M.R.O. 1—77,000—8-6-37.

(1) Number of pages 776

(2) Date of repair 9-12-04

(3) Initials of the Referencer

MADRAS RECORD OFFICE.

Government of Madras.

Public Works DEPARTMENT.

G.O. No. 947 Press Mis.

Dated 26-3-1873.

to be folded or roughly handled

Proceedings of the Madras Government, Public Works Department,
26th March 1873.

No. 635. Read the following letter from the Officiating Deputy Secretary to the Government of India, Public Works Department, (Railway,) to the Secretary to the Government of Madras, Public Works Department, (Railway,) dated Fort William, 25th February 1873, No. 306 G. R:—

I AM directed to acknowledge the receipt of your two communications named in the margin, the former submitting for sanction surveys, plans, and estimates for the construction of a line of railway from Madras to Cuddalore by the Carnatic Railway Company, and the latter giving cover to an application from the Agent of the Company for permission to collect materials for the line.

No. 2,852, dated 4th December 1872.
„ 2,882, „ 7th „ „

2. As already intimated by telegraph on the 29th January 1873, the proposals for the construction of the line are generally approved by the Government of India, and sanction has been given for the preparation of materials.

3. The Chief Engineer's estimate modified by the Consulting Engineer is as follows:—

	Chief Engineer's Estimate.	Consulting Engineer's Estimate.
	RS.	RS.
Preliminary expenses	3,60,994	3,61,000
Construction of line	16,22,124	15,92,460
Ballast and permanent-way	29,45,452	22,06,870
Stations and buildings	11,24,997	8,43,320
Plant	1,71,817	2,11,700
Rolling stock	10,35,870	7,04,000
Maintenance...	55,080	55,080
Establishment	11,42,199	5,56,750
Contingencies	7,12,238	2,95,000
	91,70,771	68,26,180

The Government of Madras approve of the reduction made by the Consulting Engineer, but adding Rupees 15,000 for an improved station at St. Thomas' Mount, and Rupees 500 to the mileage estimate for rolling stock, recommend that sanction shall be given to an expenditure of Rupees 69,10,522, and this sum, I am to state, is sanctioned by the Governor General in Council with the following general remarks for the consideration of the Government of Madras.

4. The quantities of the different kinds of work, and the proposed rates at which the Company's Engineers have thought that they can be executed, have been freely altered by the Consulting Engineer, but there is no record of the Railway Agent's acceptance of these changes, or of an expression of belief that the altered total, in his opinion, and, in that of the Company's Engineer, adequately represents the total probable cost of the railway.

5. The gradients appear to be unusually severe for a railway where the earthworks are light, no less than 11 miles out of 127 miles being proposed to be so steep as 1 in 140. The adjustment of the gradients is however a minor question as compared with that of the water-ways and of the foundations of the bridges.

The small amount of water-way provided for the area drained, and the low estimated cost of the bridges proposed for the Carnatic Railway, raise a doubt as to the sufficiency of the designs and estimate.

6. The total drainage area to be provided for is 13,672 square miles. The lineal water-way proposed to be given is 8,273 lineal feet. The sectional area of water-way below the flood line is 90,392 square feet. The average cost per lineal foot of water-way in large and small bridges is estimated to be Rupees 80. If the small openings be excluded, the average price of the larger bridges is shown to be Rupees 120, while the difficult bridge over the Palar river is estimated to cost only Rupees 160 per lineal foot. The comparative figures for the Southern Extension of the Great Southern of India Railway appear to be:—

Total area drained	5,467 square miles.
Lineal water-way...	8,070 lineal feet.
Effective area for flood discharge	53,176 square feet.
Estimated cost per lineal foot	Rs. 153.

The climate in the country which is traversed by the Great Southern of India Railway extensions to Tuticorin differs from the climate of the country between Madras and Cuddalore, and the sandy nature of the soil near the east coast may affect the question of water-way.

7. It is not understood by the Government of India why the Railway Company should at this early period of their enterprise desire to obtain sanction for the employment of a large locomotive establishment. And although the engineering staff proposed is, probably, in excess of actual requirements, I am to suggest for consideration the expediency of guarding against too great a reduction which might in the end prove to be the reverse of economical.

8. As regards the permanent-way, I am to observe that pemission has already been given to the Agent to use iron sleepers, if they can be shown to be, when newly laid on the works, as cheap as wooden cross sleepers. The Consulting Engineer thinks that the iron sleepers would be far the dearer of the two, and his opinion appears to be correct; but I am to request that option may still be left to the authorities in England to use the iron permanent-way, if it can be laid down as cheap as rails on cross sleepers of creosoted pine. The indent should be for the whole line, including the terminus at Madras.

All drawings, with the exception of the general plan, are returned.

No. 636.

ORDER THEREON, 20th March 1873, No. 947.

RAILWAY, No. 61.

COMMUNICATED to the Consulting Engineer for Railways.

2. The line in question being the Northern, as the line with which it is compared is the Southern, Extension of the Great Southern of India Railway, and both having to be carried out eventually under the same agency and professional supervision, and the Consulting Engineer having proposed that the affairs of the amalgamated Company shall be carried on by the gentlemen who have hitherto directed, supervised, and designed the works of the separate Companies, he will

obtain from the Agents and Chief Engineers of both Companies an expression of their joint opinion as to the adequacy of the revised estimates to meet the cost of the proposed works. He will also obtain such joint report from the Chief Engineers as shall set at rest the doubts as to the adequacy of the designs and estimates of the bridges on the Northern Extension, which are entertained by the Government of India on a comparison with those sanctioned for the Southern Extension.

3. Paragraph 8 of the letter from the Government of India will be communicated to the Agent of the Carnatic Company for the information of his Board at Home.

(True Extract.)

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

To the Consulting Engineer for Railways.
„ Examiner of Railway Accounts.

Exd. S. T. Austin.

2106
22 April

Inspector Lee
Yr letter Office letter
N° 193 of 5th March/93
and its enclosure
are not likely to
be out of the press
within the next day
or two, will you be
so good as to let me
have for Col. Shaw
Stewart a copy of the

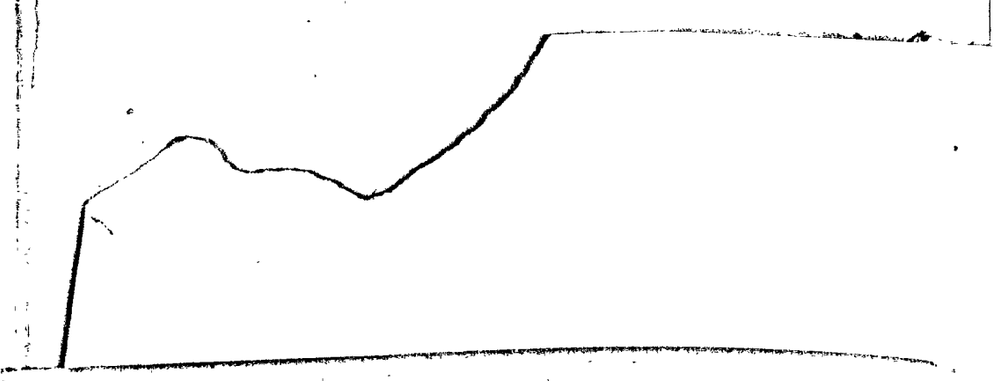
enclosure written
out by one of your
clerks.

Col Shaw thinks
has also asked me
to write for the
distribution of the Sailors
from Madras &
Subsidiary Stock
The Court of Directors
selected to Jose

– with Three Cells 4/0 306 & 6E
of 25 Feb 1873. / 660 h.p. /
of 26 March/73 /.

+ 5 of Officers

Yours Truly
Thos Dyke
23.4.73



		Mo	Chs
1	Working Survey from Maenamba Ruu to Madras	10	70
2	Do Section Do Do	10	70
3	Do Survey from Godavanchary to Menumbakum 22-50 to 10-70		
4	Working Do from Godavanchary to Menumba Ruu 22 miles 50 Chs to 10 Mo 70 Chs		
5	Do Survey from Godavanchary to Chinglepet 22 Mo 50 Chs to 34 Mo 70 Chs		
6	Do Section from Chinglepet to Godavanchary 34 Mo 70 Chs to 22 Mo 50 Chs		
7	Do Survey from Chinglepet to Alcherwauts 34 Mo 70 Chs to 59 Mo 28-01 Chs		
8	Do Section from Madrantecum to Chinglepet 50 Mo 28-01 Chs to 34 Mo 70 Chs		
9	Do Section from Alcherawats to Madrantecum 59 Mo 28-01 Chs to 50 Mo 28-01 Chs		
10	Do Survey from Alcherawats to Tinderanum 59 Mo 28-01 Chs to 76 Mo 28-01 Chs		
11	Do Section from Alcherawats to Tinderanum 59 Mo 28-01 to 76 Mo 28-01 Chs		
12	Do Survey from Tinderanum to Villoopooram 76 Mo 28-01 Chs to 98 Mo 52-41 Chs		
13	Do Section from Tinderanum to Salay 76 Mo 28-01 Chs to 89 Mo 32-41 Chs		

14 Working Section from Salay to Villoopooreum
89 Ms 32·41 Chs to 98 Ms 52·41 Chs
15 Do Survey from Villoopooreum to Punrooty
98 Ms 52·41 Chs to 111 Ms 12·41 Chs
16 Do Section from Villoopooreum to Punrooty
98 Ms 52·41 Chs to 111 Ms 12·41 Chs
17 Do Survey from Punrooty to Cuddalore
111 Ms 12·41 Chs to 127 Ms 74·16 Chs
18 Do Section from Punrooty to Cuddalore
111 Ms 12·41 Chs to 127 Ms 74·16 Chs

No abvd 18 Plans were returned to the Consulting Engr for Ra Curajo on the 2nd Decr/74

6X

Dear Mr Jacobs

Hereunto the Surveys & plans asked for in your Memorandum No of 27 November 1874.

No 3 survey was taken away by Captn Thompson who is now on a tour of inspection

Yrs truly
Thos Doyle

30 Nov/74

P. W. C. No. 1470/73

Detailed Estimates for Station Buildings at Stations other than Madras

1. Detailed Estimates for Junction 1st Second Class Station Verandah and Shed.
2. Detailed Estimate for Private Room in Junction & Third Class Station
3. Do do do Third Class Station
4. Do do do Goods Shed 90 ft × 43 ft. ✓
5. Do do do do do 60 ft × 25 ft. ✓
6. Do do do Jail House ✓
7. Do do do Engine Shed ✓
8. Do do do Carriage Shed.
9. Do do do Coal Store ✓
10. Do do do Native Station Masters' House
N.B. Estimate for East Indian Station Masters the same as Estimate for Locomotive Employés'
11. Detailed Estimate for Level Crossing Gate ✓
12. Do do do Gatekeepers Lodge ✓
13. Do do do Temporary Bungalow for

103.527

Y

Detailed Estimate for a Junction class Station House with Verandah & Sheds

Detail of Works Masonry	Number	Measurement in feet: Lengths in ft and inches Each	Flat	Total length	Breadth	Thickness	Depths or Heights	Contents	Total quantity of each description
Foundations Footings								87	
Main Building Front & Rear Walls	2	67' 0"	134' 0"						
" " End Walls	2	16' 0"	32' 0"	166' 0"	2' 9¾"	1' 6"		700.31	
" " Partition Walls	3	16' 0"		48' 0"	2' 3"	2' 3"		243.0	
" " "	1			8' 0"	1' 6"	2' 3"		27.0	
Verandah Front Wall	1			86' 9"	2' 7½"	2' 3"		512.36	
" Rear Wall	1			20' 0"	2' 9¾"	1' 6"		84.38	
" End Walls	2	26' 0"		52' 0"	2' 7½"	2' 3"		307.12	
" Partition Walls	2	8' 0"		16' 0"	1' 6"	2' 3"		54.00	
Shed Wall	1			61' 6"	2' 9¾"	1' 6"		259.49	
" Pillars	19	2' 3"		42' 9"	2' 3"	0' 6"		48.10	
" Platform Walls	1			408' 0"	1' 0"	1' 0"		408.0	
" "	1			408' 0"	0' 10½"	1' 0"		357.00	
" "	1			408' 0"	0' 9"	1' 10½"		573.75	
with Brickwork	3								
		Total Cubic feet of Footings						3574.41	
								132.38	
Basement									
Main Building Front & Rear Walls	2	66' 6"	133' 0"						
" End Walls	2	16' 0"	32' 0"	165.0"	2' 3"	4' 0"		1485.00	
" Partition Walls	3	16' 0"		48' 0"	1' 6"	3' 3"		234.00	
" "	1			8' 0"	1' 1½"	3' 3"		29.25	
Verandah Front Wall	1			86' 0"	1' 10½"	3' 3"		524.06	
" Rear Wall	1			20' 0"	2' 3"	4' 0"		180.00	
" End Walls	2	26' 0"		52' 0"	1' 10½"	3' 3"		316.88	
" Partition walls	2	8' 0"		16' 0"	1' 1½"	3' 3"		58.50	
Shed Wall	1			61' 3"	2' 3"	4' 0"		551.25	
" Pillars	19	1' 10½"		35.62	1' 10½"	1' 6"		100.10	
		Total Cubic feet of Basement						3479.04	
Deduct for letting in posts into Pillars	19	3' 6"		66' 6"	0' 5"	0' 5"		11.55	
" Arch ways in Verandah &c	15	7' 5"		111' 3"	1' 10½"	3' 3"		671.90	
"		Total Cubic feet of Deductions						689.45	
		Total Cubic feet of Basement less Deductions						2789.59	
								103.32	

Detail of work.	Number	Measurements in feet Length Each	Flat	Flat Cubic	Breadth Thickness	Depth or Height	Contents	Total quantity of each description of work.
Plinth								
Main Building Front & Rear walls	2	66' 3"	132' 6"			9".		
End Walls	2	21' 3"	42' 6"					
Verandah	1		19' 3"					
	1		20' 10½"					
Shed	2	58' 6"	116' 0"	331' 1½"	0' 2¼"	1' 6"	93.13	
Total Cubic feet of Plinth work								93.13 & 3.45 Cyds
Superstructure								
Main Building Front & Rear walls	2	66' 3"	132' 6"					
End Walls	2	16' 0"	32' 0"	164' 6"	1' 10½"	20' 6"	6322.97	
Partition Walls	3	16' 0"		48' 0"	1' 6"	20' 6"	1476.00	
" "	1			8' 0"	0' 9"	20' 6"	123.00	
Verandah Front Wall	1		86' 0"					
Rear Wall	1		20' 0"					
End Walls	2	26' 0"	52' 0"					
Shed - Wall	1		61' 0"	219' 0"	1' 10½"	14' 9"	6036.72	
Ladies Bath Room - End Walls	2	8' 0"		16' 0"	0' 9"	14' 9"	177.00	
Moulding to outside main Bg & Verandah				454' 0"	0' 9"	0' 6"	170.25	
Parapet								
Main Building Front & Rear Walls	2	66' 3"	132' 6"					
End Walls	2	17' 6"	35' 0"	167' 6"	1' 1½"	1' 6"	282.66	
Verandah - Front Wall	1		86' 0"					
End Walls	2	8' 6"	17' 0"					
Rear Wall	1		20' 0"	123' 0"	1' 6"	2' 3"	415.13	
Binding Walls	3	16' 0"		48' 0"	1' 6"	1' 6"	108.00	
Total Cubic feet of Superstructure								15131.73
Deduct for doorways in Main Building								
in Front wall below Springing line	1			5' 0"	1' 10½"	8' 0"	95.00	
" Arches	1			Area 9.815	1' 6"		14.73	
" carried over							87.73	

Detail of Work	Number	Measurement in feet: Each Length	Total Length	Breadth or Thickness	Depths or Heights	Contents	Total quantity of each description
Deduct for (Continued)		Brought forward			10x	89.73	
in rear wall below Spg. line	3	5' 0" Area	15' 0"	1' 10½"	8' 0"	225.00	
" " above "	3	9.815	29.45	1' 6"		44.18	
" " below. "	1		3' 9" Area	1' 10½"	8' 0"	56.25	
" " above "	1		5.52	1' 6"			
" in Front wall Flat arch	1		2' 6"	1' 10½"	6' 0"	28.12	
" in End Wall "	1		3' 0"	1' 10½"	6' 0"	33.75	
" in Front wall "	1		3' 0"	1' 10½"	6' 0"	33.75	
" in Partition wall.	1		3' 0"	1' 6"	6' 0"	27.00	
" in Verandah.	1		2' 6"	0' 9"	6' 0"	11.25	
" Windows in Main Building							
" " in rear Wall below							
" " Spring line	2	3' 9" Area	7' 6"	1' 10½"	6' 0"	84.37	
" " above "	2	5.52	11.04 Area	1' 6"		16.56	
" " below "	1		2' 9" Area	1' 10½"	6' 0"	30.96	
" " above "	1		2.969	1' 6"		4.46	
" " in Ft. wall below.	3	3' 9" Area	11' 3" Area	1' 10½"	6' 0"	126.54	
" " " above.	3	5.52	16.56	1' 6"		24.84	
" Gable " below "	1	3' 9"	3' 9" Area	0' 4½"	6' 0"	8.44	
" " " above.	1		5.52	0' 4½"		2.70	
" Round Top windows to Ladies Bath Rm in Verandah in End wall of Main Bldg.	1		3' 9"	1' 1½"	6' 0"	25.31	
" Flat arch	1		3' 0"	1' 10½"	6' 0"	33.75	
" Centre arch of Verandah forming wall to Ladies Bath Room below Spg. line	1		8' 6"	0' 9"	8' 0"	51.00	
		Carried Over				957.96	

Detail of Work	Number	Measurements in feet Lengths Each	Lengths Flat	Lengths Flat Lengths	Breadth or Distance	Depth or Height	Contents	Total Quantity of each description of work
				Brought forward			957.96	
Deductions / Continued /								
" Centre arch of Verandah forming wall to Ladies Bath Room above 1st line	1			Area 28.37	0' 4½		10.64	
" Archway to Verandah in Front & End Walls below Springing line	10	8' 6"		85' 0"	1' 10½	8' 0"	1275.00	
" " above "	10	Area 28.37		283.7	1' 10½		531.94	
" in Shed Wall with Openbrick work	2			Contents 138.83	Each		277.66	
" " in Shed Wall below Springing line	3	8' 6"		25' 6"	1' 10½	8' 0"	382.50	
" " Above "	3	Area 28.37		Area 83. 11	1' 10½		1393 8	
" Ventilators	4	Area 1.767		Area 24.74	1' 10½		46.38	
				Total Cubic feet of Deductions			3641.66	
				Total Cubic feet of Superstructure less deductions			11490.07	425.56 Yds
Cornice Work								
Main Building all around inside & Room in Verandah							290.00 Rft	
				Total Running feet of Cornice Work				290 Rft
Plastering								
General waiting Room & booking office	2	38.	76'					
Ladies waiting Room	2	30'	60'					
Private Room	2	30'	60'					
Gentlemens & Private Bath Rooms	4	15' 6"	62'	248 6		18' 9"	4837.50	
Ladies Bath Room	2	16' 0"		32' 0"		14' 3"	456.00	
To Jambs & soffits of Door & windows							621.56	
				Total Square feet of Plastering			5915.06	

Detail of work	Numbers	Measurement in feet: Length Each	Length Flat	Length Flat Angles	Breadths	Thickness	Depths or Heights	Contents	Total quantity of each description of work
Deduct for doorways inside									
" in general waitg Rm	2	5'6"		11'0"			8'0"	88.00	
" " Ladies "	1			5'6"			8'0"	44.00	
"	1			3'6"			6'0"	21.00	
" " Private Room	1			5'6"			8'0"	44.00	
" " "	1			3'6"			6'6"	22.75	
" " "	1			3'6"			6'6"	22.75	
" in Gentlemens Baths Rm	1			3'0"			6'6"	19.50	
" in Private "	1			3'6"			6'6"	22.75	
" in Ladies " in Vbls	1								
" Windowways inside									
" General waiting & Bg Office	2	4'3"		8'6"			6'0"	51.00	
" Ladies waiting Room	2	4'0"		8'0"			6'0"	48.00	
" Private Room	2	4'0"		3'0"			6'0"	18.00	
" Gentlemens Baths Rooms	1			3'0"			6'0"	18.00	
" Private " Room	1			3'9"			6'0"	22.50	
" Ladies Baths Rm in Vbls	1								
			Total Square feet of Deductions					490.25	
			Total Sqre ft or Squares of Plastering less deductions					5424.81	54 4/439
Flooring									
General waiting Rm & Bg Office				22'0"	16'0"			352.00	
Private & Ladies waiting Rooms	2	16'0"		32'0"	14'0"			448.00	
Gentlemens & Private Baths "	2	8'0"		16'0"	7'6"			120.00	
Under Doorways								21.50	
Verandah all round & Ladies Ltr Rm				116"	8'0"			932.00	
			Total Square feet or Squares of Flooring					1873.50	18 3/4
Roofing Terracing									
To Main Building	1			64'0"	18'0"			1152.00	
To Verandah	1			122'0"	9'0"			1098.00	
			Total Square feet or Squares of Terracing					2250.00	22 1/2

Detail of work	Number	Measurement in feet: Length. Each	Std	Total length	Breadth or Thickness	Depth or Height	Contents	Total quantity of each description of work
Roofing (Continued)						13X		
Corrugated Iron Roofing	1			180' ö	12' ö		2160.00	
	1			78' ö	24' ö		1872.00	
Total Square feet of Corrugated Iron Roofing								1032:00
Wood Work								
Joists to Main Building	54	18' ö		972' ö	0' 3"	0' 9½"	187.31	
Beams at angles of front Verandah	2	14' ö		28' ö	0' 8"	1' ö	18.66	
Joists to Verandah	96	9' 6"		912' ö	0' 3"	0' 5¾"	109.25	
Wall plates to Main Building	2	65' ö	130' ö					
" to Verandah	2	29' 0"	58' 0"					
" "	2	19' 0"	38' ö					
" "	1	85' 0"	85' 0"					
" "	1	66' ö	66' 0"	377' ö	0' 6"	0' 4"	62.83	
" "	3			11 ft 6 in	Each		12.00	
5 feet Gates	2			3' 0"	Each		6.00	
Gates				266' ö	0' 5"	0' 5"	46.17	
Pillars to Corrugated Iron roof				215' ö	0' 2"	0' 5"	14.92	
Breesummer do do								
Framing of Plant Rm & Booking Office								
Uprights	9	8' 0"	72' 0"					
Horizontals	4	20' 0"	80' 0"	152' ö	0' 4"	0' 3"	12.66	
" Plant Rm				17' 9"	7' 0"	0' 1½"	15.30	
Deck to Booking Office	1			18' ö	2' 0"	0' 1"	3.00	
	1			215' ö	3' 0"	0' ½"	26.87	
Valance	1			215' ö	0' 3"	0' 9"	40.30	
Moulding								
Framing Principal uprights	45	8' 6"		382' 6"	0' 4"	0' 4"	42.60	
Truss Posts	360	3-10		1800 ö	0' 3"	0' 1½"	56.25	
" Horizontals	3	265' ö		795' ö	0' 4"	0' 1½"	33.10	
Total Cubic feet of Wood work								687.32
" Pipes	6	17' ö	102' ö					
Pipes	10	11' 0"	110' ö	212' ö	2' 10"		176.67	
Total Square feet of Pipes or Tubes								176.67
								239.94

Detail of Work	Number	Measurement in feet: Each	Lengths: Flat	Flat Lengths	Breadths Thickness Depth or Height	Contents	Total Quantity if taken together
Doors & Windows							
Venetian portion of doors	4 (4'x8')			20' 0"	23' 9" 14x	475.00	
" "	1 (4'x3'9")						
" " windows	6 (5'x3'9")			35' 0"	25' 3"	883.75	
" "	1 (5'x2'9")						
"		Total Square feet of Venetians					1358.75
Pannelled portion of Doors	5 (3'6"x4'9")			17'6"	23' 9"	415.626	
" Small doors	2	5' 9"		11' 6"	6' 6"	74.75	
		Total Square feet of Pannels					490.375
Wood Rib							
Joists of Main Building	54	16' 0"		864' 0"	1' 6"	1296.00	
" to Beams at angles of Verandah	2	14' 0"		28' 0"	2' 8"	74.67	
" Joists to Verandah	96	8' 0"		768' 0"	1' 2½	928.00	
" to Booking Office Training				21' 0"	16' 6"	346.50	
" Planking Complete				18' 0"	2' 3"	40.50	
" to Booking Office Desk				266' 0"	1' 8"	443.33	
" Pillars to Corrugated Iron Roof				215' 0"	1' 2"	250.83	
" Bressummer						362.32	
" Venetian portion of Doors						960.75	
" Pannelled " Windows				215' 0"	6' ½	1298.91	
" Valance				215' 0"	1' 0"	215.00	
" " Moulding		Total Square of Wood Rib					9477.81
							94 3/4 sq
Framing							
" for fencing upright posts	45	8' 6"		382' 6"	1' 2"	570.00	
		Carried Over				570.00	

Detail of Work	Number	Measurement in feet: Length Each	Length Total	Total Length	Breadth or Thickness	Depth or Height	Contents	Value of each description of work
			Brought forward				510.00	
Jarring Continued								
" for fencing Brick Posts	360	5' 0"		1800' 0"	0' 9"		1350.00	
" Horizontals	3	265' 0"		795' 0" area	0' 11"		728.75	
" 5ft Gates	3			86.97 area	Each		260.91	
" Small Gates	2			67.06 area	Each		134.12	
	Total Square of Jarring							30 Sq.
Earthwork								
Excavating Foundations								
Main Building Front & Rear				166' 0"	3' 4"	3' 3"	1798.33	
" End Walls								
" Partition Walls	3	14' 9"		44' 3"	2' 9"	3' 3"	395.49	
	1			6' 9"	2' 0"	3' 3"	43.88	
Verandah Front Wall	1			86' 9"	3' 1½"	3' 3"	881.06	
" Rear Walls	1			19' 0"	3' 3¼"	3' 3"	204.55	
" End Walls	2	25' 0"		50' 0"	3' 11½"	3' 3"	507.81	
" Partition Walls	2	6' 9"		13' 6"	2' 0"	3' 3"	87.75	
Shed Wall	1			19' 0"	3' 4"	3' 3"	205.83	
" Pillars	19	3' 1½"		59' 3"	2' 9"	1' 4½"	224.02	
Platform Wall				408' 0"	1' 6"	1' 4½"	841.50	
Filling in Basement								
General waiting Room	1			22' 0"	16' 0"	2' 0"	704.00	
" Ladies waiting & Private Room	2	16' 0"		32' 0"	14' 0"	2' 0"	896.00	
" Gent's & Private Bath Rooms	2	8' 0"		16' 0"	8' 0"	2' 0"	256.00	
" Verandah all round								
" including Lr & Bth Rooms				116' 6"	8' 0"	2' 0"	1864.00	
" Platform				400' 0"	20' 0"	1' 3"	10000.00	
							18910.24	
	Total Cb. Yards of Earthwork, excavating & filling in							700.38

Detail of work	Number	Measurement in ft. Length. Each	Total	Total length	Breadth or Thickness	Depth or Height	Contents	Total quantity of each description of work.
Gravelling				400' ö 20' ö 0' 6			4,000.00	
" under Platform								
Total Cubic yards of Gravelling,								148 1/8

Abstract

Quantities	Description of work	Rate Per	Rate P°	Rate c°	Rate p	Amount P°	Amount c°	Amount p	Totals P°	Totals c°	Totals p
132.38 Cubic	Footings										
103.32 "	Basement										
3. 45 "	Plinth Work										
425.56 "	Superstructure										
664.71 "	Flat Brick in Chunam	Cyd	12	"	"	1976	8	4			
290 Rft	Cornice work including Plastering	Rft	"	12	"	217	8	"			
64¼ Sqrs	Plastering with 3 Coats Chunam to interior of Building	Sq	6	"	"	385	8	"			
18.34 "	Flooring 3" thick with Jelly Carried and Sanded	"	6	"	"	112	8	"			
22½ "	Terracing with knife edge 3 of Jelly 3 Courses of flat tiles & Plastering inside & outside with 3 Coats of Chunam	"	25	"	"	562	8	"			
40½ "	Corrugated Iron Roofing inclusive of wood framing	"	25	"	"	1012	8	"			
687.32 Cft	Teakwood wrought and put up	Cft	4	"	"	2749	4	6			
239.94 lbs	Piping (Zinc)	Cwt	16	4	"	34	13	"			
1358¾ Sft	Inclusive Portion of Doors & Windows with frames hinges knobs, bolts, locks & fastenings Complete	Sft	2	4	"	3057	3	"			
	Panelled	"	1	8	"	735	12	"			
490½ "	Wood Work Exposed Timber	Sq	1	"	"	94	12	"			
94¾ Sqrs	Tarring for fencing & gates	"	"	4	"	7	8	"			
30 "	Cartlitworth	Cyd	"	4	"	175	1	4			
700.38 Cft											
					Carried Over	17061	6	2			

Quantities	Description of work	Rate Per	Rate Rs. as. p.	Amount Rs. as. p.	Total Rs. as. p.
	Brought forward			17061 6 2	
148 3/8 Cyds	Travelling to Platform	Cyd	" 9 6	87 15 3	
	Cost of Private Room in the above			1856 10 11	
	Cost of 2nd Class Station Estab			Rupees	15292 10 6

Madras
14th August 1872

Fredk Dibble
Chief Engineer

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Detailed Estimate for cost of Private Room in Junction Station. 19x

Detail of Work Masonry	Number	Measurements in feet: Length: Each	Flat	Total Length	Breadth or Thickness	Depth or Height	Contents	Total quantity of each description of work.
Foundations								
Footings								
Main Building Ft & Rear Walls	2	15' 6"		31' 0"	2' 9¾"	1' 6"	130.78	
Partition wall	1			16' 0"	2' 8"	2' 3"	81.00	
Verandah - Front Wall	1			11' 6"	2' 7½"	2' 3"	67.93	
Pillars	1			2' 3"	2' 3"	0' 6"	2.53	
		Total Cubic feet of Footings						282.24
								10.45
Basement								
Main Building Ft & Rear walls	2	15' 6"		31' 0"	2' 3"	4' 0"	279.00	
Partition wall	1			16' 0"	1' 6"	3' 3"	78.00	
Verandah Front Wall	1			11' 6"	1' 10½"	3' 3"	69.99	
Pillars	1			1' 10½"	1' 10½"	1' 6"	5.27	
		Total Cubic feet of Basement					or Cubic Yards	432.26
								16.00
Plinth								
Main Building Walls	1			15' 6"	0' 2¼"	1' 6"	2.35	
		Total Cubic feet of Plinth work						4.35
								.16
Superstructure								
Main Building Ft & Pr walls	2	15' 6"		31' 0"	1' 10½"	20' 6"	1191.50	
Partition Walls	1			16' 0"	1' 6"	20' 6"	492.00	
				11' 6"	1' 10½"	14' 9"	318.03	
Verandah Wall				31' 0"	0' 9"	0' 6"	11.63	
fronting outside Building								
Parapet								
Main Building Front & Rear walls	2	15' 6"		31' 0"	1' 1½"	1' 6"	52.31	
Binding Wall	1			16' 0"	1' 6"	1' 6"	36.00	
Verandah Wall				11' 6"	1' 6"	2' 3"	38.81	
		Total Cubic feet of Superstructure						2.140.28
Deduct for Doorways & Window ways								124.11
Door in Private Room				5' 0"	1' 10½"	8' 0"	74.99	
" below Spring line	1			Area 4.815	1' 6"		14.72	
" above	1						89.71	
							Carried Over	

Details of work	Numbers	Measurements in feet: Lengths Each	Total	Total Lengths	Breadths or Heights	Depths or Weights	Contents	Total Quantities and Abstracted Amount
				Brought forward			89.11	
Deductions / Continued /								
" Windows below Spring line	2	3' 9" area		7' 6" area	1" 10½	6"	84.37	
" " above "	2	5.32		11.04	1' 6"		16.56	
" Archway in Verandah below Spring line	1			8' 6" area	1' 10½	11' 3"	179.29	
" " above "	1			28.37	1' 10½		50.19	
				Total Cubic Feet of Deductions			425.12	
				Total Cubic Feet of Superstructure less Deductions				1715.16
				Total Cubic Yards of Brick in Superstructure				90.13
Cornice Work / Interior / Main Building / Private Room							76.00	
				Total Running Feet of Cornice Work				76.00
Plastering / Private Room				60' 0"		18' 9"	1125.00	
Jamb & Jiffits of Door & Windows							94.00	
				Total Square feet of Plastering			1219.00	
Deduct for Door & Windows inside								
Door	1			5' 6"		8' 0"	44.00	
Windows	2	4 5' 0"		8' 0"		6' 0"	48.00	
				Total Square feet of Deductions			92.00	
				Total Square feet or Squares of Plas. less deductions				1127 or 11¼
Flooring								
" Private Room				16' 0"	14' 0"		224.00	
" Verandah				15' 6"	8' 0"		124.00	
" under Doorway				5' 0"	1' 6"		7.50	
				Total Square feet of Flooring				356.50 ½
Roofing / Terracing / to Private Room				15' 6"	18' 0"		279.00	
" Verandah				15' 6"	9' 0"		139.50	
				Total Square feet of Terracing				418.50 ½

Detail of Work	Numbers	Measurement in feet: Length Each	Length Total	Total Length	Breadth or Thickness	Depth or Height	Contents	Total quantity of each description of work
Roofing Continued								
Corrugated Iron Roof				15' 6"	12' 0"		186.00	
Total Square feet or Sqrs Corrugated Iron Roof								1.860 1/8
Wood Work								
Joists to Private Room	13	18' 0"	234' 0"	234' 0"	0' 3"	0' 9"	15.06	
Verandah	13	9' 6"	123' 6"	123' 6"	0' 3"	0' 5¾"	14.79	
Wall Plates to Maud B.R.	2	15' 6"	31' 0"					
to Verandah	1	15' 6"	15' 6"	46' 6"	0' 6"	0' 4"	7.75	
Pillars to Corrugated Iron roof	1			14' 0"	0' 5"	0' 5"	2.42	
Bressummer do do				15' 6"	0' 2"	0' 5"	1.07	
Valance				15' 6"	3' 0"	0' ½"	1.93	
" Moulding				15' 6"	0' 3"	0' 9"	2.90	
Total Cubic Feet of Teakwood								75.91
Doors & Windows								
Venetian Portion 1(5'x4')							20.00	
2(3'9"x5')							37.50	
Total S. Feet of Venetians								57.50
Pannelled Portion of Doo	1			4' 9"	3' 6"		16.63	
Total Square feet of Pannello								16.63
Wood Rib								
Joists to Private Room	13	16' 0"		208' 0"	1' 6"		312.00	
Verandah	13	8' 0"		104	1' 2½"		125.66	
For "doors & Windows							170.00	
Bressummer of Corrugated iron roof				15' 6"	1' 2"		18.08	
Valance				15' 6"	6' 1½"		94.93	
Moulding.				15' 6"	1' 0"		15.50	
Pillars				14' 0"	1' 8"		23.33	
Total S. ft or Squares of Wood Rib								759.50 or 7 Sqrs 59½

Details of Work	Number	Measurements in feet: Length: Each	Length: Total	Total Length	Breadth or Thickness	Depth or Height	Contents	Total Superficial or Solid Measurement
Earthwork								
Excavating Foundt & Rear Walls	2	15' 6"		31' 0"	3' 4"	3' 3"	335.80	
" Partition Wall	1			14' 9"	2' 9"	3' 3"	131.83	
" Verandah Wall				15' 6"	3' 1½"	3' 3"	157.41	
" Pillars				3' 1½"	2' 9"	1' 4½"	11.81	
Filling in Basemt Private Rm				16' 0"	14' 0"	2' 0"	448.00	
" Verandah				15' 6"	8' 8"	2' 0"	248.00	
Total Cubic feet for C. Yards of Earthwork								1332.86
								49.36

Abstract Estimate cost of the Private Rooms in Junction Station.

Quantities	Description of work	Rate Per	Rate Rs As P	Amount Rs As P	Total Rs As P
10.45 Cyds	Footings				
16.00 "	Basement				
.16 "	Plinth Work				
63.52 "	Superstructure				
	Total Brick in Chunam	Cyd	12 " "	1081 8 11	
90.13 "	Cornice Work (Interior)	Rft	" 12 "	57 " "	
76 Rft	Plastering with 3 Coats of Chunam				
11¼ Squares	to the interior of Building	Sq:	6 " "	67 8 "	
	Flooring 3" thick with jelly tarred	"	6 " "	21 " "	
3½ "	Terracing with Brick on edge 3" thick				
4½	of Jelly 3 Courses of Flat tiles and				
	plastering inside and outside with				
	3 Coats of Chunam	"	25 " "	105 " "	
	Corrugated Iron Roofing inclusive				
1⅞ "	of Wood framing	"	25 " "	46 14 "	
	Teakwood brought & put up	Cft	4 " "	303 10 2	
75.91 Cft	Venetian portion of doors & windows				
57½ Cft	with panes, hinges, hooks, bolts,				
	locks & fastenings Complete	Sft	2 4 "	129 6 "	
	Panelled " "	"	1 8 "	24 12 5	
16 3/5 "	Woodoil to Exposed Timber	Sq:	1 " "	7 8 "	
7½ Sqrs	Earthwork	Cyd	" 4 "	12 5 5	
49.36 Cyd			Total Rupees	1856 10 11	

Madras
14th August 1873

Executive Officer
Chief Engineer

~~Dr. 4/2/73.~~

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Estimate for 3rd Class Station

No.	Length ft	in	Breadth ft	in	Thickness or mean ft	in	Contents		Rate Rs	as	p		Amount Rs	as	p	Total Rs	as	p
							Earthwork											
1	408	"	1	2	1	"	476.0	a										
1	403	6	19	3	1	6	11657.1	a										
1	265	"	1	6	1	6	596.2											
1	20	"	20	"	1	6	600.0											
1	39	"	28	"	1	6	1638.0											
2	28	6	1	11	1	6	163.9											
3	11	8	1	6	1	6	78.8											
1	78	6	2	9	1	6	323.8											
1	21	10	1	6	1	6	49.1											
1	21	10	1	6	1	6	28.9											
2	6	5	1	6	1	6	92.0											
2	20	"	1	6	1	6	43.1											
1	15	"	1	11	1	6	28.9											
1	12	10	1	6	1	6	15,767.8											
= 584 Cyds									" 4 "	Cyd			146	"	"	146	"	"
							Brickwork											
							In platform wall											
1	407	6	1	2	1	"	475.4											
1	403	6	"	9	1	9	529.6											
1	403	6	"	9	1	9	1005.0		12 "	"			446	6	5			
37.2 Cyds																		
							In booking office & storeroom											
2	28	10	1	11	1	6	165.8											
2	10	10	1	11	1	6	62.3											
2	10	10	1	6	1	6	24.4											
1	10	10	1	6	1	6	251.5									446	6	5
Carried over																146	"	"

Estimate for 3rd Class Station (Continued)

No.	Length	Breadth	Thickness	Contents	Rate	D.	Amount	Total
	Ft. in.	Ft. in.	Ft. in.		Rs. as. P.		Rs. as. P.	Rs. as. P.
	Brought forward			257.5				
2	28 5	1 6	1 9	149.2				
2	11 3	1 6	1 9	59.1			1446 6 5	146 . .
1	11 3	1 2	1 9	23.0				
2	28 "	1 2	10 .	653.3				
2	11 8	1 2	11 3	306.2				
1	11 8	" 9	11 3	98.4				
	Deduct openings			1541.7				
2	7 3	3 6	1 2	59.2				
4	2 6	2 "	1 2	23.3				
	54 Cyds			82.5	12 . .			
	In Arrivals			1459.2				
1	21 9	1 6	1 6	48.9				
2	7 6	1 6	1 6	33.8				
2	19 2	1 6	1 6	86.6				
1	15 "	1 11	1 6	43.1				
1	13 9	1 6	1 6	30.9				
1	21 5	1 2	1 9	43.7				
2	7 2	1 2	1 9	29.3				
2	19 8	1 2	1 9	80.3				
1	15 5	1 6	1 9	40.5				
1	13 5	1 2	1 9	27.4				
1	21 "	" 9	8 "	26.0				
2	6 9	7 "	" 9	70.9				
2	20 "	7 "	" 9	210.0				
1	15 9	9 "	1 2	165.4				
1	13 "	8 "	" 9	78.0				
	483 Cyds			1114.8	12 . .			
							495 9 7	
							1590 . .	146 . .

No.	Length	Breadth	Thickness	Contents	Rate	D.	Amount	Total
	Ft. in.	Ft. in.	Ft. in.		Rs. as. P.		Rs. as. P.	Rs. as. P.
	Brought forward						1590 . .	146 . .
	In excavating shed							
1	62 10	28	1 6	257.3				
1	62 5	25	1 9	264.0				
2	4 "	2 3	1 6	27.0				
4	3 5	2 3	1 6	46.1				
2	3 9	1 11	5 6	79.1				
4	3 "	1 11	5 6	126.1				
2	8 3	1 2	1 6	28.9				
2	8 6	5 6	" 9	70.1				
4	8 3	1 2	1 "	38.5				
4	3 5	1 2	1 "	16.0				
4	3 "	1 2	1 "	9.3				
2	4 "	1 2	1 "	9.3				
1	62 "	6 9	1 6	627.8				
				1581.2				
	Deduct							
5/6	(4 3)	3/5	1 6	212.7				
	50.8 Cyds =			1371.3	12 " . .		609 9 7	219 9 7
	Granolithic							
1	407 "	19 3	" 3	1958.7				
1	20 "	20 "	" 3	100.0				
1	36 "	28 "	" 3	252.0				
				2310.7				
	Deduct							
1	28 "	14 "	" 3	98.0				
	82 Cyds =			2212.7	" 9 6			48 11 .
					Carried over			2394 4 7

No.	Length ft	in	Breadth ft	in	Thickness ft	in	Contents	Rate Rs.	as.	p.	per	Amount Rs.	as.	p.	Total Rs.	as.	p.
							Brought forward								2291	4	7
							Flooring										
1	12	11	11	8	"	"	150.7										
1	12	"	11	8	"	"	140.0										
							290.7	6	"	"	C ft				7	6	5
							Planking										
2	12	11	10	"	"	"	258.3										
4	11	8	11	"	"	"	573.3										
2	12	"	10	"	"	"	240.0										
							Whichamu being	1011.6	2	8	"	"	"	"	25	4	5
							Square	10.11	"	4					2	8	5
							Timber										
							In front for scaffolding roof of Native dwelling & shed										
6	12	"	"	4½	"	4½	10.13										
							In front of Commander of Booking office										
4	10	"	"	4½	"	4½	5.63										
2	8	"	"	3½	"	3½	1.36										
							In wood work railing										
1	126	"	5	"	"	1	52.5										
							In front of roof of booking office & store room										
19	1	6	"	3	"	1	6.93										
19	8	6	"	3	"	1	3.36										
6	4	9	"	3	"	1	0.60										
							Carried over	80.31							2439	7	10

Estimate for 3rd Class Station (Continued)

No.	Length ft	in	Breadth ft	in	Thickness in	Contents	Rate Rs.	as.	p.	per	Amount Rs.	as.	p.	Total Rs.	as.	p.
						Brought forward	8051							2439	7	10
						In railway & tree										
1	28	6	"	6	"	2¼ 2.67										
						In Breastsummer										
1	6	6	"	3	"	3 4.40										
1	28	6	"	4	"	3 2.38										
						Reefers										
1550						running feet 1550										
						In native Urinals										
						6	"	3	4.25							
2	17	"	"	6	"	1	3.90									
22	8	6	"	3	"	1	94.11	4	"	"	C ft	376	7	"		
							530									
						Reefers left	1550	5	"	"	100 C ft	105	"	"		
							2100									
						Doors and windows										
2	7	3	3	6	"	"	50.75									
4	3	"	2	6	"	"	30.00									
2	2	6	1	3	"	"	6.25									
							87.00	1	8	"	100 C ft	130	8	"	611	15	"
						Roofing (above)										
						In Native working sheds										
1	63	"	13	"	"	"	819	25	"	"	Sq				204	12	"
						Sloped Terracing										
						In booking office										
						& store rooms										
1	28	6	26	3	"	"	748									
						In Native urinals										
2	15	9	8	6	"	"	268								127	"	"
							1016	12	8	"					3383	2	10

No	Length ft	in	Breadth ft	in	Thickness ft	in	Contents	Rate Rs	as	P.	Qy	Amount Rs	as	P.	Total Rs	as	P.
							Brought forward								3385	2	10
							Coping 9"										
							C. ft	90	2	-	C. ft				180	-	-
							Jarrah timber (Facing)										
4	126	-	5	-	-		2520	-	4	-	Qr.	6	4	9			
							Pointing with hard oil (Deduct 8½)										
4	7	3	3	6	-	-	101.5										
8	3	-	2	6	-	-	60.0										
4	2	6	1	3	-	-	12.5										
							Posts										
6	12	-	1	6	-	-	108.0										
4	10	-	1	6	-	-	60.0										
2	8	-	1	2	-	-	18.7										
							Rafters & Cr.										
19	17	6	-	8	-	-	221.7										
19	8	6	-	8	-	-	107.7										
6	4	9	-	8	-	-	19.0										
							Carried over	709.1				6	4	9	3563	2	10

No	Length ft	in	Breadth ft	in	Thickness ft	in	Contents	Rate Rs	as	P.	Qy	Amount Rs	as	P.	Total Rs	as	P.
							Brought forward	709.1				6	4	9	3563	2	10
							Shelving 6"										
1	28	6	1	4½	-	-	39.2										
							Transoms										
1	6	6	1	-	-	-	6.5										
1	28	6	1	2	-	-	33.3										
							Rebates										
1650	-	-	3	-	-	-	387.5										
							In Retaining Wall										
2	17	-	1	6	-	-	51										
22	8	6	-	8	-	-	124.7										
							Rebates										
550	-	-	3	-	-	-	137.5										
								1488.8	1	-	Qr.	11	14	3	21	3	-
							Distance round stacking round Coal stacked 1200 yds	1,200	-	6	-	6 3/4			450	-	-
							Carried over								4034	5	10

No.	Length Ft.	Length In.	Breadth Ft.	Breadth In.	Thick Ft.	Thick In.	Contents	Rate	£	Amount R.	Amount a.	Amount p.
							Brought forward				4231	5 10
							Grassing 2 slopes					
1	320	"	4	"	"	"	1280					
2	28	"	4	"	"	"	224					
2	22	"	4	"	"	"	176					
							1680	" 8 " 0			8	6 5
							Gates					
							Double Teak Wood Gates				200	" "
							Metalling in approach from Road to Station					
1	100	"	12	"	"	6	3600					
							133.3	" 1 " 0	Cyds		74	15 8
							Signals					
1	Set						140	" "			140	" "
							Furniture & fittings					
30	Lin.	feet	forms	for	passengers							
1	Board	with	Station	name								
4	Small	Direction	boards									
1	Weighing	Machine										
1	Stamping	do										
1	Cash	Chest										
1	Clock											
1	Bell											
2	Iron	Buckets	for	urinals								
	Office	furniture										
											4457	11 11

Abstract

		Cyds Earthwork E.	1/4	146 " "
584.0	"	Brickwork E	12/	2199 9 7
183.3	"	Gravelling	1/9/6	48 11 "
82.0	"	flooring	6/	17 6 5
2.9	squares	Plastering	2/8	25 4 5
10.11	"	Whitewashing	1/4	2 8 5
10.11	"	Teak Timber	4/	376 7 "
94.11	Cft.	Teak Creepers	5/	105 " "
2100.0	Lft.	Teak Doors & windows	1/8	130 8 "
87.0	Sp. ft.	Iron roofing	28/	204 12 "
8.19	Squares	Sloped terrace roofing	12/8	127 " "
10.16	"	Ashlar Coping	3/	180 " "
90.0	L. ft.	Jarring timber	1/4	6 4 9
25.2	Squares	Painting with wood oil	1/	14 14 3
14.89	"	Ditch and mound fencing	1/6	450 " "
1200.0	L. yds	Turfing slopes	1/8	8 6 5
16.8	Squares	Double Teak Wood gates complete	20/	200 " "
133.3	Cyds.	Metalling in approach from gate to Station house	1/9	74 15 8
		1 set station signals		400 " "
				440 " "
			Rs	4457 11 11

X

Abstract for each building	621 3 10
Platforms	1124 15 2
Booking office & Store room	774 9 3
Urinals	1072 0 0
Waiting shed	724 15 8
Compound	400 0 0
Station signals	Rs 4717 11 11

Madras
14th August 1872

Fredk Dobbie
Chief Engineer

Possible

Dr. 1878/73.

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Detailed Estimate for a Goods Shed 90'0" x 45'0"

Details of work	Number	Measurement in feet: Lengths in ft & ins. Each	Total	Total lengths	Breadths or Thickness	Depths or Heights	Contents	Remarks & details of description of work.
Masonry								
Foundations								
Footings								
Front & Rear Walls	2	94' 6"	189' 0"					
End Walls	2	43' 0"	86' 0"	275' 0"	2' 7½"	1' 6"	1082.80	
Pilaster to Rear Wall	1			24' 0"	0' 4½"	1' 6"	13.49	
Inside Shed Platform wall	1			110' 0"	2' 3"	1' 6"	371.25	
outside " "	1			70' 6"	1' 0"	4' 0"	282.	
			Total				1749.54	
Deduct for arches in end walls	2	9' 3"	18' 6"	18' 6"	2' 7½"	1' 6"	72.84	
		Total Cubic ft of Footings less deductions					1676.70	
				or Cubic Yards				62.10
Ashlar Plinth								
Front & Rear Walls	2	93' 9"	187' 6"					
End walls	2	43' 1½"	86' 3"	273' 9"	2' 0¾"	4' 0"	2258.43	
Pilaster to Rear Wall	1			24' 0"	0' 6¾"	4' 0"	52.00	
Platform wall	1			110' 0"	1' 8¼"	5' 6"	1023.93	
			Total				3333.36	
Deduct for arches in End walls	2	10' 0"	20' 0"	20' 0"	1' 10½"	4' 0"	149.99	Yds:
		Total Cubic feet Plinth less deductions					3183.37	117.90
Superstructure								
Front & Rear Walls	2	93' 9"	187' 6"					
End Walls	2	43' 1½"	86' 3"	273' 9"	1' 10½"	17' 6"	8982.37	
Pilaster to Rear Walls	1			24' 0"	0' 4½"	17' 6"	157.49	
Gables	2	23' 6"	47' 0"	47' 0"	1' 10½"	13' 3"	467.65	
Moulding to Front & Rear walls	2	96' 0"	192' 0"					
End walls	2	46' 10½"	93' 9"					
Gables	2	46' 10½"	93' 9"	379' 6"	0' 7"	1' 3"	276.70	
Total		Cubic feet Superstructure					13584.21	

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Detail of work	Number	Measurement in feet — Length in ft & inches — Each	Total	Total length	Breadth or Thickness	Depth or Height	Contents	Brief description of item
Deduct for arch wage &c								
" in Ft. wall below Spring line	4	8' 0" Area	32' 0"	32' 0" area	1' 10½"	10' 6"	629.99	
" " above "	4	18.85	Each	75.4	1' 10½"		141.37	
" in Rear wall below Sp.g line	7	6' 0" Area	42' 0"	42' 0" area	1' 10½"	10' 6"	826.87	
" " above "	7	14.14	Each	98.98	1' 10½"		172.08	
" in End walls below Spring line	2	10' 0" Area	20' 0"	20' 0" area	1' 10½"	10' 3"	384.37	
" " above "	2	23.56	Each	47.12	1' 10½"		88.31	
" in End walls opening with Honey Comb work	4	10' 0" Area	40' 0"	40' 0" area	0' 9"	6' 0"	180.00	
" " above Sp.g line	4	23.56	Each	94.24	1' 10½"		176.69	
" upto Spring line	4	10' 0"	40' 0"	40' 0"	1' 10½"	4' 6"	337.49	
" Circular Openings in gable End walls	2	12.56 Area	Each	25.12 area	1' 10½"		47.10	
Total Cubic Feet of Deductions							2984.30	
Total Cubic Feet Superstructure less deductions							7599.91	or 281.4 Cub. Yds
Total Cubic Yds of Brick in Chimneys							461.48	
Honey Comb Work upto Sp.g line	4	10' 0" Area	40' 0"	40' 0" area		4' 6"	180.00	
" above "	4	23.56	Each	94.24			94.24	
Carried Over							274.24	

Detail of work	Number	Measurement in feet: Length in ft & ins. Each	Flat	Total length	Breadth Thickness Depth or Height	Contents	Total quantity of each description of work
			Brought forward			274.24	
Honey Comb work Cont'd					10' 6"	441.00	
" in rear wall up to 4th line	7	6' 0	42' 0	42' 0		98.98	
" " above "	7	14. 14 Each area	98.98				
		Total 1 ft Honey Comb Work					814.22
		or 9 Inch Total Cubic yards					22.617
Coping Brick on edge				110' 0	1' 9" 0' 3"	48.13	
Inside shed Platform wall	1			70' 6"	1' 0" 0' 3"	17.63	
outside shed "	1						
		Total Cubic feet Coping Brick on edge				65.76	
		or Cubic Yards					2.44
Wood work							
" built beneath doors		Contents				62.32	
in Front wall	4	15.58 Each	62.32			75.04	
Doors "	4	18.76 Each	75.04			42.60	
" " in End walls	2	21.3 Each	42.60			38.12	
Purling	10	91' 6" 915' 0	915' 0	915' 0"	2" 0' 3"	19.53	
Ridge Piece	1			93' 9"	0' 2½" 0' 9"		
		Total Cubic feet Teak Wood					237.61
Wood Work							
Boarding to Roof	2	93' 9" 187' 6	187' 6	25' 6"	0' ½	199.18	
		Total Cubic feet Wood Work					199.18
Wood Rib & Exposed timber		Area		Area		830.80	
Doors in front wall	4	207.70 Each	830.80			508.96	
in End walls	2	254.48 Each Area	508.96			226.00	
" built under doors	4	56.50 Each	226.00			1565.76	
		Total Squares of Wood Rib					15.66
Gravelling							
Platform				60' 0	32' 0" 0' 6"	960.00	
		Total Cubic Yards of Gravelling					35.56

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Details of work	Number	Measurement in feet: Lengths in ft & ins: Each	Total	Total lengths	Breadths or Thickness	Depths or Height	Contents	Total quantity of each description of work
Earthworks								
Front wall	1			94' 6"	4' 0"	3' 0"	1134.00	
Rear wall	1			94' 6"	4' 4½"	3' 0"	1240.50	
End walls	2	42' 0"	84' 0"	84' 0"	4' 0"	3' 0"	1008.00	
Inside shed Platform wall	1			110' 0"	3' 7½"	3' 0"	1196.25	
outside	1			70' 6"	2' 1½"	3' 0"	449.43	
Filling in Shed (inside)				90' 0"	29' 9"	4' 3"	11379.37	
		Total Cubic feet Earthworks					16407.34	
		or Cubic Yards						607.68
Snow Trusses Roofing Complete				90' 0"	50' 0"		4500.00	
		Total Squares of Snow Trusses Roofing						45.00

Abstract.

