th August 1864.*

No. 416. Read the following Proceedings of the Governor General of India in Council, Public Works Department, dated Simla, 7th July 1864, No. 41 :—

Description of Girder for wrought iron Bridges best suited for India.

Read Despatch No. 3, dated 9th February, addressed by the Secretary of State to the Government of Bombay, forwarding copy of the following :—

Dated 12th January 1864.

*From—COLONEL P. L. HART, Engineers (Retired List), Bombay,
To— Under Secretary of State for India.*

1. In acknowledging the receipt of the correspondence as per margin, relative to the supply

Letter from the Under Secretary of State for India, dated 13th November 1863.

Letter No. 1,775 of 1863, dated 14th September, from the Secretary, Bombay Government, Public Works Department.
Letter No. 42 of 1863, dated 14th September, (copy of) from the Bombay Government, to Her Majesty's Principal Secretary of State for India.

of wrought iron bridges required by the Bombay Government, I have the honor to report, for the information of Her Majesty's Principal Secretary of State for India, that I addressed a letter with a printed general description of these bridges (a copy of which

is annexed,) to the following principal manufacturers :—

R. Brotherwood, Railway Works, Chippenham, Wilts.
Harry Grissell, Regent's Canal Iron Works, City Road.
Cochrane and Co., Woodside Iron Works near Dudley.
Fairbairn and Co., Manchester.
Bray, Waddington and Co., New Dock Works, Leeds.
Kennard Brothers, Crumlin Works, Monmouthshire.
The Horsey Company, Tipton, Staffordshire.

and that I subsequently had interviews with either the Principals or their Agents at their several works and offices.

2. The result is, that I now beg to submit tenders numbered from 1 to 7, and drawings and tracings (in a tin case) numbered from 1 to 20, for wrought iron bridges on screw-piles of 100, 60, and 30 feet spans, each tender being for two spans and one pier complete. An abstract for easy reference is annexed, showing the cost of the various bridges, and other information in connection with them.

3. It will be seen from the tenders, that generally speaking, with the increase of span, how greatly the cost is increased; and as, I am sure, there are few rivers in Western India which cannot safely be bridged with spans of 60 feet, I would earnestly recommend the Bombay Government not to exceed that span, except in special cases.

4. The drawings and tenders now submitted will, I trust, enable the Bombay Government to select any design which they may consider the best adapted; they are all very simple, and have been prepared in strict conformity with the Government instructions, which I embodied on

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20th August 1864.

the printed description forwarded to the different manufacturers. After a very careful consideration of these designs, with due regard to their cost, I am of opinion that the following will be found best suited to the purpose required:—

- 1st.—For the 100 feet spans, Mr. Brotherwood's design (plan No. 1, tender No. 1,) being a wrought iron lattice girder; the amount of Estimate for two complete spans and one pier, landed at Bombay, being £1,826
- 2nd.—For the 60 feet spans, Mr. Brotherwood's design (plan No. 1, tender No. 1,) being a wrought iron lattice girder, precisely similar to the above; the amount of Estimate for two complete spans, and one pier, landed at Bombay, being 958
- 3rd.—For the 60 feet spans, I would request particular attention to the Horseley Company's design (plan No. 12, tender No. 7,) of a wrought iron girder of segmental form; and would recommend that, with any order given, a few of this span should be sent. It is easily put together, and the cost very moderate; being for two continuous spans, with screw-pile pier, tracing, &c., complete, landed at Bombay 660
- 4th.—For the 30 feet spans, Bray, Waddington and Co.'s design (plan No. 11, tender No. 5,) being wrought iron plate girders; the amount of Estimate being for two complete spans, and one pier, with spare materials, landed at Bombay 304

5. I would observe, that the amounts now tendered for these bridges are subject to such variations as may exist in the prices of iron, freight, &c., and the general state of the trade at the time the order is given; and that some slight modifications will require to be made when the working drawings are prepared.

6. I would further observe that it was explicitly explained to the manufacturers, that their Estimates were to include no commission or percentage of any description, they are therefore the *bona fide* prices for the work tendered.

Actual travelling expenses... .. £13
19 days engaged 19
Total.. £34

7. A bill of my actual travelling expenses at £1 per day for each of the days engaged on this enquiry is annexed, amounting to £34.