Quantities	Description of works	Rate per	Rate Rs as p	Amount Rs as p	Total Rs as p
62.10 Cyds	Footings				
117.90 "	Plinth work				
281.48 "	Superstructure				
461.48 "	Total Brick in Chunam	Cyd	12 " "	5537 12 1	
2211 "	Honey Comb Work	"	6 " "	133 11 2	
2.44 "	Coping of Brick on edge	"	12 " "	29 4 6	
237.61 Cft	Teakwood wrought & put up	Cft	4 " "	950 7 -	
	Boarding to Roof	"	1 14 "	373 7 4	
199.18 "	Wrod oil to Exposed Timber	Sq:	1 " "	15 10 7	
15.66 Squares	Gravelling to Platforms	Cyd	- 9 6	21 1 10	
35.56 Cyds	Earthwork	"	" 4 "	151 15 6	
607.68 "	Jow Trues Roofing Complete	Sq:	81 " -	3645 " "	
45 Squares			Total Cost Rupees		10,860 5 11

Madras
14 th August 1872

Recd Drbbw
Chief Engineer

Detailed Estimate for a Small Goods Shed. 347

Detail of Work Masonry	Number	Measurements in feet Lengths in ft & ins Each	Total	Total length	Breadth or Thickness	Depth	Contents	Total quantity of each description
Footings								
Front & Rear Walls	2	64'6"	129'0"					
End Walls	2	23'6"	47'0"	176'0"	2'7½"	1'6"	693.00	
Platform Wall	1			139½"	1'1½"	3'0"	469.57	
Total Cubic feet of Footings								1162.57
or Cubic Yards do								43.058
Up to Plinth								
Front & Rear Walls	2	63'4½"	126'9"					
End Walls	2	24'7½"	49'3"	176'0"	1'10½"	3'9"	1237.49	
Platform Wall	1			139½"	0'9"	1'6"	156.80	
Total Cubic feet of Plinth Work								1394.29
or Cubic Yards do								51.64
Superstructure								
Front & Rear Walls	2	63'0"	126'0"					
End Walls	2	25'0"	50'0"	176'0"	1'6"	12'0"	3168.00	
Gable Walls	2	28'0"	56'0"	56'0"	1'6"	3'9"	315.00	
Moulding outside Building				209'6"	0'4½"	1'0"	78.56	
Total Cubic feet of Superstructure								3561.56
Deduct for								
Doorways in front & Rear Walls up to Springline	1	6'0" Circular	24'0"	24'0" Area	1'6"	8'0"	288.00	
	1	2.73 Each		10.92 Area	1'6"		16.38	
" Windows in End Walls up to Springline	1	4'0" Circular	16'0"	16'0" Area	1'6"	6'0"	144.00	
	1	2.03 Each		8.12 Area	1'6"		12.18	
" Circular Openings in End Walls	2	3.14 Each		6.28 Area	1'6"		9.42	
Total Cubic feet of Deductions								469.98
Total Cubic feet of Superstructure less Deductions								3091.58
or Cubic Yards do								114.6

Detail of work	Number	Measurements in ft. Each	Length	Breadth	Height	Quantity	Remarks
Honey Comb Work							
" Windows & Doors	2	4' 0"	16' 0"	16' 0"	6' 0"	96.00	
" above	"	42.03 each	8.12			8.12	
Total Square feet of Honey Comb Work							104.12
0.9" thick Total Cyards							2.89
Wood Work							
Truss Tie Beam	1		27' 0"	0' 5"	0' 8"	7.49	
Principals	2	14' 3"	28' 6"	28' 6"	0' 4"	0' 5"	3.957
King Post			7' 0"	0" 5"	0' 5"	1.214	
Struts	2	6' 3"	12' 6"	12' 6"	0' 3"	0' 6"	1.562
Total for One Truss							14.223
Total Cubic feet for Seven Trusses							99.561
Purlins	6	61' 6"	369' 0"	369' 0"	0' 2½"	0' 6"	38.43
Ridge Piece	1		61' 6"	0' 3"	0' 6"	7.69	
Rafters	64	16' 0"	0240	024' 0"	0' 0"	2' 0"	4" 56.86
Boarding to Roofs	2	9' 1" Cont.	2 each	18.2 Cont.			18.20
Doors	2	3.145	2 each	6.29			6.29
Total Cubic feet of Wood Work							227.031
Nuisance Running feet of Ballen Work		1 Area		1 Area		356'	356.
	2	50.73	2 each	101.46			101.46
Total C. feet of Ballen Work							101.46
Iron Work							Weights
Straps at feet of King Posts	1		3' 6"	0' ½"	0' 3"	17.53	
Straps at Lower ends of principals	2	3' 6"	6' 6"	0' 0"	½"	0' 3"	30.01
Bolts	4	0' 7"	28"	28"	½" diameter		1.52
Bolt Heads & Nuts	4						.65
Total weight in Iron work							49.76 lbs
Do Brass							34.32

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Detail of Work	Number	Measurements in ft Length in feet & inches Each	Total	Total Length	Breadth	Thickness or Height	Contents	Total quantity of each description of Work
Roofing								
Tile	1			64'6"	34'0"		2193.00	
Total Squares of Roofing								22.
Woodoil to Exposed Timber							Area	
to one Truss							126.00	
" for Seven Trusses							882.00	
" Doors	4	105.00 Area	each				420.00	
" Balk & Sleeper at Doors	2	36.7 Area	Each				73.40	
" Rafters							853.00	
Total Squares of wood Oil to Exposed Timber							2228.40	22.29
Earthwork								
Front & Rear Walls	2	65'6"	131.0					
End Walls	2	22'6"	45'0"	176'0"	4'0"	3'0"	2112.00	
Platform Wall	1			140'0"	2'1½	2'0"	594.99	
Filling in Shed				60'0"	25'0"	2'3"	3375.00	
in Platform				117'9"	8'6"	0'9"	750.66	
" "				118'6"	9'0"	1'6"	1599.75	
Total Cft of Earthwork								8432.40
& Cubic yards								312.31
Gravelling Platform				120'0"	10'0"	0'6"	600.00	
Total Square yards of Gravelling								22.23

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Abstract

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Quantities	Description of Work	Rate Per	Rate Rs	Rate as	Rate p	Amount Rs	Amount as	Amount p	Total Rs	Total as	Total p
43.058 Cyd	Footings										
51.64 "	Plinth work										
114.5 "	Superstructure										
209.198 "	Total Brick in Chunam	Cyd	12	"	"	2510	6	"			
2.89 "	Open Brick or Honey Comb Work	"	6	"	"	17	5	5			
227.031 Cft	Teak Wood Wrought Scantings	Cft	4	"	"	908	1	11			
35.67 Rft	Rafters	100 Rft	5	"	"	178	5	7			
101.46 Rft	Batten Doors	Rft	1	"	"	101	7	4			
22.10 Sq.	Roofing with Tiles &c	Sq.	9	"	"	198	"	"			
22.29 "	Wood work to be scraped & Painted	"	1	"	"	22	4	7			
312.31 Cyd	Earthwork	Cyd	"	4	"	78	1	2			
22.23 "	Gravelling	"	"	9	6	13	3	2			
348.32 Rs	Iron Work	Rs	"	3	"	65	4	11			
						Total Rupees			4092	8	1

Madras
14th August 1872

Fredk Dibdin
Chief Engineer

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Detailed Estimate for a Tank House

Detail of work	Number	Measurements in feet Length in ft & inches Each	Total	Total Length	Breadth or Thickness	Depth or Height	Contents	Total quantity of each description in work
Masonry.								
Footings								
Front & Rear Walls	2	19' 0"	38' 0"	38' 0"	3' 0"	0' 6"	57.00	
End Walls	2	9' 9"	19' 6"	19' 6"	1' 6½"	0' 6"	15.23	
Total Cubic feet of Footings							72.23	
Deduct for recesses in Front & Rear Walls	2	9' 5½"	18' 10½	18' 10½	0' 11¼	0' 6"	8.83	
Total Cft: of Footings less deductions								63.40
or Cubic Yards								2.35
Off to Plinths								
Front & Rear Walls	2	18' 1½"	36' 9"	36' 9"	2' 5¼"	3' 9"	335.91	
End Walls	2	10' 6"	21' 0"	21' 0"	1' 1½"	3' 9"	88.59	
Total Cubic feet of Plinth work							424.50	
Deduct for recesses in Front & Rear Walls	2	10' 1½"	20' 3"	20' 3"	0' 11¼"	3' 9"	71.18	
Total Cubic ft of Plinths less deductions								353.32
or Cubic Yards								13.086
Superstructure								
Front & Rear Walls	2	18' 0"	36' 0"	36' 0"	2' 3"	11' 1½"	901.12	
End Walls	2	10' 6"	21' 0"	21' 0"	1' 9"	11' 1½"	408.84	
Front & Rear walls of Tank	2	18' 0"	36' 0"					
End Walls	2	12' 0"	24' 0"	60' 0"	1' 6"	4' 9"	427.50	
Moulding Front & Rear Walls	2	18' 0"	37' 6"					
End Walls	2	15' 9"	31' 6"	69' 0"	0' 4½" (area)	0' 9"	17.40	
Arch carrying floor of Tank	1			14' 3"	9.75		138.94	
Total Cubic feet of Superstructure							1895.80	

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Description of work	Number	Measurements in feet: Length in ft and inches — Each	Flat	Total lengths	Breadths or Thickness	Depths or Heights	Contents	Total quantity of each description of work
Deduct for								
" recessed arches in front Rear & End walls below Spring line	4	10' 6"	42' 0"	42' 0"	0' 9"	4' 9"	149.63	
" " above "	4	43.295 area	Each	173.18 area	0' 9"		129.88	
" doorways in End wall below Spring line	1	4' 0"	4' 0"	4' 0"	1' 1½"	6' 0"	26.99	
" above "	1			6.28 area	1' 1½"		7.06	
" Windows in Front & Rear Walls below Spring line	2	3' 0"	6' 0"	6' 0"	1' 6"	1' 3"	38.25	
" above "	2	3.5 area	Each	7.00 area	1' 6"		10.5	
" " in End walls below Spring line	1			3' 0"	1' 1½"	4' 3"	14.34	
" " above "	1			3.5 area	1' 1½"		3.93	
Total Cubic feet of Deductions							380.58	
Total Cubic feet of Superstructure less deductions								1515.22
or Cubic Yards								56.12
Concrete								
Over Haunches of arch				14' 3"	6' 0"	4' 0"	342.00	
Total Cubic feet of Concrete								342.
or Cubic Yards								12.7
Wood work								
Pannelled								
Doors in End Walls upto Spring line	1			4' 0"		6' 0"	24.00	
" above "	1			6.28 area			6.28	
Total Square feet of Pannelled								20.28

Detail of work	Number	Measurements in feet: Length in feet & inches: Each	Width	Total length	Breadth or distance	Depth or Height	Contents	Total quantity of each description of work
Honey Comb Work								
Windows in front, Rear & End Walls up to Springline	3	3' 0" area	9' 0"	9' 0" area		4' 3"	38.25	
" above "	3	3 5 each		10.5			10.5	
Total S. feet of Honey Comb Work								1.8.75
or Cubic Yards								1.35
Asphalt								
To Tank floor				15' 0"	12' 0"		180.00	
Total S. feet of Asphalt work								180.
or Squares								1.8
Earthwork								
Front & Rear Walls	2	20' 0"	40' 0"	40' 0"	4' 0"	2' 0"	320.0	
End Walls	2	8' 9"	17' 6"	17' 6"	2' 6¾"	2' 0"	89.68	
Total Cubic feet of Earthwork							409.68	
Deduct for recessed arch in Front & Rear Walls	2	8' 9"	17' 6"	17' 6"	0' 11¼"	2' 0"	32.81	
Total Cft of Earthwork less deductions								376.87
or Cubic Yards								13.96

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Carriatie Railway Co:/Limd:/
Abstract Estimate for a Tank House. 41X

Quantities	Description of work	Rate Per	Rate Rs: as p	Amount Rs: as p	Total Rs: as p
2.35 Cyds	Footings				
13.086 "	Plinth work				
56.12 "	Superstructure				
71.556 "	Total Brick in Chunam	Cyd	12 " "	858 10 9	
12.7 "	Concrete	"	4 " "	50 12 9	
20.28 Sft	Pannelled Doors (Complete)	S.ft	1 8 "	30 6 8	
1.35 Cyds:	Honey Comb Work	Cyds:	6 " "	8 1 7	
1.8 Square	Asphalt	Square	25 " "	45 " -	
13.96 Cyds:	Earthwork	Cyd	" 4 "	3 7 10	
		Total Rupees			996 7 7

Madras
14th August 1872

Fredk Dobbs
Chief Engineer

e

37

Detailed Estimate for an Engine Shed. 427

Detail of work Masonry	Number	Measurements in feet Length in ft & ins Each	Total	Total lineal Length	Breadth	Thickness	Depth or Height	Contents	Total quantity of each description of work
Footings									
Front and Rear walls (main building)	2	7' 10½"	14 9"						
End Walls "	2	30' 0"	60' 0"	209' 9"	3' 0"	1' 6"		943.88	
Pilasters to Front & Rear Walls	2	4' 1½"	49' 6"	49' 6"	0' 6¾"	1' 6"		111.76	
Front & Rear Walls of Godowns	2	13' 6"	27' 0"						
Side Walls "	1	12' 0"	12' 0"	39' 0"	2' 3"	1' 6"		131.63	
			Total Cubic feet Footings						1187.29
Deduct for Archways in End Walls	4	9' 3"	37' 0"	37' 0"	3' 0"	1' 6"		166.5	
			Total Cubic feet of Deductions						166.5
			Total " " Footings less deductions						1020.79
			or Cubic Yards						37.81
Up to Plinth									
Front & Rear Walls (main building)	2	7' 1½"	14 8 3						
End walls	2	30' 0"	60' 0"	208' 3"	2' 3"	4' 3"		1971.40	
Pilasters to Front & Rear Walls	12	3' 4½"	40' 6"	40' 6"	0' 4½"	4' 3"		64.63	
Front & Rear Walls (Godowns)	2	13' 6"	27' 0"						
Side Walls	1	12' 0"	12' 0"	39' 0"	1' 6"	1' 6"		87.75	
			Total Cubic feet up to Plinth Work						2123.78
Deduct for Archways in End Walls	4	9' 7½"	38' 6"	38' 6"	2' 3"	4' 3"		368.16	
" Door Connecting Main " building with Godowns	1			3' 1½"	2' 3"	1' 6"		10.34	
			Total Cubic feet deductions						378.50
			Total Cubic feet up to Plinth less deductions						1745.28
			or Cubic Yards						64.64
Superstructure									
Front & Rear Walls of Main building	2	7' 9"	14' 6"						
End Walls	2	30' 0"	60' 0"	207' 6"	1' 10½"	15' 0"		4835.94	
15 4 11"						Carried down		5835.94	
12									

Details of work	Number	Measurements in feet: Lengths in Stretches Each	Total	Total Lengths	Breadths or Thickness	Depths or Height	Contents	Total quantity of each description of work
				Brought forward			5835.94	
Superstructure (Cont'd)								
Pilasters	12	3' 0"	36' 0"	36' 0"	0' 4½"	15' 0"	202.50	
Stables to end walls	2	17' 6"	35' 0"	35' 0"	1' 10½"	9' 0"	590.63	
Ft & Rear Walls to Godowns	2	13' 6"	27' 0"	27' 0"	1' 6"	17' 0"	688.50	
Side Walls to	1			12' 0"	1' 6"	12' 9"	229.50	
Moulding Ft & Rear Walls	2	75' 3"	150' 6"					
End Walls	2	35' 0"	70' 0"					
Stables Walls	2	36' 6"	73' 0"	293' 6"	0' 7"	1' 3"	214.01	
Total Cubic feet Superstructure							7761.03	
Deduct for								
Arch opening below Sp & line in Ft	9	6' 6"	58' 6"	58' 6"	1' 10½"	7' 9"	850.08	
& Rear Wall (Main building)	9	Area 33.18		Area 298.62	1' 10½"		559.91	
" " above Springing								
" Arched door ways in End walls	4	10' 0"	40' 0"	40' 0"	1' 10½"	10' 3"	768.75	
below Springing	4	Area 25.52		Area 102.08	1' 10½"		191.40	
" " above Springing								
" Circular opening in	2	Area 7.06		Area 14.12	1' 10½"		26.48	
Gable ends								
" Doorway connecting Godowns	1	3' 6"	3' 6"	3' 6"	1' 10½"	5' 0"	32.81	
with Main building	3	3' 0"	9' 0"	9' 0"	1' 6"	4' 6"	60.75	
" Windows in Godowns								
Total Cubic feet Deductions							2490.18	
Total Cubic feet Superstructure less deductions							5270.90	
Total Cubic feet Superstructure or C. Yards do							195.22	

Detail of work	Number	Measurements in ft Lengths in ft & ins: Each	Total	Total lengths	Breadths or thickness	Depths or Heights	Contents	Total quantity each description of work
Open Brickwork								
" to Openings in front								
" 1½ Rear Walls below Sp^a line	9	6' 6" area	58' 6"	58' 6" area		7' 9"	453.37	
above	9	33.18	Each	298.62			298.62	
" " "	3	3' 0"	9' 0"	9' 0"		4'6"	40.50	
" to Windows of Godowns								
" Total	Square feet Open Brick work						792.49	
	or less 9" thick			Total Cyds				22.02
Engine Pits								
Footings								
Side Walls	2	66' 10½	133' 9"					
End Walls	2	3' 0"	6' 0"	139' 9"	1' 3¾	0' 6"	91.71	
Above - footings								
Side Walls	2	66' 6"	133' 0"					
End Walls	2	3' 0"	6' 0"	139' 0"	1' 1½	2' 4½	371.39	
Steps	2	3' 0"	6' 0"	6' 0"	1' 8"	1' 6"	15.00	
	Total	Cubic feet of Masonry					478.10	
Deduct for Vaults of timber								
to carry rails	2	32' 0"	64' 0"	64' 0"	0' 9"	0' 6"	24.00	
" Holes for fastening in side walls	22	0' 9"	16' 6"	16' 6"	0' 9"	0' 3"	3.10	
	Total	Cubic feet of Deductions					27.10	
Total C. ft of Masonry in one Engine Pit less deductions								451.00
Do Do in 2 Do Do								902.00
or Cubic Yards								33.40
Drain to Engine Pit								
Side Walls	2	26' 0"	52' 0"	52' 0"	0' 9"	1' 3"	48.75	
Floor	1	26' 0"	26' 0"	26' 0"	0' 9"	0' 6"	9.75	
Top Covering	1	16' 0"	16' 0"	16' 0"	0' 9"	0' 3"	3.00	
	Total C ft. Masonry in Drain						61.50	2.28 Cyds
Total C. Yds. Brick in Chamber in Engine Pits & Drain								35.68

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Detail of work	Number	Measurements in feet Length in ft & inches Each	Ittab	Total lengths	Breadths Each	Depths or Height	Contents	Workmanship & incidentals
Wood Work.								
Trues								
Jw Beam	1	32' 0"	32' 0"	32' 0"	0' 5"	0' 11"	12.22	
Principals	2	17' 6"	35' 0"	35' 0"	0' 4"	0' 6"	5.83	
King Post	1			8' 3"	0' 6"	0' 6"	2.06	
Struts	2	8' 0"	16' 0"	16' 0"	0' 3"	0' 6"	2.00	
	Ittab Co. ft of Timber in one Trues						22.11	
	Do				in Six	Do.	132.66	
Purlins	8	71' 6"	572' 0"					
Ridge Piece	1	71' 6"	71' 6"	643' 6"	0' 3"	0' 6"	80.44	
Rafters	5	35' 0"	175' 0"					
Do	53	19' 0"	1007' 0"	1182' 0"	0' 2"	0' 4"	65.67	
Uprights to carry lower roof sides	32	3' 0"	96' 0"	96' 0"	0' 4"	0' 4"	10.67	
Horizontal piece of and upright Ends	2	55' 6"	111' 0"	111' 0"	0' 4"	0' 3"	9.25	
Principals	30	5' 0"	150' 0"	150' 0"	0' 2"	0' 4"	8.33	
Purlins	4	55' 6"	222' 0"	222' 0"	0' 2"	0' 4"	12.33	
Rafters	84	5' 3"	441' 0"	441' 0"	0' 1½	0' 2"	9.19	
Venetians to lower roof in sides (Each)	8	54' 0"	432' 0"					
Do Do in Ends "	8	10' 0"	80' 0"	512' 0"	0' 6"	0 ½	10.67	
Wall Plates to Trusses	12	3' 0"	36' 0"	36' 0"	0' 6"	0' 3"	4.5	
Baulks of Timber to carry rails	2	32' 0"	64' 0"	64' 0"	0' 9"	0' 6"	24.00	
	Ittab Cubic feet of Wood Work							367.71
	Ittab Running feet of Peepers							6000
Peepers								
Doors								
Doors in End Walls (main Building	4	10' 0"	40' 0"	40' 0"		12' 6"	500.00	
Connecting Wk Bldg. with Godown	1			3' 6"		6' 6"	22.75	
	Ittab S. feet of Doors							522.75

Details of work	Number	Measurements in feet — Lengths in ft & inches — Each	Total	Total Lengths	Breadths Thickness	Depths Heights	Contents	Total quantity each description of work
Iron Work							lbs	
Straps at foot of King posts	1			1' 6"	0' ½	0' 3"	22.34	
Sterrups at lower end off	2	3' 6"	7' 0"	7' 0"	0' ½	0' 3"	35.06	
Bolts	4	7"	28"	28"	½" diameter		1.52	
Bolt Heads & Nuts	4						.65	
	Total weight in lbs in one Truss						59.77	lbs
	Do Do in 6 Trusses						6	358.62
Tile & Roofing								
Lowere Roof	1	55' 6"	55' 6"	55' 6"	11' 0"		610.50	
Lower Roof	2	75' 6"	151' 0"	151' 0"	16' 6"		2491.50	
Roof to Godown	1	16' 0"	16' 0"	16' 0"	15' 0"		240.00	
	Total		Sft	Roofing			3342.00	
	Or		Squares of	Roofing				33½
Flooring				70' 0"	20' 4"		1423.33	
	Total		Squares of	Flooring				14¼
Earthwork								
Front & Rear Walls (Main Bys)	2	73' 9"	147' 6"	147' 6"	4' 9"	3' 0"	2101.86	
End Walls "	2	27' 6"	55' 0"	55' 0"	4' 4½"	3' 0"	721.86	
Side Walls (Godown)	2	13' 1½"	26' 3"					
Front Wall	1	9' 10½"	9' 10½"	36' 1½"	3' 7½"	3' 0"	392.85	
Engine Pits Side Walls	4	67' 10½"	271' 6"					
End Walls	4	3' 0"	12' 0"	283.6	2' 3¾"	1' 6"	991.72	
Steps	4	3' 0"	12' 0"	12' 0"	1' 8"	1' 0"	20.00	
Drain to Engine Pit Side Walls	2	26' 0"	52' 0"	52' 0"	1' 7½"	1' 3"	105.62	
				Carried Over			4333.91	

Detail of work	Number	Measurements in feet: Lengths in Inches: Cubes	Breadths or Thickness	Depths or Heights	Contents	Total quantities Cubic Excepting Squares
			Brought forward		4338.91	
Earthwork (Cont'd)						
Filling in Main Building	1	70' 0"	24' 0"	0' 11½	1610.00	
Total					5948.91	
Deduct for						
Archways in End Walls	4	10' 0"	10' 0"	10' 0"	4' 4½ 3' 0"	525.00
					Total Cubic feet of Earthwork Less Deductions	5418.91
					or Cubic Yards	200.70
Wood Bd to all exposed Timber						
For Doors &c ft						1045.50
For one Truss			Area 151. 04			
Do for Six Trusses						906.24
For Rafters Purlins Ridge Piece &c						1787.60
					Total Feet of Wood Bd	3739.34
					or Squares	37½

Carnatic Railway Co. Limd.

Abstract Estimate for an Engine Shed. 487

Quantities	Description of work	Rate		Amount		Total	
		Per	Rs as p	Rs as p		Rs as p	
35.21 Cyds	Footings						
65.37 "	Extra Plinth						
195.22	Superstructure						
295.80	Total Brick in Chunam	Cyd	12 " "	3549	9 7		
	" in Engine Pit & Drain	"	12 " "	428	2 3		
35.68 "	Open Brickwork	"	6 " "	132	1 11		
22.02 "	Teak wood Wrought & put up	Cft	4 " "	1470	13 5		
367.71 Sft	Rafters	100 Sft	5 " "	300	" "		
6000 Sft	Purlins	Sft	1 " "	522	12 "		
522.75 Sft	Doors	Sft	" 3 "	67	3 10		
338.62 Sft	Iron work to Trusses	Sq:	9 " "	301	8 "		
33½ Sq	Tile Roofing	"	12 " "	171	" "		
14¼ "	Flooring	Cyd	" 4 "	50	2 10		
200.70 Cyds	Earthwork	Sq	1 " "	37	8 "		
37.50 Sq:	Wood sub to Sleeper Timber						
			Total Cost of Engine Shed			7030	13 10
			Deduct				
	Detailed Abstract for Engine Pits & Drain						
				428	2 6		
35.68	Cyds. Masonry at 12/-			96	" "		
24.00	Cft Timber at 4 Cft			10	5 6		
41.38	Yds Earthwork at /4 /4						
				534	8 -		

Madras
14th August 1872

Fredk Orbell
Chief Engineer

Carnatic Railway Co. (Ld.)

Detailed Estimate for a Carriage Shed

49X

Detail of work	Number	Measurements in feet: Lengths in ft & in: Each	Total	Total Lengths	Breadth or Thickness	Depth or Height	Contents	Quantity & description of
Masonry								
Footings								
Front & Rear walls (Main Bg)	2	174' 10½"	349' 9"					
End walls "	2	30' 0"	60' 0"	409' 9"	3' 0"	1' 6"	1843.875	
Pilasters to Front & Rear walls	28	4' 1½"	115' 6"	115' 6"	0' 6¾"	1' 6"	97.453	
Front & Rear walls of Godowns	2	13' 6"	27' 0"					
Side walls "	1	12' 0"	12' 0"	39' 0"	2' 3"	1' 6"	131.65	
	Total Cubic feet Footings						2072.978	
Deduct for								
arch ways in End walls	4	9' 3"	37' 0"	37' 0"	3' 0"	1' 6"	166.5	
	Total Cubic feet of Deductions						166.5	
	Total Cubic feet Footings less deductions						1906.478	
	or Cubic Yards							70.61
Plinths								
Front & Rear walls main Building	2	174' 1½"	348' 3"					
End walls "	2	30' 0"	60' 0"	408' 3"	2' 3"	4' 3"	3903.89	
Pilasters to Front & Rear walls	28	3' 4½"	94' 6"	94' 6"	0' 4½"	4' 3"	152.60	
Front & Rear walls (Godowns)	2	13' 6"	27' 0"					
Side walls "	1	12' 0"	12' 0"	39' 0"	1' 6"	1' 6"	87.75	
	Total Cubic feet upto Plinths						4142.24	
Deduct for								
" arch ways in End walls	4	9' 7½"	38' 6"	38' 6"	2' 3"	4' 3"	368.16	
" door Connecting Main Buil^g with Godowns	1			3' 1½"	2' 3"	1' 6"	10.54	
	Total Cubic feet of Deductions						378.70	
	Total Cubic feet upto Plinths less deductions						3763.54	
	or Cubic Yards							139.39

Detailed Estimate for a Carriage Shed (Continued) 50X

Detail of work	Number	Measurements in feet: Lengths in ft & inches — Each	Total	Total lengths	Breadths or Thickness	Depths or Heights	Contents	Remarks & description of Scantlings &c
Superstructure								
Front & Rear walls Main Building	2	173' 9"	347' 6"					
End Walls "	2	30' 0"	60' 0"	407' 6"	1' 10½"	15' 0"	1460.87	
Pilasters	28	3' 0"	84' 0"	84' 0"	0' 4½"	15' 0"	472.49	
Gables to End walls	2	17' 6"	35' 0"	35' 0"	1' 10½"	9' 0"	590.63	
Front & Rear walls to Godown	2	13' 6"	27' 0"	27' 0"	1' 6"	17' 0"	688.50	
Side wall to "	1			12' 0"	1' 6"	12' 9"	229.50	
Moulding to Front & Rear walls	2	175' 3"	350' 6"					
End walls	2	35' 0"	70' 0"					
Gable walls	2	36' 6"	73' 0"	493' 6"	0' 7"	1' 3"	359.32	
		Total Cubic feet Superstructure					13801.81	
Deduct for								
" arched opening below Spring line in Front & Rear walls (Main Building)	21	6' 6" Area	136' 6"	136' 6" area	1' 10½"	7' 9"	1983.50	
" allowe Springing	21	33.18		696.78	1' 10½"		1306.45	
" arched door ways in the walls below Springing	4	10' 0" area	40' 0"	40' 0" area	1' 10½"	10' 3"	768.75	
" " allowe "	4	25.52		102.08	1' 10½"		191.40	
" circular opening in Gable ends	2	area 7.06		area 14.12	1' 10½"		26.48	
" door way connecting godown with Main Building	1	3' 6"	3' 6"	3' 6"	1' 10½"	5' 0"	32.81	
						Carried Over	4309.39	

Detailed Estimate for a Carriage Shed (Continued)

Detail of work	Number	Measurement in feet: Lengths in ffrenches Each	Total	Total lengths	Breadths or Thickness	Depths or Height	Contents	Quantity of each description of work
			Brought forward				4309.39	
Deduct for-(Continued)								
" Windows in Godowns	3	3' ö	9' ö	9' ö	1' 6"	4' 6"	60.75	
		Total Cubic feet of Deductions					4370.14	
		Total Cubic feet of Superstructure less deductions					938.67	
		or Cubic Yards						349.32
Open Brick work-								
" to openings in Front and Rear walls below ffg line	21	6' 6" area	136' 6"	136' 6"		7' 9"	1057.88	
" above "	21	33.18	.	696.78			696.78	
" to windows of Godowns	3	3' ö	9' ö	9' ö		4' 6"	40.50	
		Total Square feet Open Brick work					1795.16	
		or 1½ Brick Thick Total Cubic Yards						49.86
Wood Work-								
Truss								
Tie Beam	1	32' ö	32' ö	32' ö	0' 5"	0' 11"	12.22	
Principals	2	17' 6"	35' ö	35' ö	0' 4"	0' 6"	5.83	
King Post	1			8" 3"	0' 6"	0' 6"	2.06	
Struts	2	8' ö	16' ö	16' ö	0' 3"	0' 6"	2.00	
		Total Cubic feet of Timber in One Truss					22.11/4	
		Do in Fourteen Do					309.54	
Purlins	8	171' 6"	1372' ö					
Ridge Piece	1	71' 6"	171' 6"	1543'6"	0' 3"	0' 6"	192.94	
Rafters	12	35' ö	420' ö					
"	124	19' ö	2356' ö	2776' ö	0' 2"	0' 4"	154.21	
						Carried Over	656.69	

Detailed Estimate (4) for a Carriage Shed (Contd)

Detail of work	Number	Measurements in feet: Length in figures Each	Total	Total lengths	Breadth or Thickness	Depth or Height	Contents	Quantity of each description of work
				Brought forward			656.69	
Wood Work (Continued)								
Uprights to carry lower roof sides and Ends	75	3' 0"	225' 0"	225' 0"	0' 4"	0' 4"	25.00	
Horizontal pieces upon uprights	2	155' 6"	311' 0"	311' 0"	0' 4"	0' 3"	25.91	
Principals	70	5' 0"	350' 0"	350' 0"	0' 2"	0' 4"	19.44	
Purlins	4	155' 6"	622' 0"	622' 0"	0' 2"	0' 4"	34.55	
Rafters	196	5' 3"	1029' 0"	1029' 0"	0' 1½"	0' 2"	21.44	
Venetian to lower roof inside/Bars	8	154' 0"	1232' 0"					
Do Do in Ends	8	10' 0"	80' 0"	1312' 0"	0' 6"	0' 0½"	27.33	
Wall plates to Trusses	28	3' 0"	84' 0"	84' 0"	0' 6"	0' 3"	10.50	
			Total Cubic feet of Wood Work					820.80
Iron Work —			Total Running feet of Rafters					1400.0
Doors —								
" in End Walls (Nos 2 3)	4	10' 0"	40' 0"	40' 0"		12" 6	500.10	
" Connecting Main Building with Godown	1			3' 6"		6' 6"	22.75	
			Total Square feet of Doors					522.75
Iron Work —							lbs	
Straps at foot of King Posts	1			4' 6"	0' ½"	0' 3"	22.52	
Stirrups at lower end of Ps	2	3' 6"	7' 0"	7' 0"	0' ½"	0' 3"	35.06	
Bolts	4	7"	28"	28"	× ½" diameter		1.52	
Bolt heads & nuts	4						.65	
			Total weight in lbs in one Truss				59.77	lbs
			Do in fourteen Do				14	836.78

Detailed Estimate for a Carriage Shed / Cont.d

Detail of Work	Number	Measurements in ft. Each	Lengths in ft & inches Total	Total Lengths	Breadths or Thickness	Depths or Height	Contents	Quantity & each description of work
Tile Roofing								
Louvre roof	1	155' 6"	155' 6"	155' 6"	11' 0"		1710.50	
Lower roof	2	175' 6"	351' 0"	351' 0"	16' 6"		5791.50	
Roof to Godown	1			16' 0"	15' 0"		240.00	
	Total Square feet Roofing						7742.00	
	or Squares of Roofing							77½
Flooring				170' 0"	30' 0"		5100.00	
	Total Squares flooring							51
Earthwork								
Front and Rear walls (Main Building)	2	173' 9"	347' 6"	347' 6"	4' 9"	3' 0"	4951.88	
End Walls "	2	27' 6"	55' 0"	55' 0"	4' 4½"	3' 0"	721.86	
Side Walls (Godown)	2	13' 1½"	26' 3"					
Front wall	1	9' 10½"	9' 10½"	36 1½"	3' 7½"	3' 0"	392.85	
Filling in Main Bildg	1			170' 0"	30' 0"	0' 11½"	4887.48	
	Total Cubic ft						10952.07	
Deduct for								
arch ways in End walls	4	10 0	40' 0"	40' 0"	4' 4½"	3' 0"	525.00	
	Total Cubic ft Earthwork less deductions						10429.07	
	or Cubic Yards							386.26
Wood Oil to all Exposed Timber								
For doors 8ft				area 151.04			1045.50	
For 1 Truss							2114.56	
" for fourteen Trusses							4171.07	
For Rafters, Purlins, Ridge Piece &c.							7331.13	
	Total Sq. ft of Wood Oil							
	or Squares							73½

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Carnatic Railway Co.y / Ld. /

Abstract Estimate for a Carriage Shed

Quantities	Description of work	Rate Per	Rate Rs	as	p	Amount Rs	as	p	Total Rs	as	p
70.61 Cyds	Footings										
139.39 "	Upto Plinth										
349.32	Superstructure										
559.32	Total Brick in Chunam	Cyd	12	"	"	6711	13	5			
49.86 "	Open Brick work	"	6	"	"	299	2	6			
820.86 Cft	Teakwood wrought & put up	Cft	4	"	"	3283	7	"			
14000.00 Lft	Reepers	100 Lft	5	"	"	700	"	"			
522.75 Cft	Doors	Cft	1	"	"	522	12	"			
836.78 lbs	Iron work to Trusses	lbs	"	3	"	156	14	4			
77 1/2 Sqrs	Tile Roofing	Sqr	9	"	"	697	8	"			
51 "	Flooring	"	12	"	"	612	"	"			
386.26 Cyd	Earthwork	Cyd	"	4	"	96	9	"			
73 1/2 Sqrs	Wood oil to exposed Timber	Sqr	1	"	"	73	8	"			
			Total Rupees						13,153	10	3

Madras
14th August 1862.

Fredk Dobbs
Chief Engineer

Carnalea Railway Co: / Kenure /

Detailed Estimate for a Coal Store House.

Details of works	Number	Measurements in feet: Lengths in Strait. Each	Total	Total Lengths	Bagatts or Thickness	Depths or Heights	Contents	Total quantities of each description of Work.
Masonry								
Foundations								
Footings								
Front and Rear walls	2	64'6"	129' 0"					
End walls	2	29' 3"	58' 6"					
Buttresses to Walls	20	3' 3"	65' 0"	232' 6"	2' 7½"	1' 6"	915.47	
Pillars	4	3' 0"	12' 0"	12' 0"	3' 0"	1' 6"	54.00	
Total Cubic feet of Footings								969.47
Off to Plinths								
Front & Rear walls	2	58' 9"	107' 6"					
End walls	2	29' 7½"	59' 3"	166' 9"	1' 10½"	3' 6"	1094.30	
Total Cubic feet of Plinth work							1094.30	
Deduct for Door ways in Front wall	2	9' 6"	19' 0"	19' 0"	7' 6"	1' 6"	213.75	
Total Cubic feet of Plinth work less deductions								780.54
Superstructure								
Front and Rear walls	2	53' 9"	107' 6"					
End walls	2	30' 0"	60' 0"	167' 6"	1' 6"	13' 6"	3391.87	
Buttresses to Walls	20	36.56 Contents	Each	731.20 Contents			731.20	
Total Cubic feet of Superstructure							4123.07	
Deduct for								
Door ways in front wall above springing	2	Area 4.92	Area 9.84					
window in Rear & Endwalls above Spring of arch	11	Area 4.92	54.12	Area 63.96	1' 6"		95.94	
						Carried Over	95.94	1750.01

Detail of Work	Number	Each	Total	Total Length	Breadth & Thickness	Depth or Height	Contents	Total quantity of each description of Work.
		Measurements in feet & inches						
		Length in feet & inches						
Reductions (Cont'd) Brought forward							95.94	1752.01
" Door ways in Front wall below Spring line	2	7' 6"	15' 0"	15' 0"	1' 6"	10' 6"	236.25	
" windows in Rear & End walls below Spring line	11	7' 6"	82' 6"	82' 6"	1' 6"	3' 0"	371.25	
Total Cubic feet of Deductions							703.44	
Total Cubic feet of Superstructure less deductions								3419.63
Pillars from Footings								
Pillars	4	2' 3"	9' 0"	9' 0"	2' 3"	14' 0"	283.5	
Deduct for Flues	4	0 9"	3' 0"	3' 0"	0' 9"	14' 0"	31.5	
Total Cubic feet of Masonry in Pillars less deductions								252.00
Parapet Walls								
Front & Rear Walls	2	53' 0"	106' 0"					
End Walls	2	30' 0"	60' 0"	166' 0"	1' 1½"	2' 0"	373.50	
Total Cubic feet of Masonry in Parapet Walls								373.50
Cornice round Building								
Front & Rear Walls	2	53' 9"	107' 6"					
End Walls	2	33' 0"	66' 0"	173' 6"	0' 1½"	1' 0"	65.06	
Total Cubic feet of Masonry in Cornice work								65.06
Horizontal Flues								
Side Walls	2	12' 0"	24' 0"					
End Walls	1	0' 9"	0' 9"	24' 9"	0' 9"	1' 3"	23.20	
Floor	1	8' 0"	8' 0"					
Top	1	8' 6"	8' 6"	16' 6"	0' 9"	0' 3"	3.09	
Total Cubic ft. Masonry in one Horizontal Flue							26.29	
Do " in floor "								105.16
							Carried Over	5962.45

57X

Details of Work	Number	Measurements in feet Each	Total	Total Lengths	Breadths Runnings	Depths or Heights	Contents	Total Quantity of Each description
			Brought forward					3762.46
Pillars to carry Platforms								
Footings	4	1' 10½"	7' 6"	7' 6"	1'10½"	1' 0"	14.0	
above "	4	1' 6"	6' 0"	6' 0"	1' 6"	4' 6"	40.50	
Total Cubic feet of Masonry Pillars to carry Platforms								54.50
Total " throughout								6016.98
or Cubic Yards								222.85
Honey Comb Work								
" to Windows						Square ft	920.37	
Total Square ft of Honey Comb Work								920.37
or by 9ths Cubic Total Cubic Yards								25.56
Terracing								
"	1			50' 0"	30' 0"		1500.00	
Total Squares of Terracing								15.00
Wood work								
Beams to carry roof	2	51' 6"	103' 0"	103' 0"	0' 9¾"	1' 1¾"	95.84	
Joists	42	32' 0"	1344' 0"	1344' 0"	0" 0'	3" 0'	5¾" 161.00	
Wall plates to Beams	4	3' 0"	12' 0"	12' 0"	0" 0'	9" 0'	4½" 3.37	
Plates on Top of Pillars	4	2' 3"	9' 0"	9' 0"	2' 3"	0'	4½" 7.59	
Wall plates to Joists	2	51' 0"	102' 0"	102' 0"	0" 0'	6" 0'	3" 12.75	
Bressummer to carry Platforms at door in Lapp	1	40' 0"	40' 0"					
	2	9' 0"	18' 0"	58' 0"	0' 4½"	0'	6" 10.87	
Planking to Platforms								
planks to be placed 1" apart			Running ft:	320' 0"	9" 0'	2"	40.00	
Loose planking to doors in Front walls	2	Contents 11.20 Each		Contents 22.40			22.40	
Total Cubic feet of Wood work								353.82

50

Detail of Work &c	Number	Measurements in feet Lengths & Inches Each	Wall	Total Length	Breadths Thickness	Depths Height	Contents	Total quantity of each description of work
Wood Ab to. Exposed Timber								
Beams to carry roof	2	50' 0"	100' 0"	100' 0"	3' 0"		300.00	
Joists	42	30' 0"	1260' 0"	1260' 0"	1' 2½"		1522.50	
Bressummer to carry plat from at door	1	40' 0"	40' 0"					
	2	9' 0"	18' 0"	58' 0"	1' 4½"		79.75	
Planking to Platform		Running ft		320' 0"	1' 10½"		600.00	
Planking to Doors	2	Area 345.00	Each	Area 690.00			690.00	
		Total Square feet Wood-Oil						3192.25
		or Squares						32
Earthwork								
Front and Rear walls	2	56' 3"	112' 6"					
End Walls	2	27' 6"	55' 0"					
Buttresses to Walls	20	3' 3"	65' 0"	232' 6"	4' 0"	3' 0"	2790.00	
Pillars	4	4' 4½"	17' 6"	17' 6"	4 4½"	3' 0"	229.69	
Pillars to carry Platform	4	2' 10½"	11' 6"	11' 6"	2' 10½"	1' 6"	49.59	
		Total Cubic feet of Earthwork						3069.20
		or Cubic Yards						113.68

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Calicut Railway Co's R^y

Abstract Estimate for a Coal Store House

Quantities	Description of work	Rate			Amount			Total		
		Per	R^s	a	p	R^s	a	p	R^s	a	p
222.83	Cubic Yards Brick in Chunam	Cyd	12	"	"	2674	3	2			
25.56	" Stone Coarse Work	Cyd	6	"	"	153	5	9			
15.00	Square Terracing with Brick on edge 3" jelly 3 courses of Flat tiles & plastering inside & outside with 3 Coats of Chunam	Sq.	25	"	"	375	"	"			
353.82	Cubic feet Teakwood wrought & put up	Cft	1	"	"	1415	4	6			
32.00	Square Wood oil &c Inclosed Timber	Sq.	1	"	"	32	"	"			
113.68	Cubic Yards Earthwork	Cyd	"	4	"	28	6	9			
					Total Rupees				4678	4	2

Madras
14th August 1872

Edwd. Dobbs
Chief Engineer

6 7 34 Lot

Estimate for Native Station Masters house

No.	Length ft	Length in	Breadth ft	Breadth in	Thickness ft	Thickness in	Contents	Rate Rs	Rate as	Rate ø	Per	Amount Rs	Amount a	Amount ø	Total Rs	Total as	Total ø
							Earthwork										
2	40	6	1	2	1	"	94.5										
2	38	"	1	6	1	"	114.0										
2	37	"	1	6	1	"	111.0										
2	9	6	1	2	1	"	22.2										
1	9	9	1	2	1	"	11.4										
1	8	6	1	2	1	"	9.9										
2	5	"	1	6	1	"	15.0										
2	15	"	5	3	1	6	236.3										
	22.8	Cyds.					614.3	"	4	"	C.yd	5	11	2			
							Brickwork										
							In footings										
2	40	6	1	2	1	"	94.5										
2	38	"	1	6	1	"	114.0										
2	37	6	1	6	1	6	168.8										
2	9	6	1	2	1	6	33.3										
1	9	9	1	2	1	6	17.1										
1	8	6	1	2	1	6	14.9										
2	5	"	1	6	1	6	22.5										
							In walls										
1	28	"	6	0	"	9	126.0										
1	21	9	6	"	"	9	97.9										
1	10	"	11	"	1	2	128.3										
2	10	"	11	"	"	9	165.0										
1	40	"	13	"	1	2	606.7										
							1589.0								5	11	2
	Carried Over																

Abstract

22.8	Cyds	Earthwork @	4/	5.11.2
93.4	"	Brickwork @	7/	653.12.9
9.14	Squares	flooring @	6/	54.13.5
44.1	"	plastering @	2/8	110.4.0
22.0	"	White washing @	4/	5.8.0
12.19	"	Roofing @	20/	243.12.10
7.11	Cft	Timber (teak) @	4/	28.7.0
115.9	Sp.ft	Doors & windows @	1/8	173.13.7
3.17	Squares	painting (wood oil) @		3.2.9

Rs. 1279.5.6

Madras
14th August 1872

Fredk Debbie
Asst Engineer

No.	Length ft	Length in	Breadth ft	Breadth in	Thickness ft	Thickness in	Contents	Rate Rs	Rate as	Rate d	£	Amount Rs	Amount as	Amount d	Total Rs	Total as	Total d
	Brought forward						1589.0					5	11	2			
1	6	"	9	"	"	9	40.5										
1	3	"	3	"	"	9	6.8										
1	9	10	10	"	"	9	73.8										
1	9	9	8	"	"	9	58.5										
1	9	1	10	"	"	9	68.1										
1	10	"	37	8	1	2	139.4										
1	9	"	37	8	1	2	395.5										
2	16	3	2	"	"	9	48.8										
2	5	3	2	"	1	2	24.5										
							2744.9										
Deduct openings																	
1	6	6	5	"	1	2	37.9										
1	9	"	6	"	1	2	63.0										
2	6	6	3	3	1	2	49.3										
1	6	6	3	3	"	9	15.9										
4	2	"	2	"	1	2	18.7										
1	2	"	2	"	"	9	3.0										
1	11	"	2	9	1	2	35.3										
							223.1										
	93.4	Cyds =					2521.8	7	"	"	@	653	12	9			
							Carried over					659	7	11			

Estimate for Native Station Masters house.

No.	Length Ft	Length in	Breadth Ft	Breadth in	Thickness Ft	Thickness in	Contents	Rate Rs	Rate as	Rate p	₹	Amount Rs	Amount as	Amount p	Total Rs	Total a	Total p
				Brought forward								659	7	11			
				Flooring with Jelly Tarred and Sanded													
1	38	6	6	"			231.0										
2	15	1	10	"			301.7										
1	12	4	6	"			74.0										
1	28	3	3	8			103.6										
1	20	9	9	10			204.0										
							914.3	6			19	54	13	5			
				Flustering													
2	6	"	1	6			18.0										
2	40	"	13	"			1040.0										
2	40	"	6	6			520.0										
2	21	"	6	6			273.0										
2	20	6	11	"			451.0										
4	10	"	11	"			440.0										
2	15	1	10	"			301.7										
2	15	1	9	"			271.3										
2	16	"	8	6			272.0										
2	9	1	10	"			181.7										
2	9	"	8	"			144.0										
1	38	6	9	"			346.5										
2	5	3	6	"			63.0										
2	5	3	"	9			7.9										
1	40	"	2	"			80.0										
				Carried Over			4410.1	2	8	"	"	110	4	"			
												824	9	4			

Estimate for Native Station Masters house.

No.	Length Ft	Length in	Breadth Ft	Breadth in	Thickness Ft	Thickness in	Contents	Rate Rs	Rate as	Rate p	₹	Amount Rs	Amount as	Amount p	Total Rs	Total a	Total p
				Brought forward								659	7	11			
				Flooring with Jelly Tarred and Sanded													
1	38	6	6	"			231.0										
2	15	1	10	"			301.7										
1	12	4	6	"			74.0										
1	28	3	3	8			103.6										
1	20	9	9	10			204.0										
							914.3	6			19	54	13	5			
				Flustering													
2	6	"	1	6			18.0										
2	40	"	13	"			1040.0										
2	40	"	6	6			520.0										
2	21	"	6	6			273.0										
2	20	6	11	"			451.0										
4	10	"	11	"			440.0										
2	15	1	10	"			301.7										
2	15	1	9	"			271.3										
2	16	"	8	6			272.0										
2	9	1	10	"			181.7										
2	9	"	8	"			144.0										
1	38	6	9	"			346.5										
2	5	3	6	"			63.0										
2	5	3	"	9			7.9										
1	40	"	2	"			80.0										
				Carried Over			4410.1	2	8	"	"	110	4	"			
												824	9	4			

No.	Length ft	Length in	Breadth ft	Breadth in	Thickness ft	Thickness in	Contents	Rate Rs	Rate as	Rate p	C	Amount Rs	Amount as	Amount p	Total Rs	Total as	Total p
							Brought forward					824	9	4			
							& Plate washing Squares	22	"	4	29	5	8	"			
							Roofing with palmyra rafters and sleepers - Covered with flat & pan tiles										
1	12	6	40	6				506.3									
1	12	6	23	"				287.5									
1	12	6	34	"				425.0									
								1218.8	20	"	"	"	243	12	10		
							Timber in posts										
4	7	"	"	4	"	4		3.11									
4	9	"	"	4	"	4		4.00									
								7.11	4	"	"	Cft	28	7	"		
							Doors & windows (panelled)										
1	6	6	5	"				32.5									
3	6	6	3	3				63.4									
5	2	"	2	"				20.0									
								115.9	1	8	"	Sft	173	13	7		
							Painting posts with wood Oil Sft										
								85.3									
							Doors & Windows	231.8									
								317.1	1	"	"	Sq	3	2	9	1279	5	6

Estimate for Coach erecting Shed

No	Lengths ft	in	Breadths ft	in	Thickness ft	in	Contents	Rate Rs	a	p	Amount Rs	a	p
							In Each Gable End						
							Earthwork						
2	4	"	1	6	1	6	18 cft	"	7	3	Cft	-	4	10
							Concrete						
2	4	"	1	6	1	6	18 cft	4	"	"		2	10	8
							Woodwork						
							In posts						
2	10	"	"		6	"	6	5.00						
							In upright posts						
1	4	6	"		3	"	3	.5625						
							In diagonal braces						
1	5	3	"		3½	"	2	.2552						
1	5	3	"		2½	"	2	.1823						
							In upper horizontal bar						
1	13	3	"		3	"	3	.8281						
							In lower horizontal bar						
1	13	3	"		3¾	"	3	1.0352						
							In intermediate horizontal bars						
3	13	3	"		3	"	2	1.6563						
								9.5196	4	"	- Cft	38	1	3

1841

Carried over 41 - 9

No.	Lengths		Breadths		Thickness		Contents	Rate			£	Amount		
	ft	in	ft	in	ft	in		£	s	d		£	s	d
							Brought forward					65	11	9
							Ironwork							
							In two rods							
1	5	9	3	.82 lbs			17.09							
1	5	9	1.732				9.959							
							In shafts							
1	1	9	1.82 lbs				3.185							
1	1	7	1.82				2.882							
							In hinges							
2	2	3	3.34				15.03							
							In hooks							
2	1	2.62 lbs					5.24							
							In bolt							
1	1	1.476 lbs					1.476							
							In bolts & hooks							
16		6 ×	1.636 lbs				5.248							
							67.11	..	2	..	lb	7	12	3
							Carried Over					4	8	13 ..

No	Lengths Ft	In	Breadths Ft	In	Thickness Ft	In	Contents	Rate Ob	ob	b	Pr	Amounts Rs	As	P
				Brought forward								664 4	8	13 ..
				Painting with Wood Oil										
2	10	..	2	..			40							
2	4	6	1	..			9							
1	5	3	..	11			5							
1	5	3	..	9			4							
1	13	3	1	..			13							
1	13	3	1	1½			15							
3	13	3	..	10			33							
							119	1	..	..	Sq.		1	3 ..
											Total		50	.. ..
													2	.. ..
				For a pair of Gates									100	.. ..

Abstract

For a pair of Gates

Earthwork	1.3 Cyds	..	7	3	Cyd
Concrete	1.3 ..	4	..	..	..
Woodwork	19.0392 ..	4	..	..	Cft
Ironwork	124.22 lbs	..	2	..	lb
Painting	2.38 Sqs	1	..	..	Sq.

			9 8
			5 5 4
			7 6 2 6
			15 8 6
			2 6 ..
			100 .. ..

Fredk Wibbles
Chief Engineer

Carnatic Railway C° L

Estimate for Fuel Stage

61X

Quantity	Description	Rate				Amount			
143.84	Earthwork	£	4	.	Cyd	35	15	4	
13.98	Brickwork	7	.	.	"	111	13	5	
9.40	Turfing	.	8	"	Sqrs	4	11	2	
9.40	Trimming	.	2	.	"	1	2	10	
		Total Rupees				139	11	1	

Fredk Dibdin
Chief Engineer

Estimate for Gate keeper's Lodge 68 T

No.	Length Ft	Length in	Breadth Ft	Breadth in	Thickness Ft	Thickness in	Contents	Rate Rs	Rate as	Rate ps	℔	Amount Rs	Amount as	Amount ps	Total Rs	Total as	Total ps
				Earthwork													
2	12	"	1	11	1	6	69.0										
2	9	6	1	2	1	6	33.3										
1	8	"	1	2	1	6	14.0										
2	4	6	1	2	1	6	15.8										
		5.	Cyds =				132.1	"	4	"					1	4	-
				Brickwork													
2	12	"	1	11	2	"	92.0										
2	9	6	1	2	2	"	44.3										
1	8	"	1	2	2	"	18.6										
2	4	6	1	2	2	"	21.0										
2	11	6	7	"	1	6	241.5										
2	10	"	5	4½	"	9	80.6										
5	5	"	3 1/7		"	9	58.9										
1	7	6	8	"	"	9	45.0										
2	5	"	8	"	"	9	60.0										
1	17	"	13	9	"	9	175.4										
							837.3										
			Deduct openings														
2	2	"	1	6	"	6	9.0										
2	4	"	5	"	"	9	15.0										
1	4	"	5	"	"	9	16.5										
2	5	6	2	"	"	9	14.6										
1	6	"	3	3	"	9	55.1										
			29 Cyds				782.2	10	"	"					290	"	"
												Carried Over			291	4	-

Abstract

5.0	Cyds	Earthwork	@	1/4	1. 4
29.0	"	Brickwork	@	10/	290 .
2.48	Squares	Jelly over arch	@	4/	9 14
1.3	"	Jelly flooring tarred & sanded	@	6/	
6.22	"	Plastering	@	2/8	7 12
6.22	"	White washing	@	-/4	1 8
25.5	Sft	Doors & Windows	@	1/8	38 4
.9	Cft	Teak Joists	@	4/	3 9
.79	Squares	Painting with wt Oil	@	1/	. 12
.48	"	Sloped terracing	@	12/8	6 .
					374 11

Madras
14th August 1872

Fred'k Dobbs
Chief Engineer.

No	Length ft	Length in	Breadth ft	Breadth in	Thickness ft	Thickness in	Contents	Rate Rs	Rate as	Rate p	₹	Amount Rs	Amount as	Amount p	Total Rs	Total as	Total p
							Brought forward								291	4	.
							Jelly in Covering over arch										
1	18	"	13	9	"	"	248	4	"	.	39				9	14	8
							Flooring with Jelly tarred and Sanded										
1	10	"	10	"			100										
1	6	"	5	"			30										
							130	6	"	.	39				7	12	9
							Plastering (interior)										
1	10	"	26	"			260										
2	10	"	5	4½			107.5										
5	5	"	3½	"			78.6										
2	6	"	8	"			96										
2	5	"	8	"			80										
							622.1	2	8	"	39				15	8	9
							White washing	622	.	4	"	-			1	8	9
							Doors & windows										
1	6	"	3	3			19.5										
2	2	"	1	6			6.0										
							25.5	1	8	"	Sq:ft				38	4	"
							Teakwood Joists										
7	6	"	"	3	"	1	0.9 Cft	4	"	"	Cft				3	9	7
1	Painting with wt Oil						.79	Sq:ft	"	"	39				"	12	7
							Sloped terracing								6	"	"
1	8	"	6	"			48	12	8	"	39						
															374	11	1

Estimate for Masonry Stile

No.	Length Ft	Length In	Breadth Ft	Breadth in	Thickness Ft	Thickness in	Contents	Rate Rs	Rate as	Rate p	%	Amount Rs	Amount as	Amount p	Total Rs	Total as	Total p
					Earthwork												
1	5	"	2	6	1	"	12.5										
1	4	2	1	2	1	"	4.9										
		64	Cyds =				17.4	"	4	"	"				"	2	7
					Brickwork												
1	6	"	2	6	1	"	12.5										
1	4	2	1	2	1	"	4.9										
1	4	7	3	6	2	"	32.1										
1	4	2	3	6	"	9	11.0										
		2.24	Cyds =				60.5	7	"	"					15	10	11
					Stone Steps												
5	4	7	"	10	"	3½	5.6	2	"	"					11	3	2
															27	"	8

Abstract

64.	Cyds	Earthwork
2.24.	"	Brickwork
5.6	Cft	Stone Steps

@ ₹ . . 2 ₹
@ ₹ 13 10 11
@ ₹ 11 3 2
27 . 8

Madras
14th August 1872

Asst Engineer

C 35

Estimate for an Engineers Bungalow

Details of work	Number	Measurements in feet: Lengths: Each	Slab	Total Lengths	Breadths Thickness	Depths Heights	Contents	Total quantities of each description of work.
Foundations								
Footings B in chunam								
Pillars in Side Walls	4	1' 10½"	7' 6"	7' 6"	2' 4½"	1' 0"	17.81	
Pillars all round	12	1' 10½"	2.7.6	22' 6"	1' 10½"	1' 0"	42.17	
Basement								
Pillars in Side Walls	4	1' 6"	6' 0"	6' 0"	2' 0"	3' 0"	36.00	
Pillars all round	12	1' 6"	18' 0"	18' 0"	1' 6"	3' 0"	81.00	
Superstructure								
Pillars in Back Verandah	5	1' 6"	7' 6"	7' 6"	1' 6"	9' 3"	104.06	
" in Ft. " "	5	1' 6"	7' 6"	7' 6"	1' 6"	7' 3"	81.56	
" in Side Walls	4	1' 6"	6' 0"	6' 0"	2' 0"	14' 0"	168.00	
" "	2	1' 6"	3' 0"	3' 0"	1' 6"	14' 0"	63.00	
Total Cubic feet of B in Chunam								593.60
Foundations								
Footings Brick in Clay								
Front and Side Walls			99' 6"					
Rear Wall			34' 6"					
Balls Room Walls	2	6' 6"	13' 0"	11.70	1' 1½"	1' 0"	165.37	
Basement								
Front and Side Walls			103' 0"					
Rear Wall			36' 0"					
Bath Room Walls	2	6' 6"	13' 0"	152' 0"	0' 9"	3' 0"	342.00	
Steps to Bed Room	1			4' 0"	4' 0"	1' 0"	16.00	
" in Ft. & Back Verandah	2	10' 6"	21' 0"	21' 0"	1' 0"	0' 6"	11.50	
" " " above	2	9' 0"	18' 0"	18' 0"	1' 6"	1' 3"	33.75	
Total Cubic feet of Footings & Basement								568.62

Detail of work	number	Measurements in feet: Length		Total length	Breadth or thickness	Depth or height	Contents	Total quantity of each description of work
Superstructure								
Side Walls of Extra & Bed Rooms	2	16' 6"	33' 0"	33' 0"	0' 9"	14' 0"	346.50	
Side walls of extra Bath Room	1	6' 6"	26' 0"	26' 0"	0' 9"	11' 3"	219.375	
Rear Walls of ..	2	9' 0"	18' 0"	18' 0"	0' 9"	9' 3"	124.87	
Top of Ft. & Rear Walls inside	2	41' 0"	82' 0"					
Around door in sitting Room	2	25' 0"	50' 0"					
" in Bath Rooms	2	23' 0"	46' 0"					
" windows in Ft. & Rr. Walls	4	22' 0"	88' 0"	266' 0"	2' 0"	1' 0"	532.00	
" two doors in sitting Room	2	25' 0"	50' 0"	50' 0"	1' 6"	1' 0"	75.00	
Total Superstructure Cft B in Clay							1297.745	
Deduct for								
Door in Extra Room	1	3' 0"	3' 0"					
" in Bath Room	2	2' 6"	5' 0"	8' 0"	0' 9"	6' 6"	39.00	
" windows in Bed & Extra Rooms	3	4' 0"	12' 0"	12' 0"	0' 9"	5' 0"	45.00	
Total Cft of Deductions							84.00	
Total Cft of Superstructure B in Clay less deductions								1213.745
Superstructure — Sun dried Briets in Mud								
Front and Rear Walls	2	41' 0"	82' 0"	82' 0"	2' 0"	15' 6"	2542.00	
Partition Walls (including gables)	2	18' 0"	36' 0"	36' 0"	1' 6"	19' 3"	1039.00	
Total Cft of sun dried Briets in mud							3581.50	
Deduct for								
" Door to Bath Rooms	2	5' 0"	10' 0"					
" " Sitting Room	2	6' 0"	12' 0"	22' 0"	2' 0"	8' 6"	374.00	
" " "	2	6' 0"	12' 0"	12' 0"	1' 6"	8' 6"	153.00	
" windows	4	6' 0"	24' 0"	24' 0"	2' 0"	7' 0"	336.00	
Total Cubic ft of deductions							863.00	
Total Cft of Sun dried Briets in mud less deductions								2718.5

Details of work	Number	Measurements in feet Length	Total	Total Length	Breadth Thickness Depth &c	Height	Contents	Total quantity Each deduction of Work
Plastering-								
Side walls including Pillars	2	25' 0"	50' 0"	50' 0"		14' 3"	712.50	
	2	9' 6"	19' 0"	19' 0"		11' 6"	218.50	
Rear Walls of Bath Room	2	11' 3"	22' 6"	22' 6"		9' 3"	208.125	
Steps (in all)							80.00	
Total Square feet Plastering							1219.125	
(Deductions)								
Total Sft or Squares Plastering less deductions								1139.625 or 11 1/2
Whitewashing								
Pillars Ft Verandah	5	6' 0"	30' 0"	30' 0"		7' 3"	217.50	
Bk Verandah	3		15' 0"	15' 0"		9' 3"	138.75	
Side Walls	2	18' 0"	36' 0"	36' 0"		14' 3"	513.00	
Partition Walls with gables	4	18' 0"	72' 0"	72' 0"		16' 9"	1206.00	
Ft & Rear walls of main Bg	2	38' 0"	76' 0"	76' 0"		14' 6"	1102.00	
"	1	42' 6"	42' 6"	42' 6"		14' 0"	595.00	
"	1	39' 6"	39' 6"	39' 6"		14' 0"	553.00	
Bathroom Side Walls	6	6' 6"	39' 0"	39' 0"		11' 6"	448.50	
Rear Walls	2	9' 0"	18' 0"	18' 0"		9' 6"	171.00	
for Doors Ws Doors & windows							414.00	
Total S. feet of Whitewashing							5358.75	
Deductions or Sqrs S feet							613.50	
Total Sq. feet of Whitewashing less deductions								4745.25 or 47 1/2
Roofing	2	15' 0"	30' 0"	30' 0"	36' 0"		1080.00	
	"			22' 0"	48' 6"		1067.00	
	2	13' 0"	26' 0"	26' 0"	13' 0"		338.00	
Total S. feet or Squares of Roofing								2485.00 or 25

747

Detail of work	Number	Measurements in feet: Each	Lengths: Total	Total Length	Breadth or Distance	Depth or Height	Contents	Total quantity of each description of work
Flooring								
Sitting Room				18' 0"	16' 0"		288.00	
Eschas Room				18' 0"	10' 0"		180.00	
Bed Room				18' 0"	12' 0"		216.00	
Baths Rooms	2	9' 0"	18' 0"					
Baths Verandahs	1	21' 6"	21' 6"	39' 6"	6' 6"		256.75	
Front "	1			42' 6"	10' 6"		446.25	
Between Pillars	6	9' 0"	54' 0"	54' 0"	0' 9"		40.50	
Under doorways							47.00	
Total Sft or Square of Flooring								1474.500 / 14 3/4
Venetian Portion of Doors & Windows								
Doors	2	3' 9"	7' 6"					
Windows	4	5' 0"	20' 0"	27' 6"	4' 0"		110.00	
Total S. ft Venetians								110.
Pannelled Portion of Doors & Windows								
Doors	2	2' 9"	5' 6"	5' 6"	4' 0"		22.00	
"	3	6' 6"	19' 6"	19' 6"	3' 0"		58.50	
"	2	6' 6"	13' 0"	13' 0"	2' 6"		32.50	
Windows	3	5' 0"	15' 0"	15' 0"	4' 0"		60.00	
Total Sfeet of Pannels								173.00
Wood Reb For all doors & Windows							607.00	
Total Squares of Wood Reb								6.
Earthwork								
Pillars	4	2' 1½"	9' 6"	9' 6"	3' 4½"	2' 0"	64.12	
" "	12	2' 10½"	34' 6"	34' 6"	2' 10½"	2' 0"	198.38	
						Carried Over	262.50	

75X

Details of Work	Number	Measurements in feet: Lengths: Each	Lengths: Total	Total lengths	Breadths or Thickness	Depths or Heights	Contents	Total quantity of each description of Work
Earthwork (Cont'd)			Brought forward				262.50	
Side Walls	2	26' 3"	52' 6"					
Rear Wall	2	30' 6"	61' 0"					
Bath Room Walls	2	5' 6"	11' 0"	124' 6"	2' 1½"	2' 0"	529.12	
Front & Rear Walls of Sitting Room &c	2	41' 0"	82' 0"	82' 0"	3' 0"	0' 6"	123.00	
Partition Walls	2	18' 0"	36' 0"	36' 0"	2' 6"	0' 6"	45.00	
Sitting in Sitting Room				18' 0"	16' 0"		288.00	
Room				12' 0"	18' 0"		216.00	
Room				18' 0"	10' 0"		180.00	
Bk Verandah				21' 6"	6' 6"		139.75	
Ft Verandah				41' 0"	10' 6"		430.50	
Bath Room	2	9' 0"	18' 0"	18' 0"	6' 6"		117.00	
Total left in Cyards of Earthwork								2330.87 or 86⅔

C

Abstract Estimate for an Engineer's Bungalow - 74

Quantities	Description of work	Rate Per	Rate Rs.	as.	p.	Amount Rs.	as.	p.	Total Rs.	as.	p.
22 Cyds	Brick in Chunam	Cyd	5	"	"	110	"	"			
66 "	Brick in Clay	"	2	"	"	132	"	"			
100 2/3 "	Sun dried Brick in Mud	"	1	8	"	151	"	"			
11½ Sqrs	Plastering outside	Sqr	2	"	"	23	"	"			
2 7½ "	Whitewashing	"	"	3	"	8	14	6			
14 3/4 "	Flooring 3" thick Jelly	"	3	"	"	44	4	"			
110 Sft:	Venetian Potion of doors & Windows with pannel backs, hinges, bolts locks & fastenings Complete	Sft	1	4	"	137	8	"			
1 3 "	Battens	"	1	"	"	173	"	"			
6 Squares	Wood Sit to Doors & Windows	Sq	1	"	"	6	"	"			
86 3/3 Cyds	Earthwork	Cyd	"	3	"	16	3	"			
26 Square	Thatched Roofing	Sq:	15	"	"	375	"	"			
43 Cft.	Wood for Breastsummer & Wall plates	Cft	1	8	"	64	8	"			
		Total Rupees							1241	5	6

Madras
14th August 1872

Fred. L. Dobbs
Chief Engineer

Detailed Estimates. etc: relating to Br

No 1470/73

1. Estimates for culverts of 1'no. 2; 4; 5; and 6', and bridges of 10 ft, 20 ft, 25 ft. 30 ft, 40 ft span.

Estimate for Bridge over Adyar : - Rs 43,106.

Alternative do do do do - - - 48,448.

Estimate for Bridge over Palar - - - - 4,27,647.

Do do do do Ponneay - - - 2,61,550

Do do do do Guddalam - - - 1,20,656.

Do do do do do Backwater - 19,440.

Statement of weights of girders designed for reduced rolling loads.

Revised Estimate for Bridge over Adyar - Rs 33,921

Do do do do Palar - - 3,43,981.

Do do do do Ponneay - - 2,03,653.

Do do do do Guddalam - - 1,00,251.

Statement showing savings effected by adopting reduced rolling loads. v

Govt Order No. 306

Govt 26.3.73

1 - 18'. span Culvert. 13 D.

Estimate for bridge No 1

No	Lengths ft	in	Breadths ft	in	Thickness ft	in	Contents	Rate Rs	as	p	£	Amount Rs	as	p	Total Rs	as	p
							Earthwork										
1	12	6	6	6	3	"	243. 8										
4	2	"	3	6	3	"	84. 0										
2	12	4	1	6	1	"	37. 0										
							364. 8										
							13. 5 Cyd.		4	"	C. yd.	3	6	"			
							Brick work in Platform										
1	12	3	6	6	"	6	40. 3										
4	2	9	2	"	"	6	11. 0										
							Footings										
2	12	"	2	4	1	6	84. 0										
							Abutments										
2	12	"	4	9	1	6	171. 0										
							Wing walls										
4	6	3	3	6	1	6	131. 3										
							437. 6										
							16. 2 Cyd.	12	"	"	C. yd.	194	6	5			
							Woodwork Sills										
2	6	"	"	8	"	5	3. 3 Cft.	4	"	"	C. ft.	13	3	2			
							Coping										
1	5	6					226 ft.	2	"	"	C. ft	44	"	"	254	15	7

No 1

Abstract

13.5 Cyds.	Earthwork	@ 5/4	3 6	0
1602 "	Brickwork	@ 12/	19 4	6 5
3.3 Cft	Woodwork	@ 1/-	13 3	2
22.0 Lft	Coping	@ 2/-	44 -	- -
			251 15	7

Madras
14th August 1872

Fred. Dobbs
Chief Engineer

F

2 No Culvert

Estimate for Bridge No 2 7th

No	Length		Breadth		Height		Contents	Rate			Amount			Total		
	Ft	In	Ft	In	Ft	In		Rs	As	P	Rs	As	P	Rs	As	P
							Earthwork in foundations									
1	22	3	4	8	3	3	31.2									
2	12	1	1	6	1	"	1.3									
							32.5	"	4	"				8	2	"
							Brickwork in Plaster									
1	22	3	6	8	"	6	2.8									
4	2	6	1	11	"	6	.4									
							Screw walls									
2	11	8	1	6	1	"	1.3									
							Flooring									
2	21	9	2	4	1	6	5.6									
							Abutments									
2	21	9	4	"	1	6	9.7									
							Wing Walls									
4	3	"	6	3	1	6	4.2									
							24.0	12	"	"				288	"	"
							Arches Covering Stone									
1	21	9	3	6	"	9	57.1 cft	1	-	"				57	1	7
							Coping									
2	11	9					23.5 ft	2	"	"				47	"	"
														400	3	7

1 ft. Girder

Estimate for Bridge No. 3

No.	Lengths ft	in	Breadth ft	in	Thickness ft	in	Contents	Rate No	as	p	£	Amount No	as	p	Total No	as	p
							Cast Iron in foundations										
1	12	5	8	8	3	"	322.8										
4	2	9	2	"	3	"	66.0										
2	11	9	1	6	1	"	44.3										
				16	Cyds		433.1	"	4	"		1	"	"			
							Brickwork in platforms										
1	12	5	8	8	"	6	53.8										
4	2	9	2	"	"	6	11.0										
							Screw Walls										
4	14	9	1	6	1	"	88.5										
							Footings										
2	12	"	2	4	1	6	84										
							Abutments										
	12	"	3	9	1	6	67.5										
							Screw walls										
2	9	"	1	"	"	5	7.5										
							Wing Walls										
4	3	6	5	6	1	6	115.5										
				15.8	Cyds		427.8	12	-			189	9	7			
							Cellar Coping										
4	6						24 Cft	2	-			48	-	-			
							Carried Over					241	9	7			

Madras
14th August 1872

Fred. Lewis
Chief Engineer

No. 2
Abstract

32.6	Cyds	Cast Iron Work in Foundations	@	11	8 - 2 - 6	
24.0	"	Brick Work	@	12	288 - 0 - 6	
57.1	Cft	Covering Stones	@	1	57 - 1 - 7	
23.5	Cft	Coping	@	2	47 - - -	
					460 - 3 - 7	

No 3

Abstract

11.0 Cubs	Earthworks	@ 1/4	£	. .
15.8 "	Brickwork	@ 12/-	159	7 7
21.0 Lft	Casings	@ 2/-	48	. .
9.0 C.ft:	Woodwork	@ 4/-	36	. .
.082 Tons	Ironwork	@ 200/-	16	6 5
			No 294	. .

Madras
14th August 1872

Fred Orbston
Chief Engineer

No	Length ft	Length in	Breadth ft	Breadth in	Thickness ft	Thickness in	Contents	Rate No	Rate as	Rate p	per	Amount No	Amount as	Amount p	Total No	Total as	Total p
							Brought forward					241	9	7			
							Woodwork Sills										
2	6	"	1	"	"	4	1.0										
							Joists										
3	6	"	"	8	"	5	5.0										
						Cft	9.0	4	.	.	Cft	36	.	"			
							Ironwork Girders										
2	5	6	"	5	"	3/8	.143										
4	5	6	"	3/8	"	1/2	.238										
						Cft	.381										
	.082	Tons	Ironwork.					200	"	"	Ton	16	6	5	294	"	"

1½ ft flat top Culvert

Estimate for Bridge No. 1.

No.	Length ft	in	Breadth ft	in	Thickness ft	in	Contents	Rate No	as	p	per	Amount No	as	p	Total No	as	p
							Earthwork										
4	1	10	2	"	3	"	44.00										
1	21	5	8	9	3	"	562.19										
2	12	6	1	6	1	"	37.50										
=	64	3.69	c ft	or			23.899	"	4	"	Cyd.		5	15	2		
							Brickwork										
							In Platforms										
1	21	5	8	9	"	6	93.66										
4	1	10	2	"	"	6	7.33										
							Toothing										
2	21	"	2	4	1	6	147.00										
							Abutments										
2	21	"	2	4	1	6	157.50										
							Wing Walls										
4	5	6	2	6	1	6	82.50										
							In Apron Walls										
2	12	6	1	6	1	"	37.50										
=	52	5.49	=				19.531	12	"	"	Cyc	234	"	"			
							Ashlar Covering Stone										
2	21	"	2	6	"	9	78.75										
1	21	"	4	6	"	9	70.88										
							149.63	c ft			c ft	149	9	7			
							Ashlar Coping										
							25 lft	2	"			50	"	"	439	8	9
2	12	6															

No 1

Abstract

23.8 Cyds	Earthwork @	1/-	3	15 3
19.5 " @	Brickwork @	12/-	23	8 "
149.6 cft.	Covering Stones @	1/-	11	9 7
25.0 Cft.	Copings @	2/-	2	5 "
			No 1	139 8 7

Madras
14th August-1872.

Fred. Dobbs
Asst Engineer

H.

5 ft Arch

Estimate for Bridge No 5

No	Length ft	in	Breadth ft	in	Thickness ft	in	Contents	Rate Rs	as	A	P	Amount Rs	as	A	Total Rs	as	A
							Earthwork										
	29	"	17	2	3	8	1825.3										
							67.6	"	4	"	Cyd	16	14	5			
							Brickwork										
							in platforms										
	29	"	15	"	"	6	217.5										
							Abutments										
2	12	"	6	6	2	9	429.0										
							Wingwalls										
4	7	3	4	10	2	"	280.3										
							Returns										
4	3	"	3	"	1	6	54.0										
							Parapet walls										
2	10	6	2	9	1	6	86.6										
							Invert										
	29	"	8	3	1	2	279.1										
							Arch										
	12	"	6	6	1	2	91.0										
	53.2	Cubic					1457.5	12	"	"	"	638	6	5			
							Concrete										
	9	"	11	"	"	6	49.5										
					Cyds		1.8	4	"	"	"	7	3	2			
							Arch Barrel Copings										
2	11	"	"	"	"	"	22										
4	8	6	"	"	"	"	34										
4	3	6	"	"	"	"	14										
							70								140	"	"
															802	8	"

No 5.

Abstract

67.6 Cyds Earthwork @ 4/	16	4 5
53.2 " Brickwork @ 7/	638	6 5
1.8 " Concrete @ 4/	7	3 2
70 Lineal ft Copings @ 2/	140	" "
Rs	802	8 "

Madras
14th August 1872.

Fidler Wilson
Chief Engineer

6 ft Girder Bridge

Estimate for Bridge No 6

I.

No	Length ft	in	Breadth ft	in	Thickness ft	in	Contents	Rate Rs	as	p	per	Amount Rs	as	p	Total Rs	as	p
							Earthwork										
2	24	"	1	"	4	"	768										
							= 28.4 yds	"	4	"	Cyd	7	1	7			
							Brickwork										
						in	footings of Abutments										
2	6	10	3	6	1	"	47.83										
							In footings of Wing Walls										
4	5	3	2	8	1	"	56.00										
							In Abutments										
2	12	"	7	"	2	9	462.00										
							Screen Walls										
2	9	-	1	"	"	9	13.5										
							Parapets										
4	2	6	1	"	1	6	15.00										
4	6	6	1	6	"	6	21.37										
							Wing Walls										
4	7	-	3	"	1	11	161.00										
							Newalls										
4	5	"	2	"	2	"	80.00										
	= 359		83		cft		= 31.8 yds	12	"	"	Cyd	381	9	7			
							Ashlar Copings										
4	3	-					12.0										
4	3	9					15.0										
4	2	6					10.0										
							37 cft	2	"	"	cft	74	"	"			
												462	11	2			

No 6
Abstract

No 28. L. C ft.	Earth in founds.	@ ¼	7	1	7
12. 5 "	" in flooring	@ ¼	3	2	"
31. 8	Brickwork	@ 12/-	381	9	7
37. 0 C ft	Copings	@ 2/-	74	-	"
14. 34 C ft.	Woodwork	@ 4/-	57	5	9
18 Nos	Ironwork	@ 200/-	36	-	"
10. ¼ Cyd.	flooring	@ 7/-	72. 12. 10		
		No	631	15	9

Madras
14th August 1832

Lieut Dibbin
Chief Engineer

No	Length ft	Length in	Breadth ft	Breadth in	Thickness ft	Thickness in	Contents	Rate No.	Rate As.	Rate P.	£	Amount No.	Amount As.	Amount P.	Total No.	Total As.	Total P.
							Woodwork					1162	11	2			
							Sills										
2	6	"	1	3	"	4	5.0										
							Joists										
4	6	"	"	8	"	5	6. 67										
							Foot plate										
1	8	"	2	"	"	2	2. 67										
						Cft	14. 34	4	"	"	Cft	57	5	9			
							Ironwork										
2	8	"	"	7	"	½	.39										
4	8	"	"	4	"	½	.44										
	18	Tons			Cft		.83	200	"	"	Ton	36	-	-			
							Pitching Earthwork										
1	12	"	5	"	1	"	60.00										
2	8	6	5	"	1	"	85.00										
2	9	"	1	6	4	"	108.00										
2	7	"	1	6	4	"	84.00										
	=	337	Cft		=		12. 5 Cyd	"	4	"	Cyd	3	2	"			
							Stone										
1	12	"	5	"	1	"	60.00										
2	8	6	5	"	1	"	85.00										
2	9	"	1	6	"	6	13.50										
2	7	"	1	6	"	6	10.50										
2	9	"	1	"	3	6	63.00										
2	7	"	1	"	3	6	49.00										
	=	281	Cft		=		10. 4 Cyd	7	"	"		72	12	10	631	15	9

6 ft Arched bridge

J.

Estimate for bridge No 7

No.	Length ft	in	Breadth ft	in	Thickness ft	in	Contents	Rate per	Amount £	s	d	Total £	s	d
							Earthwork							
1	33	"	17	"	4	"	2244							
							83.1							
							Brickwork in Platforms							
	33	"	15	"		"	6 247.5							
							In Abutments							
2	12	"	8	"	3	"	576							
							Wingwalls							
4	9	3	8	6	2	3	707.6							
							Returns							
4	3	3	5	6	1	6	107.3							
							Parapetwalls							
2	12	"	3	6	1	6	126							
							Invert							
1	12	"	7	6	1	2	105							
2	10	6	10	6	1	2	257.3							
							Arch							
	12	"	11	6	1	6	207							
	= 2333.7						Cft = 864 yds							
							Concrete							
	9	"	12	3	"	6	55.1							
							Asblar Copings							
2	12	6	"	"	"		25							
4	10	10					43.3							
4	3	3					13							
			Loose				81.3							

No 7

Abstract

83.1 Cyds Earthwork	@	1/4	20.12.5
864 " Brickwork	@	2/	1036.12.10
2 " Concrete	@	4/	8. " "
81.3 Lft Copings	@	2/	162.9.7
			Rs 1228.2.10

Madras
14th August 1873

Fredk Dobbs
Asst Engineer

10 ft Girder bridge

Estimate for Bridge No 8

K.

No	Length ft	Length in	Breadth ft	Breadth in	Thickness ft	Thickness in	Contents	Rate Rs	Rate As	Rate P	Amount Rs	Amount As	Total Rs	Total As	Total A
							Earthwork								
2	25	"	4	4	4	"	270.7								
							Cyds 36								
							Brickwork								
							in footings of Abutment								
2	12	5	4	4½	1	"	108.6								
							In footings of Wingwalls								
4	8	3	2	5	1	"	79.8								
							In Abutments								
2	12	"	2	9	8	9	577.5								
							Parapet walls								
4	8	6	"	7½	1	6	31.9								
4	2	"	1	"	1	6	12.0								
							Steps in walls								
2	9	"	1	9	"	9	23.6								
							Wingwalls								
4	6	6	7	"	1	11	348.8								
							Newels								
4	5	"	2	"	2	"	80.0								
							1176 Cyds = 1262.2								
							Asphalt Copings								
4	2	6					10.0								
4	7	3					29.0								
4	2	6					10.0								
							49.0								

No 7

Abstract

83.1 Cyds Earthwork	@	1/4	20.12.5
864 " Brickwork	@	2/	1036.12.10
2 " Concrete	@	4/	8. " "
81.3 Lft Copings	@	2/	162.9.7
			Rs 1228.2.10

Madras
14th August 1873

Fredk Dobbs
Asst Engineer

10 ft Girder bridge

Estimate for Bridge No 8

K.

No	Length ft	Length in	Breadth ft	Breadth in	Thickness ft	Thickness in	Contents	Rate Rs	Rate As	Rate P	Amount Rs	Amount As	Total Rs	Total As	Total A
							Earthwork								
2	25	"	4	4	4	"	270.7								
							Cyds 36								
							Brickwork								
							in footings of Abutment								
2	12	5	4	4½	1	"	108.6								
							In footings of Wingwalls								
4	8	3	2	5	1	"	79.8								
							In Abutments								
2	12	"	2	9	8	9	577.5								
							Parapet walls								
4	8	6	"	7½	1	6	31.9								
4	2	"	1	"	1	6	12.0								
							Steps in walls								
2	9	"	1	9	"	9	23.6								
							Wingwalls								
4	6	6	7	"	1	11	348.8								
							Newels								
4	5	"	2	"	2	"	80.0								
							1176 Cyds = 1262.2								
							Asphalt Copings								
4	2	6					10.0								
4	7	3					29.0								
4	2	6					10.0								
							49.0								

No. 8.

Abstract

36 Cyds Earth Work in foundations	@	1/4	9	" "
21.1 " " flooring	@	1/11	5	4 5
47 " Brickwork	@	12/	56	4 "
49 Lft Copings	@	2/	9	8 "
17.3 Cft Woodwork	@	4/	6	9 3 2
41 Lons Iron work	@	2cwt	8	2 " "
16.1 Cyds Flooring	@	7/	11	2 11 2

Rs 940.2.9

Madras
14th August 1873

Fredk Orfeur
Chief Engineer

K.
86

No.	Length ft	Length in	Breadth ft	Breadth in	Thickness ft	Thickness in	Contents	Rate Rs	Rate as	D.	Amount Rs	Amount as	Total Rs	Total as
							Woodwork							
							Sills							
2	6	"	1	3	"	4	5.0							
							Joists							
5	6	"	"	8	"	5	8.3							
							Foot Board							
1	12	"	2	"	"	2	4.0							
							17.3							
							Iron work							
							Girders							
2	12	"	"	11	"	½	0.92							
4	12	"	"	6	"	½	1.00							
					Cft		1.92							
							Retaining							
							Earthwork							
1	12	"	9	"	1	"	108							
2	12	"	7	"	1	"	168							
2	14	6	1	6	4	"	174							
2	10	"	1	6	4	"	120							
		21	1	Cyds			570							
							Floors							
1	12	"	9	"	1	"	108							
2	12	"	7	"	1	"	168							
12	14	6	1	6	"	6	21.8							
2	10	"	1	6	"	6	15							
2	14	6	1	"	3	6	101.5							
2	10	"	1	"	3	6	70.							
			16.1	Cyds			= 434.3							

10 ft. arched bridge

Estimate for bridge No. 9.

No.	Length Ft	in	Breadth Ft	in	Thickness Ft	in	Contents	Rate Rs	a	p	£	Amount Rs	as	p	Total Rs	as	p
							Earthwork										
2	39	.	6	3	5	"	2437.5										
							= 90.3										
							Brickwork in Foolings										
2	13	3	6	3	1	"	165.4										
2	12	10	4	10	1	"	124.0										
4	13	6	4	3	2	"	459.0										
							In Abutments										
2	8	6	12	"	3	6	714.0										
							Counterfort										
8	8	6	2	"	2	"	272.0										
							Wing walls										
4	12	"	2	3	9	"	972.0										
							Returns										
4	5	"	3	2	1	6	95.0										
							Parapet walls										
2	20	"	4	6	1	6	270.0										
							Arch										
	12	"	12	"	1	9	252.0										
	3323	.	45	Ft.	=		123.1 Cyds										
							Asklar Copings										
2	20	6			Lft		41										
4	14	3					57										
4	3	3					13										
					Lft		111										

90·9

Abstract

90.3	Cyds.	Earth. in founds	@	1/4	22 9 2
38.1	"	" in flooring	@	1/4	9 8 5
123.1	"	Brickwork	@	12	1477 3 2
111.0	Lft	Copings	@	2	222 . .
4.1	Cyds	Concrete	@	4	16 6 5
32.7	"	flooring	@	7	228 14 5
				Rs	1976.9.7

Madras
14th August-1872

Fidk Dobbie
Chief Engineer

No.	Length ft	Length in	Breadth ft	Breadth in	Thickness ft	Thickness in	Contents	Rate Rs	Rate as	Rate p	F.	Amount Rs	Amount as	Amount p	Total Rs	Total as	Total p
							Concrete.										
	16	6	9	-	-	9	111.4										
							4.1 Cyds										
							Flooring										
							Earthwork										
4	16	3	5	.	1	6	487.5										
1	12	"	12	6	1	"	150.0										
2	13	6	14	6	1	"	391.5										
		38	1 Cyds				1029										
							Stone										
2	13	6	14	6	1	"	391.5										
1	12	"	12	"	1	"	150.0										
4	16	3	4	6	1	"	292.5										
4	16	3	.	6	1	6	48.8										
		32	7 Cyds				882.8										

20 ft Girder bridge.

Estimate for Bridge No 10. 91X

No	Length ft	in	Breadth ft	in	Thickness ft	in	Contents	Rate Rs	a	P	Amount Rs	a	P	Total Rs	a	P
							Abutment									
							Earthwork									
2	10	"	5	3	1	9	813.75									
1	12	"	8	"	1	9	144.0									
	57.7	Cyds	=				957.75									
							Brickwork in footings									
2	10	"	4	"	4	6	360.0									
1	12	"	5	9	4	6	310.5									
							Do Abutment									
1	12	"	8	3	3	4	330.0									
							Do Wingwalls									
2	8	"	2	"	7	3	252.0									
							Do Newalls									
2	4	9	2	"	2	"	38.0									
							Do Screenwalls									
1	9	"	2	9	"	9	18.6									
							Do parapet walls									
2	4	1¼	1	6	"	4¼	4.4									
2	3	6	2	3	1	6	23.6									
	48.8	Cyds	=				317.1									

No.	Length	Breadth	Thickness	Contents	Rate	£	Amount	Total £
	ft.	in	ft.	in	ft.					
						Brought forward				
						Casings				
2	4	"	"	"	"	8.0				
2	9	"	"	"	"	18.0				
2	2	6	"	"	"	5.0				
						31.0 Cft				
						Ashlar Sills				
2	3	1½	3	"	"	8	12.5 Cft			
						In back Pier				
						Earthwork				
1	16	3	8	6	5	3	725.2			
							27 Cyds			
						Brickwork				
1	12	"	6	3	4	6	337.5			
1	4	6	4	6	4	6	91.1			
1	14	"	4	"	7	9½	435.2			
			32	Cyds	=		863.8			
						Ashlar sills				
2	4	"	3	"	"	8	16.0 Cft			
						Ashlar Copes				
1	3	3	3	"	"	6	5.3			
1	3	"	3	"	"	8	6.0			
							11.3 Cft			

No	Length	Breadth	Thickness	Contents	Rate	£	Amount	Total £
	ft.	in	ft.	in	ft.					
						Brought forward				
						In back casing				
						Iron work — In Girders				
Weight of web						352.5 lbs				
"	of flange plates					537				
"	of rivets					197.3				
"	filler & ends					20.6				
"	Irons in bracing									
	flanges					829.1				
"	Irons & ends					43.5				
"	T Irons					194.8				
						2091.4				
add 5 per Cent for rivetheads & covering plates						104.6				
						2196 lbs				
= 98 Tons										
Weight of 2 Girders						4392.0				
"	T Irons in X braces					538.7				
"	L Irons used for X girder & handrail					2080.0				
"	Casing for handrail					192.0				
						7202.7				
= 3.22 Tons										
	Woolwork									
2	24	"	1	"	"	6	24.0			
2	24	"	1	8	"	3	20.0			
1	9	"	4	"	"	6	18.0			
							62.0 Cft			

20 ft Girder bridge

Abstract

In each Abutment				
57.7 Cyds Earthwork	@	1/8	57	11 2
48.8 " Brickwork	@	12/	585	9 7
31.0 Cft Copings	@	2/	62	1. 0
12.5 Cft Ashlar sills	@	2/	25	1. 0
			730	4. 9
In each Pier				
27.0 Cyds Earthwork	@	1/8	13	6. 0
32.0 " Brickwork	@	12/	384	0. 0
16.0 Cft Ashlar sills	@	2/	32	1. 0
11.3 Cft Ashlar Copings	@	2/	22	9 7
			452	1. 7
In each opening				
1.96 Tons Iron work Cast	@	300	588	
2 Main girders				
1.26 Tons Iron work Cross girders Hand rail	@	300	378	
62.0 Cft Woodwork	@	4/	248	
			1214	2. 0
			Rs 2396	6. 4

Madras
14th August 1872

Rd Wilcox
Chief Engineer

25 ft Girder

N.

Estimate for Bridge No 11

No	Length Ft	in	Breadth Ft	in	Thickness Ft	in	Contents	Rate Rs	as	p	℔	Amount Rs	as	p	Total Rs	as	p
					In each Abutment												
					Earthwork												
2	11	6	5	9	9	2	1212.3										
1	12	"	8	10	9	2	971.7										
		80.9		Cyds	03		2184	Cft									
					Brickwork												
					In footings												
2	11	6	4	6	5	"	517.5										
1	12	"	6	4	5	"	380.0										
				In Abutments													
1	12	"	9	4	3	8	410.7										
				In Wing walls													
2	9	4	9	.	2	3	378.0										
				In Newalls													
2	6	"	2	"	2	.	48.0										
				In Screen walls													
1	9	.	3	6	.	9	23.6										
1	4	.	3	"	"	9	9.0										
				In parapet walls													
2	4	7½	1	6	.	1½	5.2										
2	3	10	1	6	3		34.5										
	66	9	Cyds				1806.5	Cft									

25 ft Girder bridge.

Abstract

In Each	Abutment				
80.9	Cyds	Earthwork	@ 1/		80.11.5
66.9	"	Brickwork	@ 12/		802.12.10
35.2	Lft	Copings	@ 2/		70.6.5
13.8	"	Ashlar sills	@ 2/		27.9.7
				981.11.3	
In each Pier					
33.4	Cyds	Earthwork	@ 1/8		16.11.2
42.4	"	Brickwork	@ 12/		505.12.9
18.0	Cft	Ashlar sills	@ 3/		36.0.0
13.0	"	Ashlar Caps	@ 2/		26.0.0
				584.7.11	
In Each Opening					
2.84	Tons	Ironwork in 2 Main Girders	@ 300/		852.0.0
1.60	Tons	in Cross Girders and hand Rail	@ 300/		480.0.0
74.4	Cft	Woodwork	@ 4/		297.7.7
				1629.9.7	
			Rs	3198.12.9	

Madras
17th August 1872

Fred. Dobbs
Civil Engineer

No.	Length ft	Length in	Breadth ft	Breadth in	thickness ft	thickness in	Contents	Rate Rs	Rate as	Rate p	℔	Amount Rs	Amount as	Amount p	Total Rs	Total as	Total p
			Brought forward														
			Copings														
2	4	4					8.6										
2	10	9					21.5										
2	2	6					5.0										
							35.2	lft									
			Ashlar sills														
2	3	5½	3	"	"	8	13.8	cft									
			In Each Pier														
			Earthwork														
1	16	9	9	6	5	8	901.7										
			Cyds				33.4										
			Brickwork														
1	12	"	7	"	5	"	420.0										
1	5	"	5	"	5	"	125.0										
1	14	3	4	6	9	4	398.5										
			42.4 Cyds =				1143.5	cft									
			Ashlar sills														
2	4	6	3	"	"	8	18.0	cft									
			Ashlar Caps														
1	3	4	3	4	"	6	5.5										
1	3	2	3	2	"	9	7.5										
							13.0	cft									

No	Length ft	in	Breadth ft	in	Thickness ft	in	Contents	Rate Rs	as	p	£	Amount Rs	as	p	Total Rs	as	p
							Brought forward										
							In each opening										
							Ironwork In Girder.										
							Weight of Web										
							555.8										
							" of Upper flange										
							714.4										
							" Lower "										
							410.6										
							" Plates at ends										
							30.0										
							" L Irons in										
							both flanges										
							1023.1										
							" L Irons at ends										
							55.3										
							" In T Irons										
							250.4										
							3039.6										
							Add 5 percent for rivet heads &c. plates										
							152.0										
							3191.6 lbs = 1.42 Tons										
							Weight of 2 Girders										
							6383.2										
							" 4 pairs T Irons in Cross braces										
							538.7										
							" L Irons used for Girders & hand rail										
							2773.3										
							" Piping for hand rail										
							236.0										
							9931.2 = 4.44 Tons										
							Woodwork										
2	29	6	1	.	.	6	29.5 cft										
2	29	6	1	8	.	3	24.6										
1	9	"	4	6	.	6	20.3										
							74.4 cft										

30 ft Girder Bridge

Estimate for Bridge No 12.

No	Length ft	in	Breadth ft	in	Thickness ft	in	Contents	Rate Rs	as	p	Amount Rs	as	p	Total Rs	as	p
							In each Abutment									
							Earthwork									
2	11	6	5	9	9	6	1256.4									
1	12	"	8	10	9	6	1007.0									
			83.8 Cyds = 2263.4 cft													
							Brickwork									
							In footings									
2	11	6	4	6	5	"	577.5									
1	12	"	6	4	5	"	380.0									
							In Abutment									
1	12	"	9	4	3	8	410.7									
							In Wing walls									
2	9	4	9	.	2	3	378.0									
							In Newalls									
2	6	"	2	.	2	"	48.0									
							In Screen Walls									
1	9	"	3	6	.	9	23.6									
1	4	"	3	"	"	9	9.0									
							In Parapet walls									
2	4	7½	1	6	"	4½	5.2									
2	3	10	1	6	3	.	34.5									
			66.9 Cyds = 1806.5 cft													

30 ft. Girder Bridges.
Akatarach

In each Abutment

83.8 Cyds Earthwork	@ 1/-	83	12 10
66.9 " Brickwork	@ 12/	802	12 10
35.2 Lft Coping	@ 2/	70	6 5
13.8 Cft Ashlar sills	@ 2/	27	9 1
	984.9.8		

In each Pier

35.4 Cyds Earthwork	@ 9/8	17	11 2
42.4 " Brickwork	@ 12/	508	12 10
18.0 Cft Ashlar sills	@ 2/	36	" "
13.0 " " Caps	@ 2/	26	" "
	588.8.0		

In each opening

3.96 tons Iron work in 2 Main girders	@ 307	1188	" "
1.75 tons Iron work in Cross girders & handrail	@ 307	525	" "
83.5 Cft Woodwork	@ 4/	334	" "
	2,047.0.0		

Rs 3620.1.8

Madras
14th August 1872

Fred Dobbs
Chief Engineer

No 96

No	Length ft	in	Breadth ft	in	Unit of measurement ft	Contents	Rate Rs	as	p	Amount Rs	as	p	Total Rs	as	p
						Brought forward									
						In each opening									
						In girders									
						Weight of Web	765.0 lbs								
						" Upper flange	844.9								
						" Lower "	611.8								
						" L Irons in both flanges	1499.4								
						" L Irons at ends	62.9								
						" T Irons	435.1								
						add 5 per Cent for rivet heads and covering plates	4219.1 210.9								
							4430 lbs	= 1.98 tons							
						" two Girders	8860								
						" 4 pairs Transverse in Cross brackets	546								
						" L Irons used for x girders & handrail	3120								
						" Piping for handrail	276								
						Total Iron in 1 span	12802	= 5.71 tons							
						Woodwork									
2	34	6	1	"	" 6		34.5	Cft							
2	34	6	1	8	" 3		28.8								
1	9	"	4	6	" 6		20.2								
							83.5	Cft							

40 ft Plate Girder bridge 1 P.

Estimate for Bridge N. 13. 97

No	Length	Breadth	Thickness or mean	Contents	Remarks
	ft in	ft in	ft in	Cu. ft.	
					Brought forward Copings
2	4 4	" "	" "		
2	10 9	" "	" "	8.6	
2	26	" "	" "	21.3	
				5.0	
				35.2	Cft
					Ashlar Sills.
2	35/23	" "	8	13.8	Cft
					In Back Pier Earthworks
1	16 9	9 6	6 "	954.8	
			Cyds	35.4	
					Brickwork
1	12 "	7 "	5 "	420.0	
1	5 "	5 "	5 "	125.0	
1	14 3	4 6	9 4	598.5	
	42.4	Cyds	=	1143.5	Cft
					Ashlar Sills
2	4 6	3 "	" 8	18.0	Cft
					Ashlar Caps
1	34	34 "	6	5.5	
1	32	32 "	9	7.5	
				13.0	Cft

No	Length	Breadth	Thickness or mean	Contents	Rate	£	Amount	Total
	ft in	ft in	ft in		Rs. as. P.		Rs. as. P.	Rs. as. P.
					In each Abutment Earthwork
2	12 6	6 6	9 9	1584.4				
1	13 "	10 "	9 9	1267.5				
		105.6	Cyds =	2851.9				
					Brickwork in footings
2	12 6	5 "	6 "	750.0				
1	13 "	7 "	6 "	546.0				
					In Abutment
1	12 "	8	10 3	10 406.3				
					In wing walls
2	11 "	9	2 2	4 470.5				
					In Parapet walls
2	5 9	2 "	2 "	46.0				
					In screen wall
1	9 "	4	6 "	9 30.4				
1	4 "	3	6 "	9 10.5				
					In parapet walls
2	5 "	1	6 "	4½ 5.6				
2	4 "	3	10 1	6 46.0				
		85.6	Cyds =	2311.3				

140 ft. Girder Bridge

Abstract

In each Abutment			
105.6 Cyds Earthwork	@	1/-	105 9 7
85.6 " Brickwork	@	12/-	1027 3 2
39.5 Cft Copings	@	2/-	79 " "
14.5 Cft Ashlar sills	@	2/-	29 " "
			1240.12.9
In each Pier			
48.1 Cyds Earthwork	@	1/8	24 " 10
53.2 " Brickwork	@	12/-	638 6 5
20.0 Cft Ashlar sills	@	2/-	40 " "
16.9 Cft Ashlar Copes	@	2/-	33 12 10
			736.14.1
In each Opening			
8.5 tons Iron work in			
2 Main girders	@	300/-	2550 " "
2.111 tons Iron work in			
Cross girders & handrail	@	300/-	633 4 10
105 Cft Woodwork	@	4/-	420 " "
			3603.4.10
			Rs. 5580.5.8

Madras
14th August 1872

Fredk Dobbs
Chief Engineer

P. 2

No.	Length ft	in	Breadth ft	in	Thickness ft	in	Contents	Marks	Amount Rs	a	p	Total Rs	a	p
							Brought forward							
							Copings							
2	4	6	"	"	"	"	9	Cft						
2	12	9	"	"	"	"	25.5							
2	2	6	"	"	"	"	5.0							
							39.5	Cft						
							Ashlar sills							
2	3	7½	3	"	"	8	14.5	cft						
							In each Pier							
							Earthwork							
1	17	6	11	"	6	9	1299.4							
							Cyds	48.1						
							Brickwork							
1	12	"	8	"	6	"	576.0							
1	5	8	5	8	6	"	192.7							
1	14	6	5	"	9	3	670.6							
			53.2	Cyds=			1439.3	Cft						
							Ashlar sills							
2	5	"	3	"	"	8	20.0	Cft						
							Ashlar Copes							
1	3	8	3	8	"	6	6.7							
1	3	6	3	6	"	10	10.2							
							Total	16.9	Cft					

No	Length	Breadth	Thickness	Contents	Rate	Amount	Total
	ft in	ft in	ft in				
				Brought forward			
				Inclined opening			
				Iron work in Girders			
				Weight of Web = 1320 lbs			
				" Upper flanges = 2292			
				" Lower " = 1538			
				" plates at ends = 90			
				" L Irons in both flanges = 2993.8			
				" L Irons @ ends = 123.7			
				" T Irons = 713.9			
						9071.4	
				Add 5 % Cast for rivet heads and covering plates		453.6	
					lbs	9525 = 4.35 Tons	
				Weight of two girders		19050 lbs = 8.5 Tons	
				" 4 Cross T Irons in X bracg		546 "	
				" L Irons used for top girders Handrail		3344 "	
				" L Irons for securing top girders		469 "	
				" Piping for handrail		360 "	
				Total Iron in 1 span		23769 lbs = 10.611 Tons	
				Wood work			
2	45	" 1	" " 6			45	
2	45	" 1	8 " 3			37.5	
2	9	" 2	6 " 6			22.5	
104	11					105 Cft	

Carnatic Railway Co. Ld.

Statement showing the saving effected in the undermentioned bridges — the rolling load on the girders being taken at half that in the G. O.*

Number of Spans	Span in feet	Heavy girders Rs	a.	p.	Light girders Rs	a.	p.	Saving Rs	a.	p.
Palar	Bridge	4,27,647	5	6	3,33,981	1	6	93,666	4	"
Ponnar	"	2,61,547	13	6	2,03,652	11	"	57,897	2	6
Cuddalore	"	1,20,656	4	9	1,00,251	1	7	20,405	3	2
Adyar	"	43,105	10	7	33,921	"	1	9,184	10	6
16	40	57,652	13	4	41,280	"	"	16372	13	4
22	30	45,034	"	"	36586	"	"	8448	"	"
16	25	26,073	4	4	20,457	9	4	5616	"	"
22	20	26,708	"	"	21,362	"	"	5346	"	"
								Total		
								2,16,936	1	6

* No 323 of 26th Feb. 1872.

Gradus 2

Fred Dibbles

[illegible]
the currency effected
in bridges — the
railway cost on the
girders being taken
at half that in the
G.O. No. 523 of 26th Feb. 72

Carnatic Railway Co. (Ld.) 1004

Summary of revised Estimate for a Bridge across the River Cuddalum, to consist of 8 Spans of 100 feet clear each, resting on 9 Piers of two Clusters of Three Wrought Iron Screw Piles

	Tons	Total Tons
Wrought Iron		
In 8 Spans Superstructure	188.56	
8 Sets Rollers & Frames	1.28	
In Piers	76.68	
Total		266.52
Cast Iron		
In Piers		40.5

Quantities	Description of Charges		Rate Per	Rate Rs	a	p	Amount Rs	a	p	Total Rs	a	p
266.52 Tons	Wrought Iron	√	Ton	300	"	"	79956	"	"			
40.5 "	Cast Iron	√	"	200	"	"	8100	"	"			
307.02 "	Cartage over 16 Miles	√	Ton mile	"	5	"	1535	1	7			
360 ft	Sinking 18 Cylinders	√	ft	12	-	-	4320	-	-			
1118 cft	Teak Sleepers (12 x 8")	√	cft	4	"	"	4472	"	-			
467 "	Teak Platform (18' x 7")	√	"	4	-	-	1868	"	"			
										1,00,251	1	7

Note
For details of Main Girders
see Estimate for Ponnar Bridge.

Madras
14 Aug 1872

Fredk. C. Dibble
Chief Engineer

Cont[illegible]

Carnatic Railway Co. Ltd

Estimate for

Ironwork in a Single Span of 100 feet clear opening of the Railway being carried on the Bellur Flange of Girder

Road

Weight of Girder Say 10.0
Add weight of Platform 4.4
14.4

Road Load = 14.4/16 = 9 tons per Lineal Foot
Rolling Load (as per Conditions) Engineers Letter &c
50 × 9 + 50 × 6 = 79.5 = 5 tons per bay on 2 Girders
= 2.5 tons per bay on 1 Girder

Total Load on One Girder = 2.5 + 9 = 3.4 per bay.

Summary of Estimate

In Two Main Girders 14.76
" 17 Cross Girders 8.16
Horizontal Bracing of Platform .65
Total weight of Ironwork 23.57

Weight of Suspension Chains as per Estimate

Carnatic Railway Co. Ltd.

Estimate

for a Bridge across the River Gadalam consisting of 8 Spans of 100 feet each resting on 9 Piers of Two Cluster of Three Wrought Iron screw piles.