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Abstract showing the amount of Tenders, Manufacturers' names, &c., &c.

Number of Drawings or Tracings.	Number of Tender.	Name and Address of Manufacturer.	AMOUNT OF TENDER FOR TWO SPANS AND ONE PIER COMPLETE.			Bridges where delivered.	REMARKS.
			100 feet.	60 feet.	30 feet.		
1.	1.	R. Brotherwood, Railway Works, Chippenham, Wilts.	£ 1,645 *1,826	£ 858 958	£ 385 431	Free on boardship at London. At Bombay.	These amounts include sundry extra bolts. The cost of extra cast iron columns and piles, is shown in Mr. Brotherwood's tender. * This has been calculated with freight at 35s. per ton, insurance 40s. per cent. on the value of the work, and all other expenses (after the work has been delivered alongside the exportship) at 1s. per ton. These amounts do not include the spare materials, the cost of which is shown in Mr. Grissell's tender. These amounts do not include the cost of spare fittings, they are, however, shown in Cochrane and Co.'s tender. Cochrane and Co. do not undertake to deliver at Bombay. Messrs. Fairbairn and Co. undertake to deliver alongside a quay at Liverpool, though the cost is given, delivered at Bombay. The amounts include spare parts of piers, &c., and are based on the assumption that many bridges of these several spans will be required. In these amounts the spare screw-piles, bracings, &c. are included. In these amounts the spare fittings are included. † Freight, insurance, and other charges have been calculated at the same rates as above to Mr. Brotherwood's bridges. In these amounts the spare materials are included.
2.	2.	Harry Grissell, Regent's Canal Iron Works, Eagle Wharf Road, N.	2,210	1,160	490	At Bombay.	
3.	3.	Cochrane and Co., Wood-side Iron Works near Dudley.	2,518	1,157	400	Free on boardship London or Liverpool.	
4.	4.	Messrs. Fairbairn and Co., Manchester.	2,818	1,297	450	At Bombay.	
5.	5.	Bray, Waddington and Co., new Dock Works, Leeds.	3,905	1,617	585	At Bombay.	
6.	6.	Kennard Brothers, Crumlin Works, Monmouthshire.	3,161 3,592	1,085 1,236	345 394	At Liverpool. At Bombay.	
7.	7.	The Horseley Company, Tipton, Staffordshire.	3,680 4,058	1,751 1,938	587 661	At Newport or Grangemouth. At Bombay.	
8.	8.		2,155	575	700	At London or Liverpool.	
9.	9.		2,400	660	233	At Bombay.	
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19.	19.						
20.	20.						

*Proceedings of the Madras Government, Public Works Department,
20th August 1864.*

ORDER.—Ordered that copies of Colonel Hart's report be forwarded to the Local Governments and Administrations for information.

(Signed) R. STRACHEY, Colonel, R. E.,
Secy. to the Govt. of India.

(Signed) E. C. S. WILLIAMS, Captain, R. E.,
Under Secy. to the Govt. of India.

To the Secretary to the Government of Madras in the Public Works Department.

No. 417.

ORDER THEREON, 20th August 1864, No. 2,392.
Communicated to the Superintending Engineers.

(Signed) J. H. M. SHAW STEWART, Major, R. E.,
Deputy Secretary to Government.

To the Superintending Engineers.

Exd. T. O'Connor.

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No. 2392

Communicated to the
Superintending Engineers. M.

Chepaudd
20th August 1864

To the Superintending Engineers ✓

No. 87.

20th August

intended to be forwarded to the
Superintending Engineers

*Proceedings of the Madras Government, Public Works Department,
20th August 1864.*

ORDER.—Ordered that copies of Colonel Hart's report be forwarded to the Local Governments and Administrations for information.

(Signed) R. STRACHAN

*20th 1864 Dept
1. Pro. of Govt. for Ind.
No. 3521*

Civil Works.
Communications.

CIRCULAR No. 41.

To

FROM

SECT. TO GOVT. OF INDIA,
IN THE PUBLIC WORKS DEPT.

Dated SIMLA, 7th July, 1864.

Received

10 Aug.

no. 2392-20th ed. 1864-

52464417.

Circulates, for information, copies of Colonel Hart's report on the description of Girder for wrought iron Bridges best suited for India.

With an order.

12th Aug. 1864 Or. 152

Exd. T. O'Connor.