Summary	Total
Wrought Iron	266.52
Cast Iron	40.5

5

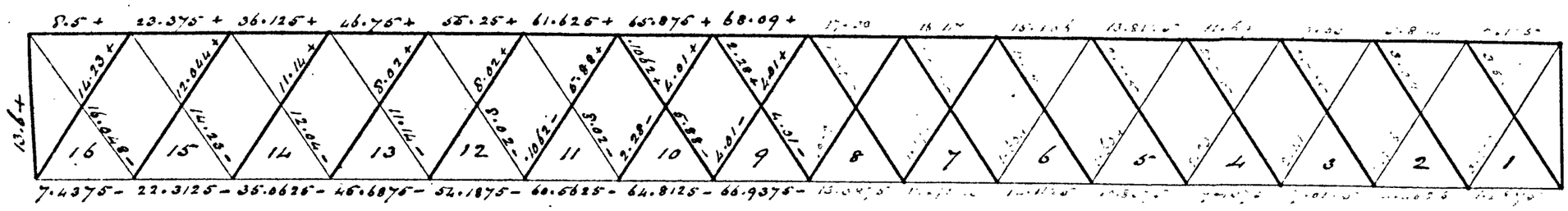
Chief Engineer

100 Ft. Span

Weight of Girder Bay 10.0

Half - Do - Platform 4.4

Dead Load $16 \overline{)14.4}$ .9 per Bay



V : h : : 1 : .625 V : d : : 1 : 1.18 Depth of Girder 10 feet Length of Bay 6.25 feet

Diagram of Maximum strains on each member of Girder

the Red figures denote Square inches of Section to bear those strains

Four Tons allowed per Square inch in Compression

Five do do in Tension

Bay No	No	Girder 100 feet clear Span	Square Inches	Lengths	Weight lbs	Weight Tons	Total weight Tons
		Top Flange					
	2	Vertical Plates 8" × 1/4"	4.00	100'	1333		
Throughout	1	Plates 12" × 1/4"	3.00	100'	1000		
	2	L Irons 3" × 3" × 3/8"	4.125	100'	1373		
5 to 13	1	Plate 12" × 1/4"	3.00	52'	520		
6 to 11	1	Plate 12" × 1/4"	3.00	39.5'	395		
	2	Cover Plates 12" × 1/4" × 3' 0"	3.00	6.00	60		
	17	Thickening pieces for ~~web~~ plate at Pins 5" × 1/4" × 1' 6"	1.25	25.5	106		
	10	L Irons Cover plates 3" × 3" × 3/8" × 1' 6"	2.0625	9' 0"	103		
					4892	2.20	
		Bottom Flange					
Throughout	2	Vertical Plates 8" × 1/4"	4.00	100'	1333		
2 3 11 12 13	2	L Irons 3" × 3" × 3/8"	4.125	25'	344		
4 to 13	2	L Irons 3 × 4 × 3/8"	4.96	62.5'	1033		
5 to 12	1	Plate 12" × 4"	300	852'	520		
7 8 9 8 10	1	Plate 12" × 1/4"	300	27'	270		
1, 2, 3, 11, 12, 13		Plates at Pins 12" × 1/4"	300	1' 0"	90		
	2	Cover Plates 12" × 1/4" × 3' 0"	300	6' 0"	60		
	10	L Irons Cover Plates 3" × 3" × 3/8"	2.0625	9' 0"	103		
	17	Vert. Plate thickening pieces at Pins 5" × 1/4" × 1' 6"	1.25	25.5	106		
					3859	1.74	
							3.94

Bay No	No	Girder 100 ft: clear Span (Cont)	Sq: inches	Length	Weight lbs	Weight Tons	Total Weight Tons
		Brought forward					3.74
		Web (Ties)					
1 & 16	2	Bars 1" x 7/16"	3.5	11.2	261		
2 & 15	2	Bars 4" x 3/8"	3.00	11.2	224		
3 & 14	2	Bars 3.5" x 3/8"	2.625	11.2	196		
4 & 13	2	Bars 3" x 3/8"	2.5	11.2	187		
5,6, 11 & 12	2	Bars 2.5" x 3/8"	1.875	11.2	210		
		(Braced)					
7 & 9, 10	2	Bars 2.5 x 1/4"	1.25	11.2	187		
do	1	Bracing for do. 2" x 1/4"	0.50	17.0	112		
		(Heads for Ties)					
1 & 16	4	Area 33.183 Sq: in x 9/16"			45		
2 & 15	4	" 33.183 " x 1/2"			40		
3 & 14	4	" 28.2744 " x 7/16"			26		
4 & 13	4	" 23.7583 " x 3/8"			21		
5,6,11,12	4	" 19.638 " x 3/8"			42		
7,8,9,10	4	" 19.635 " x 1/4"			22		
					1573	.70	
		(Struts)					
1 & 16	2	Bar 4" x 1/4" & 2 Irons 2 1/4" x 2 1/4" x 1/4"	4.165	11.2	311		
2 & 15	2	T Irons 4" x 2 1/4" x 1/4"	3.00	10.2	204		
3,4,13 & 14	2	T Irons 3" x 1 1/2" x 5/16"	2.617	10.2	534		
5,6,11 & 12	2	Bars 3" x 1/4"	1.5	11.2	336		
7,8,9,10,11	2	Heads for Struts					
1 & 16		Area 33.183 Sq: in x 9/16			45		
		23.7583 " x 1/4"			13		
6,7,8,9 & 11		Plate 4 1/2" (average) x 1/2" x 1'6"	9.00	1'6"	90		
2 & 15		Plate 4 1/2" (average) x 7/16" x 1'6"	7.88	1'6"	236		
3,4,5,12 & 13		(Bracing between Bars)					
1 & 5 & 12 & 16		Plate 6" x 3/8"	11.25	7"	219		
6 & 11		Bar 3" x 1/4	.75	15'	225		
					2243	1.00	
							5.64

Bay No	Nr.	Girder 100 ft. Span (Cont.)	Sq. Inches	Length	Weight lbs	Weight Tons	Total Weight Tons
		Brought forward					5.64
		Ends of Girder					
	1	End Plate 2'0" (average) × ¼"	600	12'1"	240		
	2	Δ^r Plates 10'8" × ¼"		1'6"	160		
	2	L Irons 3"×3"×⅜"	4.125	12'0"	165		
	2	L Irons 3"×3"×⅜"	4.125	1'6"	21		
	2	L Irons 3"×3"×⅜"	4.125	1'2"	16		
	1	Bearing Plate 1'6"×½"	9.00	3'0"	90		
	2	L Irons 3"×3"×⅜"	4.125	10'8"	147		
	2	Δ^r plates 14"×¼" (Gussets)		10'8"	125		
	2	L Irons 3"×3"×⅜" (Gussets)	4.125	1'2"	16		
					980		
					1960	·88	
		Pins					
	34	2" diameter	3.14	1'0"		·16	
							6.68
		Add 5% for nuts					·34
							7.02
		Add 5% for contingencies of designing & manufacture					·35
		Total weight of 1 Girder					7.37
		Horizontal Bracing on Platform					
8	2	Bars 1¼" × ⅜"		18.18			·65

Carnatic Railway Co (Limd)

Summary of Revised Estimate for a Bridge across the River Poonian, consisting of 100 ft clear each, resting on 18 Piers of two Clusters of three Wrought Iron Screw Piles -

	Tons
Wrought Iron	
In 17 Spans of 100 feet each	400.69
In 18 Piers	142.21
34 sets of Rollers & Frames at 1/6	5.4
Total Wrought Iron in Bridge	548.30
Cast Iron	
Castings for 18 Piers at 4.5 Tons	81.00

Quantities	Descriptions of Charges		Rate Per	Rate Rs	Rate as	Rate ps	amount Rs	amount as	amount ps	Total Rs	Total as	Total ps
548.3 Tons	Wrought Iron	)	Ton	300	"	"	164490	"	"			
81.0 Tons	Cast Iron	)	"	200	"	"	16200	"	"			
629.3 "	Cartage over 30 Miles	)	Ton Mile		5	"	5899	11	"			
	Screwing Piles											
20 feet	6 Piers of 6 Piles		ft	7	8	"	900	"	"			
26 feet	1 Pier		"	"	"	"	195	"	"			
30 "	1 " "		"	"	"	"	225	"	"			
31 "	2 " "		"	"	"	"	475	"	"			
32 "	3 " "		"	"	"	"	720	"	"			
33 "	2 " "		"	"	"	"	495	"	"			
35 "	2 " "	)	"	"	"	"	525	"	"			
2372 Cft	Teak Decking 12" × 8"	)	Cft	4	"	"	9488	"	"			
1010 Cft	Teak Platform 18" × 2½"	)	Cft	4	"	"	4040	"	"			
										203652	11	"

Madras
14th Aug 1872

Jas W Dibble
Chief Engineer

Estimate Road as Constructed
Summary Letter No 15

Cost Account

Cost Account to a Length of 2 Miles 1 Chain 1 Link
Clear Waterway Provided for
Carriage Road on the Bottom of Each Span.

Estimate

2 Main Girders 44.76
17 Cross " 8.16
Longitudinal Girders .65
Platform 23.57

Chief Engineer

Cuneiform Railway Co Ltd/

Estimate for

Iron work in a single span of 120 feet clear opening the Railway being carried on the lower flange of Girders.

Load

	tons
Weight of Girder per bay	12.6
Half weight of Platform	6.12
	18.72

Dead Load = $\frac{18.72}{18}$ = 1.04 per bay

Rolling Load (as per Consulting Engrs letter No)

50 × .99 + 70 × .6 = 91.5 = 5.1 tons per bay on 2 Girders

= 2.55 tons per bay on 1 Girder

Total Load = 2.55 + 1.04 = say 3.6 tons per bay.

Summary of Estimate

	tons
In Two Main Girders	20.76
19 Cross Girders	9.12
Horizontal Bracing and Platform	.73
Total Weight of one span	30.61

Cuneiform Railway Co Ltd/

Estimate for

Iron work in a single span of 120 feet clear opening the Railway being carried on the lower flange of Girders.

Load

	tons
Weight of Girder per bay	12.6
Half weight of Platform	6.12
	18.72

Dead Load = $\frac{18.72}{18}$ = 1.04 per bay

Rolling Load (as per Consulting Engrs letter No)

50 × .99 + 70 × .6 = 91.5 = 5.1 tons per bay on 2 Girders

= 2.55 tons per bay on 1 Girder

Total Load = 2.55 + 1.04 = say 3.6 tons per bay.

Summary of Estimate

	tons
In Two Main Girders	20.76
19 Cross Girders	9.12
Horizontal Bracing and Platform	.73
Total Weight of one span	30.61

Cuneiform Railway Co Ltd/

Estimate for

Iron work in a single span of 120 feet clear opening the Railway being carried on the lower flange of Girders.

Load

	tons
Weight of Girder per bay	12.6
Half weight of Platform	6.12
	18.72

Dead Load = $\frac{18.72}{18}$ = 1.04 per bay

Rolling Load (as per Consulting Engrs letter No)

50 × .99 + 70 × .6 = 91.5 = 5.1 tons per bay on 2 Girders

= 2.55 tons per bay on 1 Girder

Total Load = 2.55 + 1.04 = say 3.6 tons per bay.

Summary of Estimate

	tons
In Two Main Girders	20.76
19 Cross Girders	9.12
Horizontal Bracing and Platform	.73
Total Weight of one span	30.61

Cuneiform Railway Co Ltd/

Estimate for

Iron work in a single span of 120 feet clear opening the Railway being carried on the lower flange of Girders.

Load

	tons
Weight of Girder per bay	12.6
Half weight of Platform	6.12
	18.72

Dead Load = $\frac{18.72}{18}$ = 1.04 per bay

Rolling Load (as per Consulting Engrs letter No)

50 × .99 + 70 × .6 = 91.5 = 5.1 tons per bay on 2 Girders

= 2.55 tons per bay on 1 Girder

Total Load = 2.55 + 1.04 = say 3.6 tons per bay.

Summary of Estimate

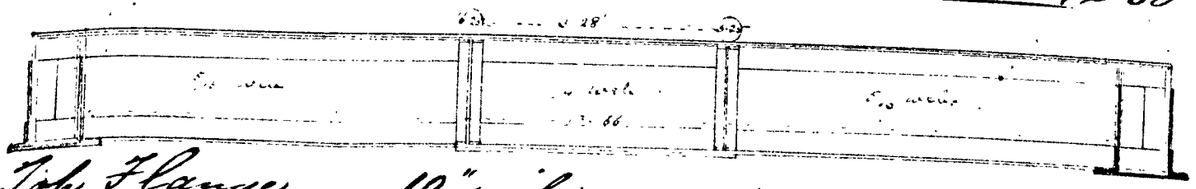
	tons
In Two Main Girders	20.76
19 Cross Girders	9.12
Horizontal Bracing and Platform	.73
Total Weight of one span	30.61

Carnatic Railway Co. (Ltd)

Estimate for Cross Girder for Carrying the Railway on the bottom flanges of the Girders 100 ft. & 120 ft. span.

Dead Load

	lbs	Tons
Two Teak Sleepers 12"×8"×6'0" = 4 Cub. ft. 168 cub.		.15
Weight of Girder		.40
Total say		.50
Live Load (weight of two axles)		12.0
Total load		12.50



Top Flange 10" wide

Two L Irons 3"×3.5"×½" = 6 sq. ins × 13'66 ft. lbs
1 Plate 10"×¼" = 2.5 sq. ins × 13'66 ft. } 373

Two Ends

Two L Irons 3" × 3.5" × ½" × 1'0"
1 Plate 10" × ¼" × 1'0" } 56.1

1 Bottom Flange

Two L Irons 3" × 3.5" × ½" × 13.166'
1 Plate 10" × ¼" × 4" } 296.6

Web

2 Plates 4.9' × 1.0" × 5/16"
1 Plate 3.28' × 1.0" × ¼"
4 T Irons 3.5" × 3.5" × ⅜" × 1'0" } 208.00
933.7

Tons .42

Two Connections with main Girder

1 Plate 12" × 8" × ¼"
2 L Irons 3" × 3" × ½" × 3'4" } .06

Tons .48

V : h :: 1 : 56 Weight of Girder .7
Half-br- Platform .34
Dead Load 1.04 per bay

V : d :: 1 : 1·14

Rolling Load 50 × .99 + 70 × .6 = 91·5 = 5·1 per bay on two Girders

Total Load = $\frac{1.04}{2.56}$ / 3.59 Say 3.6 per bay

120 Ft. Span

Depth of Girder 12 ft Length of Bay 6·72 ft

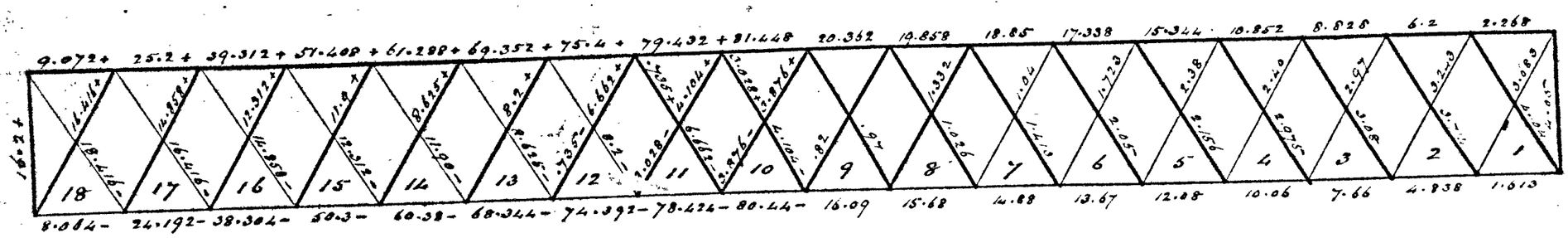


Diagram of Maximum strains on each member of Girder

The Red figures denote Square inches of Section to bear those strains

Four Tons allowed per Square inch in Compression

Five do do in Tension

Top

Bay No.	No.	Girder 120 feet Clear Span	Square Inches	Length	Weight Lbs.	Weight Tons	Total weight Tons
		Top Flange					
Same as Bay 2	2	Vertical Plates 8" × 1/4"	4·00	120'	1600		
	1	Plate 12" × 1/4"	3·00	120'	1200		
	2	L Irons 3" × 3" × 1/2	5·5	120'	2200		
5 to 11	1	Plate 12" × 1/4"	3·00	69·2'	692		
6 to 12	1	Plate 12" × 1/4"	3·00	55·7'	557		
8, 9, 10 to 11	1	Plate 12" × 1/4"	3·00	28·8'	288		
	6	Cover plates 12" × 1/4" × 4'0"	3·00	24·00	240		
	12	L Iron Cover plates 3" × 3" × 1/2" × 16"	2·25	18·00	135		
	19	Vertical plates thickening pieces at Piers 5" × 1/4" × 16"	1·25	28·5	119		
					7031	3·14	
		Bottom Flange					
Same as Bay 2	2	Vertical Plates 8" × 1/4	4·00	120'	1600		
2, 3, 4, 5, 14, 15, 16 to 17	2	L Irons 3" × 3" × 1/2"	5·5	60·5	1109		
4 to 13	1	Plate 12" × 1/4"	3·00	82·6	826		
6 to 13	2	L Irons 3" × 4" × 1/2"	6·5	53·8	1166		
6 to 13	1	Plate 12" × 1/4"	3·00	30·36	304		
7 to 12	3	Cover Plates 12" × 1/4" × 3'0"	3·00	9·00	90		
12, 15 to 16	12	L Iron Cover plates 3" × 3" × 1 1/2" × 16"	2·25	18·00	135		
1, 2, 15 to 16	1	Plate at Piers 12" × 3"	3·00	16"	60		
	19	Vert. plate thickening pieces at Piers 5" × 1/4 × 16"	1·25	28·5	119		
					5409	2·42	
							5·56

Bay No.	No	Girder 120 ft Clear span (Contd.)	Sq. inches	Length	Weight lbs	Weight Tons	Total weight Tons
		Brought forward					5.56
		Web (Ties)					
1+18	2	Bars 4" × 1/2"	4.00	13.2	352		
2+17	2	Bars 4" × 7/16"	3.5	13.2	308		
3+16	2	Bars 4" × 3/8"	3.00	13.2	264		
4,5,14+15	2	Bars 3" × 3/8"	2.5	13.2	440		
6,7,12+13	2	Bars 2.5" × 3/8"	1.875	13.2	330		
		(braced)					
8,9,10,11	2	Bars 2.5 × 1/4"	1.25	13.2	220		
do	1	bracing for do 2" × 1/4"	0.50	20.0	133		
		(Heads for Ties)					
1+18	4	area 33.183 sq in × 3/4"			60		
2+17	4	" 33.183 " × 9/16"			45		
3+16	4	" 33.183 " × 1/2"			40		
4,5,14+15	4	" 23.7583 " × 3/8"			43		
6,7,13+12	4	" 19.635 " × 3/8"			34		
8,9,10,11	4	" 19.635 " × 1/4"			32		
					2291	1.02	
		(Struts)					
1,2,17,18	2	Bars 4" × 1/4" & 4 L Irons 2 1/4" × 2 1/4" × 1/4"	4.165	13.2	731		
3,4,15,16	2	T Irons 4" × 2 1/4" × 1/4"	3.00	11.5	460		
5,6,13,14	2	T Irons 3" × 1 1/2" × 5/16"	2.617	11.5	401		
7,8,9,10,11,12	2	Bars 3" × 7/4"	1.5	13.2	396		
		(Heads for struts)					
1+18	4	area 33.183 sq in × 3/4"			60.		
2+17	4	" 33.183 " × 9/16"			45		
7,8,9,10 11,12	4	" 23.7583 " × 1/4"			43		
3,4,15,16	4	Plates 4 1/2" (average) × 1/2"	9.00	1'6"	180		
5,6,13,14	4	" 4 1/2" (average) × 7/16"	7.88	1'6"	158		
					2474		
							658

Bay No	No	Girder 120 ft. Clear span (Cont.)	Sq. inches	Length	Weight lbs	Weight Tons	Total Weight Tons
		Brought forward			2474		6.58
		Web (Cont.) Struts					
16 6 4 13 6 18 6		Plates 6" × 3/8"	13.5	7"	315		
7 6 12	1	Bar 3" × 1/4"	.75	20'0"	300		
					3089	1.39	
		Ends of Girder					
	1	End Plates 2'0" (average) × 1/4	6.00	16.9	338		
	2	Δr. Plates 12'8" × 1/4		1'6"	380		
	2	L Irons 3" × 3" × 3/8"	4.125	16.9	230		
	2	do do	4.125	1'2"	16		
	2	L Irons 3 × 3 × 3/8"	4.125	1'6"	21		
	1	Bearing Plate 16" × 1/2"	9.00	3'00	90		
	2	L Irons 3 × 3 × 3/8	4.125	1'2"	16		
	2	do do } gussets	4.125	12'8"	174		
	2	Δr. Plates 14" × 1/4 }		12'8"	148		
					1415/2		
					2830	1.27	
		Rivets					
38		2" diameter	3.1416	12"		.18	
							9.42
		Add 5% for rivet heads					.47
							9.89
		add 5% for contingencies in design & manufacture					.49
		Total weight of one Girder					10.38
		Horizontal Bracing on platforms					
9	2	Bars 4" × 3/8"		18.18			.73

Carnatic Railway Co[y] Limited

Summary of Estimate (revised) for a bridge across the River Palar, consisting of 18 Spans of 120 feet clear each resting on 19 Piers of two Cast Iron Cylinders 3 feet 6 inches outside diameter

	Tons	Total Tons
Wrought Iron In 18 Spans Superstructure	530.98	
In 18 Sets Rollers & Frames	5.76	
In Piers	23.87	
Total Wrought Iron		580.61
Cast Iron In Piers		595.29

Quantities	Description of charges		Rate Rs.	As.	P.	Amount Rs.	As.	P.	Total Rs.	As.	P.
580.61	tons Wrought Iron	tons	300	"	"	164183	"	"			
595.29	" Cast Iron	tons	200	"	"	119058	"	"			
1175.90	" Cartage over 45 miles	Ton/mile		5	"	16536	1	6			
40	feet Sinking 36 Cylinders	feet	12	"	"	17280	"	"			
2984	Cft. Teak sleepers 12x8	Cft.	4	"	"	11936	"	"			
1247	Cft. Teak Platform 18"x2"	Cft.	4	"	"	11988	"	"			
									333981	1	6

Madras
14 Aug[t] 1872

Fred[k] Dobbs
Chief Engineer

(Writing Cost as per Consulting Engineers letter &c)

Carnatic Railway Co[y] Limited

Estimate
for Cast Iron Piers & Wrought Iron Superstructure of 120 feet Spans

Summary

Cast Iron	595.29	@ 200	119058
Wrought Iron	580.61	@ 300	174183
Cartage	1175.90	@ 5	16536
19 Cyl[s] Sinking	40	@ 12	17280
Teak Sleepers &c			11936
Teak Platform			11988
Cost Wrought Iron			350.61

For Bridge over
River Palar (Revised)

Chief Engineer

Carnatic Railway Co (Ltd)

Estimate for

Iron work in a single Span having Main Girders 67 feet 6 inches between End Piers. The Railway being carried on the Top Flange of the Girders.

Load

	Tons
Weight of Girder say	4.00
Half weight of Platform	3.08
	7.08

Dead Load = $\frac{7.08}{9}$ = .78 tons per bay

Rolling Load (as per Consulting Engineer letter No

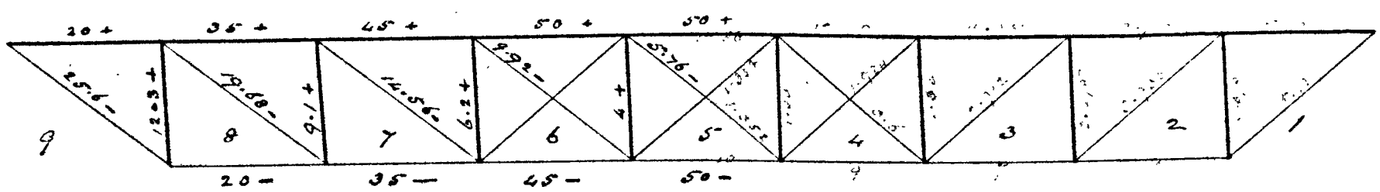
50 × .99 + 17.5 × .6 = 60 Tons = 6.666 tons per bay

on 2 Girder = 3.333 tons per bay on 1 Girder

Total Load = 3.333 + .78 = 4.113 or say 4 tons per bay.

67.5 Ft. Span

Weight of Girder say 4.00 Tons
Half do Platform 3.08
9 | 7.08
Dead Load .78 per bay



V : h : : 1 : 1.25 V : d : : 1 : 1.60 . . Depth of Girder 6 ft Length of Bay 7.5 feet

Diagram of maximum strains on each member of Girder
the red figures denotes Square Inches of Section to bear those strains
Four Tons allowed per Square inch in Compression
Five do do in Tension

54

1167

Carnatic Railway Co: / Limd /

Weight of Wrought and Cast Iron in one Span of 64 Bridge Girders
67 feet 6 Inches between end Piers

No		Each	Total Tons
2	Main Girders	3. 12	6. 24
10	Cross Girders	. 14	1. 40
8	Bracing between Girders	. 104	. 83
291 ft	Hand rail		. 13
2 Sets	Rollers and Frames		. 09
4	Inv Chairs		. 10
			8. 79
	Adds 5 % for contingencies in designing & manufacture		. 43
	Total Wrought Iron in one Span		9. 02
	Total Cast Iron in 1 Span		. 69

Bay No	No	Girder 67 ft. 6 in between End Pins	Square Inches	Length	Weight Lbs	Weight Tons	Total Weight Tons
		Top Flange					
	1	Plate 12" x 1/4"	3.00	69'0"	690		
	1	" 12" x 1/4"	3.00	39'6"	395		
	2	L Irons 3" x 3 1/2" x 1/2"	6.00	69'0"	1380		
	1	Cover Plate 12" x 1/4"	3.00	3'0"	30		
	20	L Iron Brackets *8" x 3" x 1/2"	5.25	1'6"	525		
					3020		
						1.35	
		Add 5% for rivets &c				.06	
							1.41
		Tension Bar					
298	2	Bars 4 1/2" x 1/2"	4.5	*9.00	270		
397	3	" 4 1/2" x 1/2"	6.75	9.00	405		
486	4	" 4 1/2" x 1/2"	9.00	9.00	540		
5	5	" 4 1/2" x 1/2"	10.75	9.00	323		
		Web Ties			1538	.69	
174	2	Bars 4 1/2" x 9/16"	506	*11.00	371		
298	2	" 4" x 1/2"	400	10.75	286		
347	2	" 3" x 1/2"	300	10.75	235		
		(braced diagonals					
486	2	Brass 3" x 3/8"	2.25	10.75	161		
5	2	" 3" x 5/16"	1.875	10.75	734		
	4	Bracing 2" x 1/4"	2.00	15.00	180		
					1287	.58	
							2.68

Bay No	No	Girder 67 ft 6 in between End Pins (cont)	Square Inches	Length	Weight lbs.	Weight Tons	Total weight Tons
							2.68
		Vertical Struts					
199	2	T Irons 3"x2"x 5/16"	2.93	5' 0"	98		
298	2	L Irons 3"x2"x1/4"	2.375	5' 0"	79		
397	2	Bars 3"x1/4"	1.5	* 7' 6"	75		
486	2	" 3"x1/4"	1.5	7' 6"	75		
		End Pieces (Top)					
199	2	Plates * 5"x1/2"	5.00	1'4"	44		
298	2	" 5"x1/2"	5.00	1'4"	44		
		End Pieces (bottom)					
199	2	Plates * 5 1/2"x1/2"	5.5	1'3"	46		
298	2	" 5 1/2"x1/2"	5.5	1'3"	46		
		Bracing					
					38		
1799	3	Plates 5"x6"x3/8"			60		
3468	1	Plate 2"x1/4"	0.5	9'0"	60.5	.27	
		Pieces					
18	3"	Diameter	7.0686	11"	383	.17	
				Total Weight of main Girder			3.12
		Cross Girders					
1		Rolled Beam 6"x6"x3/8" I Iron	6.47	13' 2"	284		
2		L Irons 2"x2"x1/4	1.875	3' 9"	24		
					308		.14
		Cross Braeing between main Girders					
2		T Irons 4"x4"x1/2"	3.75	7' 6"	187.5		
2		End Plates * 5 1/2" x 1/2"	2.75	1'1 1/4"	20.35		
2		Do 6x1/2	3.00	1'1 1/4"	22.2		
					230.05		
		Weight of Iron in Chains & Bed Plate					0.104
1		1" Bolts and heads		58.3	58.52		
		Cap 7"x6"x3/4"			8.7		
					67.22		
7		2" Rollers 1'2" long + 2 Frames 1/2 x 3/16" x 1.4"			97.26		

Cast Iron

Bay No	No	Girder 6'/f 6 in between end Piers/Centre	Cub in.	Total Cub in.		
		Caps for Piers				
18		(Top) 5" round x 3/4"	14.75			
18		Bottom 6" round x 3/4"	21.25			
			36.00	648		'08
4		Chairs and Bed Plates				
		Plate 1'10" 1'7" x 1/2	627			
	2	Side guards 1/2 Quarter round x 1"	19.5			
	1	Ed Do Do Do 1'3"	6.5			
	1	Do Do Do 8"	3.5			
			656.5	2626		'31
		Saddle				
4	1	Plate 1'0 x 1'3" x 1/2"	270			
	2	" 4/4 x 11 x 1/2"	305			
	1	" 4" x 6/2" x 1/2"	39			
4		" 4" x 1/4 x 1/2	30			
			644	2576		'30
		Total Cast Iron in Girder Span				'69

Abstract of Revised Estimate for a Bridge across the River Adyar consisting of 6 Spans of 66 feet each on Masonry Piers

Description	Quantity	Rate Rs	as	p	Up	Amount Rs	as	p	Total Rs	as	p
Brickwork	623.867	15	0	0	C yds	9358	0	0			
Looker Ashlar	231 Cub ft	3	0	0	C ft	693					
Rough Ashlar	1630.5 Cub ft	2	0	0	C ft	3261					
Earthwork	113.03 C yds		8	0	C yds	56	8	2			
									13368	8	2
Wrought Iron	54.48 Tons	300	0	0	Ton	16.344	0	0			
Cast Iron	4.26 Tons	200	0	0	Ton	852	0	0			
Coal tar & Tallow	58.74 Tons		5	0	Ton Mile	128	7	11			
Teak Uprights (12"×8")	567 C ft		4	0	C ft	2268	0	0			
Teak Platform (18"×2")	240 C ft		4	0	C ft	960	0	0			
									20552	7	11
						Grand Total			33.921	0	1

Madras
14 Aug. 1872

Fred. Dibdin
Chief Engineer

Carnatic Railway Co. Ltd

Estimate

for a Bridge across the Kistna River at Ibrahimpatam

near Kistna Co. 1/3

Carnatic Railway Co. Ltd

Statement showing the weights of girders designed for gross loads of 1.07 Tons and 0.6 Tons per l. ft.

Girder 44 ft long (for 40 ft opening)

	1.07 Tons per l. ft.	0.6 Tons per l. ft.
	lbs	lbs
Weight of Web	1320	1320
" plates in upper flange	2292	1146
" " lower "	1538	769
" " at ends	90	90
" L Irons in both flanges	2993.76	1497
" " at ends	123.76	123
" T Irons (stiffening ribs)	713.86	714
	9071.4	5639
Add 5 P Cent for rivet heads and Covering plates	453.6	283
	9525	5922
Tons	4.25	2.65

Girder 34 ft. long (for 30 ft. opening).

Gross load 1 Ton & .583 Tons p. l. ft.

	lbs	
Weight of web	765	765 lbs
" plates in upper flange	1194.5	697 "
" " lower	728.3	364 "
" " at ends	56.3	56 "
" L Irons in both flanges	1499.4	750 "
" " at ends	62.9	63 "
" T Irons (stiffening ribs)	435.1	435 "
	4741.5	3030
Add 5 P Cent for rivet heads and Covering plates	237	151 "
	4978.5	3181
~~1.42 Tons~~ Tons	2.22	1.42

Girder 29 ft. long (for 25 ft. opening)
Gross load 1 Ton and .575 Tons p. l. ft.

	1 Ton per foot	.575 Ton per foot.
Weight of web	555.8	556
" plates in upper flange	714.4	357
" " lower "	410.6	205
" " at ends	30.0	30
" L Irons in both flanges	1023.1	512
" " at ends	55.3	55
" T Irons (stiffening ribs)	250.4	250
	3039.6	1965
Add 5 P Cent for rivet heads and Covering plates	152.0	98
	3191.6	2063
Tons	1.42	.921

Girder 23'-6" long (for 20 ft. opening)
Gross load 1 Ton and .569 Tons p ft.

	1 Ton per ft.	.569 Tons per ft.
Weight of web	352.5	352
" plates in upper flange	453.7	227
" " lower "	197.2	99
" " at ends	20.6	20
" L Irons in both flanges	829.1	415
" " at ends	43.5	43
" T Irons (stiffening ribs)	194.8	195
	2091.4	1351
Add 5 Pcent. for rivet heads and covering plates	104.6	67
	2196.0	1418
Tons	.98	.633

Fred Dobbins
Chief Engineer

Madras
[illegible] 1872

Bridge 100 feet Span at Cuddalore

			Wt. Iron Tons	
1/2 One Span	100 ft.		35.53	@ Rs. 300
" Two Piers of Screw Piles		35 feet deep		
		Wt. Iron	Cast Iron	
each		8.92	4.5	
		Tons	Tons	
Total		17.84 @ Rs. 300	9.0 @ Rs. 200	

Timber Sleepers 139.92 Cft. @ Rs. 4
" Platform 58.0665 " " "

Screwing Piles Two Piers of Six Piles
35 feet @ 7/8/- per ft.

Madras
14th August 1872

Fred. L. Dibdin
Chief Engineer

P.W.D. Estimate Abstract
the Cuddalore Bridge
Screwing Piles
Iron 35.53 Tons @ Rs. 300
Timber 198 Cft @ Rs. 4
Screwing Piles
Two Piers of Six Piles
35 feet @ 7/8/- per ft.

Z2

Carnatic Railway 6m/26d/

Summary of Estimate for a Bridge across the River Gudalum to consist of 8 Spans of 100 feet each resting on 9 Piers of two Clusters of three Wrought Iron Screw Piles.

1247

	Tons	Total Tons
Wrought Iron		
in 8 Span Superstructure	265.2	
8 Sets Rollers and Frames	1.28	
In Piers	76.68	
		343.16
Cast Iron		
In Piers		40.5

Quantities	Description of Charges	Rate Per	Rate Rs.	Rate A	Rate P	Amount Rs.	Amount A	Amount P	Total Rs.	Total A	Total P
343.16 Tons	Wrought Iron	Ton	300	-	-	1,02,948	-	-			
40.5 "	Cast Iron	"	200	-	-	8,100	-	-			
383.66 "	Cartage over 16 miles	Ton/mile	-	5	-	1,918	4	9			
20 feet	Sinking 9 Piers	foot	7	8	-	1,350	-	-			
1118 Cft.	Teak Sleepers (12"x8")	Cft.	4	-	-	4,472	-	-			
467 "	" Platform (1.8"x2")	Cft.	4	-	-	1,868	-	-	1,20,656	4	9
						Total			1,20,656	4	9

Madras
14th August 1872

Fredk Dibdin
Chief Engineer

Estimate for foundations of a Bridge
across the River Gudalum Consisting of 8 Spans
100 feet each resting on 9 piers of two Clusters of
three Wrought Iron Screw Piles

125 T

		Wt. Iron	Cast Iron
5 Piers	41 ft	41.10	22.5
1	42	8.63	4.5
1	43	8.82	4.5
1	44	8.97	4.5
1	45	9.16	4.5
		76.68	40.5

Carnatic Railway Co (Ld)

Summary of Estimate for Poonian Bridge

Wrought Iron

Superstructure

		Tons
	17 spans 100 ft each @ 34·2 tons	581·4
	In 16 piers & 2 Abutments	142·21
	34 sets of Rollers & Frames @ ·16	5·4
	Total Wrought Iron in bridge	729·01

Cast Iron

Castings for 16 piers & 2 abutments @ 4·5 tons 81.

Quantities	Description of Charges	Rate Per	Amount Rs.	As.	P.	Total Rs.	As.	P.
729·01	Tons Wrought Iron	Ton	300	"	"	2,18,703	"	"
81	" Cast Iron	"	200	"	"	16,200	"	"
810·0	Miles Cartage over 30 miles screwing piles	Ton per mile	"	5	"	7,593	13	6
20 ft	6 pieces of 6 piles	ft	"	7	8	"	900	"	"
26 "	1 Pier "	"	"	"	"	"	195	"	"
30 "	1 Pier "	"	"	"	"	"	225	"	"
31 "	2 Piers "	"	"	"	"	"	465	"	"
32 "	3 " "	"	"	"	"	"	720	"	"
33 "	2 " "	"	"	"	"	"	495	"	"
35 "	2 " "	"	"	"	"	"	525	"	"
8720	Cft. Teak Sleepers (12"×8")	Cft	"	4	"	"	11,488	"	"
910 "	Teak Platforms (18×2")	Cft	"	4	"	"	4,040	"	"
							26,1549	13	6

Madras
14th August 1872

Fredk Dobbie
Chief Engineer

Z,

100 Feet Span

v : h :: 1 : .625 Vertical : Diagonal :: 1 : 1.18

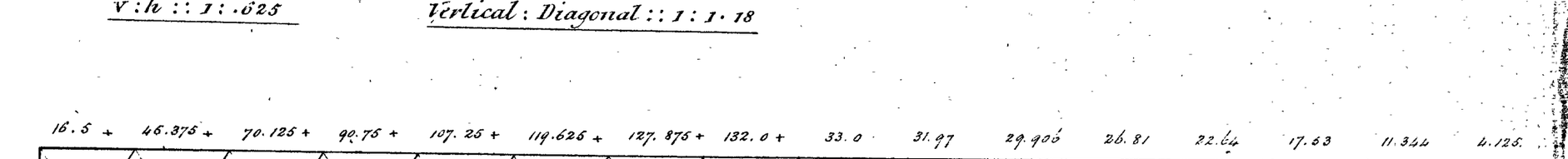


Diagram of Maximum strains on each member of Girder

The red figures denote Square inches of Section to bear those strains

Four Tons allowed per Square in Compression

Five ___ do _____ do in Tension

Canadian Pacific Railway Co's Rly,
Saint Boonicks

1264

To be bridged by 17 spans 100 feet clear each to
centres piers consisting of two of 3 screw piles
at 103.5' Centre.

	Height above ground to formation	Approximate depth of foundation
Abutment (North)	6.0.	20'
Pier 1	8.0	20'
2	6.5	20'
3	10.0	35'
4	10.0	35'
5	11.4	33'
6	11.3	32'
7	11.5	20'
8	7.3	33'
9	7.0	31'
10	6.5	34'
11	12.0	30'
12	12.2	31'
13	12.4	32'
14	13.0	32'
15	13.2	26'
16	13.0	20'
Abutment (South)	7.5	20'
	Average Depths	28.00 ft

Bonnie's bridge / Cont'd /

Wrought Iron in Piers

				1297
North Abutment	Total length of piles			tons
6 piles 5" dia	25'0" @ 196.35 lbs or .0883 Tons per Lft.			4.38
2 sets of bracing				.78
				5.16
Pier 1				
6 piles	27'0"	4.75		
2 sets of bracing		.78		5.53
Piers 2				
6 piles	25.5	4.49		
2 sets bracing		.78		5.27
Piers 3 & 4				
12 piles	44'	15.49		
6 sets bracing		2.36		17.85
Piers 5				
6 piles	43.4	7.64		
3 sets bracing		1.18		8.82
Piers 6				
6 piles	42.3	7.45		
3 sets bracing		1.18		8.63
Pier 7				
6 piles	30.5	5.37		
3 sets bracing		1.18		6.55
Pier 8				
6 piles	39.3	6.92		
2 sets bracing		.78		7.70
Pier 9				
6 piles	37.0	6.57		
2 Sets bracing		.78		7.29
Pier 10				
6 piles	39.5	6.95		
2 sets bracing.		.78		7.73
				80.53

Bowcraid Bridge (Cd) Wrought Iron in piles — Tons

Brought forward — 80.53

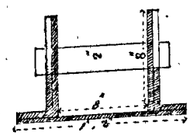
	Total length of piles	Tons	
Pier 11			
6 Piles	41.0	7.22	
3 sets of bracing		1.18	8.40
Pier 12			
5 Piles	42.2	7.43	
3 sets bracing		1.18	8.61
Pier 13			
6 Piles	43.4	7.64	
3 sets bracing		1.18	8.82
Pier 14			
6 Piles	44.	7.75	
3 sets bracing		1.18	8.93
Pier 15			
6 Piles	38.2"	6.72	
3 sets bracing		1.18	7.90
Pier 16			
6 Piles	32.	5.63	
3 sets bracing		1.18	6.81
South Abutment			
6 Piles	26.5	4.66	
2 sets bracing		.78	5.44
			135.44
Add 5% for joints, fastenings, Screw blades &c			6.77
Total Wrought Iron in Piers			142.21

Comp[d] C.S.

Carnatic Railway Co. Ltd. Z 20

Estimate of Iron work for a Bridge of 100 feet clear opening.

Bay No.	No.		Superficies	Lengths	Weight in lbs	Weight in Tons	Total Tons
		Top Flange					
	1	Plates 1' 2" × 1/4					
	2	Plates 8" × 3/8	15	100	5000		
	2	∠ Irons 3"×3"×1/2"					
	1	Plate 1' 2"×1/4	3.5	77	899		
	1	Plate 1' 2" × 5/16	4.375	64.5	941		
	1	Plate 1' 2" × 5/16	4.375	52	758		
	1	Plate 1' 2" × 3/8"	5.25	39.5	691		
	1	Cover Plate 1' 2" × 3/8"		5'	88		
	2	Cover Plate 1' 2" × 5/16"		3'	88		
	2	do do 1' 2" × 1/2"		2' 6"	58		
	34	Thickening Plates to Vertical Plates at Pin-holes 5"×1/2"		1' 6"	425		
	8	∠ Iron Cover Plates 3"×3"×1/2"		1' 6	110		
					9058	4.04	
		Bottom Flange					
	1	Plate 1' 2" × 1/4"	15	100	5000		
	2	Plates 8" × 3/8					
	2	∠ Irons 3"×3" × 1/2"					
	1	Plate 1' 2" × 1/4"	3.5	61.5	753		
	1	Plate 1' 2" × 1/4"	3.5	52'	607		
	1	Plate 1' 2" × 5/16"	4.37	39.5"	576		
		Cover Plates as per top flange			234		
		Thickening pieces for Vertical Plates as per top flange			425		
		∠ Iron Cover plates do			110		
					7705	3.44	
							7.48



The bars of the web are fastened between the Vertical plates

100 ft Girder Continued

Bay No	No		Sq. Inches	Length	Weight in lbs	Weight in Tons	Total Tons
		Brought forward					7.48
		Web Struts					
1	2	T irons 5"×3"×½"	7.5	11'	275		
2	2	T irons 4.5"×3"×½"	7.0	11'	257		
3	2	T irons 3"×3"×½"	5.4	11'	198		
4&5	2	T irons 3"×4"×⅜"	4.96	11'	364		
6.7.8.9&10	2	T irons 3"×2"×5/16	2.83	11'	320		
		Bracing between T irons.					
60	6	Pieces 6"×⅜"×7" to each Strut			263		
		End pieces four to each Strut					
1		5"×⅜"		2'	184		
2		4.5"×1¼"		2'	150		
3		4"×1⅛"		2'	120		
4&5		4"×⅞"		1'9"	163		
6.7.8.9&10		4"×¾"		1'9"	347		
					2841		
		There are two of each like above			5682	2.54	
		Web Ties					
1	2	4"×13/16"	6.316	11.3	245		
2	2	3.75"×¾"	5.525	11.3	212		
3	2	3.75"×⅝"	4.673	11.3	177		
4	2	3.5"×⅝"	4.335	11.3	165		
5	2	3"×7/16	2.807	11.3	99		
6	2	3"×7/16	2.807	11.3	99		
1	4	**Heads for Ties** 1⅛"	Diff area .28"		51		
2	4	15/16	.20"		30		
3	4	¾	.20"		24		
4	4	11/16	.17"		19		
5	4	7/16	.15"		11		
6	4	7/16	.15"		11		
					1143		
		Two of each like above			2286	1.02	
				Carried over			11.4

100 ft. Girder (Continued)

1937

Bay No	No.		Dy Inches	Length	Weight in lbs	Weight in Tons	Total Tons
		Brought forward					11.04
		Ends of Girders					
	2	Plates 1'6" x 3/8"		10'8"	480		
	2	Plates 1'2" x 1/4"		1'6"	35		
	1	Plate 1'2" x 3/8"		10'8"	184		
	1	Bearing Plate 3'6" x 1/2"		2'0"	140		
		∠ Irons 3" x 3" x 1/2"		27'4"	251		
		Gussets					
2	1	Δ^r Plates 1'2" @ bottom x 3/8"		10'8"	181		
	2	∠ Irons 3" x 3" x 1/2"		10'8"	390		
	2	∠ Irons 3" x 3 x 1/2"		1'2"	43		
					170 1/2		
		There are two of the above			3408	1.53	1.257
		Add 5% for rivets &c.					.63
34		Piers 2' diameter					.16
		Total					13.36
		Horizontal Bracing in platform					
	8						
	2	Bars 4" x 3/8"		18.18			.65

Carnatic Railway Co. Ltd.

Estimate for

a single Span of 100 feet clear opening the Railway being carried on the bottom Flange of Girders.

Load

Cross Girder	.42 tons	
Rail & Sleepers	.23 tons per bay of 6.25 ft	
	2 | .65	on two girders
Half weight of platform	.33 per bay	
Weight of Girder 2 ay	1.24 do	assumed
	1.57 or say 1.6 tons per bay	

Rolling Load = 50 + 50 × .6 tons = 80 tons = 5. "

Total Load 6.6

Summary of Estimate

In two Main Girders	26.72
17 Cross Girders	8.16
Horizontal bracing of Platform	.65
Total weight of one Span	35.53

Madras
14th August 1872

Fredk Dibdin
Chief Engineer

1557

Carnatic Railway Co.y Ld.y

Summary of Estimate for a bridge across the River Palar consisting of 18 spans of 126 feet clear each resting on 19 piers of two Cast Iron Cylinders 3 feet 9 inches outside diameter

	Tons	Total Tons
Wrought Iron		
18 spans superstructure	817.38	
18 sets of Rollers & Frames	5.76	
In Piers	23.87	
Total		847.01
Cast Iron		
In Piers		595.29

Quantities	Description of charges	Rate Per	Rate Rs	Rate as	Rate p	Amount Rs	Amount as	Amount p	Total Rs	Total as	Total p
847.01 Tons	Wrought Iron	Ton	300	..	..	254,103	..	..			
595.29 "	Cast Iron	"	200	..	..	119058	..	..			
1442.3 "	Cartage over 45 miles	For mile	..	5	..	20,282	5	6			
40 feet	Drifting 36 Cylinders	ft	12	..	..	17.280	..	..			
2984 cft	Teak Sleepers (12"x8")	cft	4	..	..	11,936	..	..			
1247 "	Teak platform (18"x2")	"	4	..	..	4988	..	..			
									427647	5	6

Madras
14th August 1872

Fred.k Dobbs
Chief Engineer

1367

Estimate for bridge foundations on two Cast Iron Cylinders 3'-9" diameter

Thickness of Cylinders 1 1/8"

a length of Cylinder (6 ft. long) weighs 1.52 Tons

1" Bolts and nuts per length of Cylinder 0.058 "

	lbs	Tons	Total Tons
Cap of Cylinder			
Bottom Flange	790.6		
Top do	943.5		
Vertical webs	331.96		
	2066.06		
Add 10% for stiffness &c	206.6		
	2272.66	1.02	
		2	
		2.04	
Distance piece between pairs @ top 10' long		.21	
			2.25
Cast Bracing between Cylinders			22
Three Set Legs for do			13

Total heights of piers

average depths below surface 40 ft.

		Height above bed of River	Depth of foundation	Total
a)	One Pier	20' 3"	40	60' 3"
b)	2 Piers	17' 3"	40	57' 3"
c)	" 3 "	16' 3"	40	56' 3"
d)	" 1 "	15' 3"	40	55' 3"
e)	" 2 "	14' 3"	40	54' 3"
f)	" 5 "	13' 3"	40	53' 3"
g)	" 2 "	12' 3"	40	52' 3"
h)	" 1 "	10' 3"	40	50' 3"
k)	" 2 "	4' 3"	40	44' 3"

	Weights of Cast Iron	of wrought Iron.
a)	32.53	1.17
b)	61.82	2.22
c)	90.83	3.27
d)	29.82	1.07
e)	59.38	2.10
f)	143.78	5.15
g)	56.44	2.02
h)	27.14	.97
k)	47.95	1.72
9 plates of cross bracing	2.85	4.18
19 " Caps	42.75	
Total	595.29 tons Cast Iron	23.87 tons Wr. Iron

Carnatic Railway Co Ltd 1367

Estimate for a single span of 120 feet clear opening the Railway being carried on the lower flange of Girders.

Dead Load

Cross Girder .42 tons per bay
Rails & Sleepers .25 "
2 | .67 " on two girders
.34 tons per bay " one do

Rolling Load

50 + 70 x .6 = 92 tons = 5.10 per bay

Weight of Girder say 1.3 "
6.74 or say 6.75 per bay

Summary of Estimate

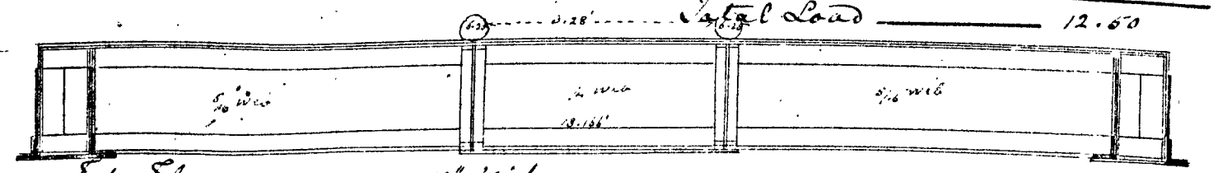
In two Main Girders	34.98
19 Cross Girders	9.12
Horizontal Bracing of platform	.73.
Total weight of one span	44.83 tons

Carnatic Railway Co (Ltd)

Estimate for Cross Girder for carrying the Railway on the bottom Flanges of the Girders 100 ft & 120 ft Span.

Dead Load

		Tons
Two Rail Sleepers 12"×8"×6'0" = 4 Cub. ft	168 lbs each	.15
Weight of Girders		.40
	Total Say	.60
Live Load (weight of two axles)		12.00
	Total Load	12.60



Top Flange — 13" wide

		lbs
Two ∠ Irons 3"×3.5"×½" = 6 lbs/lin. ft × 13.166 ft		373
1 Plate 10"×¼"	= 2.5" " × 13.166 ft	

Two ends

Two ∠ Irons 3"×3.5"×½"×1'0"	56.1
1 Plate 10"×¼"×1'0"	

1 Bottom Flange

Two ∠ Irons 3"×3.5"×½"×13.166'	296.6
1 Plate 10"×¼"×4'	

Web

2 Plates 4.9'×1'0"×5/16"	208.00
1 Plate 3.28'×1'0"×¼"	
4 T Irons 3.5"×3.5"×⅜"×1'0"	
	933.7

	Tons
	.42

Two Connection with Main Girder

1 Plate 12"×8"×¼"		.06
2 ∠ Irons 3"×3"×½"×3'4"		
Tons		.48

120 Ft.ᵉ Span

Depth of Girder 12 feet

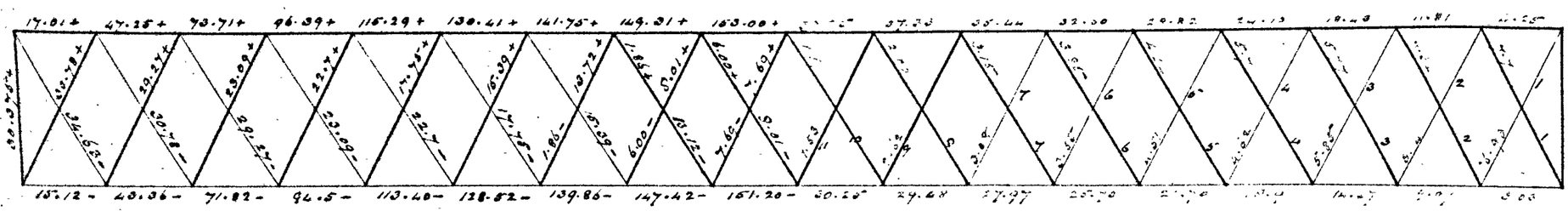


Diagram of Maximum strains on each member of Girder

The Red figures denote Square Inches of section required to bear the strains

Four Tons allowed per Square Inch in Compression

Five do do in Tension

Vertical : Horizontal :: 1 : .56

Vertical : Diagonal :: 1 : 1.14

Length of Diagonal 13.72 feet

120 ft Girders

Bay No	No		Size inches	Length	weight in lbs	weight in Tons	Total Tons
		Top Flange					
	1	Plate 1'8" × 4"	16	120'	6400		
	2	Plates 8" × 3/8"					
	2	L Irons 3" × 3" × 1/2					
	1	Plate 1'6" × 1/4"	4·5	95·24'	1427		
	1	Plate 1'6" × 1/4"	4·5	81·91'	1228		
	1	Plate 1'6" × 1/4"	4·5	68·58'	1028		
	1	Plate 1'6" × 1/4"	4·5	55·25'	828		
	1	Plate 1'6" × 1/4"	4·5	42'	630		
	38	Thickening Plates to Vertical					
		Plates at pin holes 1'6" × 5" × 1/2"			473		
					12014	5·32	
		Bottom Flange					
	1	Plate 1'6" × 1/4"	16	120'	6400		
	2	Plates 8" × 3/8"					
	2	L Irons 3" × 3" × 1/2"					
	1	Plate 1'6" × 3/8"	6·75	82	1842		
	1	Plate 1'6" × 5/16"	5·6	55·25	1036		
	1	Plate 1'6" × 1/4"	4·5	28·64	430		
	31	Thickening Plate to Vertical					
		plates at pin-holes 1'6" × 5" × 1/2"			475		
					10183	4·56	
							9·88

Section of Flanges as per 100' Girder.

120 ft Girder (Continued)

Bay No.	No.		Sq: inches	Length	Weight in lbs	Weight in Tons	Total Tons
		Brought forward					9.88
1	2	Web (Ties) 4" × 7/8"	7	13'0	301		
2	2	3.75" × 13/16"	6.09	13'0	262		
3	2	3.75" × 3/4"	5.42	13'0"	233		
4	2	3.75" × 5/8"	4.69	13'0"	201		
5	2	3.75" × 5/8"	4.69	13'-0"	201.		
6	2	3.0" × 9/16"	3.375	13'-0	145		
7	2	3" × 1/2"	3.0	13'0	129		
		Heads for Ties	area of Sq.				
1	4	1 3/8"	.28"		62		
2 & 3	8	1 1/8"	.2"		72		
4 & 5	8	3/4"	.2"		48		
6	4	9/16"	.15"		14		
7	4	1/2"	.15"		12		
					1680		
					2		
		There are two of each this above			3360	1.5	
							11.38

120 ft Girder (Continued)

Bay No.	No.		Sq: inches	Length in ft	Weight in lbs	Weight in Tons	Total Tons
		Brought forward					11.38
		Web (Struts)					
1	2	Tirons 5"×3"×½"	7.7	13'	332		
2	2	Tirons 5"×3"×½"	7.7	13'	332		
3+4	2	Tirons 3"×3"×½"	5.77	13'	496		
5	2	Tirons 3"×4"×⅜"	4.44	13'	190		
6+7	2	Tirons 3"×2"×5/16"	3.85	13	331		
8.9.10+11	2	Tirons 3"×2"×5/16"	3.15	13'	541		
		End Pieces					
1	4	Struts 5"×1⅜"		2'-0"	184		
2	4	4.5"×1¼"		2-0	150		
3+4	8	4"×1⅛"		2'0"	240		
5	4	4"×⅞"		2'-0	93		
6+7	8	4"×¾"		1'-9"	140		
8.9.10+11	16	4"×¾		1'-9	280		
		Bracing between Tirons					
7	7	Pieces 6"×⅜"×7" to each attach			337		
					3649		
					2		
					7298	3.3	
							14.68

120 ft Girder Continued

Bay No	No		Sq.re inches	Length	weight in lbs	weight in Tons	Total Tons
		Ends of Girders Brought forward					14·68
	2	Plates 16" × 3/8"		12'-8"	575		
	2	Plates 16" × 1/4"		16"	45		
	1	Plate 16" × 1/4"		12'8"	192		
	1	Bearing Plate 16" × 1/2"		3'6"	53		
		L Iron 3" × 3 × 1/2"		31.4	289		
		L Iron 2" × 2" × 1/4"		25'4"	79		
2		Gussets					
	1	Δr Plate 1'3" × 3/8"		12'8"	240		
	1	L Iron 3" × 3" × 1/2"		25'4"	469		
	1	do 3 × 3 × 1/4"		2'6"	47		
					1989		
					2		
		There are two of the above			3978	1.78	
							16·46
		Add 5% for rivets					·83
38		Pins 2" diameter		13"			·20
		Total weight of Main girder					17·49
		Horizontal Bracings on platform.					
9		2 Bars 4" × 3/8"		18'18			·73

Alternative No 9

Carnatic Railway Co. (Alternative)
Detailed Estimate for Bridge over the Nyan River

Detail of work	Number	Measurement in ft & inches: Length in ft & Inches: Each	Total	Total Length	Breadth in Inches	Depth or Height	Contents	Quantity of Stock required for Masonry
Masonry								
Foundations								
South Abutment	1	3' 9"	3' 9"	3' 9"	6' 9"	3' 0"	76.94	
"	2	5' 3"	13' 6"	10' 6"	3' 9"	3' 0"	118.125	
North Abutment	1	3' 9"	3' 9"	3' 9"	6' 9"	3' 0"	76.94	
"	2	5' 3"	10' 6"	10' 6"	3' 9"	3' 3"	118.125	
South Wing walls	2	5' 0"	10' 0"	10' 0"	3' 0"	3' 0"	90.00	
"	2	7' 0"	14' 0"	14' 0"	2' 3"	3' 0"	94.50	
"	2	5' 0"	10' 0"	10' 0"	1' 6"	3' 0"	45.00	
Pilasters	2	5' 3"	10' 6"					
"	2	3' 9"	7' 6"	18' 0"	0' 9"	3' 0"	40.50	
North Wing walls	2	8' 9"	16' 0"	16' 0"	3' 0"	3' 0"	144.00	
"	2	7' 0"	14' 0"	14' 0"	2' 3"	3' 0"	94.50	
"	2	5' 0"	10' 0"	10' 0"	1' 6"	3' 0"	45.00	
Pilasters	2	5' 3"	10' 6"					
"	2	3' 9"	7' 6"	18' 0"	0' 9"	3' 0"	40.50	
Pier No 1	1	17' 3"	17' 3"					
(2) Cutwaters	1	5' 0"	5' 0"	22' 3"	9' 6"	3' 0"	634.125	
" No 2	1	17' 3"	17' 3"					
(2) Cutwaters	1	5' 6"	5' 6"	22' 9"	10' 0"	3' 0"	682.50	
" No 3	1	17' 3"	17' 3"					
(2) Cutwaters	1	6' 0"	6' 0"	23' 3"	11' 6"	3' 0"	802.125	
" No 4	1	17' 3"	17' 3"					
(2) Cutwaters	1	4' 10½"	4' 10½"	22' 1½"	9' 4½"	3' 0"	622.265	
" No 5	1	17' 3"	17' 3"					
(2) Cutwaters	1	4' 9"	4' 9"	22' 0"	9' 1½"	3' 0"	602.25	
			Carried Over				4325.395	

Chief Engineer's Office
Fort St. George
26th Feb. 1872

Carnatic Railway Co's Bridge
over the Nyan River

Estimate

Sheet 1

Length of Bridge 120 feet
Clear Opening

Summary

Cube Masonry Cubics 34.198
" 19 Cores " 9.12
Masonry Bridge Piers 0.73
Total Rock Masonry 44.858 Cubics

Chief Engineer

Carnatic Railway Co. (Limd)
Detailed Estimate for Bridge over the Aryan River (Contd)

Detail of work	Number	Measurement in ft & in: Length in ft & in: Each	Total	Total Length	Quantity in Sup. ft.	Height in Height	Contents	Quantity of Each description of work
Brought forward							4326.395	
Superstructure —								
Cutwater portion below ashlar Course —								
Pier No 1	1	17' 3"	17' 3"					
(2) Cutwaters	1	4' 8¼"	4' 8¼"	21' 11¼"	8' 10½"	7' 6"	1460.212	
" No 2	1	17' 3"	17' 3"					
(2) Cutwaters	1	4' 11¼"	4' 11½"	22' 2¼"	9' 1½"	9' 6"	1923.36	
" No 3	1	17' 3"	17' 3"					
(2) Cutwaters	1	5' 2¼"	5' 2¼"	22' 8¼"	9' 10½"	13' 6"	2880.40	
" No 4	1	17' 3"	17' 3"					
(2) Cutwaters	1	4' 7½"	4' 7½"	21' 10½"	8' 9¾"	6' 6"	1253.01	
" No 5	1	17' 3"	17' 3"					
(2) Cutwaters	1	4' 6¾"	4' 6¾"	21' 9¾"	8' 7½"	5' 6"	1034.710	
Piers at Ashlar Course —	5	17' 3"	86' 3"					
(2) Cutwaters	5	3' 4½"	16' 10½"	102' 1½"	6' 1"	1' 10"	1150.10	
Piers Above ashlar Course —	5	18' 0"	90' 0"	90' 0"	6' 2"	12' 0"	6660.00	
Piers above the head of Girder	5	9' 2"	45' 10"	45' 10"	5' 3"	2' 0¾"	486.30	
"	5	2' 3"	11' 3"	11' 3"	4' 6"	2' 6¾"	129.73	
South Abutment (Counterfort)	1	3' 9"	3' 9"	3' 9"	58.632	Sq ft	219.87	
"	2	5' 3"	10' 6"	10' 6"	45.14	Sq ft	473.97	
North abutment (Counterfort)	1	3' 9"	3' 9"	3' 9"	72.132	Sq ft	270.496	
"	2	5' 3"	10' 6"	10' 6"	52.64	Sq ft	552.72	
South Wing Walls —	2	5' 0"	10' 0"	10' 0"	35.063	Sq ft	350.63	
"	2	7' 0"	14' 0"	14' 0"	31.125	Sq ft	435.75	
"	2	5' 6"	11' 0"	11' 0"	23.625	Sq ft	259.875	
"				Carried down			23866.532	

Carnatic Railway Co. (Limd) [illegible]

Detailed Estimate for Bridge over the Koyan River
(Continued)

Detail of work	Number	Measurement in ft & inches: Length in ft & inches: Each	Total	Total length	Breadth on Plinth	Depth on Masonry	Contents	Quantity of Each description of work
Brought forward							23866.532	
Superstructure (Continued)								
Pilasters	2	5' 3"	10' 6"					
"	2	3' 9"	7' 6"	18' 0"	0' 9"	18' 6"	249.75	
North Wing Walls	2	8' 0"	16' 0"	16' 0"	41.063	Sq ft	657.008	
"	2	7' 0"	14' 0"	14' 0"	35.625	Sq ft	498.75	
"	2	5' 6"	11' 0"	11' 0"	25.5	Sq ft	280.5	
Pilasters	2	5' 3"	10' 6"					
"	2	3' 9"	7' 6"	18' 0"	0' 9"	20' 6"	276.75	
Total Cubic feet of Brick in Chunam							25829.29	
Deductions —								
In Cutwater for dia								
Pier No 1	1			4' 10½"	6' 0"	9' 4"	273.00	
" No 2	1			4' 10½"	6' 0"	11' 4"	331.50	
" No 3	1			4' 10½"	6' 0"	14' 10"	433.87	
" No 4	1			4' 10½"	6' 0"	8' 4"	234.75	
" No 5	1			4' 10½"	6' 0"	7' 4"	214.5	
In Superstructure								
Piers	5	4' 10½"	24' 4½"	24' 4½"	6' 6"	6' 0"	950.625	
Semi Circular openings	5	13.6 area	each	68.00 area	6' 0"		408.00	
Bedding stones	10	5' 3"	52' 6"	52' 6"	2' 9"	1' 3"	180.47	
Total Cubic feet of deductions							3026.718	
Total C. feet of Brick in Chunam less deducts							22802.575	
or Cubic Yards								844.54

Carnatic Railway Co's Line of

Detailed Estimate for Bridge over the Adyar River (Continued)

Details of work	Number	Measurement in ft & Inches: Length in ft & Inches: Each	Total	Total Length	Breadth or Thickness	Depth or Height	Contents	Quantity of Each description of work
-Concrete-								
Pier No 1	1			4' 10½"	6' 0"	9' 4"	273.00	
" " 2	1			4' 10½"	6' 0"	11' 4"	331.50	
" " 3	1			4' 10½"	6' 0"	14' 10"	433.87	
" " 4	1			4' 10½"	6' 0"	8' 4"	234.75	
" " 5	1			4' 10½"	6' 0"	7' 4"	214.5	
Total Cubic feet of Concrete							1487.62	
or Cubic Yards								55.1
-Rock Faced Ashlar-								
Lower Course of Piers	5	64' 6"	322' 6"	322' 6"	2' 0"	1' 4"	869.80	
"	5	64' 6"	322' 6"	322' 6"	1' 4"	0' 6"	214.95	
Upper Course "	5	26' 6"	132' 6"					
" S.W. abt			46' 6"					
" N.W. abt			52' 6"	231' 6"	1' 0"	2' 3"	520.875	
Coping to North Wing walls	2	15' 0"	30' 0"					
" South "	2	12' 0"	24' 0"	54' 0"	1' 0"	0' 4"	18.00	
Caps to Abutments	4	6' 2"	24' 8"					
" " "	4	4' 9"	15' 0"					
" to Piers	10	6' 2"	61' 8"	101' 4"	2' 0"	1' 0"	202.67	
" to Cutwaters	5	41.24	Each	206.2	Contents		206.2	
Quoins (2'6"x1'x1) Pier No 1	16							
Pier No 2	20							
" No 3	26							
" No 4	14							
" No 5	12			88			220.00	
Total Cubic feet of Rock faced Ashlar							2242.495	

2242.5

Carnatic Railway Co's Claim

Detailed Estimate for Bridge over the Adyar River (Continued)

Details of work	Number	Measurements in ft & Inches: Breadth	Length in ft & In: Total	Total depth	Breadth in Chinam	Depth in Mortar	Contents	Quantity of Each description of work
Rubble Masonry								
Bedding stones for Girders	10	5' 3"	52' 6"					
	4	2' 6"	10' 5"	62' 6"	2' 9"	1' 3"	214.86	
Total Cubic feet of Rubble Masonry								214.86
Terra Cotta Dental Mouldings								
Piers	5	22' 6"	112' 6"					
S^th^ Abt^t			46' 6"					
N^th^ Abt^t			52' 6"	211' 6"			211.5	
Total Running feet of dental Mouldings								211.5
Terra Cotta Plain Mouldings								
Piers	5	10' 0"	50' 0"					
Abutments	4	5' 0"	20' 0"					
"	4	3' 6"	14' 0"	84' 0"			84.00	
Total Running feet of Plain Mouldings								84.00
Earthwork								
South Abutment	1	3' 9"	3' 9"	3' 9"	6' 9"	3' 0"	75.94	
	2	5' 3"	10' 6"	10' 6"	3' 9"	3' 0"	118.125	
North Abutment	1	3' 9"	3' 9"	3' 9"	6' 9"	3' 0"	75.94	
	2	5' 3"	10' 6"	10' 6"	3' 9"	3' 0"	118.125	
South Wing Walls	2	5' 0"	10' 0"	10' 0"	3' 0"	3' 0"	90.00	
	2	7' 0"	14' 0"	14' 0"	2' 3"	3' 0"	94.50	
	2	5' 0"	10' 0"	10' 0"	1' 6"	3' 0"	45.00	
Pilasters	2	5' 3"	10' 6"					
"	2	3' 9"	7' 6"	18' 0"	0' 9"	3' 0"	40.50	
Carried down							658.13	

Carnatic Railway Co: (Limd)
Detailed Estimate for Bridge over the Adyar River (Continued)

Detail of work	Number	Measurements in feet & inches					Contents	Quantity of each description of work
		Length in feet & inches			Breadth or Width	Depth or Height		
		Each	Total	Total Length				
Brought forward							658.13	
Earthwork (Continued)								
North Wing Walls	2	8' 0"	16' 0"	16' 0"	3' 0"	3' 0"	144.00	
	2	7' 0"	14' 0"	14' 0"	2' 3"	3' 0"	94.50	
	2	5' 0"	10' 0"	10' 0"	1' 6"	3' 0"	45.00	
Pilasters	2	5' 3"	10' 6"					
"	2	3' 9"	7' 6"	18' 0"	0' 9"	3' 0"	40.50	
Pier No 1	1	17' 3"	17' 3"					
(2) Cutwaters	1	5' 0"	5' 0"	22' 3"	9' 6"	3' 0"	634.125	
Pier No 2	1	17' 3"	17' 3"					
(2) Cutwaters	1	5' 6"	5' 6"	22' 9"	10' 0"	3' 0"	682.50	
Pier No 3	1	17' 3"	17' 3"					
(2) Cutwaters	1	6' 0"	6' 0"	23' 3"	11' 6"	3' 0"	802.125	
Pier No 4	1	17' 3"	17' 3"					
(2) Cutwaters	1	4' 10½"	4' 10½"	22' 1½"	9' 4½"	3' 0"	622.265	
Pier No 5	1	17' 3"	17' 3"					
(2) Cutwaters	1	4' 9"	4' 9"	22' 0"	9' 1½"	3' 0"	602.25	
Total Cubic feet of Earthwork =							4326.395	
or Cubic Yards =								160.2

Carnatic Railway Co. (Limd.)
Abstract Estimate
for Bridge over the Adyar River

Quantities	Description of work	Rate		amount		Total
		Cy	Rs. a. P.	Rs. a. P.		Rs. a. P.
844.54	C. yds Brick work	C. yd	15 " "	12668 1 7		
55.1	" Concrete	"	4 " "	220 6 4		
2242.5	C. ft Rock faced Ashlar	C. ft	2 " "	4485 " "		
214.85	" Faced Ashlar	"	3 " "	644 8 9		
211.5	Rg ft Terra Cotta dental Mouldg	Rg ft	2 8 "	528 12 "		
84.0	" " Plain Moulding	"	1 " "	84 " "		
160.2	C. yds Earthwork	C. yd	" 8 "	80 1 7		
						18710 14 3
86.78	Tons Wrought Iron	Ton	300 " "	26034 " "		
4.26	" Cast Iron	"	200 " "	852 " "		
91.04	" Cartage over 7 miles	Ton Mile	" 5 "	199 2 5		
423	C. ft Teak Sleepers (12"x6")	C. ft	4 " "	1692 " "		
240	" Teak Platform (1'8"x2")	"	4 " "	960 " "		
						29737 2 5
	Total Cost of Bridge					48448 " 8

Madras
22nd Augt. 1872

Fredk Dibdin
Chief Engineer

Carnatic Railway Co: Ltd
Detailed Estimate
for Bridge over the Adyar River

Detail of work Masonry Brickwork	Number	Measurements in ft Length Each	Length Total	Total length	Breadth or Thickness	Depth or Height	Contents	Quantity Reduced description of work
No I Pier (above cut water)	1			12' 0"	5' 3"	11' 6"	724.5	
	2	2' 3"	4' 6"	4' 6"	1' 1½	1' 10"	9.49	
							733.99	
Deduct for Bedding stones	2	5' 3"	10' 6"	10' 6"	3' 0"	1' 3"	39.38	
		Total cft less Deductions					694.61	
" (Cut water portion) Foundations	1			12' 0"	7' 6"	3' 0"	270.00	
"	1			4' 0½	7' 6"	3' 0"	90.94	
" "	1			12' 0"	7' 6"	9' 6"	855.00	
" "	1			3' 9"	7' 6"	9' 6"	267.19	
	Total cft Brickwork in No I Pier						2177.74	
	or Cubic Yards							80.66
No II Pier above Cut water								
Same as per No I Pier							694.61	
" (Cut water portion) Foundations	1			12' 0"	7' 6"	3' 0"	270.00	
"	1			4' 2½	7' 6"	3' 0"	94.67	
	1			12' 0"	7' 6"	11' 6"	1035.00	
	1			3' 8"	7' 6"	11' 6"	316.19	
	Total Cubic ft Brickwork in No 2 Pier						2410.47	
	or Cubic Yards							89.277
No III Pier above Cut water								
Same as per No I Pier							694.61	
" (Cut water portion) Foundations	1			12' 0"	7' 6"	3' 0"	270.00	
"	1			4' 6¼	7' 6"	3' 0"	101.70	
	1			12' 0"	7' 6"	15' 3"	1372.5	
	1			3' 10"	7' 6"	15' 3"	438.43	
	Total Cft Brickwork in No 3 Pier						2877.24	
	or Cubic Yards							106.57
						Carried over		276.507

Continued

1537.

Detail of Work	Number	Measurements in feet: Each	Length: Flat	Length: Total length	Breadth or Thickness	Depth or Height	Contents	Quantity of each description of work
Brought forward								276.507
No IV Pier (above cutwater) same as per No 1 Pier							694.61	
" (Cutwater portion) Foundations	1			12' 0"	7' 6"	3' 0"	270.00	
"	1			3' 11½	7' 6"	3' 0"	89.05	
	1			12' 0"	7' 6"	8' 6"	765.00	
	1			3-7	7-6	8' 6"	228.43	
Total Cubic feet Brickwork in No 4 Pier							2047.09	
or Cubic Yards								75.82
No V (above Cutwater) same as per No 1 Pier							694.61	
(Cutwater portion) Foundations	1			12' 0"	7' 6"	3' 0"	270.00	
	1			3' 10½	7' 6"	3' 0"	87.18	
	1			12' 0"	7' 6"	7' 6"	675.00	
	1			3' 6"	7' 6"	7' 6"	196.88	
Total Cubic feet Brickwork in No 5 Pier							1923.67	
or Cubic Yards								71.25
South Abutment				13' 3"	area 83.00		1099.75	
Pilasters	2	4' 6"	9' 0"	9' 0"	0' 4½	12' 6"	42.18	
Wing Walls	2	14' 10"	29' 8"	29' 8"	area × 40		1086.66	
Total Cft Brickwork in South Abutment							2228.59	
or Cubic Yards								82.54
North Abutment				43' 4"	area × 102		3599.99	
Pilasters	2	4' 6"	9' 0"	9' 0"	0' 4½	14' 6"	48.93	
Wing Walls	2	18' 10"	37' 8"	37' 8"	area × 47		1770.33	
Total Cft Brickwork in North Abutment							3179.25	
or Cubic Yards								117.75
Total Cubic yards of Brickwork								623.867

Detail of Work	Number	Measurements in ft Each	Length Flat	Length Grad	Breadth or Thickness	Depth or Height	Contents	Quantity of Each description of work Reduced
Brought forward								
Stone work - Tooled Ashlar Bedding Stone for one Pier	2	5' 3"	10' 6"	10' 6"	3' 0"	1' 3"	39.38	
for 5 Piers							196.90	
Total Cubic feet of Tooled Ashlar								197.
Do Do for Abutment	2	2' 3"	4' 6"	4' 6"	3' 0"	1' 3"	16.875	
for 2 abutment							33.750	34
								231
Stone work Rock faced Ashlar No 1 Pier Capo	2	6' 3"	12' 6"	12' 6"	1' 6"	1' 3"	23.44	
Stone quoins at Corners				46' 0"	0' 9"	0' 6"	17.25	
Capo ow Cut waters	4	8.5	2 x 3.5 / 3				169.62	
Stone Coping.				24' 0"	1' 9"	1' 0"	42.00	
				Total			252.31	
							5	
For 5 Piers							1261.55	
Stone quoins 15"x6"x9" No 1 Pier	28						13.125	
" No 2 "	32						15.00	
" No 3 "	44						20.625	
" No 4 "	24						11.25	
" No 5"	20						9.375	
" 15"x9"x9" No 1 Pier	28						19.69	
" No 2 "	32						22.50	
" No 3 "	44						30.94	
" No 4 "	24						16.875	
" No 5 "	20						14.062	
				Carried Over			1434.992	

Continued

Detail of work	Number	Measurements in feet: Each	Length: Total	Length: Length	Breadth	Thickness	Depth or Height	Contents	Quantity of each description of work
Stone work Rock faced Ashlar (Cont'd)									
Brought forward								1434.992	
" Stone Quoins at no 2)									
" 5 Ft 9" thick)									
No 1 Pier	7							3.94	
" 2 "	8							4.50	
" 3 "	11							6.18	
" 4 "	6							3.375	
" 5 "	5							2.81	
5 Ft x 9"									
No 1 Pier	6							2.25	
" 2 "	8							3.00	
" 3 "	10							3.75	
" 4 "	6							2.25	
" 5 "	5							1.875	
Ashlar Capo to Abutments	4	5' 10½	23' 6"	23' 6"	1' 10½	1' 3"		55.078	
Stone Coping to Wing Walls				66' 0"	1' 0"	1' 0"		66.00	
Stone Quoins to Pilasters				108' 0"	0' 9"	0' 6"		40.50	
Total Cft of Rock faced Ashlar									1630.50
Earthwork Pier No 1				12' 0"	7' 6"	3' 0"		270.00	
				4' 0½	7' 6"	3' 0"		90.94	
Pier No 2				12' 0"	7' 6"	3' 0"		270.00	
				4' 2½	7' 6"	3' 0"		94.67	
Pier No 3				12' 0"	7' 6"	3' 0"		270.00	
				4' 6¼	7' 6"	3' 0"		101.70	
Carried over								1097.31	

5
Continued

1567

Detail of work	Number	Measurements in feet: Length: Each	Length: Total	Length: Total length	Breadths or Thickness	Depths or Height	Contents	Quantity of each description of work
Earthwork Continued Brought forward							1097.31	
Pier No 4				12' 0"	7' 6"	3' 0"	270.00	
				3' 11½"	7' 6"	3' 0"	89.05	
Pier No 5				12' 0"	7' 6"	3' 0"	270.00	
				3' 10½"	7' 6"	3' 0"	87.18	
North Abutment				15' 4"	6' 9"	3' 8"	310.49	
" wing Walls	2	18' 10"	39' 8"	39' 8"	3' 0"	3' 0"	357.00	
South Abutment				15' 0"	6' 9"	3' 0"	303.75	
" Wing Walls	2	14' 10"	29' 8"	29' 8"	3' 0"	3' 0"	267.00	
Total Cft Earthwork							3051.78	
or Cubic Yards								113.03

Abstract of Estimate for a Bridge across the river Adyar consisting of 6 Spans of 66 ft each on Masonry Piers

Quantities	Description of charges	Rate			Amount			Total		
		Per	Rs	as	Rs	as	p	Rs	as	p
623.867	Brickwork	Cyd	15	"	9358	"	"			
231 cft	Tooled Ashlar	cft	3	"	693	"	"			
1630.5 cft	Rough Ashlar	cft	2	"	3261	"	"			
113.03 cyd	Earthwork	Cyd	"	8	56	8	2			
								13368	8	2
86.788 Tons	Wrought Iron	Ton	300	"	26034	"	"			
4.26 Tons	Cast Iron	"	200	"	852	"	"			
91.04 "	Cartage over 7 Miles	Ton Mile	"	5	"	199	2	5		
423 cft	Teak Sleepers (12 x 6")	cft	4	"	"	1692	"	"		
240 cft	Teak Platforms (18" x 2")	cft	4	"	"	960	"	"	2973	2 5
								43105	10	7

Madras
14th August 1872

Fredk Dibdee
Chief Engineer

O.W. 6147/73

Summary Estimates &c.

1. Summary Estimate, incomplete, amounting to Rs. 78,85,833.
2. General Estimates for Districts 1 to 10.
   Do. do. do. Madras Terminal Works and Stations.
   Revised and Complete Summary Estimate amounting to Rs. 94,47,707

Carnatic Railway Co. Ltd.

Estimate for the Construction of the line upon District I from Menumbaukum to Madras

III–1 Earthwork

Description	Quantity	as per Schedule	Rate Rs	a.	p	℔	Amount Rs	a	p	Total Rs	a	p
Earthwork in banks and Cuttings	91244 cyds	A_1	.	3	.	Cyd	17,670	12	.			
" Catchwater drain	14355 "	B	"	2	6	"	2,242	15	6			
Trimming Slopes	5730 Sqrs	C_1	.	2	.	Sq	716	4	.			
Turfing	4605 "		"	8	.	"	2,302	8	.			
Pitching	1125 "		5	.	.	"	5,625	.	.	28557	7	6

III–2 Bridgework i

No.	Description	as per Schedule	Rs	a	p	Amount Rs	a	p	Total Rs	a	p
19	1' 10" Open Culverts as per drawing No. 1	D				4,844	8	1			
1	2 ft Box " " 2	E				400	3	7			
6	4 ft Girder " " 3	F				1,764	.	.			
1	4 ft Box " " 4	G				439	8	9			
1	6 ft Girder " " 6	J				631	15	9			
4	10 ft " " " 8	K				3,760	11	.			
1	20 ft " Bridge " " 10	M				2,674	9	6	14,515	8	8

III 2 Bridgework ii

Mileage	Spans	Description	Quantity	as per Schedule	Rate Rs	a	p	℔	Amount Rs	a	p	Total Rs	a	p
11-chs 2-78	4-40 Girders	Coovum Bridge												
		Earthwork ✓	355.5 Cyds	P.	1	"	.	Cyd	355	8	.			
		Brickwork ✓	330.8 "		12	"	.	"	3969	9	7			
		Ashlar Copings ✓	129.7 lft		2	.	.	lft	259	6	5			
		" Sills ✓	89.0 cft		2	.	.	cft	178	"	.			
		Ironwork ✓	42.444 Tons		300	"	.	Ton	12,733	3	2			
		Woodwork ✓	420 cft		4	.	.	cft	1680	"	.			
		Carried over							19175	11	2	43073	"	2

III–2. Bridgework ii (Continued)

Ms-chs													
		Brought forward						19175	11	2	43073	"	2
61-50	6-66 Girders	Adyar Bridge											
		Earthwork	✓	113 Cyds	C	"	8 " cyd	56	8	•			
		Brickwork	✓	619.67 "	"	15	" " "	9295	"	"			
		Tooled Ashlar	✓	231 Cft	"	3	" " cft	693	"	•			
		Rough "	✓	1681 "	"	2	" " "	3362	"	•			
		Wrought Iron	✓	86.78 Tons	"	300	" " Tn	26034	"	•			
		Cast Iron	✓	4.26 "	"	200	" " "	852	"	•			
		Cartage over 7 Miles	✓	91.04 "	"	"	5 " T.f.m	199	2	5			
		Teak Timber	✓	663 Cft	"	4	" " cft	2652	"	"	62319	5	7

III–4 Level Crossings. &c.

No.	Description	as per Schedule	Amount Rs	a	p			
2	Road diversions = 1936 lin. yds	R	1452	"	•			
13	Level Crossings	S	1157	"	•			
10	Pairs gates		1000	"	•			
10	Gate keepers Lodges	T	3746	12	10			
			775	"	•			
10	Mile posts		30	"	•	7500	14	10

III–5 Fencing

Description	Quantity	as per Schedule	Rate Rs	a	p	℔	Amount Rs	a	p			
Wire Fencing	3½ Miles	V ~~V~~	1	"	•	lyd	12320	"	•	12320	"	"

IV–1 Ballast

Description	Quantity	as per Schedule	Rate Rs	a	p	℔	Amount Rs	a	p			
Ballast	22621 Cyds	U	•	9	"	cyd	12724	5	"	12724	5	"
	Carried Over									137937	9	7

IV. 2 Permanent way.

Description	Quantity	as per Schedule	Rate Rs	a	p	£	Amount Rs	a	p	Total Rs	a	p
Brought forward										137,937	9	7
Laying Permanent way	20044 yds	IV	"	8	"	lyd	10,022	"	"			
Best Best Steely iron rails with pot Slupers	11.39 Mls		16967	"	"	mile	193,259	1	10			
Leading Permanent way. 5 Miles	1788.23 Tons		"	5	"	"	2,794	1	9	206,075	3	7

V. 1 Stations & Offices

Description	as per Schedule	Amount Rs	a	p
Chutput — 3rd Class Station	X			
Platform	"	621	3	10
Booking Office and Store room	"	1124	15	2
Urinals	"	774	9	3
Waiting shed	"	1,072	"	"
Compound	"	724	15	8
	"	4,317	11	11
Sydapet 3rd Class Station	"			
Platform	"	621	3	10
Booking Office and Store room	"	1124	15	2
Urinals	"	774	9	3
Waiting Shed	"	1,072	"	"
Compound	"	724	15	8
	"	4,317	11	11
Guindy Occasional Station	"			
Platform	"	621	3	10
Booking Office and Store room	"	1124	15	2
	"	1,746	3	"
St. Thomas's Mount, 2nd Class Station	Y			
Station house & Waiting Shed	"	15,292	10	6
Lamps & Stores	X	1124	15	2
Urinals	"	774	9	3
Platform	"	621	3	10
2 Ash pits	e,	534	8	"
Small Goods Shed	f	4,092	8	1
2 Fuel Stages		279	6	2
Compound	X	724	15	8
		23,444	12	8
				33,826	7	6
Carried Over				377,839	4	8

V-2 Workshops, Store buildings &c.

Description	as per Schedule	Amount Rs.	A	P	Total Rs.	a	p
Brought forward					377.839	4	8
Carriage Shed (St. Thomas's Mount)	a	13,153	10	3			
5 Temporary Store Shed		750	"	"	13.903	10	3

V-3 Staff Quarters

Description	as per Schedule	Amount Rs	a	p	Total Rs	a	p
Chetput 3rd Class Station							
Native Station Masters house	b	1279	5	6			
Sydapet 3rd Class Station							
Native Station Masters house	"	1279	5	6			
St Thomas's Mount 2nd Class Station							
Station Masters bungalow & Out Offices		2525	"	"			
1 Temporary Engineers bungalow & out offices	c	1500	"	"			
2 " Inspectors "		1600	"	"	81.83	11	-

V 4 Station Machinery

Description	as per Schedule	Amount Rs	a	p	Total Rs	a	p
Chetput 3rd Class Station							
2 Single Arm Semaphores		400	"	"			
3 " Points		360	"	"			
		760	"	"			
Sydapet 3rd Class Station							
2 Single Arm Semaphores		400	"	"			
3 " Points		360	"	"			
		760	"	"			
Guindy Occasional Station							
2 Single arm Semaphores		400	"	"			
3 " Points		360	"	"			
		760	"	"			
St Thomas's Mount 2nd Class Station							
2 Single Arm Semaphores		400	"	"			
2 Water Cranes		900	"	"			
1 Tank House	d	996	7	7			
1 Well	1½	927	12	5			
700 ft Piping at 1/8/- per ft		1050	"	"			
1 Double acting hand pump		300	"	"			
2 Three throw points		480	"	"			
6 Single Points		720	"	"			
		5174	4	"	80544	4	-

Carnatic Railway Co. Ltd.

Estimate for the Construction of the line upon District II from Menumbaukum to Godavancherry.

III – 1 Earthwork

Description	Quantity	as per Schedule	Rate Rs	a	p	Of	Amount Rs	a	p	Total Rs	a	p
Earthworks in banks and Cuttings	89768 cyds	A 2	-	3	-	Cyd	16,831	8	-			
" Catchwater drain	15510 "	B	-	2	6	"	2423	7	-			
Trimming Slopes	5943 Sqrs	C 2	-	2	-	Sq	742	11	-			
Turfing	5943 "		-	8	-	"	2,971	8	-			
Diversion of irrg: Chan: 21 chs 12.15 to 21 chs 12–55.	660 cyds		-	2	6	Cyd	103	2	-	23,072	7	-

III – 2 Bridgework – i

No.	Description	as per Schedule	Amount Rs	a	p
25	1–10' Open Culverts as per drawing	No 1	D	6,374	5	7
2	2 ft Box	" 2	E	800	7	2
4	4 ft Girder	" 3	F	1,176	-	-
1	Double 4' Girder	" 3	-	404	9	7
5	6 ft Girder	" 6	I	3,159	14	9
1	Double 6 ft Girder	" 6	-	891	10	3
5	10 ft Girder	" 8	K	4700	13	9	17,507	13	1

III – 2 Bridgework ii

Mileage	Spans	Description	Quantity	as per Schedule	Rate Rs	a	p	Of	Amount Rs	a	p	Total Rs	a	p
22 miles	4–20' Girders	Earthwork	196.4 cyds	M	1	-	-	Cyd	196	6	5			
		Brickwork	193.6 "		12	-	-	"	2323	3	2			
		Ashlar Copings	62 lft		2	-	-	lft	124	-	-			
		" Sills & Caps	106.9 cft		2	-	-	cft	213	12	9			
		Iron work	12.88 Tons		300	-	-	Ton	3864	-	-			
		Woodwork	248 cft		4	-	-	cft	992	-	-	7,713	6	4
		Carried over										48,293	10	5

III_4 Level crofsings &c.

No.	Description	as per Schedule	Amount Rs	a	p	Total Rs	a	p
	Brought forward					48,293	10	5
1	Road diversion = 363 lin: yds	R	272	4	.			
12	Level Crossings	S	1068	.	.			
6	Pairs gates		600	.	.			
6	Gate-Keeper's lodges	T	2248	2	6			
33	Grade posts		165	.	.			
12	Mile posts		36	"	.	4389	6	6

III_5 Fencing

Description	Quantity		Rate Rs	a	p	£	Amount Rs	a	p			
Wire Fencing	rns chs 3-73	V	1	.	-	Lyd.	13,772	.	-	13,772	.	-

IV_1 Ballast

Description	Quantity	as per Schedule	Rate Rs	a	p	£	Amount Rs	a	p			
Ballast	cyds 27138	U	"	9	.	cyd	15,265	2	"	15,265	2	"

IV_2 Permanent Way

Description	Quantity	as per Schedule	Rate Rs	a	p	£	Amount Rs	a	p			
Laying Permanent Way	23162	W	"	8	"	lyd	11,581	"	"			
Best best Steely Iron rails with pot Sleepers	13.16 rns		16967	7	.	mile	2,23,291	7	8			
Leading permanent way 16¾ Miles	2068.19 Tons		"	5	"	"	10,825	10	11	2,45,698	2	7
										Carried over		
										3,27,418	5	6

V-1 Stations & Offices

Description	as per Schedule	Amount Rs	A	P	Total Rs	A	P
Palaveram 2nd Class Station — Brought forward					3,274	18	5	6
Station House and Waiting Shed	Y	15,292	10	6			
Lamps and Stores	X	1,124	15	2			
Urinals	"	774	9	3			
Platform	"	621	3	10			
2 Ash pits	c,	534	8	"			
Small Goods Shed	f	1,092	8	1			
Compound	X	721	15	8			
		23,165	6	6			
Vundaloor 3rd Class Station							
Platform	X	621	3	10			
Booking Office and Store room	"	1,124	15	2			
Urinals	"	774	9	3			
Waiting Shed	"	1,072	"	"			
Small Goods shed	c,	1,092	8	1			
2 Ash pits		534	8	"			
2 Fuel Stages		279	6	2			
Compound	X	724	15	8	32,389	8	8
		9,224	2	2			

V-2 Workshops, Store buildings &c

Description	as per Schedule	Amount Rs	a	p	Total
4 Temporary Store Sheds		600	"	"	600 " "

V-3 Staff Quarters

Description	as per Schedule	Amount Rs	a	p	Total
Palaveram 2nd Class Station					
Station Master's bungalow & Out Offices		2,525	"	"	
Vundaloor 3rd Class Station					
Native Station Master's house	b	1,279	5	6	
1 Temporary Engineer's bungalow and Out Offices	c	1,500			
2 " Inspector's " " "		1,600			6,904 5 6
					11
Carried over					3,67,312 3 8

V. 4 Station Machinery

Description	as per Schedule	Amount Rs.	a	p	Total Rs.	a	p
Brought forward					367,312	3	8
Palaveram 2nd Class Station							
2 Single Arm Semaphores		400	"	"			
5 " points		600	"	"			
		1000					
Vundaloor 3rd Class Station							
2 Single Arm Semaphores		400	"	"			
2 Water Cranes		900	"	"			
1 Tank house		996	7	7			
1 Well		927	12	5			
700 ft piping		1050	"	"			
1 Double acting hand pump		300	"	"			
6 Single points		5294	4		6,294	4	"
Grand Total					373,606	7	8

Madras
14th August 1872

Fredk Dibble
Chief Engineer

Compd for Ft

Estimate

District 2

Carnatic Railway Co. Ltd.

Estimate for the construction of the line upon District III from Godavancherry to Chingleput

III – 1 Earthwork

Description	Quantity	as per Schedule	Rate Rs	a	p	℔	Amount Rs	a	p	Total Rs	a	p
	cyds											
Earthwork in banks and cuttings	145,616	A3	"	3	"	cyd	27284	4	"			
" Catchwater drain	18322.5	B	"	2	6	"	2,862	14	3			
Trimming Slopes	89345qrs	C3	"	2	"	89	1,116	12	"			
Pitching	474 "	"	5	"	"	"	2,370	"	"			
Turfing	8460 "	"	"	8		"	4,230	"	"	37,863	14	3

III – 2 Bridgework i

№	Description	as per Schedule	Amount Rs	a	p	Total Rs	a	p
16	1–10' Open Culverts as per drawing	№ 1			D	4,079	9	4			
1	2 ft Box Culvert	" 2			E	400	3	7			
6	4 " Girder Culverts	" 3			F	1,764	"	"			
2	4 " Box "	" 4			G	879	1	6			
5	6 " Girder "	" 6			I	3,159	14	9			
1	Three 6 ft Girder Culvert	" 6			"	1,151	4	9			
5	10 ft Girder Culverts	" 8			K	4,700	13	9			
1	Double 10 ft Girder Culvert	" 8			"	1,332	10	9			
1	20 ft Girder bridge	" 10			M	2,674	9	6	20,142	3	11

III 2 Bridgework ii

Milage	Spans	Description	Quantity	as per Schedule	Rate Rs	a	p	℔	Amount Rs	a	p	Total Rs	a	p
Fls. chs														
33–73	4–20	Earthwork	196.4 Cyds	M	1	"	"	cyd	196	6	5			
	Girders	Brickwork	193.6 "	"	12	"	"	"	2,323	3	2			
		Ashlar Copings	62 lft	"	2	"	"	lft	124	"	"			
		" Sells & Caps	106.9 cft	"	2	"	"	cft	213	12	9			
		Ironwork	12.88 Tons	"	300	"	"	Ton	3,864	"	"			
		Woodwork	248 cft	"	4	"	"	cft	992	"	"	7,713	6	4
												65,719	8	6

Carried over

III-4 Level Crossings &c.

No.	Description	as per Schedule	Amount Rs	a	p	Total Rs	a	p
	Brought forward					65,719	8	6
1	Road diversion = 198 yds	R	148	8	"			
7	Level Crossings	S	623	"	"			
7	Pairs Gates		700	"	"			
7	Gate Keepers Lodges	T	2,622	13	7			
36	Grade Posts		180	"	"			
14	Mile "		42	"	"	4,316	5	7

III 5 Fencing

Description	Quantity	as per Schedule	Rate Rs	a	p	per	Amount Rs	a	p			
Wire Fencing	4,176.50ch	V	1	"	"	lyd	16,280	"	"	16,280	"	"

IV-1 Ballast

Description	Quantity	as per Schedule	Rate Rs	a	p	per	Amount Rs	a	p			
Ballast	30,865 cyds	U	"	9	"	cyd	17,361	9	"	17,361	9	"

IV-2 Permanent way

Description	Quantity	as per Schedule	Rate Rs	a	p	per	Amount Rs	a	p			
Laying permanent way	27,350 yds	W	"	8	"	lyd	13,675	"	"			
Best best steely iron Rails with pot Sleepers	15.54.92	"	1696	7	"	mile	2,63,673	15	8			
Leading permanent way 29 9/16 MIs	21442.2 Tons	"	"	5	"	"	22,561	11	8	2,99,910	11	4
										Carried over	4,03,588	2 5

V.1 Stations and Offices

Description	as per Schedule	Amount Rs	a	p	Total Rs	a	p
Brought forward					4,03,588	2	5
Godavarcherry – 3rd Class Station							
Platform	X	621	3	10			
Booking Office and Store room	"	1124	15	2			
Urinals	"	774	9	3			
Waiting Shed	"	1072	"	"			
Compound	"	724	15	8			
		4317	11	11			
Singapermacoil 3rd Class Station							
Platform	"	621	3	10			
Booking Office and Store room	"	1124	15	2			
Urinals	"	774	9	3			
Waiting Shed	"	1072	"	"			
Compound	"	724	15	8			
		4317	11	11			
Chingleput 2nd Class Station							
Station house and waiting Shed	Y	15,292	10	6			
Private room in Station house	Y_1	1856	10	11			
Lamps and Stores	X	1124	15	2			
Urinals	"	774	9	3			
Platform	"	621	3	10			
2 Ashpits	e_1	534	8	"			
2 Fuel Stages		279	6	2			
Large Goods Shed	g	10,860	5	11			
Compound	X	724	15	8			
		32,069	5	5	40,704	13	3
Carried over					4,44,292	15	8

4

V-2 Workshops, Store buildings &c.

Description	As per Schedule	Amount Rs	a	p	Total Rs	a	p
Brought forward					4,44,292	15	8
4 Temporary Store Sheds		600	"	"	600	"	"

V-3 Staff Quarters

Description	As per Schedule	Amount Rs	a	p
Godavarcherry, 3rd Class Station				
Native Station Masters house	b	1279	5	6
Shingapermacoil 3rd Class Station				
Native Station Masters house	"	1279	5	6
Chingleput 2nd Class Station				
Station Masters Bungalow & Out Offices		2525	-	-
1 Temporary Engineers bungalow and Out Offices	C	1500	"	"
2 " Inspectors " "		1600	-	-

V-4 Station Machinery

Description	As per Schedule	Amount Rs	a	p			
Godavarcherry 3rd Class Station							
2 Single arm Semaphores		400	"	"			
3 " points		360	"	"			
		760	"	"			
Singapermacoil 3rd Class Station							
2 Single Arm Semaphores		400	"	"			
3 " points		360	"	"			
		760	"	"			
Chingleput 2nd Class Station							
2 Single Arm Semaphores		400	"	"			
2 Water Cranes		900	"	"			
1 Tank house	d	996	7	7			
1 Well	Tk	927	12	5			
700 ft piping @ 1/8 per ft		1050	"	"			
1 Double acting hand pump		300	"	"			
2 Three throw points		480	"	"			
6 Single points		720	"	"			
		5,774	4	"	7,294	4	"
					Grand Total	4,60,370	14	8

Madras
14th August 1872

Fred. J. Dibdin
Chief Engineer

Carnatic Railway Co. Ltd.

Estimate for the Construction of the line upon District III from Chingleput to Madranticum

III_1 Earthwork

Description	Quantity	as per Schedule	Rate Rs	a	p	per	Amount Rs	a	p	Total Rs	a	p
Earthwork in banks and Cuttings	192,967 cyds	A1	"	3	"	Cyd	36,181	5	"			
" Catchwater drain	18,282	B	"	2	6	"	2,856	9	"			
Trimming Slopes	9641 Sqrs	1½	"	2	"	Sq	1,205	2	"			
Pitching "	70 "		5	"	"	"	350	"	"			
Turfing "	9571 "		"	8	"	"	4,785	8	"	45,378	8	"

III_2 Bridgework i

No.	Description	as per Schedule	Amount Rs	a	p	Total Rs	a	p
31	1'_10" Open Culverts as per drawing	A-1			D	8,669	1	10			
1	2 ft Box Culvert "	" 2			E	400	3	7			
11	4 ft Girder Culverts "	" 3			F	3,234	"	"			
3	4 " Box "	" 4			G	1,318	10	3			
7	6 " Girder "	" 6			I	4,423	14	3			
14	10 " "	" 8			K	3,760	11	"	21,806	8	11

III_2 Bridgework ii

Milage	Spans	Description	Quantity	as per Schedule	Rate Rs	a	p	per	Amount Rs	a	p	Total Rs	a	p
MTS chs 45_30	4'_20"	Earthwork	196.4 Cyds	M	1	"	"	cyd	196	6	5			
	Girders	Brickwork	193.6 "	"	12	"	"	"	2,323	3	2			
		Ashlar Copings	62 lft	"	2	"	"	lft	124	"	"			
		" Sills and Cups	106.9 cft	"	2	"	"	cft	213	12	9			
		Ironwork	12.88 Tons	"	300	"	"	Ton	3,864	"	"			
		Woodwork	248 cft	"	4	"	"	cft	992	"	"			
								Carried over	7,713	6	4	67,185	"	11

III. 2 Bridgework — ii (Continued)

Milage	Spans	Description	Quantity	as per Schedule	Rate Rs	a	p	℔	Amount Rs	a	p	Total Rs	a	p
		Brought fowurd							7713	6	4	67,185	.	11
M - chs 44-69	4 - 25'	Earthwork	✓ 262 Cyds	N	1	.	.	Cyd	262	.	.			
	Girders	Brickwork	✓ 261 "	"	12	.	.	"	3132	.	.			
		Ashlar Copings	✓ 704 Sft	"	2	.	.	Sft	140	12	10			
		" Sills & Caps	✓ 120.6 cft	"	2	.	.	cft	241	3	2			
		Ironwork	✓ 17.76 Tons	-	300	.	.	Ton	5,328	.	.			
		Woodwork	✓ 297.6 cft	"	4	.	.	cft	1190	6	4			
									10,294	6	4			
M - chs 49-12	9 - 40'	Carangooly River												
	Girders	Earthwork	355.5 cyds	P	1	.	.	cyd	355	8	.			
		Brickwork	330.8 "	"	12	.	.	"	3969	9	7			
		Ashlar Copings	79 Sft	"	2	.	.	Sft	158	.	.			
		" Sills & Caps	139.7 cft	"	2	.	.	cft	279	6	5			
		Ironwork	42.1443 "	"	300	.	.	Ton	12,733	3	2			
		Woodwork	1.20 cft	"	4	.	.	cft	1680	.	.			
									19,175	11	2			
M - chs 42.65	18 - 100'	Palar River												
	Girders	Wrought Iron	✓ 847.01 Tons	Z	300	.	.	Ton	254,103	.	.			
		Cast Iron	✓ 595.29 "	"	200	.	.	"	119,058	.	.			
		Cartage over 45 Miles	✓ 442.3 "	"	.	5	.	p. Ton p. mile	20,282	5	6			
		Sinking 36 Cylinders	✓ 40 ft	"	12	.	.	ft	17280	.	.			
		Woodwork	✓ 4231 cft	"	4	.	.		16,924	"	.	4,64,830	13	4
									427,647	5	6			

III - 4 Level Crossings &c

Description	as per Schedule	Amount Rs	a	p			
6 Level Crossings	S	534	"	.			
6 Pairs gates		600	.	.			
7 Gate Keepers lodges	T	2,622	13	7			
32 Grade Posts		160	"	"			
14 Mile "		42	.	.	3,958	13	7
		Carried over			5,35,974	11	10

Estimate

District 4.

Carnatic Railway Co. Ltd.

Estimate for the Construction of the line upon District V from Madranticum to Adeyalum

III-1 Earthwork

Description	Quantity	as per Schedule	Rate Rs	a	p	℔	Amount Rs	a	p	Total Rs	a	p
Earthwork in banks & Cuttings	101,687 cyds	A	.	3	.	cyd	19,066	5	.			
" Catchwater drain	17,160 "	B	.	2	6	"	2,681	4	"			
Trimming Slopes	6631 sqrs	C	.	2	.	Sq.	828	14	.			
Pitching	450 "			5	.	"	2250	.	.			
Turfing	6181 "		.	8	"	"	3,090	8	"	27,916	15	.

III-2 Bridgework i

No.	Description	as per Schedule	Amount Rs	a	p			
22	1 ½ Span Culverts as per drawing No. 1	D	5,609	6	10			
3	2 ft Box " "	E	1,200	10	9			
11	4 ft Girder "	F	3,234	.	.			
2	Double 4 ft Girder "		809	3	2			
2	4 ft Box "	G	879	1	6			
5	6 ft Girder "	I	3,159	14	9			
2	Double 6 ft girder Culverts		1,783	4	6			
1	Three 6 ft girder "		1,151	4	9			
2	10 ft Girder Culverts	K	1,880	5	6			
1	Double 10 ft Girder Culvert		1,332	10	9	21,039	14	6

III-4 Level Crossings &c.

Description	as per Schedule	Amount Rs	a	p			
9 Level Crossings	S	801	"	.			
7 Pairs Gates		700	"	.			
7 Gate Keepers lodges	T	2,622	13	7			
35 Grade posts		175	"	"			
13 Mile "		39	"	.	4,337	13	7
					Carried over	53,294	11	1

III_5 Fencing

Description	Quantity	as per Schedule	Rate Rs	a	p	℔	Amount Rs	a	p	Total Rs	a	p
Brought forward										53,294	11	1
Wire Fencing	15253 lyds	V	1	"	"	lyd	15,253	"	"	15,253	"	"

IV_1 Ballast

Description	Quantity	as per Schedule	Rate Rs	a	p	℔	Amount Rs	a	p	Total Rs	a	p
Ballast	28,918 cyds	11.5	"	9	"	cyd	16,266	6	"	16,266.	6	"

IV_2 Permanent way

Description	Quantity	as per Schedule	Rate Rs	a	p	℔	Amount Rs	a	p	Total Rs	a	p
Laying permanent way	25626 lyds	W	"	8	"		12,813	"	"			
Best best Sleby iron Rails with pot Sleepers	14.56 m	"	16,967	7	"	mile	2,47,045	14	3			
Leading permanent way 56 7/10 Miles	2288.2 Tons	"	"	5	"		40,651	4	10	3,00,510	3	1

V_1 Stations & Offices

Description	as per Schedule	Amount Rs	a	p	Total Rs	a	p
Madranticum 3rd Class Station							
Platform	X	621	3	10			
Booking Office & Store room	"	1124	15	2			
Urinals	"	774	9	3			
Waiting Shed	"	1,072	"	"			
Small Goods shed	f	4,092	8	1			
Compound	X	724	15	8			
Carried over		8,410	4	"	3,85,324	4	2

V–1 Stations and Offices (Continued)

Description	as per Schedule	Amount Rs	a	p	Total Rs	a	p
Brought forward		8,410	4	"	3,85,324	4	2
Achenwauk 3rd Class Station							
Platform	X	621	3	10			
Booking Office and Store room	"	1,124	15	2			
Urinals	"	774	9	3			
Waiting Shed	"	4,072	-	-			
Small Goods Shed	f	4,092	8	1			
2 Ash pits	C,	534	8	-			
2 Fuel Stages		279	6	2			
Compound	X	724	15	8	17,631	6	2

V–2 Workshops, Store buildings &c.

Description	as per Schedule	Amount Rs	a	p			
4 Temporary Store Sheds		600	-	-	600	-	-

V–3 Staff Quarters

Description	as per Schedule	Amount Rs	a	p			
Madaranticum 3rd Class Station							
Native Station Masters house	b	1,279	5	6			
Achenwauk 3rd Class Station							
Native Station Masters house	b	1,279	5	6			
1 Temporary Engineers Bungalow & Out Offices	C	1,500	"	"			
2 " Inspectors " " "		1,600	"	"	5,658	11	"

V–4 Station Machinery

Description	as per Schedule	Amount Rs	a	p			
Madaranticum 3rd Class Station							
2 Single Arm Semaphores		400	"	"			
5 " Points		600	"	"			
		1,000	"	"			
Achenwauk 3rd Class Station							
2 Single Arm Semaphores		400	"	"			
2 Water Cranes		900	-	-			
1 Tank house	d	996	7	7			
1 Well	T14	927	12	5			
700 ft Piping		1,050	"	"			
1 Double Acting hand Pump		300	"	"			
6 Single points		720	"	"			
		5,294	4	"	6,294	4	"

Madras
14th August 1872

Chief Engineer

Grand Total 4.15.5.11 9 4

Estimate

District 5

Carnatic Railway Co^y Ltd.

Estimate for the construction of the line upon District VI from Adyalum to Tindivanum.

III – 1 Earthwork

Description	Quantity	As per schedule	Rate Rs.	A.	P.		Amount Rs.	A.	P.	Total Rs.	A.	P.
Earthwork in banks & Cuttings	105,660	A.	"	3	0	Cy^d	19,811	4	"			
" Catchwater drain	17,160	B	"	2	6	"	2,681	4	"			
Trimming Slopes	Sq^rs 6753	C.	"	2	"	Sq^rs	844	2	"			
Pitching	" 411	"		5	"		2,055	"	"			
Turfing	" 6342	"	"	8	"	"	3,171	"	"	28,562	10	"

III – 2 Bridgework

No.	Description	As per schedule		Amount Rs.	A.	P.	
13	1'-10" Open Culvert as per drawing No. 1		D	3,314	10	7	
3	2 ft Box " " " " 2		E	1,200	10	9	
7	4 " Girder " " " " 3		F	2058	"	"	
1	4 " Box " " " " 4		G	439	8	9	
3	6 " Girder " " " " 6		I	1895	15	3	
2	10 " " " " " " 8		K	1,880	5	6	
1	Three 10 ft Girder " " " " 8		"	1,725	2	10	
1	" 20 " " Bridge " " " 10		M	6033	12	8	
3	Double 25 ft " " " " 11		N	17,480	6	6	
1	30 ft Girder " " " 12		O	4,016	3	4	40,044 12 2

III – 4 Level Crossings &c^a

No.	Description	As per schedule		Amount Rs.	A.	P.	
1	Road diversion = 352 yards		R	264	"	"	
9	Level Crossings		S	801	"	"	
6	Pairs Gates			600	"	"	
6	Gatekeepers' lodges		T	2,248	2	6	
36	Grade Posts			180	"	"	
13	Mile "			39	"	"	4,132 2 6
						Carried forward	72,739 8 8

III. 5 Fencing

Description	Quantity	As per Schedule	Rate Rs	As	P	Q	Amount Rs	As	P	Total Rs	As	P
Brought forward										72,739	8	8
Wire Fencing	Lgth 15,253	V	1	"	"	Lgth	15,253	"	"	15,253	"	"

IV-1 Ballast

Description	Quantity	As per Schedule	Rate Rs	As	P	Q	Amount Rs	As	P	Total Rs	As	P
Ballast	Cyds 28,918	V	"	7	"		16,266	6	"	16,266	6	"

IV-2 Permanent Ways

Description	Quantity	As per Schedule	Rate Rs	As	P	Q	Amount Rs	As	P	Total Rs	As	P
Laying Permanent ways	25626 Cyds	W	"	8	"	Cyd	12,813	"	"			
Best best Steel rails with fish Sleepers	1456 Miles		16,967	7	"	Mile	24,704	11	3			
Leading permanent ways 58 615/8,000			"	"	5	"		4,528	9	6	3,01,387	7	9

V-1 Stations & Offices

Description	As per Schedule	Amount Rs	As	P	Total Rs	As	P
Wellacoor 3rd Class Station							
Platforms	X	621	3	10			
Booking Office & Store room	"	1,124	15	2			
Urinals	"	774	9	3			
Waiting Shed	"	1,072	"	"			
Compound	"	724	15	8			
		4,317	11	11			
Tindivanum 2nd Class Station							
Station house & waiting Shed	Y	15,292	10	6			
Lamps & Stores	X	1,124	15	2			
Urinals	"	774	9	3			
Platforms	"	621	3	10			
2 Ash pits	C,	534	8	"			
Large Goods shed	G	10,860	5	11			
2 Fuel Stages		279	6	2			
Compound	X	724	15	8			
		30,212	10	6	34,530	6	5

Carried over 4,40,176 12 10

V-2 Workshops Store buildings &c.

Description	As per Schedule	Amount Rs	As	P	Total Rs	As	P
Brought forward					440,176	12	10
5 Store Sheds		750	"	"	750	"	"

V-3 Staff Quarters

Description	As per Schedule	Amount Rs	As	P	Total Rs	As	P
Vellacoor 3d Class Station							
Native Station Masters house	b	1279	5	6			
Tendivanum 2d Class Station							
Station Masters bungalow & out Offices	"	2,525	"	"			
Temporary Engineers bungalow & Out Offices	c	1,500	"	"			
" " Inspectors' " "		1,600	"	"	6,901	5	6

V-4 Station Machinery

Description	As per Schedule	Amount Rs	As	P	Total Rs	As	P
Vellacoor 3d Class Station							
2 Single arm Semaphores		400	"	"			
3 " points		360	"	"			
		760	"	"			
Tindivanum 2d Class Station							
2 Single arm Semaphores		400	"	"			
2 Water Cranes		900	"	"			
1 Tank house	d	996	7	7			
1 Well	T"	927	12	5			
700 ft Piping at 1/8 per ft		1,050	"	"			
1 Double Acting hand pump		300	"	"			
2 Three throw points		480	"	"			
6 Single points		720	"	"			
		5,774	4	"	6,534	4	"
					Grand Total	4,54,365	6	4

Compd. JP

Madras
14th August 1872

Fredk Dibble
Chief Engineer.

Lithuanie

Pologne

Carnatic Railway Co. Ld.

Estimate for the Construction of the line upon District VII from Tindivanam to Salay

III – 1 – Earthwork

Description	Quantity	as per Schedule	Rate Rs	a	p	D	Amount Rs	a	p	Total Rs	a	p
Earthwork in banks and Cuttings	Cyds 126-331	A 7	"	3	"		23,687	1	"			
" Catchwater drain	17232	B	"	2	6		2,692	8	"			
Trimming Slopes	79444 Sqrs	C 7	"	2	"		993	"	"			
Turfing "	79444 "		"	8	"		3972	"	"	31,344	9	"

III – 2 Bridgework i

Description	as per Schedule	Amount Rs	a	p	D	Amount Rs	a	p	Total Rs	a	p
11 1 – 10 Open Culverts as per drawing	No 1				D	2,804	11	5			
1 2.0 " " "	" 2				E	400	3	7			
16 4' 0" ft Girder " "	" 3				F	4704	"	"			
3 4' 0" Culvert " "	" 4				G	1,318	10	3			
6 6' 0" Girder " "	" 6				I	3,791	14	6			
4 10' 0" " " "	" 8				K	3,760	11	"			
1 Double 10 ft Girder " "	" 8				"	1,332	10	9	18,112	13	6

III Bridgework ii

Milage	Spans	Description	Quantity	as per Schedule	Rate Rs	a	p	D	Amount Rs	a	p	Total Rs	a	p
M-chs			cyds											
84-29	4-30'	Earthwork	273.8	0	1	"	"	cyd	273	12	10			
	Girders	Brickwork	261.0	"	12	"	"	"	3132	"	"			
		Ashlar Copings	70.4	"	2	"	"	cft	140	12	10			
		" Sills and Caps	120.6	"	2	"	"	"	241	3	2			
		Ironwork	22.84	"	300	"	"	Ton	6852	"	"			
		Woodwork	334.	"	4	"	"	cft	1336	"	"			
		Carried over							11,975	12	10	49,457	6	6

III - 2 Bridgework ii (Continued)

Mileage	Span	Description	Quantity	as per Schedule	Rate Rs	a	p	℔	Amount Rs	a	p	Total Rs	a	p
		Brought forward							11,975	12	10	49,457	6	6
II - chs 5 - 70	9 - 30	Ginger River												
	Girders	Earthwork IA	506.8 Cyds	O	1	"	"	Cyd	506	12	10			
		Brickwork	473 "	"	12	"	"	"	5,676	"	"			
		Ashlar Copings	70.4 Lft	"	2	"	"	"	140	12	10			
		" Sills & Caps	275.6 Cft	"	2	"	"	"	551	3	2			
		Ironwork	51.39 Tons	"	300	"	"		15,417	"	"			
		Woodwork	668. Cft	"	4	"	"		2672	"	"			
									24,963	12	10	36,939	9	8

III - 4 Level Crossings &c

No.	Description	as per Schedule	Amount Rs	a	p			
10	Level Crossings	S	890	"	"			
7	Pairs Gates		700	"	"			
1	Gate keepers lodges	T	2,622	13	7			
41	Grade Posts		205	"	"			
13	Mile "		39	"	"	4,456	13	7

III - 5 Fencing

Description	Quantity	as per Schedule	Rate Rs	a	p	℔	Amount Rs	a	p			
Wire Fencing	lyds 15,318	V	1	"	"	lyd	15,318			15,318	"	"

IV 1 Ballast

Description	Quantity	as per Schedule	Rate Rs	a	p	℔	Amount Rs	a	p			
Ballast	Cyds 29,941	U_1	"	9	"	Cyd	16,335	9	"	16,335	9	"
							Carried over			122,507	6	9

N. 2 Permanent way

Description	Quantity	as per Schedule	Rate Rs	a	p	℔	Amount Rs	a	p	Total Rs	a	p
Brought forward										1,22,507	6	9
Laying Permanent way	lyds 25,734	W	-	8	-	lyd	12,867	-	-			
Best best Steel iron rails with pot Sleepers	14.62 miles	"	16,967	"	"	mile	248,063	15	-			
Leading permanent way 4.5 to 20 Miles	2297.6 Tons	"	"	5	"	"	32,345	14	6	2,93,276	13	5

V-1 Station & Offices

Description	as per Schedule	Amount Rs	a	p	Total Rs	a	p
Chendoor 3rd Class Station							
Platform	X	621	3	10			
Booking Office & Store room	"	1,124	15	2			
Urinals	"	774	9	3			
Waiting Shed	"	1,072	-	-			
Compound	"	724	15	8	4,317	11	11

V-2 Workshops. Store buildings &c.

Description	as per Schedule	Amount Rs	a	p	Total Rs	a	p
4 Temporary Store Sheds		600	-	-	600	-	-

V-3 Staff Quarters

Description	as per Schedule	Amount Rs	a	p	Total Rs	a	p
Chendoor 3rd Class Station							
Native Station Masters house	b	1,279	5	6			
1 Temporary Engineer's bungalow and Out Offices	c	1,500	-	-			
2 " Inspectors " "		1,600	-	-	4,379	5	6

V-4 Station Machinery

Description	Amount Rs	a	p	Total Rs	a	p
Chendoor 3rd Class Station						
2 Single Arm Semaphores	400	-	-			
3 " points	360	-	-	760	-	-
				4,25,841	5	7

Madras
14th August 1872

Ch. Fh. H.

Ked. Dibble Grand Total
Chief Engineer

Estimate

District 7.

Carnatic Railway Co. Ld.

Estimate for the Construction of the line upon District VIII from Salay to Pillaor

III–1 Earthwork

Description	Quantity	as per Schedule	Rate Rs	A	P	℔	Amount Rs	A	P	Total Rs	A	P
	cyds											
Earthwork in banks and Cuttings	171,398	As	"	3	"	Cyd	32,137	2	"			
" Catchwater drain	17.160	B	"	2	6	"	2,681	4	"			
Trimming Slopes	9633 sq	Cs	"	2	"	Sq	1,204	2	"			
Pitching	700 "	"	5	"	"	"	3,500	"	"			
Turfing	8933 "	"	"	8	"	"	4466	8	"	43989	"	"

III 2 Bridgework-1

№	Description	as per Schedule	Amount Rs	a	p	Total Rs	A	P
15	1.10" Open Culverts as per drawing № 1	D	3,824	9	9			
4	2 ft Box " " " 2	E	1,600	14	4			
12	4 ft Girder " " " 3	F	3,528	"	"			
3	4 " Box " " " 4	G	1,318	10	3			
6	6 " Girder " " " 6	I	3,791	14	6			
3	10 " " " " 8	K	2,820	8	3			
1	Two 20 ft " Bridge " " 10	M	4,354	3	1			
2	25 ft " " " " 11	N	7,186	"	2	28,424	12	4

III–2 Bridgework ii

Milage	Spans	Description		Quantity	as per Schedule	Rate Rs	a	p	℔	Amount Rs	A	P	Total Rs	A	P
				cyds											
175 chs 97–3	3–30ft Girders	Earthwork in foundation	✓	238.4	0	1	"	"	cyd	238	6	5			
		Brickwork	✓	218.6	"	12	"	"	"	2,623	3	2			
		Ashlar Copings	✓	70.4 lft	"	2	"	"	lft	140	12	10			
		" Sills and Caps	✓	89.6 cft	"	2	"	"	cft	179	3	2			
		Ironwork	✓	17.13 Tons	"	300	"	"	Ton	5,139	"	"			
		Woodwork	✓	250.5 cft	"	4	"	"	cft	1,002	"	"			
													70,4		
					Carried over					9,322	9	7	72,413	12	4

III - 2 Bridgework ii (Continued)

Milage	Spans	Description	Quantity	as per Schedule	Rate Rs	a	p	℔	Amount Rs	a	p	Total Rs	a	p
		Brought fowward							9,322	9	7	72,413	12	4
ms-chs 92-14	5-30	Earthwork ✓	309.2 Cyd	O	1	"	"	Cyd	309	3	2			
	Girders	Brickwork ✓	303.4 "	"	12	"	"	"	3,640	12	10			
		Ashlar Copings ✓	70.4 lft	"	2	"	"	lft	140	12	10			
		" Sills and Caps ✓	151.6 cft	"	2	"	"	cft	303	3	2			
		Ironwork ✓	28.55 Tons	"	300	"	"	Ton	8,565	"	"			
		Woodwork ✓	417.5 cft	"	4	"	"	cft	1,670	"	"			
									14,629	"	"	23,957	9	7

III - 4 Level Crossings &c

No.	Description	as per Schedule	Amount Rs	a	p	Total Rs	a	p
6	Level Crossings	S	534	"	"			
6	Pairs of Gates		600	"	"			
6	Gate Keepers lodges	T	2,248	2	6			
30	Grade Posts		150	"	"			
13	Mile "		39	"	"	3,571	2	6

III - 5 Fencing.

Description	Quantity	as per Schedule	Rate Rs	a	p	℔	Amount Rs	a	p	Total Rs	a	p
Wire Fencing	15253 lyd	V	1	"	"	lyd	15,253	"	"	15,253	"	"

IV - 1 Ballast

Description	Quantity	as per Schedule	Rate Rs	a	p	℔	Amount Rs	a	p	Total Rs	a	p
Ballast	28,918 Cyd	U8	"	9	"	Cyd	16,266	6	"	16,266	6	"
										Carried over	131,455	14	5

IV – 2 Permanent Way

Description	Quantity	as per Schedule	Rate Rs	a	p	℔	Amount Rs	a	p	Total Rs	a	p
Brought forward										4,31,455	14	5
Laying permanent way	25626 lyds	W	"	8	"	lyd	12,813	"	"			
Best best Steely iron rails with pot Sleepers	1456 Miles	"	16,967	7	"	mile	2,47,045	14	3			
Leading permanent way 32 to Miles	2288.2 Tons	"	"	5	"		22,899	14	"	2,82,758	12	3

V – 1 Station and Offices

Description	as per Schedule	Amount Rs	a	p	Total Rs	a	p
Vickravandi 3rd Class Station							
Platform	X	621	3	10			
Booking Office and Store room	"	1124	15	2			
Urinals	"	774	9	3			
Waiting Shed	"	1,071	"	"			
Small Goods Shed	f	4,092	8	1			
Compound	X	724	15	8			
		8,410	4	"			
Villoopoorum 2nd Class Station							
Station House and waiting Shed	Y	15,292	10	6			
Private room in Station house	Y,	1,856	10	11			
Lamps and Stores	X	1124	15	2			
Urinals	"	774	9	3			
Platform	"	621	3	10			
2 Ash pits	e,	534	8	"			
2 Fuel Stages		279	6	2			
Large Goods shed	g	10,860	5	11			
Compound	X	724	15	8			
		32,069	5	5	40,479	9	5
Carried Over					4,54,694	4	1

V_2 Workshop Store buildings &c.

Description	as per Schedule	Amount Rs	a	p	Total Rs	a	p
Brought forward					454,694	4	1
4 Temporary Store Sheds		600	"	"	600	"	"

V_3 Staff Quarters

Description	as per Schedule	Amount Rs	a	p	Total Rs	a	p
Vickravandi 3rd Class Station							
Native Station Masters house	b	1279	5	6			
Villoopooram 2nd Class Station							
Station Masters Bungalow & Out Offices		2525	"	"			
1 Temporary Enginers Bungalow "	c	1500	"	"			
2 " Inspectors "		1,600	"	"	6,904	5	6

V_4 Station Machinery

Description	as per Schedule	Amount Rs	a	p	Total Rs	a	p
Vickravandi 3rd Class Station							
2 Single arm Semaphores		400	"	"			
5 " Points		600	"	"			
		1,000	"	"			
Villoopooram 2nd class Station							
2 Single arm Semaphores		400	"	"			
2 Water Cranes		900	"	"			
1 Tank house	d	996	7	7			
1 Well	Tin	927	12	5			
700ft Piping at 1/8/- per lft		1050	"	"			
1 Double acting hand pump		300	"	"			
2 Three throw points		480	"	"			
6 Single Points		720	"	"			
		5774	4	"	6774	4	"

Grand Total Rs 468972 13 7

Madras
14th August 1872

Fredk Dobbs
Chief Engineer

Compd P.

Estimate

District 8.

1

Carnatic Railway Co. (Ld.)

Estimate for the construction of the line upon District IX from Pillaor to Nellicoopum

III-1 Earthworks

Description	Quantity	As per Schedule	Rate Rs	As	P.	Per	Amount Rs	As	P.	Total Rs	As	P.
	Cyds.											
Earthwork in banks & cuttings	1,53,261	A	"	3	"	Cyd.	28,736	7	"			
" Catchwater drain	17,160	B	"	2	6		2,681	4	"			
Trimming Slopes	8935 Sqrs.	C	"	2	"	Sq:	1,116	14	"			
Turfing	8935 " "	"	"	8	"	"	4,467	8	"	37,002	1	"

III-2 Bridgework i

No.	Description	As per Schedule	Amount Rs	As	P.
13	1.10" Open Culverts as per drawing No 1	D.	3,314	10	7
6	2 ft Box " " " 2	E	2,401	5	6
11	4 ft Girder " " " 3	F	3,234	"	"
6	4 ft Box " " " 4	G	2,637	4	6
3	6 ft Girder " " " 6	I	1,895	15	3
6	10 ft " " " " 8	K	5,641	"	6
1	Double 10 ft Girder " " 8	"	1,332	10	9
3	20 ft Girder Bridge " " 10	M	8,023	12	6
1	25 ft " " " " 11	N	3,593	"	1	32,073	11	8

III. 2 Bridgework ii

Mileage	Spans	Description	Quantity		Rate Rs	As	P.	Per	Amount Rs	As	P.	
			Cyds									
m:ch:												
106-13	3-25'	Earthwork	✓ 228.6	N	1	"	"	Cyd.	228	9	7	
	Girders	Brickwork	✓ 218.6	"	12	"	"	"	2,623	3	2	
		Ashlar Copings	✓ 70.4	"	2	"	"	Cft.	140	12	10	
		" Sills and Caps	✓ 89.6	"	2	"	"	Cft.	179	3	2	
		Iron work	✓ 13.32	"	300	"	"	Ton	3,996	"	"	
		Wood work	✓ 223.2	"	4	"	"	Cft.	892	12	10	
								Carried over	8,060	9	7	69,075	12	8

III-2 Bridgework (Continued)

Chge Spans	Description	Quantity			Rate Rs	As	P.	Of	Amount Rs	As	P.	Total Rs	As	P.
	Brought forward								8,060	9	7	69,075	12	8
Ch: 3-41 3-40	Pillar: Nullah													
Girders	Earthwork	✓ 307.4	Cyds	P	1	"	"	Cyd	307	6	5			
	Brickwork	✓ 277.6	"	"	12	"	"	"	3,331	3	2			
	Ashlar Copings	✓ 79.	Cft	"	2	"	"	Cft	158	"	"			
	" Sills and Caps	✓ 102.8	Cft	"	2	"	"	Cft	205	9	7			
	Iron work	✓ 31.833	Tons	"	300	"	"	Ton	9,549	14	5			
	Wood work	✓ 315.	Cft	"	4	"	"	Cft	1,260	"	"			
									14,812	1	7			
Ch: 217-100	River Coredar													
Girders	Wrought Iron	729.01	Tons	Z1	300	"	"		218,703	"	"			
	Cast Iron	81.	"	"	200	"	"		16,200	"	"			
	Cartage over 30 miles Screwing piles	810.01	"	"	"	5	"	Ton mile	7,593	13	6			
	6 Piers of 6 Piles	20.	Ft	"	7	8	"	Ft	900	"	"			
	1 Pier "	26	"	"	"	"	"	"	195	"	"			
	1 Pier "	30	"	"	"	"	"	"	225	"	"			
	2 Piers	31	"	"	"	"	"	"	465	"	"			
	3 Piers	32	"	"	"	"	"	"	720	"	"			
	2 Piers	33	"	"	"	"	"	"	495	"	"			
	2 Piers	35	"	"	"	"	"	"	525	"	"			
	Teak Sleepers (12"x8")	2872	Cft	"	4	"	"	Cft	11,488					
	Teak Platforms (18x2")	1010	"	"	4	"	"	"	4,040					
									2,61,549	13	6	2,84,422	8	8

III-4 Level Crossings &c.

No	Description	as per Schedule	Amount Rs	As	P.			
1	Road diversion = 484 lin yards	R	363	"	"			
10	Level Crossings	S	890	"	"			
7	Pairs Gates		700	"	"			
7	Gatekeepers Lodges	T	2,622	13	7			
19	Grade posts		95	"	"			
13	Mile posts		39	"	"	4,709	13	7
						Carried over	3,58,208	2	11

III-5 Fencing

Description	Quantity	As per Schedule	Rate Rs	As	P.	Q	Amount Rs	As	P.	Total Rs	As	P.
Brought forward	C. yds									3,58,208	2	11
Wire Fencing	15,253	V	1	"	"	C.yds	15,253	"	"	15,253	-	-

IV-1 Ballast

Description	Quantity	As per Schedule	Rate Rs	As	P.	Q	Amount Rs	As	P.	Total Rs	As	P.
Ballast	Cyds 28,918	U/o	"	9	"	Cyd	16,266	6	"	16,266	6	"

IV-2 Permanent way

Description	Quantity	As per Schedule	Rate Rs	As	P.	Q	Amount Rs	As	P.	Total Rs	As	P.
	C.yds											
Laying Permanent way	25,626	W	"	8	"	C.yd	12813	"	"			
30 lbs best steel Iron rails with fish plates & sleepers	14.56 Miles	"	16,967	7	"	Mile	2,47,045	14	3			
Leading permanent way. 19 40 Miles	2288.2 Tons	"	"	5	"	"	13,604	1	"	2,73,462	15	3

V-1 Stations & Offices

Description	As per Schedule	Amount Rs	As	P.	Total Rs	As	P.
At Kadavilly 3rd Class Station							
Platform	X	621	3	10			
Booking office and Store Room	"	1,124	15	2			
Urinals	"	774	9	3			
Waiting Shed	"	1,072	"	"			
Compound	"	724	15	8			
Carried over		4,317	11	11	6,63,190	8	2

V-1 Stations & Offices (Continued)

Description	As per Schedule	Amount Rs	As.	P.	Total Rs	As.	P.
Brought forward		4,317	11	11	6,63,190	8	2
Punrooty 2d Class Station							
Station house and waiting shed	Y	15,292	10	6			
Private room in Station House	Y1	1,856	10	11			
Lamps and Stores	X	1,124	15	2			
Urinals	"	774	9	3			
Platform	"	621	3	10			
2 Ash Pits	C1	534	8	"			
2 Fuel Stages		279	6	2			
Large Goods Shed	9X	10,860	5	11			
Compound	X	724	15	8			
		32,069	5	5	36,387	1	4

V-2 Workshop, Storebuildings &c &c

Description	As per Schedule	Amount Rs	As.	P.	Total Rs	As.	P.
5 Temporary Store Sheds		750	"	"	750	"	"

V-3 Staff Quarters

Description	As per Schedule	Amount Rs	As.	P.	Total Rs	As.	P.
Kadavilly 3d Class Station							
Native Station Masters House	b	1,279	5	6			
Punrooty 2d Class Station							
Stationmasters Bungalow & outoffices		2,525	"	"			
1 Temporary Engineers Bungalow & outoffices	C	1,500	"	"			
2 " Inspectors " "		1,600	"	"	6,904	5	6
					Carried over	7,07,231	15	"

V-4 Station Machinery

Description	As per Schedule	Amount Rs	As	P.	Total Rs	As	P.
Brought forward					7,07231	15	"
Madawilly 3rd Class Station							
2 Single arm semaphores		400	"	"			
3 " points		360	"	"			
		760	"	"			
Permooty 2d Class Station							
2 single arm semaphores		400	"	"			
2 Water Cranes		900	"	"			
1 Tank house	d	996	7	7			
1 " Well	Ta	227	12	5			
700 ft piping		1,050	"	"			
1 Double acting hand pump		300	"	"			
2 Three throw points		480	"	"			
6 Single points		720	"	"			
		5,774	4	"	6,534	4	"
					Grand Total	7,13766	3 "

Madras
14th August 1872

Fred. L. Dibbles
Chief Engineer

Estimate

District 9.

Carnatic Railway Co (Ld)

Estimate for the construction of the line upon District X from Nelliecoopum to Cuddalore.

III-1 Earthwork KO.

	Quantity	As per Schedule	Rate Rs	As	P.	Q	Amount Rs	As	P.	Total Rs	As	P.
	Cyds											
Earthwork in banks & cuttings	2,02,472	A 10	"	3	"	Cyds	37,963	8	"			
" Catchwater drain	16,529	B	"	2	6	"	2,582	10	6			
Trimming slopes	10,911 Sqyds	C 10	"	2	"	Sq:	1,367	10	"			
Pitching	515 "		"	5	"	"	2,575	"	"			
Turfing	10,426 "		"	8	"	"	5,213	"	"	49,701	12	6

III-2 Bridgework KO i

	Description		As per Schedule	Amount Rs	As	P.
9	1-10'	Open Culverts as per drawing	No 1	16 D	2,294	12	3
15	4 ft	Girder "	" 3	F	4,410	"	"
1	4"	Box "	" 4	G	439	8	9
8	6"	Girder "	" 6	I	5,055	14	"
5	10"	" "	" 8	K	4,700	13	9
			12	178				16,901	"	9

III-2 Bridgework KO ii

Mileage Spans	Description	Quantity	As per Schedule	Rate Rs	As	P.	Q	Amount Rs	As	P.
m: ch:										
124-5 8-100	River Guddelum									
	Girders Wrought Iron	343·16 Tons	Z2 & Z2a	300	"	"	Ton	1,02,948	"	"
	Cast Iron	40.5 "		200	"	"	"	8,100	"	"
	Cartage over 16 miles	383·66 "	"	"	5		mile	1,918	4	9
	Sinking 9 piers	20: ft	"	7	8	"	ft	1,350	"	"
	Teak Sleepers (12"×8")	1118 Cft	"	4	"	"	Cft	4,472	"	"
	" platforms (1·8"×2")	467 "	"	4	"	"	"	1,868	"	"
							Carried over	1,20,656	4	9	66,602	13	3

III-2 Bridgework-ii (Contd)

Mileage	Name	Description	Quantity	As per Schedule	Rate Rs	As	P.	Of	Amount Rs	As	P.	Total Rs	As	P.
		Brought forward							1,20,656	4	9	66,602	13	3
M: Ch:														
127-381-100		Cuddalore Backwater		7.3 & 7.2a										
	Girders	Wrought Iron	53.37 Tons		300	"	"	Ton	16,011	"	"			
		Cast Iron	9. "		200	"	"	"	1,800	"	"			
		Cartage over 16 miles	62.37 tons		"	5	"	ton mile	311	13	7			
		2 piers of 6 piles	70. ft.		7	8	"	ft.	525	"	"			
		Teak Sleepers	139.92 Cft.		4	"	"	Cft	559	10	11			
		Teak Platform	58.6668 "		4	"	"	"	232	11	3			
									19,439	12	9	1,40,096	1	6

III-4 Level Crossings &c.

No	Description	As per Schedule	Amount Rs	As	P.			
15	Level Crossings	S	1,335	-	"			
6	Pairs of Gates		600	"	"			
6	Gate-Keepers Lodges	T	2,248	2	6			
14	Grade Posts		70	"	"			
12	Mile Posts		36	"	"	4,289	2	6

III-5 Fencing

Description	Quantity	As per Schedule	Rate Rs	As	P.	Of	Amount Rs	As	P.			
Wire Fencing	M: Ch: 4-14	V	1	"	"	Cyd	14,696	"	"	14,696	"	"

IV-1 Ballast

Description	Quantity Cyds	As per Schedule	Rate Rs	As	P.	Of	Amount Rs	As	P.			
Ballast	27.855	V/11	"	9	"	Cyd	15,668	7	"	15,668	7	"
							Carried over			2,41,352	8	3

IV-2 Permanent way

Description	Quantity	As per Schedule	Rate Rs	As	P	If	Amount Rs	As	P	Total Rs	As	P
Brought forward										2,41,352	8	3
Laying permanent way	24.683 Lgs	W	"	8	"	Lgs	12,341	8	"			
Best best Steely iron rails with Oak sleepers	14.02 miles	"	169 67	7	"	mile	2,37,883	7	7			
Leading permanent way 6¼ miles	2203.3 Tons	"	"	5	"		4,303	5	1	2,54,528	4	8

V-1 Stations & Offices

Description	As per Schedule	Amount Rs	As	P
Nellicoopuram 3d Class Station				
Platforms	X	621	3	10
Booking office & store room	"	1,124	15	2
Urinals	"	774	9	3
Waiting Shed	"	1,072	"	"
Compound	"	724	15	8
		4,317	11	11
Tripapaloor 3d Class Station				
Platform	"	621	3	10
Booking office & Store room	"	1,124	15	2
Urinals	"	774	9	3
Waiting Shed	"	1,072	"	"
Compound	"	724	15	8
		4,317	11	11
Cuddalore 2d Class Station				
Station House & waiting shed	Y	15,292	10	6
Private room in Station house	Y_1	1,856	10	11
Lamps & Stores	X	1,124	15	2
Urinals	"	774	9	3
Platforms	"	621	3	10
2 Ash Pits	e,	534	8	"
2 Fuel Stages		279	6	2
Large Goods shed	g	10,860	5	11
Compound	X	724	15	8
		32,069	5	5
				40,704	13	3
Carried over				5,36,585	10	2

V-2 Workshops, Store buildings &c.

Description	As per schedule	Amount Rs	As	P.	Total Rs	As	P.
Brought forward					536,585	10	2
Cuddalore Station — 1 Engine shed	e	7,030	13	10			
1 Carriage "	d	13,153	10	3			
1 Fuel store "	h	4,678	4	2			
5 Temporary storesheds		750	"	"	25,612	12	3

V-3 Staff Quarters

Description	As per schedule	Amount Rs	As	P.	Total Rs	As	P.
Nellicoopum 3d Class Station.							
Native Station Masters House	b	1,279	5	6			
Tripapaloor 3d Class Station							
Native Station Masters House	"	1,279	5	6			
Cuddalore 2d Class Station							
Station Masters Bungalow & out offices		2525	"	"			
1 Temporary Engineers Bungalow & out offices	c	1,500	"	"			
2 " Inspectors " "		1,600	"	"	8,183	11	"

V-4 Station Machinery

Description	As per schedule	Amount Rs	As	P.	Total Rs	As	P.
Nellicoopum 3d Class Station							
2 Single arm Semaphores		400	"	"			
3 " Points		360	"	"			
		760					
Tripapaloor 3d Class Station							
2 Single arm Semaphores		400	"	"			
3 " Points		360	"	"			
		760	"	"			
Cuddalore 2d Class Station							
2 Single arm Semaphores		400	"	"			
2 Water Cranes		900	"	"			
1 Tank house		996	"	"			
1 Well	d T14	627	12	5			
700 ft Piping @ 1/8" p. ft		1050	"	"			
1 Double acting hand pump		300	"	"			
2 Three throw points		480	"	"			
6 Single points		720	"	"			
1 Engine Turn table		2,500	"	"			
		8274	4	"	9,794	4	"

Madras
14th August 1872

Chief Engineer

Grand Total 580,176 5 5

Carnatic Railway Co. (Limited)

Madras to Cuddalore

General Estimate

I	Preliminary Expenses	3,60,994. 7. 2
II	Land	" " "
III	Construction of Line	18, 76,133. 3. 0
IV	Ballast & Permanent way	29. 60, 121. 15. 8
V	Stations and Buildings	11, 24 997. 5. 1
VI	Electric Telegraph	" " "
VII	Plant	1, 71, 816. 13. 6
VIII	Rolling Stock	10, 35, 870. 0. 0
IX	Maintenance	55, 080. 0. 0
X	Establishment	11, 42, 199. 0. 0
XI	Contingencies	7. 20, 493. 14. 11

Grand Total Rupees 94. 47. 706. 11. 4

Jos. T. Fisher
Agent and Manager

Carnatic Railway Co. Ld.

Madras to Cuddalore

V 3 47

Summary Estimate

I Preliminary Expenses

Amount of expenditure upto August 31st 1872	2,96,276. 4. 2
Probable future expenditure	64,718. 3. 0
	3,60,994. 7. 2

Contract 3,60,994 : 7 : 2

Jos. J. Fisher
Agent & Manager

Fredk Dobbs
Chief Engineer

Carnatic Railway Co. Ld.

Madras to Cuddalore

Summary Estimate

2351

II Land

Fredk. Dobbs
Chief Engineer

Carnatic Railway Co. Ltd.

Madras to Cuddalore

Summary Estimate

V 26 7

III Construction of Line

No. of District	Earthwork			Minor bridges			Large bridges			Tunnels			Level Crossings			Fencing		
	Rs.	A	P	Rs.	A	P	Rs.	A	P	Rs	A	P	Rs	A	P	Rs	A	P
I	28557	7	6	14,515	8	8	62,319	5	7	"	"	"	7,500	14	10	12,320	"	"
Sub: Sect.n District II	1769	14	"	891	10	3	"	"	"	"	"	"	33491	13	3	10,920	"	"
II	23072	7	"	17.507	13	1	7.713	6	4	"	"	"	4389	6	6	13,772	"	"
III	37863	14	3	20,142	3	11	7.713	6	4	"	"	"	4316	5	7	16,280	"	"
IV	45378	8	"	21.806	8	11	1,86,648	13	11	"	"	"	3958	13	7	16,236	"	"
V	27916	15	"	21.039	11	6	"	"	"	"	"	"	4.337	13	7	15,253	"	"
VI	28562	10	"	40,044	12	2	"	"	"	"	"	"	1.132	2	6	15,253	"	"
VII	31.344	9	"	18,112	13	6	36,939	9	8	"	"	"	4.456	13	7	15,318	"	"
VIII	13989	"	"	28,424	12	1	23,951	9	7	"	"	"	3571	2	6	15,253	"	"
IX	37002	1	"	32.073	11	8	2,84,422	8	8	"	"	"	4,709	13	7	15,253	"	"
X	49701	12	6	16,901	"	9	140,096	1	6	"	"	"	4,289	2	6	14,696	"	"
Total	355,159	2	3	231,460	13	9	1049,804	13	"	"	"	"	79,154	6	"	160,554	"	"
Average per mile	2774	11	2	1,808	4	8	8,201	9	7	"	"	"	618	6	6	1254	4	10

Grand Total Rs. 18,76,133. 3. 0

Fredk. Drobie
Chief Engineer

4

Carnatic Railway Co. Ld.

Madras to Cuddalore

Summary Estimate

IV Ballast and Permanent way

237

	Ballast			Permanent way		
	Rs	A	P	Rs	A	P
	1,61,670	6	.	27,98,451	9	8
Average per mile	1,263	.	.	21,862	14	5

Grand Total £ 2,99,121 - 15 - 8

Fredk Dobbs
Chief Engineer

Carnatic Railway Co. Ld.

Madras to Cuddalore

Summary Estimate

V Stations and Buildings

No. of District	Stations & Offices			Workshops &c.			Staff Quarters			Station machinery		
	Rs.	A	P	Rs.	A	P	Rs.	A	P	Rs.	A	P
I	33,826	7	6	13,903	10	3	8,183	11	"	8.054	4	"
Sup: Sectn. Dist: I	"	"	"	"	"	"	"	"	"	"	"	"
II	32,389	8	8	600	"	"	6,904	5	6	6,294	4	"
III	40,704	13	3	600	"	"	8,183	11	"	7,294	4	"
IV	"	"	"	750	"	"	3,900	"	"	"	"	"
V	17,634	6	2	600	"	"	5,658	11	"	6,294	4	"
VI	34,530	6	5	750	"	"	6,904	5	6	6,534	4	"
VII	4,317	11	11	600	"	"	4,379	5	6	760	"	"
VIII	40,479	9	5	600	"	"	6,904	5	6	6,774	4	"
IX	36,387	1	4	750	"	"	6,904	5	6	6534	4	"
X	40,704	13	3	25,612	12	3	8,183	11	"	9,794	4	"
Terminal Works	2,90,438	2	1	3,41,982	14	5	32,088	1	1	10,306	7	7
Total	5,71,413	"	"	3,86,749	4	11	98,194	8	7	68,640	7	7
Average per mile	4,464	3	2	3021	8	1	767	1	7	536	4	11

Rs. 11,24,997-5-1

Fred. Robbins

Chief Engineer

Carnatic Railway Co. Ltd.

2398

Madras to Cuddalore

Summary Estimate

VI Electric Telegraph

Fredk Dobbs
Chief Engineer

Carnatic Railway Co. Ld.

Madras to Cuddalore

Summary Estimate

VII Plant

Engineering			Locomotive			Carriage & Waggon			Station & Office furniture		
Rs	A	P	Rs	A	P	Rs	A	P	Rs	A	P
20,488	12	6	59,825	9	"	59,825	8	"	31,677	"	"
* 160	1	1	* 467	6	3	* 467	6	3	* 247	7	8

* Average per mile

Grand Total 17,18 16-13-6

Fred. Dobbs
Chief Engineer

Carnatic Railway Co. Ltd.

Madras to Cuddalore

Summary Estimate

VIII Rolling Stock

	Locomotive Stock			Carriage & Waggon Stock		
	Rs.	A.	P.	Rs.	A.	P.
Total	5,54,400	"	"	4,81,470	"	"
Average per mile	4,331	4	"	3,761	7	9

Grand Total 10,35,870 - " - "

Fredk. Dobbs
Chief Engineer

Carnatic Railway Co. Ltd.

Madras to Cuddalore

Summary Estimate

2634

X Establishment

	Direction			Engineering			Locomotive			Telegraph			Stores			Audit & accounts		
	Rs.	a	p	Rs	a	p	Rs	a	p	Rs.	a	p	Rs	a	p	Rs	a	p
Annual expenditure	28,665	.	.	2,95,092	.	.	48,576	.	.	.	.	.	8400	.	.	included in Agency	.	.
Total for 3 years	85,995	.	.	8,85,276	.	.	145,728	.	.	.	.	.	25200	.	.	.	.	.

Grand Total 11,42,199-0-0

Jos. T. Fisher
Agent & Manager

Fredk Dibbles
Chief Engineer

Carnatic Railway Co. Ltd.

Madras to Cuddalore

Summary Estimate

XI Contingencies

No. of District	Direction Rs.	A	P	Engineering Rs	A	P	Locomotive Rs.	A.	P	Telegraph Rs	A	P	Stores Rs	A	P	Audit & accounts Rs	A	P
I				40,265	8	"												
Sup: Sect: Dist: I				10,066	6	"												
II				40,265	8	"												
III				45,298	11	"												
IV				92,779	2	10												
V				40,265	8	"												
VI				45,298	11	"												
VII				40,265	8	"												
VIII				45,298	11	"												
IX				70,464	10	"												
X				57,881	10	6												
Terminal Works				$ 31,457	5	5	157,286	11	2									
Total	* 3600	"	"	559,607	3	9	157,286	11	2	"	"	"	"	"	"	"	"	"
Average per mile	28	2	.	4,371	14	11	1,228	12	11	"	"	"	"	"	"	"	"	"

Included in "Direction"

Included in "Direction"

* Estimated for 3 years

$ Including Head Quarters Contingencies

Madras 20th April 1893-14-11

Jno. T. Fisher
Agent & Manager

Fredk. Robbs
Chief Engineer

Carnatic Railway Co.ᵒ (Ltd.)

Estimate for the Construction of the Terminal Works at Madras

V-1 Station and Offices

Description	As per Schedule	Amount Rs.	A	P.	Total Rs.	A	P.
Passenger's Station	T1	2,24,318	8	-			
Goods Shed	T2	59,864	2	7			
Locomotive Superintendents office	T3	6,255	7	6	2,90,438	2	1

V-2 Workshops Store buildings &c.

Description	As per Schedule	Amount Rs.	A	P.	Total Rs.	A	P.
Engine Shed	T4	12,519	7	11			
Carriage "	T5	16,826	4	-			
General Stores (building)	T22	21,944	15	1			
Fuel Store	T6	8446	10	9			
		59,737	5	9			
Locomotive Workshops							
Engine and Carriage erecting Shop	T7	1,22,056	1	11			
Wood Cutting and Sawing Shop	T8	66,845	12	11			
Fitting Shop	T9	23,917	-	3			
Smithy	T10	19,553	5	6			
Stores (building)	T11	16,652	13	8			
Boiler Shop	T12	7,119	-	3			
Boiler Seat and tank	T13	7,720	8	9			
3 Wells	T14	2,783	5	3			
Compound	T15	6,701	3	11			
Engine turntable		2,500	"	"			
Weigh bridge		850	"	"			
Centrifugal Pump		200	"	"			
1000 Feet Piping		1,500	"	"			
6 Single Points		720	"	"			
Chief Engineer's Temporary Workshops	T16	3,126	4	3			
		2,82,245	8	8	3,41,982	14	5
					Carried Over	6,32,421	-	6

Madras
14th August 1872

Fredk Dibble
Chief Engineer

V-3 Staff Quarters

Description	Ref to Schedule	Amount Rs	a	p	Total Rs	a	p
Brought forward					6,32,421	"	6
Locomotive Workmens houses	T17	23.645	4	4			
do do out houses	T18	6.300	9	4			
do Superintendents out houses	T19	1,392	13	"			
do Gatekeepers Lodges	T20	749	6	2	32.088	1	1

V-4 Station Machinery

Description	Ref to Schedule	Amount Rs	a	p			
At Locomotive Works							
1 Single arm Semaphore		200	"	"			
1 Water Crane		450	"	"			
		650	"	"			
Terminal Station							
1 Weigh bridge		850	"	"			
1 Engine turn table		2,500	"	"			
1 Tank house	d	996	7	7			
1 Water Crane		450	"	"			
200 ft piping		300	"	"			
1 Double acting hand pump		300	"	"			
1 Double arm Semaphore		300	"	"			
3 Single arm Semaphores		600	"	"			
4 Three throw points		960	"	"			
20 Single points		2.400	"	"			
		9.656	7	7	10,306	7	7
					6,74,815	9	2

Madras
14th August 1872

Ferd. Dibble
Chief Engineer

Carnatic Railway Co. Ltd.

Statement Showing the Cost of Constructing the Line from Madras to Cuddalore

127 Miles 74.16 Chains

Heads		Description of work	District I Mls 10 — Chs 13.50		District I Supplementary Section Mls 0 — Chs 61.38		District II Mls 11 — Chs 60		District III Mls 13 — Chs 70		District IV Mls 13 — Chs 6801		District V Mls 13 — Chs 00		District VI Mls 13 — Chs 00		District VII Mls 13 — Chs 4.4		District VIII Mls 13 — Chs 00		District IX Mls 13 — Chs 00		District X Mls 12 — Chs 41.75		Madras Terminal Works		Total of each Description of work		Total of each Head		Average Cost per mile of each Description of work	
			Rs	aP	Rs	aP	Rs	aP	Rs	aP	Rs	aP	Rs	aP	Rs	aP	Rs	aP	Rs	aP	Rs	aP	Rs	aP	Rs	aP	Rs	aP	Rs	aP	Rs	aP
III	Construction of Line	Earth work	28.557	7 6	1.769	14 -	23.072	7 -	37.863	14 3	45.378	8 -	27.916	15 -	28.562	10 -	31,344	9 -	43.989	- -	37,002	1 -	49,701	12 6	-	- -	3.55.159	23			2774	11 2
		Bridge work	76.834	14 3	891	10 3	25.221	35 -	27.855	10 3	4,86,634	6 3	21,034	14 6	40.044	12 2	55,052	7 2	52.376	5 11	3,16,496	4 4	1,56,997	2 3	-	- -	12,31,236	10 9			10.610	
		Level x ings	7,500	1 10	33.491	13 3	4,389	6 6	4,316	5 7	3,958	13 7	4,337	13 7	4,132	2 6	4,456	13 7	3,571	2 6	4,709	13 7	4,289	2 6	-	- -	12,59,447	10 9			9.839	6 5
		Fencing	12,320	- -	10,920	- -	13,772	- -	16,280	- -	16,236	- -	15,253	- -	15,253	- -	15,318	- -	15,253	- -	15,253	- -	14,696	- -	-	- -	79,154	6 -			618	6 6
																													18,26,133			
IV	Ballast & Permanent way	Ballast	12.724	5 -	1,919	13 -	15,265	2 -	17,361	9 -	17,330	1 -	16,266	6 -	16,266	6 -	16,335	9 -	16,266	6 -	16,266	6 -	15,668	7 -	-	- -	1.61.670	6 -			1,263	- -
		Permanent way	2.06.075	3 7	30,949	14 4	2,15,698	2 7	2,99,910	11 4	3,09,893	1 5	3,00,510	3 1	3,01,384	7 9	2,93,274	13 5	2,82,758	12 3	2,73,462	15 3	2,54,528	4 8	-	- -	27,98,451	9 8	29,60,121	15 8	21,862	14 5
V	Stations & Buildings	Stations	33.826	7 6	-	- -	32,389	8 8	40,704	13 3	-	- -	17,634	6 2	34,530	6 5	4,317	11 11	40,479	9 5	36,387	1 4	40,704	13 3	2,90,438	2 1	5.71.413	- -			4,464	3 2
		Workshop Stores &c	13.903	10 3	-	- -	600	- -	600	- -	750	- -	600	- -	750	- -	600	- -	600	- -	750	- -	25,612	12 3	3,41,982	14 5	3,86,749	11			3,021	8 1
		Staff Quarters	8.183	11 -	-	- -	6,904	5 6	8.183	11 -	3,900	- -	5658	11 -	6,904	5 6	4,379	5 6	6,904	5 6	6,904	5 6	8,183	11 -	32,088	1 1	98,194	8 7			767	1 4
		Station Machinery	8.054	4 -	-	- -	6,294	4 -	7.294	4 -	-	- -	6,294	4 -	6,534	4 3	760	- -	6,774	4 -	6,534	4 -	9,794	4 -	10,306	7 7	68,640	7 7	11,24,997	5 1	536	4 1
																												59,39,434	7 9	46,401	13 1
VII	Plant	Engineering																					20,488	12 6	20,488	12 6					160	1 1
		Locomotive																					59,825	9 -	59,825	9 -					467	6 3
		Carriage & Wagon																					59,825	8 -	59,825	8 -					467	6 3
		Station & Office furn.e																					31,677	- -	31,677	- -	1,71,816	13 6			247	9 8
																													25 7			
VIII	Rolling Stock	Locomotive																					5,54,400	- -	5,54,400	- -					1,332	- -
		Carriage & Wagon																					4,81,470	- -	4,81,470	- -	10,35,870	- -			3,761	7 9
																													5,57,007		2,37	
XI	Contingencies	Engineering	40.265	8 -	10,066	- -	40.265	8 -	45,298	11 -	90,597	6 -	40,265	8 -	45,298	11 -	40,265	8 -	45,298	11 -	40,464	10 -	57,881	10 6	31,457	5 5	5,57,425	6 11			4,354	4 2
		Locomotive																					1,57,286	11 2	1,57,286	11 2	4,14,712	2 1			1,228	12 11
																													74,85,833		611	
			4,48,246	5 11	90,004	6 10	4,13,871	15 6	5,05,669	9 8	4,74,681	4 3	4,53,777	1 4	4,99,664	1 4	4,66,106	13 7	5,14,271	8 7	5,41,235	15 -	6,38,057	15 11	20,11,246	7 3	74,85,833	7 4	74,85,833	7 4	61,420	7 -

Chief Engineers Office
Madras 14th August 1872

Fredk Dobbs
Chief Engineer

Carnatic Railway Co. / Ld. Dist.

C.W.C. No. 1470/73

25 37

Miscellaneous Statements.

1. Statement of Drainage areas and Water ways.
2. Table of Gradients.
3. Do. do. Curves.
4. Do. do. Earthwork.
5. Do. do. Superficial area of slopes of banks and cuttings.
6. Statement of Ballast required in each district.

1205 / 5.57

512 / 2258

25 = 4,124 / 6 yards 94,244

23

U_1

Ballast

Cross Section



Lengths of District =	Mm. 10 –	Chs. 13½	= 17897 Yards
Add 12 % Cent for sidings			= 2148 "
		Total	20045 "

20045 × 1.1285 Sq. Yards = 22,621 Cyards

Dis I

M

U2

Ballast

Area of Cross Section = 1.1285 sq: Yards

Length of District 11-60 Yrs: Chs: = 20680 Yards
Add 12 Cent for sidings = 2481.6 "

Total 23161.6 "

23161.6 × 1.1285 = 27138 Cyds:

10.13
11.00
23

Kowanaka Railroad Co. Ltd. Dist I

A1

U_3

256

Ballast

Area of Cross Section = 1.1285 Sq: yards

Length of District 13 Mls: 70 chs: = 24420

Add 12 P Cent for sidings 2930.4

Total 27350.4

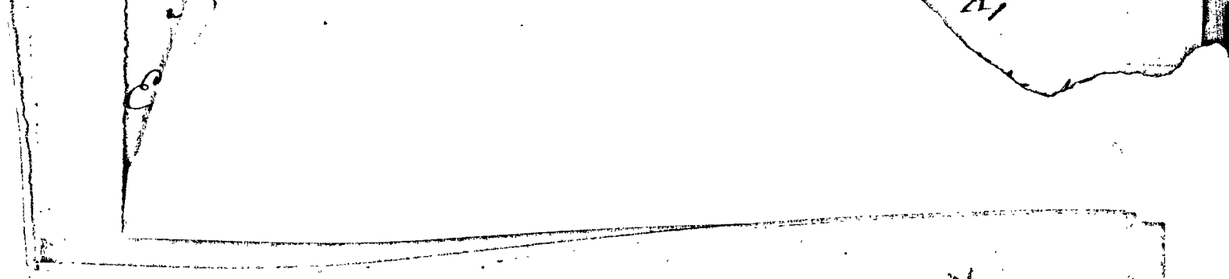
27,350.4 × 1.1285 = 30865 Cyds.

2173
1130
35.68

1159
205.
557

681
512
2258.

25 4124
6. Yards 94.244



257

U4

Ballast

Area of cross section = 1.1285 sq: yards

Lengths of District 13 - 68 = 24376 yards
Add 12 ℔ Cent for sidings 2925
Totab 27301

27.301 × 1.1285 = 30.809 C. yards

2587

U_5

Ballast

Area of Cross Section 1.1285 C. yards

Length of district 13 Miles = 22,880 C. yards

Add 12 Per cent 2745

Total 25625

$25625 \times 1.1285 = 28.918$ Cyards.

U_6

2518

Ballast

Area of Cross section 1.1285 Cyards

Length of District 13 miles = 22,880 L. yards
Add 12 Cent 2,745

Total .. 25,625

25,625 x 1.1285 = 28.918 Cyards

U7

Ballast

Area of Cross Section 1.1285 C yards

Length of District	13	4.4	= 22,976.8
Add 12 % Cent for sidings			2757.2
		Total	25734 C. yards

25734 x 1.1285 = 29041 C yards

U8

Ballast

Area of Cross Section 1.1285 Cyards

Length of District 13 Miles = 22.880 L. yards
Add 12 ½ Cent 2.745

Total 25,625

25,625 x 1.1285 = 28,918 Cyards

U_9

Ballast

Area of Cross Section 1.1285 C. Yards

Length of District 13 miles = 22,880 L. yards
Add 12 ℘ cent 2,745

Total 25,625

25,625 × 1.1285 = 28;918 Cubic Yards.

Dis I

A1

U10

2657

Ballast

Area of Cross Section 1.1285 Cubic yards

Length of District 12 Miles 41.75 Chains = 22,038.5 Lyards
Add 12 P Cent 2,644.62

Total 24,683.12

24,683.12 × 1.1285 = 27,855 Cubic yards

Madras
14th August 1872

Fredk Dibble
Chief Engineer

681 25 = 4,124

Carnatic Railway Co.s L.d Dis I

From Madras to Vreenumbaukum A,

Mile	Earthwork		Mile	Earthwork		Mile	Earthwork	
35th Mile	471		31st Mile	6,557		27th Mile	2258	264
	832	1303		640			1,268	
	304			251			152	
	238			267	7718		828	
	464			550			385	4,891
	985			342			1,379	
34th Mile	3608			266			1,755	
	4,160		30th Mile	986			640	
	3,520			464		26th Mile	734	
	1955	15,234		422			1,093	
	1379			2,534			1,262	
	1262			4,255	9,819		464	
	1889			1,204			464	7,791
33d Mile	1093			229			832	
	640			624			594	
	1148		29th Mile	97		25th Mile	422	
	782			2,310			464	
	506	8699		5,387			92	
	513			2,781			304	
	4780			1188	13,820		507	
	4950			1150			909	4124
	1821			686				
32nd Mile	882			535		35th	1,303	
	1379			827		34th	15,234	
	985			338		33d	8699	
	782		28th Mile	159		32nd	16,556	
	464	16,556		594	4289	31st	7,718	
	1,093			640		30th	9,819	
31st Mile	1,320			159		29th	13,820	
	1,500		27th Mile	266		28th	4289	
	1,439			681		27th	4891	
	1,205			512		26th	7,791	
	6557			2258		25th	4,124	
							6 Yards	94,244

From Meenumbankum to Godavancherry

Dis: II
A 2

Mile	Earthwork		Mile	Earthwork		Mile	Earthwork	
24th Mile	782		21st Mile	2781		17th Mile	2549	265
	229			1262			782	
	507			986			734	
	304			507	5536		832	
	464			159			1626	
	986			67			1205	
	2689			304			1690	9418
	2611	8572	20th Mile	61			1205	
	554			125			1262	
	125			507		16th Mile	1093	
	125			194			304	
	125			342	1759		106	
23rd Mile	464			1755			480	
	882			68			48	
	266			924			229	
	986	3523	19th Mile	169			1205	5932
	2534			1205			3176	
	1439			882		15th Mile	1501	
	77			986			238	
22nd Mile	712			595			686	
	138			159	6743		266	
	266			555			933	
	1148		18th Mile	182			1501	
	1262			342			1262	9563
	240	7816		1039			1690	
	254			1563		14th Mile	986	
	267			2310			831	
	882			1439			382	
21st Mile	696			933	8363		782	
	782			986			832	
	2781		17th Mile	1563			1039	
				2549			2025	8567

Dis II

A 2

Mile	Earthwork	
13th mile	3,880	
	3,609	
	1,439	
	1,262	
	1,439	
	2,347	13,976
24th mile	8,572	
23rd "	3,523	
22nd "	7,816	
21st "	5,536	
20th "	1,759	
19th "	6,743	
18th "	8,363	
17th "	9,418	
16th "	5,932	
15th "	9,563	
14th "	8,567	
13th "	13,976	89,768.

From Godavancherry to Chinglepet Dis ^{ct} A3

Mile	Earthwork		Mile	Earthwork		Mile	Earthwork	
13th Mile	986		9th Mile	4,104 / 4,441		5th Mile	4008	362
	1,439	2,426		2,165			1,262	
	2,768			1,226	7,936		92	
	1039			550			194	
	422			933			1093	
12th Mile	550		8th Mile	1,439			1,500	8149
	1,093			464			1,262	
	1,690			238			734	
	1,755			609		4th Mile	194	
	882	10,199		370			832	
	1,039			1,162	5,165		507	
	1,039			143			550	
	831			50			382	
	686			164			422	4,883
11th Mile	596		7th Mile	986			304	
	550			832			304	
	1,262			1,439			550	
	1,626	7,629		1,956		3rd Mile	1,093	
	1,755			3,176			2,611	
	1,821			2,928	11,674		2,237	
	1,148			1,262			2,384	
10th Mile	1,040		6th Mile	266			734	10,217
	304			304			382	
	124			1,888			1,039	
	2,768			2,459			92	
	686	9,646		1,755			782	
	422			1,205		2nd Mile	2,611	
	1,148			1,439	10,578		640	
	1,888			1,148			3,433	
	171			1,039			3,010	11,989
9th Mile	475		5th Mile	1,821				
	4,104			4,008				

Dis III A3

Mile	Earthwork		Mile	Earthwork		Mile	Earthwork
	4,747		13th Mile	2,425			1867
	864		12th "	10,199			
	306		11th "	7,629			
	280		10th "	9,646			
	559		9th "	7,936			
	168		8th "	5,765			
1st Mile	317		7th "	11,674			
	6,718		6th "	10,578			
	1,563		5th "	8,149			
	2,237	17,759	4th "	4,883			
	590		3rd "	10,217			
10th Mile	2,025	2,615	2nd "	11,989			
	1,500		1st "	17,759			
	640		40th "	2,615			
	1,262		41st "	14,003			
	1,563		42nd "	10,049	14,5516		
41st Mile	1,821						
	924						
	1,257						
	1,690						
42nd Mile	3,346	14,003					
	3,520						
	1,406						
	5,123	10,049					

11

Chingleput to Madrastreum Dis XI

A 4

Mile	Earthwork		Mile	Earthwork		Mile	Earthwork	
	882			1,755			5,077	261 X
	734			507		35th Mile	1,500	
27th Mile	686		31st Mile	782			986	
	640			882			832	
	507			782			933	
	832			1,093			734	
	550			2,165			832	10,894
	686	5,517		1,956	9,922		1,320	
	1,956			784			1,500	
	2,909			933			1,755	
	4,255			1,500			2,094	
28th Mile	2,847			3,788		36th Mile	2,165	
	1,148		32nd Mile	1,562			1,956	
	1,093			594			1,563	
	342			986			2,237	14,590
	1,956	16,506		1,821	11,918		1,956	
	595			1,500			1,500	
	1,439			1,039			266	
	1,262			1,205			818	
29th Mile	595		33rd Mile	2,310		37th Mile	370	
	1,122			2,847			507	
	595			3,346			782	
	550			1,352			1,420	7,639
	92	5,550		2,459	19,058		1,262	
	229			5,053			1,320	
	734			14,040			1,093	
	933		34th Mile	10,214			92	
	304			14,362		38th Mile	734	
30th Mile	60		35th Mile	8,603	52,272		782	
	229			3,698			125	
	782			1,379			266	5,674
	2,611	5,882		5,077				

Sis N

A 4

Mile	Earthwork		Mile	Earthwork		Mile	Earthwork	
39th Mile	640		27th Mile	5,517				
	3,880		28th "	16,506				
	5,803		29th "	5,550				
	5,262		30th "	5,882				
	2,847		31st "	9,922				
	1,039		32nd "	11,918				
	595		33d "	19,058				
	212		34th "	52,272				
	97	20,375	35th "	10,894				
40th Mile	765		36th "	14,590				
	660		37th "	7,639				
	342		38th "	5,674				
	782		39th "	20,375				
	595		40th "	7,170	1,92,967			
	2,165							
	1,861	7,170						

270X

Madaranticum to Adyatum District V

Mile	Earthwork		Mile	Earthwork		Mile	Earthwork	
	782			1799			1,320	2,214
	2,310		17th mile	550			1,563	
	1,755			640			1,093	
	595			2,768	5,757	21½ Mile	550	
	1,205						266	
14½ Mile	2,025			1,956			342	
	832			1,320			782	
	550	10,054		595			1,205	7,121
				229				
	550		18th Mile	125			595	
	464			304			125	
	125			734			266	
	92			882	6,145		506	
15th Mile	733					22nd Mile	594	
	1,626			1,320			985	
	882			1,148			464	
	782	5,254		734			92	3,627
			19th Mile	2,094				
	734			3,432			550	
	342			3,880			2,928	
	986			1,646			2,094	
16½ Mile	1,562			5,262	22,516		734	
	1,148					23rd Mile	229	
	266			2,310			1,626	
	194			1,262			1,262	
	570	5,742		782			595	10,018
				229				
	229		20th Mile	154			159	
17½ Mile	342			237			1,093	
	342			60			2,928	
	464			342	5,376	24th Mile	1,821	
	422						1,093	
	1799						7,094	

Mile	Earthwork		Mile	Earthwork		Mile	Earthwork	
24th Mile	7,094							2,754
	1,500							
	882							
	559	10,035						
						11th Mile	10,054	
	510					15th "	5,254	
	266					16th "	5,142	
	595					17th "	5,757	
25th Mile	1,205					18th "	6,145	
	734					19th "	22,516	
	734					20th "	5,376	
	686					21st "	7,121	
	507	5,237				22d "	3,627	
						23d "	10,018	
	507					24th "	10,035	
	640					25th "	5,237	
	640					26th "	1,805	
	640							
26th Mile	782							101,687
	422							
	832							
	342	4,805						

Adyalum to Tindivanum District VI.

Mile	Earthwork		Mile	Earthwork		Mile	Earthwork	
				2,611				27
	782			986			686	
	5,757		1st Mile	464			640	
	115			464			1,205	
1st Mile	1,674			1,148	5,673	8th Mile	686	
	138						609	
	1,101			986			1,102	
	449			550			463	
	424	9,840		640			159	5,550
				422				
	1,821			382			342	
	2,768		5th Mile	686			194	
	2,534			266			229	
	1,888			159	4,091		194	
2nd Mile	3,433					9th Mile	266	
	4,160			194			382	
	3,609			782			422	
	782	20,995		832			595	2,624
				595				
	712		6th Mile	5,803			507	
	1,039			4,066			1,956	
	882			3,972			2,459	
3rd Mile	1,262			1,765	17,999	10th Mile	1,690	
	194						1,956	
	686			882			686	
	194			782			1,039	
	196	5,765		686			1,888	12,181
				782				
	159		7th Mile	832			1,039	
	1,626			640			782	
	734			159		11th Mile	782	
4th Mile	92			933	5,696		160	
	2,611						2,763	

Mile	Earthworks		Mile	Earthworks		Mile	Earthworks	
11th Mile	2,763							2,747
	266							
	686							
	194							
	92	4,001						
						1st Mile	9,840	
	125					2d "	20,995	
	125					3d "	5,165	
	882					4th "	5,673	
12th Mile	1,039					5th "	1,091	
	464					6th "	17,999	
	882					7th "	5696	
	1,563					8th "	5,550	
	304	5,384				9th "	2,624	
						10th "	12,181	
	686					11th "	1,001	
	1,164					12th "	5,384	
	507					13th "	6,461	
13th Mile	986							
	1,500						105,660	
	782							
	986							
	550	6,461						

Subdivision to Salay

DIS VII

A.7

Mile	Earthwork		Mile	Earthwork		Mile	Earthwork	
	1,564			3,689			711	275
	1,379			92			4,160	
1st Mile	933		5th Mile	92		7th Mile	4,767	
	882			160			187	
	1,320			1,262			2,212	
	1,148			1,956			2,847	
	686				7,257		1,547	
	786			205				19,411
		8,898		559			2,534	
	686			137			1,379	
	3			1,626			1,500	
	1,057			1,205			1,148	
2nd Mile	6		8th Mile	213		8th Mile	1,148	
	1,205			222			782	
	1,690			330			2,689	
	1,563			1,500			3,092	
	1,500			832				14,272
	595	8,305			6,829		12	
				2,768			3,031	
	382			986			1,379	
	782			18			933	
3rd Mile	1,379		6th Mile	1,135		9th Mile	382	
	1,439			153			1,039	
	1,093			2,384			2,689	
	986			2,165			2,094	
	1,563			422			1,148	
	2,159			92				12,696
		10,083			10,123		341	
	2,237			229			196	
4th Mile	1,148		9th Mile	76		10th Mile	6	
	304			330			595	
	3689			76			3,620	
				711			4,661	

Mile	Earthwork		Mile	Earthwork		Mile	Earthwork
10th Mile	1,661		13th Mile	6,045			
	1,094			321		1st	8,898
	1,225			39		2nd	8,305
	1,956			1,093		3rd	10,083
	1,148	10,084		268		4th	7,251
					7,769	5th	6,829
11th Mile	832					6th	10,123
	782					7th	19,411
	640					8th	11,272
	164					9th	12,696
	229					10th	10,084
	370					11th	4,382
	28					12th	6,228
	487					13th	7,769
	550						126331
		4,382					
12th Mile	933						
	1,262						
	1,320						
	1,500						
	342						
	92						
	229						
	550						
		6,228					
13th Mile	1,439						
	686						
	1,439						
	1,500						
	205						
	594						
	182						
	6,045						

276

Salary to Killoch

Mile	Earthwork		Mile	Earthwork		Mile	Earthwork	
1st Mile	1,205		4th Mile	3,539		8th Mile	3,972	277
	1,500			1,262			1,888	
	933			1,410			1,262	
	882			1,093			76	
	734			640			153	
	1,379				7,974		127	
	2,094			61			561	
	2,025			194			138	
		10,752		194			782	
	1,205		5th Mile	304			266	
	1,039			595				9,225
	1,439			1,205			832	
	3,433			1,255			1,500	
2nd Mile	5,053			2,384			933	
	5,476				9,192	9th Mile	734	
	2,094			2,025			1,039	
	1,379			1,439			507	
		21,118		882			194	
	986		6th Mile	1,122			160	
	382			382				5,899
	734			266		10th Mile	762	
3rd Mile	933			229			27	
	1,262			159				789
	1,379				5,804		1,320	
	1,262			229			1,093	
	1,039			1,093			304	
		7,977		2,928			664	
	1,093		7th Mile	8,208			65	
	782			4,818			304	
4th Mile	882			5,053			266	
	782			4,950		Farm Killoch 1st Mile	687	
	3,539			34,32	30,741			4,703

Mile	Earthwork		Mile	Earthwork	
2nd Mile	550		1st	10,752	
	595		2nd	21,118	
	422		3rd	7,977	
	507		4th	7,974	
	986		5th	9,192	
	1,226		6th	5,804	
	2,165		7th	30,741	
	2,384		8th	9,225	
		8,835	9th	5,899	
	2,384		10th	789	
	2,384		1st	4,703	
	2,384		2nd	8,835	
3rd Mile	2,534		3rd	26,227	
	2,534		4th	22,162	
	3,346				171,398
	4,747				
	5,914				
		26,227			
4th Mile	4,950				
	4,646				
	5,757				
	4,646				
	2,534				
	229				
		22,162			

Pilloor to Nellicoopum District IX

1.9

Miles	Earthwork	Miles	Earthwork	Miles	Earthwork
4 "Miles	1,320		640		266
	1,563		1,439		125 — 279 X
	2,883	8 "Miles	2,310		125
	1,039		3,176	11 "Miles	464
	882		3,346		530
	2,310		3,092		832
5 "Miles	882		2,310		1,262
	266		1,563		1,148
	1,205		17,876		4,772
	2,608		1,690		1,148
	2,689		2,310		1,262
	11,881		2,689	12 "Miles	1,262
	1,563		2,025		2,091
	882	9 "Miles	1,379		2,689
	1,262		530		2,689
6 "Miles	1,888		113		1,626
	1,440		97		507
	1,563		205		13,277
	5,262		11,058		1,039
	3,609		1,500		1,563
	17,469		782	13 "Miles	1,755
	2,025		640		1,626
	2,459	10 "Miles	100		1,038
7 "Miles	2,376		188		1,690
	1,205		65		2,084
	69		382		1,956
	357		125		13,351
	194		3,782	14 "Miles	1,956
	8,685				3,092
					3,520
					8,568

Pilloor to Nellicoopum District IX.

A.9

Miles	Earthwork		Miles	Earthwork		Miles	Earthwork	
11" Bricks	8,568							
	2,384		4" Bricks	2,883				
	2,611		5" "	11,881				
	2,611		6" "	17,469				
	3,092		7" "	8,685				
	3,260		8" "	17,876				
		22,526	9" "	11,058				
15" Bricks	1,956		10" "	3,782				
	1,148		11" "	4,772				
	986		12" "	13,277				
	1,439		13" "	13,351				
	1,626		14" "	22,526				
	1,755		15" "	12,424				
	1,888		16" "	4,481				
	1,626		17" "	2,808				
		12,424			147,273			
16" Bricks	933							
	882							
	782							
	594							
	550							
	159							
	159							
	422							
		4,481						
17" Bricks	506							
	782							
	550							
	304							
	159							
	507	2,808						

Nellicoopsumm to Ciddaloor Destruct X

A 10

Mile	Earthwork		Mile	Earthwork		Mile	Earthwork	
17 "Mile	986		21 st Mile	159		24 "Mile	183	
	1,025			422			507	251
		2,011		304			832	
	2,094			530			1,755	
	2,025			832			2,025	
	1,821			1,563			1,821	
18 "Mile	1,439			1,500				7,123
	1,755			1,148			2,310	
	933				6,478	25 "Mile	3,880	
	782			1,888			2,611	
	733		22 nd Mile	2,025			3,880	
		11,582		1,888			4,352	
	1,148			1,821			5,693	
19 "Mile	986			1,205			3,972	
	1,262			530			3,788	
	1,093			1,205				30,486
	986			1,148			3,010	
	1,093				11,730		7,949	
	1,039			194		26 "Mile	3,252	
	530			229			176	
		8,157	23 rd Mile	229			933	
	640			832			1,439	
20 th Mile	1,093			1,148			1,690	
	1,093			782			1,690	
	1,148			986				20,139
	507			229			2,847	
	882				4,629	27 "Mile	3,880	
	159		24 "Mile	61			4,646	
	266			92			6,026	
		5,788		30				
				183			17,399	

Nellicoopum to Cuddalore, District X.

A.10

Miles	Earthwork		Miles	Earthwork		Miles	Earthwork	
27th Mile	17,399							
	6,788		17th Mile	2,011				
	1,093		18th "	11,582				
	2928		19th "	8,157				
	5,367		20th "	5,788				
		33,575	21st "	6,478				
	6,837		22d "	11,730				
28th Mile	5,584		23d "	4,629				
	3,092		24th "	7,123				
	3,260		25th "	30,486				
	4,255		26th "	20,139				
	3,092		27th "	33,575				
	2,384		28th "	31,038				
	2534		29th "	22,126				
		31,038	30th "	7,610				
	2,025							
29th Mile	1,563			202,472				
	2,165							
	1,820							
	2,459							
	3,432		Carried Forward					
	5,053							
	3,609							
		22,126						
30th Mile	3,520							
	3,972							
	118							
		7,610						

Madras
16th August 1872

Richd Dobbs
Chief Engineer

(11)

51

Carnatic Railway Co.y (Ld.)
Table of Curves

From M. Chs. Lks	To M. Chs. Lks	Radius	Length	Directions
0. 00. 00	1. 40. 30	Straight	1.40.30	
1. 40. 30	1. 51. 85	85.95	11.55	Left
1. 51. 85	2. 43. 60	Straight	0. 71. 75	
2. 43. 60	2. 76. 20	28.65	32.60	Left
2. 76. 20	4. 39. 30	Straight	1.43.30	
4. 39. 50	4. 49. 35	85.95	9.85	Right
4. 49. 35	6. 11. 40	Straight	1.42.05	
6. 11. 40	6. 17. 18	28.65	5.78	Right
6. 17. 18	6. 62. 90	Straight	0. 45.72	
6. 62. 90	6. 76. 15	28.65	13.25	Right
6. 76. 15	7. 36.50	Straight	0.40.35	
7. 36. 50	7. 49. 40	28.65	12.90	Left
7. 49. 40	8. 5. 85	Straight	0.36.45	
8. 5. 85	8. 11. 98	28.65	6.13	Right
8. 11 98	8. 19. 15	Straight	0. 7. 17	
8. 19. 15	8. 35. 25	28.65	16.10	Right
8. 35. 25	9. 46. 90	Straight	1. 11.65	
9. 46. 90	9. 53. 05	85.95	6.15	Left
9. 53. 05	11. 19. 43	Straight	1. 46.38	
11. 19. 43	11. 32. 70	42.975	13.27	Left
11. 32. 70	12. 16. 90	Straight	0. 64. 20	
12. 16. 90	12. 33.05	71.625	16.15	Left
12 33.05	14. 72.30	Straight	2.39.25	
14. 72.30	15. 8. 68	85.95	16.38	Right
15. 8. 68	15. 63. 1,8	Straight	0.54.80	
15. 63. 48	15. 71. 22	85.95	7.71	Right
15. 71. 22	17. 66. 85	Straight	1. 75. 63	
17. 66. 85	18. 7. 50	85.95	20.65	Left

Carnatic Railway Co/LY
Tables of Curves (Continued)

From Bro: Chs: Lks	To Bro: Chs: Lks	Radius	Length	Direction
18. 7. 50	19. 31. 77	Straight →	1. 24. 27	
19. 31. 77	19. 50. 40	85.95	18.63	Left →
19. 50. 40	20. 58. 53	Straight →	1. 8. 13	
20. 58. 53	20. 70. 70	85.95	12.17	Right →
20. 70. 70	22. 79. 45	Straight →	2 - 8. 75	
22. 79. 45	23. 17. 58	85.95	18.13	Right →
23. 17. 58	24. 16. 45	Straight →	0. 78. 87	
24. 16. 45	24. 32. 00	85.95	15.55	Left →
24. 22. 00	27. 54. 00	Straight →	3. 22. 00	
27. 54. 00	27. 69. 35	85.95	15.35	Left →
27. 69. 35	29. 16. 77	Straight →	1. 27. 42	
29. 16. 77	29. 35. 53	85.95	18.76	Right →
29. 35. 53	31. 43. 97	Straight →	2. 8. 44	
31. 43. 97	31. 72. 75	57.30	28.78	Left →
31. 72. 75	33. 32. 85	Straight →	1. 40. 10	
33. 32. 85	33. 50. 08	42.975	17.23	Right →
33. 50. 08	33. 70. 30	Straight →	0. 20. 22	
33. 70. 30	34. 3. 73	28.65	13.43	Left →
34. 3. 73	34. 18. 00	Straight →	0. 14. 27	
34. 18. 00	34. 23. 40	40.00	5.40	Right →
34. 23. 40	34. 53. 60	Straight →	0. 30. 20	
34. 53 60	34. 70. 00	18.00	16.40	Left →
34. 70. 00	34. 74. 27	Straight	0. 4. 27	
34. 74. 27	34. 78. 97	28.65	4.70	Right →
34. 78. 97	35. 44. 18	Straight →	0. 45.21	
35. 44. 18	35. 54. 00	30.00	9.82	Right →
35. 54. 00	37. 40. 00	Straight →	1. 66. 00	
37. 40. 00	38. 6. 85	114.60	46.85	Right →

Carnatic Railway Co. Ltd
Tables of Curves (Continued)

2857

From			To			Radius	Length	Direction
Mls:	Chs:	Links	Mls:	Chs:	Lks			
38.	6.	85	39.	4.	95	Straight	0.78.10	
39.	4.	95	39.	58.	32	85.95	53.37	Right
39.	58.	32	40.	30.	57	Straight	0.52.25	
40.	30.	57	40.	55.	87	57.30	25.30	Left
40.	55.	87	41.	50.	70	Straight	0.74.83	
41.	50.	70	41.	79.	08	57.30	28.38	Right
41.	79.	08	43.	45.	23	Straight	1.46.15	
43.	45.	23	43.	70.	70	57.30	25.47	Left
43.	70.	70	46.	6.	35	Straight	2.15.65	
46.	6.	35	46.	36.	18	57.30	19.83	Right
46.	26.	18	48.	75.	05	Straight	2.48.87	
48.	75.	05	49.	6.	82	38.20	11.77	Left
49.	6.	82	50.	17.	95	Straight	1.11.13	
50.	17.	95	50.	42.	75	42.975	24.80	Right
50.	42.	75	52.	36.	45	Straight	1.73.70	
52.	36.	45	52.	66.	85	57.30	30.13	Left
52.	66.	85	53.	40.	67	Straight	0.54.09	
53.	40.	67	53.	50.	04	57.30	9.37	Right
53.	50.	04	54.	60.	57	Straight	1.10.53	
54.	60.	57	55.	3.	78	57.30	23.21	Left
55.	3.	78	55.	57.	77	Straight	0.53.99	
55.	57.	77	55.	69.	08	85.95	11.31	Right
55.	69.	08	59.	37.	19	Straight	3.48.11	
59.	37.	19	59.	57.	30	57.30	20.11	Right
59.	57.	30	63.	14.	20	Straight	3.36.90	
63.	14.	20	63.	27.	12	85.95	12.92	Left
63.	27.	12	63.	64.	37	Straight	0.37.25	

Carnatic Railway Co: Ld
Table of Curves / Continued /

From	To	Radius	Length	Direction
Mo: Cho: Lks	Mo: Cho: Lks			
63. 64. 37	63. 75. 60	85.95	11.23	Right
63. 75. 60	68. 2. 65	Straight	4. 7. 05	
68. 2. 65	68. 17. 73	114.60	15.08	Left
68. 17. 73	70. 21. 30	Straight	2. 3. 57	
70. 21. 30	70. 38. 30	85.95	17.00	Right
70. 38. 30	74. 8. 37	Straight	3. 30. 07	
74. 8. 37	74. 32. 21	57.30	23.84	Left
74. 32. 21	75. 76. 40	Straight	1. 44. 19	
75. 76. 40	76. 12. 27	39.68	15.87	Right
76. 12. 27	77. 44. 95	Straight	1. 32. 68	
77. 44. 95	77. 73. 08	80.00	28.13	Left
77. 73. 08	83. 20. 50	Straight	5. 27. 42	
83. 20. 50	83. 46. 25	40.00	25.75	Right
83. 46. 25	84. 60. 73	Straight	1. 14. 48	
84. 60. 73	85. 13. 50	57.30	32.77	Left
85. 13. 50	86. 44. 00	Straight	1. 30. 50	
86. 44. 00	86. 74. 80	85.95	30.80	Left
86. 74. 80	89. 52. 97	Straight	2. 58. 17	
89. 52. 97	89. 74. 45	85.95	21.48	Left
89. 74. 45	91. 2. 05	Straight	1. 7. 60	
91. 2. 05	91. 29. 10	42.95	27.05	Right
91. 29. 10	93. 23. 25	Straight	1-74. 15	
93. 23. 25	93. 46. 29	57.30	23.04	Left
93. 46. 29	93. 79. 10	Straight	0. 32. 81	
93. 79. 10	94. 18. 13	57.30	19.03	Right
94. 18. 13	94. 59. 70	Straight	0. 41. 57	
94. 59. 70	94. 75. 13	80.00	15.43	Left
94. 75. 13	96. 29. 38	Straight	1. 54. 25	

Carnatic Railway Co. (Limd.)
Table of Curves (Continued)

2587

From m. ch. Lks	To m. ch. Lks	Radius	Length	Direction
96. 29. 38	96. 43. 45	57. 30	14. 07	Left
96. 43. 45	98. 30. 20	Straight	1. 66. 75	
98. 30. 20	98. 41. 47	85. 95	11. 27	Left
98. 41. 47	99. 57. 72	Straight	1. 16. 25	
99. 57. 72	99. 67. 41	60. 00	9. 69	Left
99. 67. 41	101. 50. 30	Straight	1. 62. 89	
101. 50. 30	101. 61. 05	40. 00	10. 75	Left
101. 61. 05	104. 24. 42	Straight	2. 43. 37	
104. 24. 42	104. 32. 00	80. 00.	7. 58	Right.
104. 32. 00	105. 37. 45	Straight	1. 5. 45	
105. 37. 45	105. 41. 65	40. 00	4. 20	Left
105. 41. 65	106. 75. 35	Straight	1. 33. 70	
106. 75. 35	107. 1. 68	80. 00	6. 33	Right
107. 1. 68	110. 67. 88	Straight	3. 66. 20	
110. 67. 88	111. 12. 41	30. 00	24. 53	Left
111. 12. 41	111. 31. 75	Straight	0. 19. 34	
111. 31. 75	111. 67. 88	30. 00	36. 13	Left
111. 67. 88	114. 76. 79	Straight	3. 8. 91	
114. 76. 79	114. 79. 92	30. 00	3. 13	Right
114. 79. 92	116. 33. 28	Straight	1. 33. 36	
116. 33. 28	116. 47. 22	30. 00	13. 94	Right
116. 47. 22	120. 74. 59	Straight	4. 27. 37	
120 74. 59	121. 1. 27	30. 00	6. 68	Left
121. 1. 27	122. 38. 68	Straight	1. 37. 41	
122. 38. 68	122. 48. 35	30. 00	9. 67	Right
122. 48. 35	125. 19. 13	Straight	2. 50. 78	
125. 19. 13	125. 33. 09	20. 00	13. 96	Right
125. 33. 09	127. 23. 36	Straight	1. 70. 27	
127. 23. 36	127. 43. 90	25. 00	20. 54	Left
127. 43. 90	127. 74. 16	Straight	0. 30. 26	

Carnatic Railway Co/127

Summary of Curves

No.						Length in	Length chs
1			18 chains	Radius		.	16.40
1			20	"	"	.	13.96
16	20	upto	30	"	" (inclusive)	2	69.33
10	30	"	50	"	" "	1	76.39
20	50	"	80	"	" "	5	6.64
22		Over	80			5	2.22
				Total Length of Curves		15	24.64
				Total length of Straights		112	49.52
						127	74.16

Madras
14th August 1872

Fredk D Robertson
Chief Engineer

Carnatic Railway Co.ᵗᵈ Ltᵈ
Table of Gradients

Mileage		Rate of Gradient	Ascending or Descending
From.	To		
Miles. Chs. Lks.	Miles. Chs. Lks.		
0.56.50	1.12.57	Level	
1.12.57	1.35.00	1 in 150	Ascending
1.35.00	2.20.00	Level	
2.20.00	3.9.00	1 in 1000	Ascending
3.9.00	4.64.00	Level	
4.64.00	5.65.00	1 in 990	Descending
5.65.00	5.79.00	1 in 200	Ascending
5.79.00	6.19.00	Level	
6.19.00	6.38.00	1 in 660	Ascending
6.38.00	6.59.00	Level	
6.59.00	7.4.00	1 in 200	Ascending
7.4.00	7.16.00	1 in 220	Descending
7.16.00	7.42.00	Level	
7.42.00	7.60.00	1 in 240	Descending
7.60.00	7.70.00	1 in 5500	Descending
7.70.00	8.19.00	1 in 660	Ascending
8.19.00	8.59.00	1 in 409.2	Ascending
8.59.00	9.34.00	Level	
9.34.00	9.54.00	1 in 412	Ascending
9.54.00	9.62.00	1 in 165	Ascending
9.62.00	10.16.00	1 in 2640	Descending
10.16.00	10.39.00	1 in 194	Ascending
10.39.00	11.1.00	1 in 1440	Ascending
11.1.00	11.27.00	1 in 110	Ascending
11.27.00	11.36.00	Level	
11.36.00	11.46.00	1 in 110	Descending
11.46.00	11.56.00	1 in 11880	Ascending

18411
53
00

Carnatic Railway Co (Ltd)
Table of Gradients (continued) 29.07

Mileage From	Mileage To	Rate of Gradients	Ascending or Descending
m. ch. l.	m. ch. l.		
11.56.00	12.6.00	1 in 150	Ascending
12.6.00	12.20.00	1 in 178	Descending
12.20.00	12.40.00	Level	
12.40.00	12.60.00	1 in 252	Descending
12.60.00	13.00.00	Level	
13.00.00	13.25.00	1 in 176	Ascending
13.25.00	14.00.00	1 in 905	Ascending
14.00.00	14.40.00	Level	
14.40.00	15.00.00	1 in 147	Ascending
15.00.00	16.12.00	1 in 8016.8	Ascending
16.12.00	16.67.00	1 in 300	Descending
16.67.00	17.34.00	1 in 165	Descending
17.34.00	17.62.00	Level	
17.62.00	18.30.00	1 in 140	Ascending
18.30.00	18.63.00	1 in 264	Ascending
18.63.00	19.31.00	1 in 220	Ascending
19.31.00	19.51.00	Level	
19.31.00	19.65.00	1 in 150	Descending
19.65.00	20.18.00	1 in 660	Descending
20.18.00	20.33.00	1 in 990	Descending
20.33.00	20.56.00	1 in 140	Descending
20.56.00	21.21.00	1 in 943	Descending
21.21.00	21.49.00	1 in 220	Descending
21.49.00	21.69.00	Level	
21.69.00	21.78.00	1 in 198	Ascending
21.78.00	22.3.00	Level	
22.3.00	22.14.00	1 in 236.5	Descending

Carnatic Railway Co. Ltd.
Table of Gradients (continued)

Mileage		Rate of Gradient	Ascending or Descending
From M. Chs. L.	To M. Chs. L.		
22.14.00	22.36.00	1 in 330	Ascending
22.36.00	22.73.00	1 in 140	Ascending
22.73.00	23.64.00	Level	
23.64.00	24.24.00	1 in 235.7	Ascending
24.24.00	24.63.00	1 in 146.66	Ascending
24.63.00	25.12.00	Level	
25.12.00	25.44.00	1 in 140	Ascending
25.44.00	26.9.00	1 in 547	Ascending
26.9.00	26.29.00	1 in 330	Ascending
26.29.00	26.35.00	Level	
26.35.00	26.55.00	1 in 500	Descending
26.55.00	26.72.00	Level	
26.72.00	27.30.00	1 in 140	Ascending
27.30.00	27.50.00	1 in 198	Ascending
27.50.00	27.57.00	Level	
27.57.00	28.11.00	1 in 176	Descending
28.11.00	28.46.00	1 in 140	Descending
28.46.00	29.25.00	Level	
29.25.00	29.51.00	1 in 140	Descending
29.51.00	29.69.00	1 in 982	Descending
29.69.00	30.9.00	Level	
30.9.00	30.27.00	1 in 467.7	Descending
30.27.00	30.39.00	1 in 330	Ascending
30.39.00	30.53.00	1 in 220	Descending
30.53.00	30.73.00	Level	
30.73.00	31.11.00	1 in 140	Ascending
31.11.00	31.36.00	Level	

Carnatic Railway Co (Ld)
Table of Gradients (Continued) 1904

Mileage		Rate of Gradient	Ascending or Descending
From	To		
31.36.00	31.65.00	1 in 161.	Ascending
31.65.00	32.13.00	1 in 140	Descending
32.13.00	32.45.00	Level	
32.45.00	32.64.00	1 in 140	Descending
32.64.00	33.20.00	1 in 323.26	Descending
33.20.00	34.5.00	Level	
34.5.00	34.24.00	1 in 660	Ascending
34.24.00	34.43.00	1 in 660	Descending
34.43.00	36.15.00	Level	
36.15.00	36.50.00	1 in 140	Ascending
36.50.00	36.59.00	Level	
36.59.00	37.19.00	1 in 140	Ascending
37.19.00	37.26.00	Level	
37.26.00	37.38.00	1 in 240	Descending
37.38.00	37.65.00	Level	
37.65.00	38.20.00	1 in 140	Descending
38.20.00	38.50.00	1 in 500	Descending
38.50.00	39.6.00	1 in 440	Descending
39.6.00	39.40.00	1 in 165	Descending
39.40.00	39.75.00	1 in 263	Descending
39.75.00	40.8.00	Level	
40.8.00	40.38.00	1 in 140	Descending
40.38.00	40.58.00	1 in 330	Descending
40.58.00	41.38.00	1 in 900	Descending
41.38.00	41.78.00	1 in 571.4	Descending
41.78.00	42.8.00	Level	
42.8.00	42.20.00	1 in 275	Ascending
42.20.00	43.30.75	Level	
43.30.75	43.48.00	1 in 1962.9	Descending

Carnatic Railway Co (Ltd)
Tables of Gradients (Contd)

Mileage		Rate of Gradient	Ascending or Descending
From M. Ch. L	To M. Ch. L		
43·48·00	44·4·00	1 in 263	Descending
44·4·00	44·57·00	1 in 660	Descending
44·57·00	46·6·00	1 in 3000	Descending
46·6·00	46·38·00	1 in 220	Ascending
46·38·00	46·70·00	Level	
46·70·00	47·21·00	1 in 330	Ascending
47·21·00	47·78·00	1 in 2200	Descending
47·78·00	48·28·00	1 in 660	Ascending
48·28·00	48·54·00	1 in 330	Descending
48·54·00	49·19·00	Level	
49·19·00	49·31·00	1 in 660	Ascending
49·31·00	50·19·00	1 in 2200	Ascending
50·19·00	50·32·00	1 in 1100	Ascending
50·32·00	50·55·00	Level	
50·55·00	50·63·00	1 in 220	Ascending
50·63·00	51·38·00	1 in 440	Ascending
51·38·00	51·63·00	1 in 300	Ascending
51·63·00	51·75·00	1 in 176	Ascending
51·75·00	52·3·00	Level	
52·3·00	52·27·00	1 in 150	Ascending
52·27·00	52·62·00	1 in 1320	Ascending
52·62·00	53·26·00	1 in 150	Ascending
53·26·00	53·33·00	Level	
53·33·00	53·58·00	1 in 140	Descending
53·58·00	53·78·00	1 in 176	Descending
53·78·00	54·69·00	Level	
54·69·00	55·15·00	1 in 165	Ascending
55·15·00	55·58·00	Level	
55·58·00	56·46·00	1 in 176	Ascending

Carnatic Railway Co (Ld)
Table of gradients (continued)

Mileage		Rate of gradients	Ascending or Descending
From	To		
m. ch. l.	m. ch. l.		
56.46.00	56.68.00	Level	
56.68.00	57.8.00	1 in 176	Descending
57.8.00	57.34.00	Level	
57.34.00	58.7.00	1 in 150	Descending
58.7.00	58.62.00	1 in 440	Descending
58.62.00	59.32.00	Level	
59.32.00	59.49.00	1 in 330	Descending
59.49.00	59.65.00	Level	
59.65.00	60.17.00	1 in 660	Ascending
60.17.00	60.41.00	Level	
60.41.00	60.60.00	1 in 330	Descending
60.60.00	60.78.00	Level	
60.78.00	61.16.00	1 in 660	Descending
61.16.00	61.34.00	Level	
61.34.00	62.3.00	1 in 990	Descending
62.3.00	62.38.00	1 in 176	Descending
62.38.00	62.61.00	Level	
62.61.00	63.26.00	1 in 140	Descending
63.26.00	63.67.00	Level	
63.67.00	64.3.00	1 in 330	Ascending
64.3.00	64.28.00	1 in 500	Descending
64.28.00	64.58.00	Level	
64.58.00	65.15.00	1 in 176	Ascending
65.15.00	65.68.00	1 in 1320	Ascending
65.68.00	66.20.00	1 in 330	Descending
66.20.00	66.57.00	Level	
66.57.00	67.11.00	1 in 220	Ascending
67.11.00	67.60.00	1 in 4400	Ascending

Carnatic Railway Co. Ltd.
Table of Gradients (Continued)

Mileage From M. Ch. L.	Mileage To M. Ch. L.	Rate of Gradients	Ascending or Descending
67. 60. 00	68. 13. 00	1 in 1100	Ascending
68. 13. 00	68. 45. 00	1 in 150	Ascending
68. 45. 00	68. 64. 00	Level	
68. 64. 00	68. 79. 00	1 in 330	Descending
68. 79. 00	69. 39. 00	Level	
69. 39. 00	70. 28. 00	1 in 600	Ascending
70. 28. 00	70. 53. 00	1 in 165	Ascending
70. 53. 00	70. 68. 00	Level	
70. 68. 00	71. 44. 00	1 in 500	Ascending
71. 44. 00	71. 69. 00	Level	
71. 69. 00	72. 10. 00	1 in 250	Ascending
72. 10. 00	72. 37. 00	1 in 140	Ascending
72. 37. 00	73. 3. 00	1 in 660	Ascending
73. 3. 00	73. 25. 00	1 in 176	Ascending
73. 25. 00	73. 34. 00	Level	
73. 34. 00	73. 70. 00	1 in 165	Descending
73. 70. 00	74. 2. 00	Level	
74. 2. 00	74. 24. 00	1 in 400	Ascending
74. 24. 00	74. 53. 00	1 in 140	Descending
74. 53. 00	74. 60. 00	Level	
74. 60. 00	75. 5. 00	1 in 140	Descending
75. 5. 00	75. 20. 00	Level	
75. 20. 00	75. 32. 00	1 in 176	Descending
75. 32. 00	75. 56. 00	Level	
75. 56. 00	75. 71. 00	1 in 165	Ascending
75. 71. 00	75. 79. 30	Level	
75. 79. 30	76. 44. 00	1 in 140	Descending
76. 44. 00	77. 11. 00	1 in 580	Descending

Canada Railway Co.'s Line
Table of gradients (Continued)

Mileage From	Mileage To	Rate of gradient	Ascending or Descending
m. ch. l.	m. ch. l.		
77.11.00	77.51.00	1 in 300	Ascending
77.51.00	78.28.00	Level	
78.28.00	79.2.49	1 in 580	Ascending
79.2.49	79.47.94	1 in 150	Ascending
79.47.94	79.65.36	1 in 230	Ascending
79.65.36	79.74.00	Level	
79.74.00	80.27.26	1 in 160	Descending
80.27.26	80.63.40	1 in 380	Descending
80.63.40	80.70.00	Level	
80.70.00	81.11.00	1 in 180	Ascending
81.11.00	81.27.09	Level	
81.27.09	81.50.00	1 in 140	Ascending
81.50.00	81.69.15	Level	
81.69.15	82.39.00	1 in 140	Ascending
82.39.00	82.44.00	Level	
82.44.00	82.73.42	1 in 140	Descending
82.73.42	83.1.00	Level	
83.1.00	83.38.00	1 in 140	Descending
83.38.00	84.3.00	1 in 1000	Descending
84.3.00	84.25.00	1 in 1650	Ascending
84.25.00	84.36.83	Level	
84.36.83	84.63.56	1 in 534.6	Descending
84.63.56	85.9.00	Level	
85.9.00	85.24.76	1 in 200	Descending
85.24.76	85.75.00	Level	
85.75.00	86.27.05	1 in 470	Descending
86.27.05	86.67.79	1 in 768	Descending

Canadian Railway Co's Lines
Table of Gradients (Continued)

Mileage		Rate of Gradients	Ascending or Descending
From	To		
m. ch. l.	m. ch. l.		
86. 67. 79	87. 9. 00	1 in 140	Ascending
87. 9. 00	87. 33. 00	1 in 180	Descending
87. 33. 00	87. 62. 00	Level	
87. 62. 00	88. 2. 00	1 in 155	Ascending
88. 2. 00	88. 15. 00	Level	
88. 15. 00	88. 38. 00	1 in 172.5	Descending
88. 38. 00	88. 56. 00	Level	
88. 56. 00	88. 74. 03	1 in 175	Ascending
88. 74. 03	89. 6. 00	Level	
89. 6. 00	89. 22. 91	1 in 140	Descending
89. 22. 91	89. 32. 40	Level	
89. 32. 40	89. 45. 92	1 in 150	Ascending
89. 45. 92	89. 67. 40	Level	
89. 67. 40	89. 75. 40	1 in 300	Descending
89. 75. 40	90. 42. 40	Level	
90. 42. 40	90. 65. 40	1 in 180	Descending
90. 65. 40	91. 18. 40	Level	
91. 18. 40	91. 74. 40	1 in 263	Descending
91. 74. 40	92. 17. 40	Level	
92. 17. 40	92. 45. 40	1 in 400	Ascending
92. 45. 40	93. 2. 40	1 in 660	Ascending
93. 2. 40	93. 49. 40	1 in 1100	Ascending
93. 49. 40	93. 63. 40	1 in 300	Descending
93. 63. 40	93. 68. 40	Level	
93. 68. 40	94. 3. 40	1 in 660	Ascending
94. 3. 40	95. 1. 40	1 in 600	Ascending
95. 1. 40	95. 69. 40	1 in 1320	

Carnatic Railway Co (Limd) Table of Gradients (Contd)

Mileage		Rate of Gradients	Ascending or Descending
From	To		
M. Ch. L.	M. Ch. L.		
95.69.40	96.27.40	1 in 2200	Ascending
96.27.40	96.79.40	1 in 380	Ascending
96.79.40	97.8.40	Level	
97.8.40	97.25.40	1 in 150	Descending
97.25.40	97.40.40	Level	
97.40.40	97.60.40	1 in 330	Ascending
97.60.40	98.24.00	Level	
98.24.00	98.52.40	1 in 660	Ascending
98.52.40	98.70.40	1 in 1188	Ascending
98.70.40	99.14.40	Level	
99.14.40	99.41.40	1 in 1799.82	Descending
99.41.40	100.7.40	1 in 500	Descending
100.7.40	102.11.40	Level	
102.11.40	102.25.40	1 in 154	Descending
102.25.40	102.49.90	Level	
102.49.90	102.70.08	1 in 332.97	Descending
102.70.08	103.22.40	Level	
103.22.40	103.39.90	1 in 231	Ascending
103.39.90	103.43.40	Level	
103.43.40	103.73.01	1 in 170	Descending
103.73.01	104.59.53	Level	
104.59.53	104.68.05	1 in 140	Ascending
104.68.05	105.16.40	Level	
105.16.40	105.38.30	1 in 140	Descending
105.38.30	107.67.40	Level	
107.67.40	108.15.97	1 in 230	Descending
108.15.97	109.20.97	1 in 625	Descending

Canadian Railway Co (Line)
Table of Gradients (continued)

Mileage		Rate of Gradients	Ascending or Descending
From	To		
m. ch. l.	m. ch. l.		
109.20.97	110.26.40	Level	
110.26.40	110.57.40	1 in 226	Descending
110.57.40	111.17.40	Level	
111.17.40	111.62.40	1 in 1334.6	Descending
111.62.40	113.8.40	1 in 1212.48	Descending
113.8.40	114.77.40	1 in 1035.16	Descending
114.77.40	116.26.40	Level	
116.26.40	118.30.40	1 in 721.6	Descending
118.30.40	118.62.40	1 in 1056	Descending
118.62.40	119.22.40	Level	
119.22.40	120.13.40	1 in 720.92	Descending
120.13.40	122.10.40	1 in 942	Descending
122.10.40	123.70.40	1 in 593.1	Descending
123.70.40	123.77.40	1 in 140	Ascending
123.77.40	124.12.40	Level	
124.12.40	124.22.40	1 in 146.66	Descending
124.22.40	125.30.40	1 in 1161.6	Descending
125.30.40	126.17.21	1 in 1663.95	Descending
126.17.21	127.0.27	1 in 1085	Descending
127.0.27	127.74.16	1 in 2060.76	Descending

Carnatic Railway Co.ᵗᵈ Lond.ᵒⁿ
Summary of Gradients.

Gradients between	Total Length	
	Miles	Chains
1 in 140	11	10.42
1 in 140 & 1 in 150 (inclusive)	4	64.40
1 in 150 & 1 in 200 "	10	31.66
1 in 200 & 1 in 300 "	8	66.49
1 in 300 & 1 in 500 "	11	39.37
1 in 500 & 1 in 800 "	13	65.36
1 in 800 upwards	27	4.01
Total Length of Gradients	87	41.71
Total Length of Levels	39	55.95
	127	17.66
		56.50
	127	74.16

Madras
11th August 1852

Fred.k Dobree
Chief Engineer

Rly

Rly of 13 Bridges & Openings with notes of
areas drained through each, and notes
of Corresponding openings on Trunk Road
where obtainable. Buevas to Chinglepet-

301

Acres Rs.

Mileage from Madras	Mileage from Chingleput	Description	Waterway Feet each	Waterway Feet total	Areas drained	Remarks	Brought forward	Areas drained by Madras Rs.
	33·57·50	Open Culvert	1-10	4·1				Buevas Street drainage
	33·55·	do	1-10	5·9				
	33·40·50	Culvert	1-10	5·6				
	33·40·00	do	Total 4-	15·0 16·4		1	1½	
	33·33·00	Girder	10-	91·5				
2			Total 6	105·9				
	32·40·50	Open Culvert	1-10	6·0				
	32·43·50	do	1-10	4·2				
	32·18·00	Girder	10-	10·0		2	1½	Rivers Coovum-
	32·04·50	Open Culvert	1-10	6·0				
	32·03·50	do	1-10	4·7			1920·0	Areas obtained by
	31·74·00	Girder	4-10	220·0				Rivers Adyar and
3			Total 6	220·7				Coovum, cannot be
	31·60·00	Girder	20	125·0		3	1¼	ascertained with
	30·77·00	Girder	4-	18·4				perfect accuracy
	30·76·00	do	4-	11·4				from the Ordnance
4	30·52·00	Open Culvert	1-10	7·9				Maps as Irrigation
	30·43·50	do	1-10	8·8		4	1	works within the
5	29·70·00	do	1-10	5·1				limits receives
	29·67·00	do	1-10	4·2				supplies of water from
	29·38·00	do	1-10	5·1				the Palar & Cortalier
	29·28·00	do	1-10	5·1				Rivers —
			Total 6	69·0				
	29·27·00	Open Culvert	1-10	5·1				
	29·25·00	do	1-10	5·1		5	1	
	29·00·50	Girder	10-	110·0			172¾	
				120·2				

1811
5-2
60

Continued

Mileage from Brooklyn	Number	Description	Spans per section No	Spans per section Size	Section Area	Floor Joist	Drainage Area Sq. Miles	Section Area Sq. Ft.	Remarks.
	28.26.50				39.5		Sq. Miles	Sq. Ft.	
6	28.21.00	Girder	6	6'6"	60.84		17.3	3978.0	River adyan.
	27.73.00	Open Culvert		1'10"	7.9	6	303.		
7	27.57.00	Do		1'10"	6.0				
				Total	6112.3				
	27.50.00	Girder		4'	10.4	7	1/2		
	26.79.50	Girder		6'	20.0	8	1/4		
8									
	25.71.00	Girder		10'	30.0				
9	25.35.00	Do		4'	10.4				
	25.15.00	Open Culvert		1'10"	4.9	9	1 1/2	47.0	
10	24.59.00	Girder		4	12.4				
	24.48.00	Open Culvert		1'10"	6.9				
	24.43.00	Do		1'10"	5.1				
				Total	69.7				
	24.19.00	Girder		4'	10.4				
	24.07.50	Do		4'	12.4	10	3/4	29.0	
	23.73.00	Do		10'	25.0				
				Total	47.8				
11									
	23.35.00	Girder		6'	11.4				
	23.22.00	Do	2	6'	72.0	11	1.	62.0	
12.				Total	83.4				

4.24 3/4

303 X

Continued

Mileage from Junction	Section	Description	Spans as per section		Section Area	No. of Tracks	Drainage Area per Culvert Sq. Miles	Section Area Sq. Ft.	Remarks
			No.	Size	Sq. Ft.		Sq. Miles	Sq. Ft.	
	22.01.00	Open Culvert		1.10"	9.9	12	1/2	55.0	
	21.71.00	Girder		10	55.0				
				Total	64.9				
13									
	21.33.00	Open Culvert		1.10"	9.7		✓		
	21.24.00	Do		1.10"	9.7	13	5/16	23.0	
	21.16.40	Girder		6'	26.4				
				Total	45.8				
14									
	20.61.00	Girder		4'	14.	14	1/8 ✓	12.0	
	20.14.80	Girder		6'	20'	15	3/16 ✓	30.0	Sectional area of Road train in battle from Irish Bridge which are undefinite
15									
	19.51.00	Open Culvert		1.10"	4.2				
	19.22.00	Do		1.10"	6.4	16	1/8 ✓		
				Total	10.6				
	18.74.00	Girder		4'	22.0	17	1/16	14.0	
16									
	18.40.00	Open Culvert		1.10"	8.8				
	18.38.00	Do		1.10"	6.9	18	5/8 ✓	25.0	
	18.27.40	Culvert		4'	14.4				
				Total	30.1				
17									
	17.64.50	Open Culvert		1.10"	4.2				
	17.60.00	Do		1.10"	5.1				
	17.52.50	Do		1.10"	5.1	19	1/4	48.0	
	17.42.50	Do		1.10"	7.9				
	17.28.50	Girder		10'	37.5				
				Total	59.8				
	17.04.00	Open Culvert		1.10"	7.9				
	16.73.30	Do		1.10"	9.7	20	1/8	18.0	
18	16.47.00	Girder		4'	22.4				
				Total	40.0				

Continued

	Mileage from Junction	Station	Description	No	Size	Sectional Area	Area	No. of Trains	Cleanings per Annum	Sectional Area Req'd	Remarks
				Standard Spec. Section		Sq. Ft.	Sq. Ft.			Sq. Ft.	
	16.C.R.				11'0"	348.5					
	16.29.50		Girder		6'	21.6					
	16.07.20		Do	2	4'	32.8		21	1	34.0	
					Total	54.4					
19					6'	17.4			✓		
	15.53.00		Girder		1.10"	5.1		22	1/4	29.0	Thousand Island Bridge. Can only be estimated.
	15.43.00		Open Culvt		1.10"	5.1					
	15.42.00		Do								
					Total	27.6					
	15.05.00		Culvert		2'	4.1			✓		
	15.01.00		Girder		10'	40.0		23	7/8	48.0	
	14.75.00		Culvert		2'	7.6					
					Total	51.7					
20									✓		
	14.42.50		Open Culvt		1.10"	9.7		24	5/8	47.0	3 Irish Bridges can only be estimated.
	13.77.00		Girder		10'	25.0					
					Total	34.7					
21.											
	13.41.00		Open Culv		1.10"	6.0					
	13.32.50		Do		1.10"	7.9					
	13.31.50		Do		1.10"	6.0					
	13.22.00		Do		1.10	5.1					
	13.13.00		Do		1.10"	7.9					
22.	12.70.00		Girder	4	20'	480.0		25	12	464.0	
	12.55.00		Open Culvt		1.10"	6.0					
	12.45.00		do		1.10"	7.4					
	12.25.00		do		1.10"	11.5					
	12.20.00		do		1.10"	9.7					
					Total	547.5					
									✓		
	12.15.00		Open Culvt		1.10"	5.0		26	1/8	4.0	

Continued.

Mileage from Finchley	Chainage	Description	Spans per section No.	Spans per section size	Volume Area	No on Page	Remarks Area Square Yards	Volume Cubic Yards	Remarks
	0.11.62								
	11.76.00	Girder		6'	43.6	27	¼	6.0	Includes area for over flow of Tank - Road area cannot be compared - Iron Bridge cannot be measured -
23									
	11.23.00	Girder	1	20'	100.0				
	11.03.00	do		10'	40.0	28	¼		
				Total	140.0				
	10.76.00	Open Culvert		1'-10"	6.9				
24	10.60.00	Culvert		2'	4.0	29	¾	137.0	
	10.42.10	Open Culvert		1'-10"	6.0				
	10.34.00	Girder		4'	8.4				
				Total	25.3				
				6'	28.0	30	⅛		
	10.18.00	Girder			138.3				
				103.3	138.3				
	9.71.00	Girder	3	6'	56.0	31	1½	95.0	
25									
	9.14.00	Girder		6'	38.0	32	⅛		
					94.0				
26	8.61.00	Girder		14'	14.0	33	½	14.0	
	8.09.00	Girder		10'	60.0	34	1	22.0	Apart of Road drainage only Crosses Railway
27									
28	6.07.00	Girder	2	10'	100.0	35	3	71.0	
29									
	5.48.00	Girder		4'	14.0	36	1/16	12.0	
	5.23.00	Open Culvert		1'-10"	8.7				
	5.15.00	Girder		10'	17.5				
	5.02.00	Open Culvert		1'-10"	8.5				
		Total Carried forward			34.7	37			

Continued

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Mileage from datum	Chainage	Description	Span or per section		Sectional area	No. of pieces	Diameter of longitudinal rods	Sectional area of rods	Remarks.
			No.	Size	Sq. feet		Sq. inches	Sq. feet	
	No. Ch.	Total Brought forward			34·7	37	½	38·0	
	5·01·00	Open Culvert		1'-10"	7·5				
		Total			42·2				
30	4·58·00	Open Culvert		1'-10"	9·7				
	4·53·00	Lee		1'-10"	9·9				
	4·49·00	Girder		√10'	28·1	38	1¼	42·0	Road drainage ditches to be cleaned out
	4·20·00	Open Culvert		1'-10"	5·1				
		Total			52·8				
	4·11·00	Girder		√10'	48·0	39	1 1/32	29·0	Lee Lee
	3·78·00	Open Culvert		1'-10"	8·8	40	⅛		
31									
32	2·57·00	Girder		4'	10·0	41	1/16		
	2·28·00	Girder		6'	46·4	42	1/8	54·0	The Road drainage is difficult to provide for each Ruby Bridge
	1·71·00	Girder		4'	4·4	43	¾		
33	1·37·00	Lee		4'	26·4				
		Total			91·0				
	1·10·50	Culvert		4'	14·4	44	1/8		
	0·02·50	Culvert		4'	46·4	45	1/16	22·0	
34	0·78·00	Girder	4	20	560·0	46	20	207·0	
					606·4				

6th July 1892

Fredk Dibble
Civil Engineer

Cavan & Leitrim Railway Co. Ltd. 1897

List of Bridge openings with notes of area drained through each & - and notes of corresponding openings on Trunk Road where obtainable. Chainage not to Millisporan -

Mileage from Dublin	Section	Description	Openings per section No	Openings per section size	Section Area	No. on map	Drainage area in Sq. Miles	Section area in Sq. Miles	Remarks.
	m. ch. Lks.			Ft. In.	Sq. Ft.		Sq. Miles	Sq. Miles	
35		Brought forward			506.4				
	41.14.00	Open Culvert		1'-0"	11.3				
	40.79.00	Do.		1'-0"	16.3				
	40.74.50	Do		1'-0"	15.3			13	Part of Chainage Drainage area No 46
	40.68.00	Girder		6'	39.2				
	40.50.00	Open Culvert		1'-0"	11.3				
	40.37.00	Do		1'-0"	8.7				
36	40.16.00	Do		1'-0"	6.0				
	39.75.00	Do		1'-0"	9.6				
	39.71.00	Do		1'-0"	11.3				
	39.56.00	Girder		10'	30.0				
37	39.10.00	Open Culvert		1'-0"	4.4				
					769.8				
	39.08.00	Open Culvert		1'-0"	4.3				Culverts comprising the total Catchment Area of the Drainage Area No 46
	38.60.00	Girder		4'	10.4	47	1		
	38.45.00	Do		6'	32.1				
			Total		46.8				
	38.35.00	Culvert		4'	25.0				
38	38.28.00	Do		2'	12.5				
	38.21.00	Do		4'	2.9				
	38.09.00	Girder		4'	10.4	118	1		
	37.58.00	do		6'	54				
39	37.17.50	Do		10'	200				
	36.73.00	Open Culvert		1'-0"	9.6				
40			Total		85.8		2		

Continued

Mileage from Boston	Bridge	Description	Span in each section No	Span in each section Size	Sections	Area	No. on Map	Diameter of cylinders in inches	Surface area of Cylinders Sq. Ft.	Remarks
						Sq. Ft.		Sq. M.	Sq. Feet	
	Br. C.L.			7'-0"	9.8½					
	35.63	Open Culvert		1'-10"	9.6			2		
	35.58	Do		1'-10"	5.9					
41.	35.49.00	Open do		1'-10"	9.6					
	35.11.00	Girder		6'	17.4					
	35.04.00	Do		4'	12.4	49	6			
42	34.22.00	Do		6'	26.4					
	34.12.00	Open Culvert		1'-10"	10.6					
	33.78.00	Girder		10'	120.0					
					211.9					
	33.40.00	Girder	18	120	1962.0	50	6120			Salem River
43									50.0	
	33.16.00	Do		10'	140.0					
	33.06.00	Do		6'	86.4					
					1984.64					
	32.59.00	Girder		6'	41.4					
	32.34.50	Open Culvert		1'-10"	9.6					
44	32.11.00	do		1'-10"	7.7					
	31.39.00	Girder	4	25'	950.0	57	62		805.25	
45	31.16.30	Open Culvert		1'-10"	5.9					
	31.08.50	do		1'-10"	5.1					
	31.06.50	do		1'-10"	5.1					
				Total	1025.8					
									503.0	
	30.76.00	Girder	4	20'	52					
	30.61.00	do		4'	20.0					
	30.42.00	Open Culvert		1'-10"	6.0					
	30.36.00	do		1'-10"	6.0	52	28			
	30.29.50	do		1'-10"	6.9					
46	30.00.00	do		1'-10"	13.3					
				Total	572.2					
							6218 ✓			

Continued

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Mile Post	Chainage	Description	No.	Size	Sq. ft.	Sq. ft.	Remarks
						5210	
	29.70.00	Girders		4'	20.4		
	29.28.50	Low		4'	6.4	53	½
47				Total C	26.8		
	28.61.00	Open Culvert		1'-10"	6.0		All water passed by this opening is regulated by irrigation channels drainage area cannot be accurately determined
	28.32.00	Girder		4'	10.4		
48.	28.15.00	Open Culvert		1'-10"	9.6	54	2
	28.07.50	Low		1'-10"	6.9		
	28.00.00	Low		1'-10"	4.1		
				Total C	37.0		
	27.74.30	Open Culvert		1'-10"	4.1		
	27.57.50	Low		1'-10"	6.9		24.5
	27.46.00	Girder		4'	42.4		4458. Carried forward
49	27.20.00	Low	9	40'	5760.0		
	26.73.80	Open Culvert		1'-10"	7.8		
	26.58.70	Low		1'-10"	6.0		
	26.52.50	Girder		4'	10.4	55	395
	26.45.50	Low		4'	8.4		
	26.39.00	Open Culvert		1'-10"	6.0		
	26.32.00	Low		1'-10"	7.8		
50	26.25.00	Girder		4'	12.4		
	26.11.00	Open Culvert		1'-10"	6.9		
	26.06.00	Low		1'-10"	6.9		
				Total C	5886.		
	25.77.10	Girder		4'	6.4		
	25.46.00	Low	2	4'	28.8		
	25.41.40	Open Culvert		1'-10"	6.0		
	25.28.60	Low		1'-10"	6.0		
51.		Carried forward Total C			47.2		6,615½

14

Continued

No.	Mileage from Nadiad	Chainage	Description	Span as per Station		Assessed area	No. on Map	Drainage area as per Map	Actual Area	Remarks
				Nos	Size			Sq. Miles	Sq. Ft.	
		M.ch.-Lks.			ft.	Sq. Ft.				
			Total Brought forward			47.2		6615½		
		25.13.10	Open Culvert		1'-10"	7.1				
		25.05.00	Do		1'-10"	6.0		1⅛		
		24.65.20	Do		1'-10"	6.0				
		24.52.85	Do		1'-10"	6.0				
		24.40.50	Do		1'-10"	7.8				
			Total —			80.1				
		24.32.00	Girder	3	6'	61.2			38.28	Artificial channel lines connected with the Drainage area —
52										
		23.62.00	Open Culvert		1'-10"	8.8				
		23.56.00	Do		1'-10"	9.6	57	2¾		
		23.47.00	Do		1'-10"	8.3				
		23.38.85	Girder		4'	14.4				
			Total			41.1				
53										
		22.61.20	Open Culvert		1'-10"	8.7				
		22.56.20	Girder		4'	14.0	58	2¼		
54		22.26.60	Do		6'	32.4				
			Total			55.1				
		21.55.50	Girder		4'	13.4	59	1¾		
		21.39.00	Do		4'	11.4				
55										
			Total			29.8				
		21.02.80	Open Culvert		1'-10"	6.3				
		20.72.10	Do		1'-10"	7.8				
		20.56.10	Do		1'-10"	4.4	60	2		
		20.33.50	Girder		4'	8.4				
56		20.08.20	Do		4'	11.4				
		19.42.90	Open Culvert		1'-10"	2.4				
			Total			43.7				
								6625½		

Continued

Mileage from Junction	Mileage from Junction	Description	No.	Span or Size	Total area	No. of Openings	Drainage area sq. Miles	Estimated Q. C.F.S.	Remarks
				Ft.	sq. ft.				
	19.11.00	Open Culvert		1'-10"	2.6		65.5		
57	19.29.00	Do		1'-10"	6.0				
	19.20.90	Do		1'-10"	6.0				This possible
	19.11.00	Do		1'-10"	9.6				that can be
	18.77.00	Girder		6'	50.4				reduced when
	18.72.60	Box Culvert		4'	20.0				an opportunity
	18.64.80	Culvert		2'	6.0	61	3/4		occurs to gauge
	18.60.50	Do		2'	6.0				streams.
	18.49.60	Girder		4'	27.4			13.	
	18.31.20	Do		4'	4.4			60.	
58	18.12.00	Do	2	6'	33.4			46.	
	17.72.00	Do	2	6'	19.8			7.	
	17.52.50	Do		4'	2.4				
59	17.07.70	Do		6'	20.4				
			Total		214.4				
	16.73.00	Culvert		4'	8.4				
	16.65.00	Open Culvert		1'-10"	5.7	62	1/2		
60	16.45.30	Do		1'-10"	7.8				
	16.12.20	Girder	2	4'	23.0				These openings
			Total		44.9				have been
	15.56.70	Girder		6'	14.4	63	1		determined
	15.37.00	Do		10'	27.8				from comparis-
61			Total		42.2				on with Road
									Culverts &c.
	14.76.30	Girder		10'	40.0				it is probable
	14.53.30	Do	2	10'	130.0	64	1/2		they can be
62			Total		170.0				reduced when
	13.57.00	Girder		6'	30.9				streams can
									be gauged
									during rain-
							1/2 30.2		

3rd

Continued

Mileage from Chainage	Position	Description	Spans as per section No.	Spans as per section Sq. Ft.	Total area Sq. Ft.	Drainage area per Drainage Map No.	Drainage area Sq. Ft.	Section area Sq. Ft.	Remarks.
	M.Ch.Lk.								
		73½ feet =	—		30.9				
	13.44.40	Box Culvert		4×5	14.7				
63	13.22.30	Culvert		2'	4.2				
	13.15.40	Do		4'	9.0				
	13.03.90	Open Culvert		1'-10"	7.8	65	32		
	12.65.00	Girder		10'	60.0			574.5	
	12.50.00	do	3	20'	600.0				
	12.40.00	do		4'	9.4				
	12.31.10	Open Culvert		1'-10"	6.9				
64	12.25.30	do		1'-10"	6.0				
		Total =			748.9				
	11.64.30	Girder	2	25'	225.0				
	11.40.00	Do		4'	7.3	66	19½		
65	10.56.00	Open Culvert		1'-10"	6.3				
66		Total =			338.6				
	9.74.75	Girder	3	10'	180.0				
	9.48.50	Do	2	25'	425.0				
67	9.13.50	Do		6'	17.4				
	8.58.00	Open Culvert		1'-10"	4.4	67	31		
68	8.08.00	Do		1'-10"	5.0				
	8.03.00	Do		1'-10"	5.0				
	7.77.00	Do		1'-10"	6.0				
		Total =			642.8				
	7.28.00	Girder		4'	18.4				
69	6.74.00	do	2	25	650.0				
	6.57.00	do		4'	10.4				
	6.43.00	Open Culvert		1'-10"	5.0				
70	6.22.90	Do		1'-10"	5.0			5/13½	
		Carried forward Total =			688.8				

Continued

Bridge Number	Station	Description	Spans or Piers	Sections	Area	Yds of Masonry	Quantities Yds of Masonry	Remarks.
			No.	dim.	Sq. ft.		Sq. ft.	
	71.62	73= forward Total			688.8		573=	
	6.16.50	Open Culvert		1-10"	6.0			
	5.76.00	Girder		4'	16.4			
	5.67.00	Culvert		2'	6.0			
	5.56.50	Do		4'	23.2			
	5.50.00	Girder		10'	100.3	68	37	
71	4.35.00	Open Culvert		1-10"	4.3			
72	4.24.50	Do		1-10"	6.0			
	4.14.00	Girder		4'	9.4			
	3.69.00	do		4'	17.4			
	3.29.80	do		4'	4.8			
73			Total	0	882.8			
	2.34.10	Girder		6'	22.4	69	1	
74								
	1.57.00	Girder		6'	42.9			
	1.45.00	Culvert		2'	6.4			
	1.30.00	Do		2'	4.5			
75	1-10-50	Girder		6'	32.4	70	1 3/4	17.
	0.78.20	Open Culvert		1-10"	8.7			
	0.60.00	do		1-10"	7.8			
	0.59.00	do		1-10"	7.8			
76			Total		110.5			396.
	0.15.00	Girder	1	30'	495.0			
	0.05.00	Do		4'	21.9			
	0.25.00	Do		4'	9.0	71	22	166.75
	0.39.00	Open Culvert		1-10	7.3			
77	0.53.00	Girder		10'	23.7			
	0.65.00	Do		10'	10.8			
			Total		567.7		675	

Mileage from Preston	Description	Skew as per section No	Skew as per section Size	Waterway area Sq. Ft.	Rainfall area Sq. Ins.	Drainage area Sq. Ins.	Section area Sq. Ft.	Remarks.
M. Ch. L.			Ft.	Sq. Ft.		3775	Sq. Ft.	
1.45.00	Girder		10'	30.			59.0	
78 2.18.00	Do	2	10'	50.8				
2.33.30	Open Culvert		1-10"	10.9				
2.50.00	Girder		4'	8.7	72	8		
79 2.64.00	Do		4'	13.7				
3.02.80	Do		4'	18.4				
3.16.80	Do		4'	14.4				
80		Total		146.9				
3.71.00	Girder		4'	16.4				
3.78.00	Do		4'	13.4	73	3		
4.21.80	Do		4'	10.4				
81. 4.63.20	Do		6'	26.4				
		Total		66.6				
5.47.00	Culvert		4'	10.7				
82 5.62.50	Girder		4'	6.4	74	1/2		
6.04.00	Open Culvert		1-10	4.2				
6.32.50	Culvert		4'	20.				
83.		Total		41.3				Rivers to be gauged as waterways on Road is disproportionate to drainage area
7.03.00	Culvert		4'	20.				
7.39.00	Open Do		1-10	7.				
84 7.52.00	Girder		4'	10.7	75	125	30.	
7.68.40	Do		6'	53.4			99.20	
8.00.00	Do	4	30	16.56				
8.26.80	Open Culvert		1-10	5.0				
		Total		152.1				
						6911½		

I

Continued

Bridges Number	Number	Description	Span & No per cent	Span & size	Feet B.M.	Area	No on Drawing	Square Feet	Feet B.M.	Remarks
	m.ch.l.			ft.	sq ft.			sq ft	sq ft	
								69 11½		
	8·43·00	Open Culvert		1'-10"	6.6					
85.	8·58·00	Girder		6'	39.4					
	8·75·00	Open Culvert		1'-10"	9.5					
	9·02·00	Do		1'-10"	5.3					
	9·41·00	Girder	9	30'	420.	76	357	2522.		same remark applies as above.
86	9·69·50	do		4'	22.4					
	10·01·00	do		4'	7.4					
	10·12·10	do		4'	10.4					
	10·36·00	do		4'	4.7					
87				Total	4423.7					
	11·27·50	Girder		10'	50.	77	1			
88										
	11·73·50	Girder		4'	10.4					
	12·09·00	Girder		6'	15.9	78	1			
	12·29·20	do		6'	26.4					
89				Total	52.7					
	12·58·00	Open Culvert		1'-10"	5.7	79	½			
	12·77·80	Girder		6'	20.4					
90.				Total	26.1					
									11.7	
	8·42·00	Girder		4'	9.4				6.	
	8·12·00	Do		4'	20.7	80	½			
91.	7·60·50	Do		4'	2.2					
	7·18·00	Do		6'	29.9				36.	
	7·00·00	Do		10'	83.1					
				Total	145.3					

7-12½

Continued

216X

Mileage from Junction	Section	Description	Span No.	Span Size	Estimated Area	No. on Page	Quantities carried forward	Sections Area Sq. Ft.	Remarks.
				ft.s	Sq. ft.		Sq. ft.	Sq. ft.	
	m.ch.l								
	6.75.10	Culvert		4'	17.0		7272.		
	6.71.40	Do		2'	10.5				
	6.54.50	Do		2'	10.5	81	69		
92	6.47.00	Do		2'	9.2				
	6.38.50	Girder	5	30'	1650.			1580.	
	6.30.50	Culvert		4'	29.0				
			Total		1726.2				
93	5.27.70	Girder		4'	6.4				
	5.15.50	Do		4'	12.4				
	4.77.80	Culvert		2'	4.5				
	4.67.80	Girder	2	20'	440.			322.5	
94	3.57.30	Open Culvt		1-10"	7.8				
95	3.29.30	Girder		6'	24.			29.9	
	3.14.30	Do		4'	8.4	82	26	4.0	
	3.04.00	Open Culvt		1-10"	7.5				
	2.70.10	Do		1-10"	6.9				
	2.61.60	Do		1-10"	7.8				
96	2.39.75	Girder		4'	8.8				
	2.32.20	Open Culvt		1-10"	6.0				
	2.24.75	Girder		4'	6.4				
			Total		546.3				
	1.49.30	Girder	3	30'	1134.			855.	50 p.c more than Bridge
97	1.22.00	Do		10'	42.5			64.	streams which will be gauged hereafter.
	1.09.50	Do		6'	26.4				
	0.70.75	Do		10'	50.0	83	163		
98	0.47.50	Do		4'	5.4				
	0.28.50	Open Culvt		1-10"	6.4				
	0.21.50	Do		1-10"	6.9			48.	
	0.17.00	Girder		6'	29.4				
			Total		1301.		7.538		

Credit Office.
Chief Engineer
6th July 1874

P.W. 484 1/2

Carnatic Railway Company (Ltd.)

List of Bridge openings with Notes of Areas drained through each and Notes of corresponding openings on Trunk Road where obtainable -

3177.

Villupooram to Cuddalore.

Mileage from Commencement	Position	Description	Openings as per section No.	Openings as per section Size	Waterway Area	Waterway Area as per Map	Drainage Area per Map sq. m.	Drainage Area per Map sq. ft.	Remarks.
	M. Ch.			Ft. I.	sq. ft.				
	0.20	Girder		6'-0"	35.4				
99	0.42	do		6'-0"	26.4				
	0.44	Open Culvert		1'-10"	5.9				
	0.46	Loo.		1'-10"	6.9				
	0.70	Loo		1'-10"	9.6.				
	0.74	Loo		1'-10"	6.9				
	1.02	Girder		4'-0"	16.4				
	1.05	open Culvert		1'-10"	5.9	84	8.		
	1.16	Girder		4'-0"	12.4				
	1.20	Loo		4'-0"	10.4				
100	1.39	open Culvert		1'-10"	3.2				
	1.42	Loo		1'-10"	3.2				
	1.50	Loo		1'-10"	9.6				
	1.66	Culvert		4'-0"	13.0				
	2.20	Girder		25'-0"	137.5				
102	3.36	do		25'-0"	187.5				
		Total			490.2				
105	6.30	Girders	17	100	22807.	85	454	13062	Rivers Cuman Gingalam Chinnaru Tenpennai Ponnaiyar Gadilam
		Total			22807.				
124	25.32	Girders.	8	100	11900	86	1043	7740	River Gadilam
								5598	
		Total			11900				

Executive Office
Chief Engineer
6 July 1872

C, 17

Carnatic Railway Co.'s L.d 307

Statement showing the superficial area (in squares) of the slopes of banks and cuttings between Madras and 20 Mile Stone.

1st Mile		4th Mile		7th Mile		10th Mile	
	32		65		14		109
	62		91		9		30
	26		71		132		56
	120		59		188		77
			38		153		85
			819		88		38
					740		38
	18		77				344
	38		88		76		
2nd Mile	71		97		53		62
	180		94		47		47
	191		82		37		35
	177		50		28		38
	118		20		15		
	799		22	8th Mile	17	11th Mile	26
		5th Mile	530		323		41
	91						65
	85		44		50		323
	115		29		15		
3rd Mile	77		24		24		120
	50		71		53		199
	79		38		40		597
	59		35		72		819
	41		141		13		530
	597		200	9th Mile	57		582
		6th Mile	582		29		740
	36				353		323
1st Mile	126		82				353
	221	7th Mile	44	10th Mile	91		344
	112						323
							530

over

Memo:

Pitching

Six Short Tanks	576 Squares
Cooum River	351 "
Nungambaukum Tank	198 "
	1125 "
Turfing	4605 "
Total	5730 "

C₂

Carnatic Railway Co.ˡᵗᵈ. 1874

Statement showing the superficial areas (in Squares) of the slopes of banks and Cuttings between Meenumbakum and Godavanchery.

12th Mile	59	15th Mile	19	18th Mile	11	20th Mile 2nd Mile 1st Mile
	21		22		38	422
	41		65		16	165
	26		47		29	97
	38		59		78	18
	71		85		100	53
	147		71		132	24
	114		41		94	68
	517		409		68	97
					555	85
13th Mile	44	16th Mile	15	19th Mile	71	607
	12		6		100	106
	12		26		39	71
	12		6		56	62
	38		12		62	32
	65		41		103	59
	24		18		82	62
	71		29		106	74
	278		153		639	121
14th Mile	141	17th Mile	109	20th Mile	82	557
	94		6		85	185
	7		62		77	180
	47		14		26	74
	13		82		10	85
	24		65		34	94
	79		71		5	127
	85		47		21	765
	20		15			
	510		471			

Carnatic Railway 6ms/Ldy 3207

Statement showing the superficial area (in Squares) of the Slopes of banks and Cuttings between Godavarcherry and Schinglepud.

23rd Mile	11	26th Mile	53	29th Mile	156		26
	91		613		700		26
	163		33		83		44
24th Mile	150	27th Mile	79	30th Mile	24	33rd Mile	77
	74		115		26		144
	35		15		113		130
	44		36		138		135
	77		33		109		56
	106		127		82		638
	109		103		94		32
	65		543		673		74
	660		44		79		9
25th Mile	74	28th Mile	68	31st Mile	74	34th Mile	59
	74		94		112		144
	62		38		83		50
	53		18		9		174
	117		11		18		159
	114		26		77		701
	85		71		97		213
	103		100		551		58
	512		11		83		20
26th Mile	109	29th Mile	5	32nd Mile	56	35th Mile	21
	112		18		18		38
	79		71		62		13
	74		62		111		24
	26		94		114		268
	12		118		32		100
	150		165		35		130
					373		

547	
278	
510	
409	
153	
471	
535	
639	
422	
607	
587	
765	
5943	

Pitching

In Puranoor Tank 200 Squares

Chinglepet " 274

Total " 474

35th Mile	250
	90
	174
	1101
36th Mile	171
	106
	11
	53
	112
	100
	85
	30
	97
	121
	969
	165
	660
	542
	615
	543
	400
	700
	673
	551
	373
	638
	701
	1401
	969
	8934

Carnatic Railway Co.y Ltd.y

Statement showing the superficial area (in Squares) of the Slopes of banks and Cuttings between Chinglepet and Bradyanheim.

37th Mile	138	40th Mile	94	43rd Mile	144
	127		59		124
	47		11		88
	59		26		118
	29		53		127
	41		24		601
	50		97		141
	494		118		206
			512		171
38th Mile	7	41st Mile	130	44th Mile	153
	29		160		132
	47		118		82
	74		127		74
	153		124		97
	230		109		1056
	244		97		112
	188		88		71
	50		893		47
	1022				100
39th Mile	24	42nd Mile	62	45th Mile	185
	12		56		97
	59		68		68
	56		62		56
	9		71		736
	77		97		118
	88		115		127
	85		150		77
	410		681		59
46th Mile	65				
	59				
	41				
	109				
	655				
47th Mile	144				
	59				
	21				
	6				
	26				
	68				
	56				
	21				
	401				
48th Mile	9				
	44				
	47				
	35				
	47				
	85				
	94				
	41				
	408				
49th Mile	118				
	62				
	77				
	79				
	153				

Carnalee Railway Co. (Ltd.)

Statement showing the superficial areas (in Squares) of the Slopes of Banks and Cuttings between Embankments and Adjutments.

49th Mile	200	Sitelung					
	144	In Trummony Park 10 Acres					
	94						
	118						
	1318						
50th Mile	53						
	44						
	62						
	41						
	30						
	53						
	56						
	65						
	424						
	191						
	1022						
	410						
	512						
	893						
	681						
	601						
	1056						
	736						
	655						
	401						
	408						
	1348						
	124						
	9641						
51st Mile	29	51½ Mile	85	57th Mile	18	60th Mile	35
	62		103		12		38
	35		21		21		29
	59		56		59		29
	50		124		85		21
	50		156		132		396
	50		44		362		
	41		636				35
	376				230		18
52nd Mile	41	52½ Mile	9	58th Mile	212	60½ Mile	24
	53		38		188		79
	56		71		174		100
	56		47		124		71
	82		41		56		29
	47		24		79		56
	24		12		88		412
	35		47		1151		
	394		289		65		59
53rd Mile	38	53½ Mile	82	59th Mile	56	62nd Mile	65
	65		39		26		103
	97		29		12		56
	77		24		21		9
	112		44		47		12
	156		77		88		38
	77		100		118		44
	15		88		433		386
	637		503		150	63rd Mile	44
54th Mile	47	57th Mile	29	60th Mile	50		62
			6		44		121
							82

63rds Mile
47
109
132
59
656
376
391
637
636
289
503
362
1151
433
396
412
386
656
6,631

Pitching.

200 Sqrs. in Keelamarooverthoor Jank
250 " Acherwank "
450 " Total

Carnatic Railway C:/L[illegible]

32-7

Statement showing the superficial area (in Squares) of the slopes of banks and Cuttings between Adyalum and Tindevanum.

64th Mile	67th Mile	70th Mile	73rd Mile
44	115	68	79
71	74	15	38
59	53	50	38
97	118	62	71
71	106	59	9
41	138	53	56
38	118	59	103
53	41	65	15
474	763	1.31	1.09
26	47	109	15
100	35	119	18
65	32	194	53
65	24	244	18
74	18	47	85
65	21	62	65
12	18	59	74
12	29	18	47
419	224	924	375
9	15	15	59
18	32	24	180
53	68	53	197
24	41	32	174
15	53	35	115
59	82	50	141
59	50	44	150
74	53	71	112
311	394	324	1128

65th Mile	68th Mile	71st Mile	74th Mile

66th Mile	69th Mile	72nd Mile	75th Mile

76th Mile
50
34
68
13
112
11
227
62
577
474
419
311
763
224
394
431
924
324
409
375
1128
577
6753

Pitetung

120 Lgrs in Tindevanum Tank

98 " Moroongapaukum Tank.

193 " Saruru Tank

411 Total.

Carnatic Railway Co.s/Ld./

3247

Statement showing the superficial area / in Squares/ of the slopes of banks and Cuttings between Tindevanum and Palay.

77th Mile	80th Mile	83rd Mile	86th Mile
100	26	21	29
91	9	6	15
68	9	23	47
65	15	6	177
88	85	197	67
79	118	215	103
53	471	15	118
71	17	131	79
615	38	153	635
53	12	209	62
83	103	976	59
82	82	141	50
106	19	91	38
100	16	97	21
97	26	79	26
47	97	59	3
568	62	147	33
32	472	162	44
59	150	855	336
91	71	118	68
94	2	91	85
77	73	68	88
71	11	32	97
100	135	74	29
138	127	147	9
662	35	124	21
130	9	79	44
79	616	763	441

C

C 8

Carnatic Railway Co. Ld. 325 x

Statement showing the superficial area (in Squares) of the slopes of banks and Cuttings between Salay and Pillor.

89 lbs. Bnlb	94	90 lbs. Bnlb	2	93 lbs. Bnlb	156	96 lbs. Bnlb	59	99 lbs. Bnlb	82
	53		55		77		77		704
	94		57		21		566		
	97		24		1400		74	100 lbs. Bnlb	88
	17	91 lbs. Bnlb	18	94 lbs. Bnlb	15	97 lbs. Bnlb	85		77
	40		41		21		91		26
	17		74		24		85		46
	22		56		32		68		15
	4		68		35		56		26
	74		97		62		32		24
	22		62		94		71		53
	534		440		121		562		355
	615	92 nd Bnlb	24	95 lbs. Bnlb	404	98 lbs. Bnlb	91		44
	568		59		135		124		47
	662		21		200		235		35
	471		35		82		224		41
	472		15		47		174		71
	616		10		26		94		103
	976		6		15		74		127
	855		85		18		82		135
	763		115		6		1098		603
	635		191		529		121	102 nd Bnlb	135
	336		561		50		124		135
	441	93 rd Bnlb	174	96 lbs. Bnlb	77	99 lbs. Bnlb	91		141
	534		221		94		56		141
	7944		224		85		65		171
			218		59		68		215
			309		65		97		247
									1320

103rd Mile
221
212
227
212
141
21
1034
57
440
561
1400
404
529
566
562
1098
704
355
603
1320
1034
9633

Pitching

In the Krivandy Tank 200 Squares
" Arnagoor 500
Total 700 Squares

Compared [illegible]

Carnatic Railway Co. Ltd

Statement showing the superficial area in Squares of the slopes of banks and Cuttings between Pillaor and Nellicoopum.

104th Mile	107th Mile	110th Mile	113th Mile
88	50	50	118
100	94	12	162
74	132	12	177
65	165	38	135
132	171	44	144
65	162	62	144
24	132	85	162
82	100	79	168
134	1006	382	1210
147	106	79	118
911	132	85	79
100	147	85	71
65	121	124	94
85	91	147	103
115	44	147	109
94	12	103	115
100	9	41	103
230	17	811	792
180	679	74	68
969	97	100	65
121	59	109	59
117	50	103	47
117	10	74	44
82	18	106	15
6	6	147	15
25	32	118	35
18	12	831	348
486	284		

116th Mile
41
59

Carnatic Railway Co. / Ld. /

Statement showing the superficial Area (per Square) of the Slopes of banks and Cuttings between Pellicoopum and Cuddalore.

116th Mile	14	117th Mile	911	118th Mile	50	119th Mile	79
	26		969		77		71
	15		486		77		85
	41		1006		79		77
	226		679		41		71
			284		65		77
			382		15		74
			811				44
			831				578
			1210				
			792				
			348				
			226				
			8935				

116th Mile	71	119th Mile	24	123rd Mile	6	126th Mile	153
	82		428		9		188
	153	120th Mile	15		3		212
117th Mile	124		35		41		250
	121		26		62		271
	112		44		109		77
	94		62		121		156
	109		100		112		233
	68		97		463		1540
	59		79	124th Mile	132	127th Mile	271
	56		458		188		238
	743	121st Mile	115		144		162
118th Mile	79		121		188		168
	71		115		203		200
	85		112		241		162
	77		82		191		135
	71		44		185		141
	77		82		1472		1477
	74		79	125th Mile	159	128th Mile	121
	44		750		297		100
	578	122nd Mile	18		131		127
119th Mile	50		21		12		112
	77		21		68		138
	77		62		94		174
	79		79		106		224
	41		59		106		180
	65		71		973		177
	15		21				191
			352				

P.W. 4846/72
P.C. 1470/72

128 miles	10
	1554
	153
	713
	578
	428
	458
	750
	352
	463
	1472
	973
	1540
	1477
	1554
	10941

Fitting
to approach to Cuddalore Jetty
(left bank) — 515 Square.

Madras 3
14th August 1872

Fredk Dobbs
Chief Engineer

Cr. for 277 ft

1st bill
Rs
5 0

Detailed Estimates for Stations and Buildings at Madras.

3254

Estimate for Passenger Station.
Do. do. Goods shed.
Do. do. Locomotive Superintendent's Office.
Do. do. Engine shed.
Do. do. Carriage shed.
Do. do. Coal Store.

Estimates for Workshops, including Engine and Carri
shops, Wood cutting and Sawing shops, Fitting
Locomotive Stores Building, Boiler shop, Bo
Wells, Compound Walls & gates, Temporary &
Workshops, Locomotive Employés' Quarters,
Employés' Outhouses, Locomotive superintenden
and Gate keepers' Lodges.

Estimate for General Stores building.

Estimate for terminal Station at Madras.

No.	Length Ft	in	Breadth Ft	in	Thickness Ft	in	Contents	Rate Rs	As	p	Qty	Amount Rs	As	p	Totals Rs	As
							Earthwork									
							In filling in of platforms									
2	400	"	20	"	1	3	20,000 cft									
							In filling in of Camp and porters rooms									
1	120	-	21	"	1	3	3,150									
							In filling in of Drain building									
1	200	-	150	"	1	3	37,500									
							In foundations of platform walls									
2	400	-	1	3	1	"	1,000									
							In foundation of North Arcade									
1	550	"	3	-	2	"	3,300									
							In wall of South Platform									
1	400	"	3	-	2	"	2,400									
							In South wall of Camp & porters rooms									
1	120	"	3	-	2	"	720									
							In partition walls of Camp and porters Rooms									
6	21	"	2	"	2	"	504									
							In foundation of East Arcade									
1	200	"	3	-	2	"	1,200									
							In foundation of South Arcade									
1	150	"	3	"	2	"	900									
							In foundation of West Wall of Drain building									
1	200	"	3	"	2	"	1,200									
							In foundation walls running N & S in Drain building									
5	170	"	3	"	2	"	5,100									
							In foundation of walls running E & W in Drain building									
7	135	"	3	"	2	"	5,670									
			30	6	Cyds.		82,644	"	4	"	Cyds.	765	4	"		
							Carried Over					765	4	"		

Estimate for Terminal Station at Madras

3204

No	Length ft	Length in	Breadth ft	Breadth in	Thickness ft	Thickness in	Contents	Rate Rs	Rate as	Rate p	By	Amount Rs	Amount as	Amount p	Total Rs	Total as	Total p
							Brought forward								765	4	..
							Brick work										
							In Platform walls										
2	400	..	3	..	1	..	2,400										
							In side walls of Platforms										
2	400	..	20	..	2	..	32,000										
							In South walls of Lamp and porter's rooms										
1	120	..	20	..	2	..	4,800										
							In partition walls of Lamp and porter's rooms										
6	21	..	20	..	1	6	3,780										
							In East & West walls of main Building										
2	200	..	35	..	2	..	28,000										
							In North and South walls of main Building										
2	150	..	35	..	2	..	21,000										
							In partition walls running East and West in main Building										
7	135	..	35	..	1	6	49,612										
							In partition walls running North and South in main Building										
5	170	..	33	..	1	6	14,625										
							186,217										
							Deduct openings										
							In west Arcade										
1	200	..	15	..	2	..	6,000										
							North & South Arcade										
2	150	..	15	..	2	..	9,000										
							In Doors & Windows										
200	9	..	4	..	2	..	14,400										
							29,400										
			5,808	Cyds.			156,817	12	..	..	Cyd.				69,696	..	..
											Carried over				70,461	4	..

Estimate for terminal Station at Madras

No.	Length Ft	in	Breadth Ft	in	Thickness Ft	in	Contents	Rate Rs.	As.	p.	per	Amount Rs.	As.	p.	Total Rs.	As.	p.
							Brought forward								70,161	4	..
							Granite or Limestone Masonry in Lower Storey of Main building										
1	200	..	150	..			30,000										
							in Platforms										
2	400	..	20	..			16,000										
							in Lamps and porters rooms										
1	120	..	20	..			2,400										
							484 Sq.	25	..	..	Sq.				12,100	..	..
							Plastering (Common)										
							in side walls of platforms										
2	400	..	20				16,000										
1	120	..	20				2,400										
12	21	..	20				5,040										
2	200	..	35				14,000										
2	150	..	35				10,500										
							479 Sq:	2	8	..	..		1197	8	..		
							Plastering (fine)										
							in Partition walls running East West in Main building										
16	135	..	35	..			75,600										
							in Partition walls running North South in Main building										
12	170	..	35	..			71,400										
							1470 Sq:	6	..	..	Sq:	8820	..	..	10017	8	..
															Carried Over	92578	12

Estimate for Terminal Station at Madras.

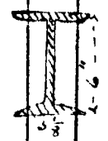
332+

	Length		Breadth		Thickness		Contents	Rate			@	Amount			Total		
No.	ft	in	ft	in	ft	in		Rs	As	p		Rs	As	p	Rs	As	p
							Brought forward								92,578	12	..
							Roofing										
							Iron Roofing over Platforms										
1	400	..	100				400 Sq	95	..	..		38,000	..	..			
							Terraced roofing (flat) over main building										
1	200	..	150	..			300 Sq	25	..	..		7.500	..	..			
							Over Lamp & Porters Rooms										
1	120	..	20				24 Sq:	25	..	..		600	..	..	46,100	..	..
							Woodwork										
							In roof of lamp and porter's rooms										
80	20	..	1			3	400 cft										
120	20	..	..	3	..	2	100										
							In flooring of upper Storey										
130	150	..	..	9	..	3	3656										
1	200	..	150	..	..	1/2	3750										
							In roof of upper Storey										
130	150	..	1	..	..	3	4875										
150	200	..	..	3	..	2	1250										
							14031	4	..	..	cft	56,124	..	..			
							Doors & Windows										
							Venetian and glass										
100	9	..	4				3,600	3	..	..	Sq ft	10,800	..	..			
							Pannelled doors										
100	9	..	4				3,600	1	8	..		5400	..	..	72,324	..	..
												Carried Over			2,11,002	12	..

Estimate for terminal Station at Madras.

3334

No.	Lengths ft	in	Breadths ft	in	Thickness ft	in	Contents	Rate Rs	as	p	per	Amount Rs	as	p	Total Rs	as	p
							Brought forward								2,11,002	12	..
			Iron work (in Columns 1'2" deep:)				cft										
40	20	..	3	8	..	1	244.4										
							52.5										
							~~44 Tons~~	200	..	..		9,800	..	..	~~9,800~~	..	..
*	In Rolled Girder						3.0										
							55.5	200	"	"					11,100		
			Whitewashing (see plastering - Common)														
							479 Sq:					119	12	-	119	12	..
			Painting with Wood Oil (Lamps and Porters Rooms)														
80	20	.	2	6			1,000										
120	20	..	..	10			2,000										
			In flooring of upper Storey														
2	200	.	150				60.000										
130	150	.	2				39.000										
			In roof of upper Storey														
130	150	..	2	6			58.500										
150	200	"	"	10			25,000										
			Doors and Windows														
400	9	..	4	..			14.400										
200	9	..	4				7,200										
							2096 Sq:	1	"	"		2096	..	..	2096	..	..
															~~2,29,018~~	~~8~~	..
												Grand Total			2,24,318	8	..
	Iron work in Rolled Girder (over Columns)																
2	400	"	"	3½	"	7/16	8.50										
* 1	400	"	"	5	"	3/8	5.20										
							13.70										
Camp:	Do						= 3 Tons										



3547

Abstract

Earthwork	Cy^{ds}	3061	"	4	"	765	4 "
Brickwork	"	5808	12	"	"	69.696	" "
Granite or Lime Stone flooring	Sq^{rs}	484	25	"	"	12.100	" "
Plastering (Common)	"	479	2	8	"	1.197	8 "
do (Fine)	"	1470	6	"	"	8.820	" "
Iron Roofing	"	400	96	"	"	38.000	" "
Terraced Roofing	"	324	25	"	"	8.100	" "
Wood Work	Cft	14031	4	"	"	56.124	" "
Doors & Windows Venetians & Glass	Sqft	3.600	3	"	"	10.800	" "
Pannelled Doors	"	3600	1	8	"	5.400	" "
Iron Work	Tons	55.5	200	"	"	11.100	" "
Whitewashing	Sq^{rs}	479	"	4	"	119	12 "
Wood oil	"	2096	1	"	"	2096	" "
		Total Rupees				224.318	8 "

Madras
14th August 1872

Fred. L. Dibdin
Chief Engineer

Estimate for the Goods Shed at the Madras Terminus

No.	Length		Breadth		Thickness		Contents	Rate			Qty		Amount		
	Ft	in	Ft	in	Ft	in		Rs	As	p			Rs	As	p
							Earthwork								
							In foundations of side walls								
2	283	6	4	"	3	"	6,804								
							In End Walls								
2	84	"	4	4	3	"	2,184								
							Platform walls (inside Shed)								
2	300	"	3	6	3	"	6,300								
							Platform walls (outside Shed)								
2	120	"	3	"	2	"	1,440								
							Filling in Platform (inside Shed)								
2	270	"	29	9	4	3	68276								
							Filling in Platform (outside Shed)								
2	120	"	29	9	1	6	10,710								
							95,714 cft								
							3,545 Cyds	4	"		Cyd		886	4	"
							Brickwork								
							In foundations								
							side walls								
2	283	6	2	8	1	6	2,268								
							End walls								
2	84	"	2	8	1	6	672								
							Platform walls (inside Shed)								
2	300	"	2	3	1	6	2,025								
							Platform walls (outside Shed)								
2	120	"	4	"	1	"	960								
							Carried over	5,925						886	4	"

Goods Shed — Madras Terminus

No	Length ft	in	Breadth ft	in	Thickness ft	in	Contents	Rate Rs	as	p	per	Amount Rs	as	p
							Brought forward					88.6	4	..
							Out Plinth							
							Side walls							
2	283	..	4	..	2	..	4,528							
							End walls							
2	84	..	4	..	2	..	1,344							
							Platform wall (inside)							
2	300	..	5	6	1	8	5,500							
							Superstructure (Side walls)							
2	283	..	17	6	1	10	18,159							
							End walls							
2	84	..	17	6	1	10	5,390							
							Gables							
4	23	6	13	3	1	10	2,283							
							Cornice							
							Side walls							
2	283	..	1	3	..	7	413							
2	84	..	1	3	..	7	123							
							Gables							
4	52	..	1	3	..	7	152							
							43,817							
							Deduct openings							
4	9	3	2	8	1	6	118							
4	10	..	4	..	2	..	320							
24	11	..	8	..	1	10	3,872							
4	13	..	10	..	1	10	953							
							5,293							
							38,524							
							Cyds	1426.8	12	..	Cyd	17,121	9	7
											Carried down	18.007	13	7

Goods Shed — Madras Terminus

No	Length ft	in	Breadth ft	in	Thickness ft	in	Contents	Rate Rs	as	p	per	Amount Rs	as	p
							Brought forward					18,007	13	7
							Woodwork							
							Bands to beneath doors							
							Side walls							
24	15.15	Cubic ft					372							
24	18.75	"					450							
							End walls — doors							
4	21.5	"					86							
							Purlins							
20	270	..	..	3	..	2	225							
							Ridge Piece							
2	27	..	..	9	..	2½	84.5							
							Boarding to roof							
4	270	..	25	6	..	½	1147.5							
							2,365	4	..	..	cft	9,460	..	..
							Wood oil to exposed Timber							
							Doors in side walls							
24	207	Area					49.85							
							Doors in End walls							
4	254.5						1018							
							Bands under Doors							
24	56.5						1356							
							Boarding to roof							
4	270	..	25	6	..	..	27,540							
							34,899	1	..	..	sq	349	..	..
							Gravelling							
							Outside Platforms							
2	120	..	32	..	..	6	3,840	..	9	6	Cyd			
							= Cyds 142							
												84	5	..
											Carried over	27.901	2	7

T2

Goods Shed — Madras Terminus 1870/72.

No	Length Ft	in	Breadth Ft	in	Thickness Ft	in	Contents	Rate Rs	as	p	per	Amount Rs	as	p
							Brought forward					27,901	2	7
							Jelly and Jar flooring Inside Platforms							
2	270	"	29	9			160.5 Sq:	6	"	"	Sq	963	"	"
							Iron Roofing							
2	270	"	50	"			270 Sq	90	"	"	Sq	24,300	"	"
							Iron work (in Columns)							
26	20	"	3	8	"	1	158.86							
							Iw rolled girder (over Columns)							
2	270	"		3 1/8		7/16	5.12							
1	270	"		5		3/8	3.52							
							167.50							
							Tons 33.5							
								200	"	"	Ton	6,700	"	"
								Grand Total				59,864	2	7

Abstract

Earthwork	Cyds	3545				
Brickwork	"	1426.8	4	"	Cyd	8864
Woodwork	Sft	2365	12	"	"	17,121 9 7
Wood oil	Sqrs	349	4	"	Sft	9,460 " "
Gravelling	Cyds	44	1	"	Sq:	349 " "
Flooring	Sqr	160.5	"	96	Sq	845 "
Iron Roofing	"	270	6	"	Sq	963 " "
Iron work	Tons	33.5	90	"	"	24,300 " "
			200	"	Ton	6,700 " "
			Total			59,864 2 7

Chief Engr

Madras
16th August 1872.

Asst Engr Dibdin
Chief Engineer

T3 I 43

Estimate for Loco Shed &c. at Attili

No	Length Ft	in	Breadth Ft	in	Thickness Ft	in	Contents	Rate Rs	as	p	per	Amount Rs	as	p	Total Rs	as	p
							Earthwork										
4	80	0	2	4	2	"	1509										
2	36	2	2	4	2	"	338										
4	16	2	2	4	2	"	302										
2	20	9	2	"	"	9	62										
1	54	"	17	"	1	6	1377										
4	8	6	8	6	x	4	433										
2	77	"	8	6	1	6	1963										
			221.6	Cyds			5984	"	4	"	Cyd	55	6	3			
							Brickwork										
4	80	0	2	4	2	"	1509										
2	36	2	2	4	2	"	338										
4	16	2	2	4	2	"	302										
4	80	5	1	11	2	"	1233										
2	36	7	1	11	2	"	280										
4	16	7	1	11	2	"	254										
2	20	9	2	"	"	9	62										
2	20	9	2	3	"	6	47										
2	20	"	1	6	"	6	30										
2	18	6	"	9	"	6	14										
2	60	"	18	3	1	6	3285										
2	17	"	18	3	1	6	931										
2	17	"	17	3	1	6	880										
4	10	"	10	3	1	6	615										
2	8	6	8	8	1	6	217										
2	7	"	1	6	1	6	315										
															55	6	3
181	11						Carried over					10,312					

Estimate for Loco: Superdt's office.

No	Length Ft	in	Breadth Ft	in	Thick or area Ft	in	Contents	Rate Rs	As	P	Amount Rs	As	P	Total Rs	As	P
	Brought forward						10312				55	6	5			
	Deduct															
14	8	"	4	"	1	6	672									
2	7	"	3	6	1	6	74									
2	4	"	3	"	1	6	36									
							782									
	353 Cyds =						9530	1	"	"	Cyd=	247	1	"	"	
	Plastering.															
4	60	"	18	3	C.		4380									
8	17	"	18	3	"	"	2482									
8	10	"	10	3	"	"	820									
4	8	6	8	6	"	"	289									
20	7	"	6	"	"		840									
							8811	2	8	"	Cy:	220	4	5		
	Whitewashing						88.11	"	4	"	"	22	"	5		
	Flat terracing (in roof)															
1	58	"	17	6	"	"	10.15	25	—	"		253	12	"		
	Sloped terracing															
2	82	6	12	3	"	"	2021									
2	20	"	12	3	"	"	490									
							25.11	12	8	"	"	313	14	"		
							Carried over					3336	5	3		

Estimate for Loco: Superdt's office

No	Length Ft	in	Breadth Ft	in	Thick or area Ft	in	Contents	Rate Rs	As	P	Amount Rs	As	P	Total Rs	As	P
	Brought forward										3336	5	3			
	Flooring (Jarrah)															
1	54	"	17	"	"	"	918									
4	8	6	8	6	"	"	289									
2	77	"	8	6	"	"	1309									
							25.16	4	"	"	Cy:	100	10	3		
	Concrete (in floor)															
1	54	"	17	"	"	6	459									
4	8	6	8	6	"	6	145									
2	77	"	8	6	"	6	654									
		46.6	Cy=				1258	4	"	"	Cy=	186	6	5		
	Teak timber															
1	19	"	1	"	"	8	12.7									
30	13	3	"	6	"	2	33.1									
30	16	6	"	6	"	2½	51.6									
2	120	"	"	6	"	4	40.0									
4	17	"	"	6	"	3	8.5									
160	13	"	"	5	"	2	144.4									
							290.3	4	"	"	Cft	1161	3	2		
	Beehive						C.ft	4920	5	"	"	100	Cft	246	"	"
	Doors & Windows															
14	8	"	4	"	"	"	448									
2	7	"	3	6	"	"	49									
2	4	"	3	"	"	"	24									
							521	2	4	"	Sq.ft	1172	4	"		
							Carried over							6202	13	1

E. Estimate for Loco: Supdt's Office

No	Description	No	Length Ft	in	Breadth Ft	in	Thick or Height Ft	in	Contents	Rate Rs	a/	Qty	Amount Rs	a/	p/	Total Rs	a/	p/
	Brought forward												6202	13	1			
14	Painting with wood oil																	
2		1	19	3	4				63									
2		30	13	3	1	4	"		530									
		30	16	6	1	5	"		701									
		2	120	"	1	8	"		400									
		4	17	"	1	6	"		102									
6		160	13	"	1	2	"		2427									
40		28	8	"	4	"	"		896									
8		4	7	"	3	6	"		98									
8		4	4	"	3	"	"		48									
4																		
20									5265	1	"	0	5210			5.6255	7	6
44																		
13																		
28																		
22																		

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Abstract

221.6 Cyds Earthwork	@	1/4	55.6.5	
353.0 " Brickwork	@	7/	2471. " "	
88.11 squares Plastering	@	2/8	220.4.5	
88.11 " Whitewashing	@	1/4	22. " .5	
10.15 " Flat terracing	@	25/	253.12.0	
25.11 " Sloped "	@	12/8	313.14. "	
46.6 Cyds Concrete (in floor)	@	4/	186. 6.5	
25.16 squares Tarring (in floor)	@	4/	100.10.3	
290.3 Cft Teak Timber	@	4/	1161.3.2	
4920 Lft Teak Beadings	@	1/5	246. " "	
521 Sup. ft Doors & windows	@	2/4	1172.4. "	
52.65 squares Painting with wood oil	@	1/	52.10.5	
			Rs 6,255 " 7. 6	

Madras
14th August 1872

Fredk Dibble
Chief Engineer

Detailed Estimate for an Engine Shed at the Madras Terminal Station.

T4

No.	Length Ft	Length Dw	Breadth Ft	Breadth Dw	Height Ft	Height Dw	Contents.	Rate Rs.	Rate a.	Rate p.	Amount Rs.	Amount a.	Amount p.
				Earthwork									
2	147	6	4	9	3	-	4,203.72						
2	27	6	4	4½	3	-	721.86						
2	13	2	3	8	3	-	289.66						
1	9	10½	3	8	3	-	108.62						
4	135	9	2	4	1	6	1,900.50						
4	3	"	2	4	1	6	42.00						
4	3	"	1	8	1	"	20.00						
2	52	-	1	7½	1	3	211.24						
1	140	-	24	"	1	"	3360.00						
						Total	10,857.60						
Total cft of Earthwork less deductions							10,332.60						
Cubic yards							382.7	"	4	-	95	10	10
				Deduction									
4	10	"	4	4½	3	-	525.00						
				Brickwork									
2	149	9	3	"	1	6	1347.75						
2	30	"	3	"	1	6	270.00						
24	4	1½	0	6¾	1	6	183.52						
2	13	6	2	3	1	6	91.12						
1	12	-	2	3	1	6	40.50						
						Total	1832.89						
				Deduction									
4	9	3	3	"	1	6	166.50						
Total cft of Footings less deductions							1666.39						
Cubic yards							61.71	12	"	-	740	8	4
2	148	3	2	3	4	3	2835.28						
2	30	"	2	3	4	3	573.75						
24	3	4½	-	4½	4	3	129.10						
2	13	6	1	6	1	6	60.75						
12111				Carried Over			3598.88				836	3	2

No.	Length Ft	Length In	Breadth Ft	Breadth In	Height Ft	Height In	Contents	Rate No.	Rate as	Rate p	Amount No.	Amount as	Amount p
				Brought forward			3598.88				83	6	3 2
1	12		1	6	1	6	27.00						
Total Cubic feet upto Plinth							3625.88						
				Deduction									
4	9	7½	2	3	4	3	368.16						
1	3	1½	2	3	1	6	10.54						
							378.70						
Total Cft upto Plinth less deduction							3247.18						
				Cubic Yards			120.26						
2	147	6	1	10½	15	"	8296.87		12	"	414	3	
2	30	"	1	10½	15	"	1687.50						
24	3	"	0	4½	15	"	405.00						
2	17	6	1	10½	9	"	590.63						
2	13	6	1	6	17	"	688.50						
1	12	"	1	6	12	9	229.50						
2	150	6	"	7	1	3	219.48						
2	35	"	"	7	1	3	51.05						
2	36	6	"	7	1	3	53.23						
Total Cft Superstructure							12221.76						
				Deduction									
19	6	6	1	10½	7	9	1794.61						
19	16.6		1	10½	"		591.37						
4	10	"	1	10½	10	6	768.75						
4	25.52	"	1	10½	"	"	191.40						
2	706	0	1	10½	"	"	26.48						
1	3	6	1	10½	5	"	32.81						
3	3	"	1	6	4	6	60.75						
Total Cft Deductions							3466.17						
Total Cft Superstructure less deductions							8755.59						
				Cubic Yards			324.28						
								12	"	"	3891	5	9
								Carried over			6170	10	10

No.	Length Ft	Length In	Breadth Ft	Breadth In	Height Ft	Height In	Contents	Rate No.	Rate as	Rate p	Amount No.	Amount as	Amount p
							Brought forward				6170	10	10
				Open Brickwork									
19	6	6	"	"	7	9	957.125						
19	16.6	"	"	"	"	"	315.40						
3	3	"	"	"	4	6	40.50						
				Total Cft open Brickwork			1313.025						
				or by 9 Inches Total Cubic Yards			36.47		6	"	218	13	1
				Engine Pits									
2	133	9	1	4	"	6	178.33						
2	3	"	1	4	"	6	4.00						
2	133	"	1	1½	2	4½	710.09						
2	3	"	1	1½	2	4½	16.03						
2	3	"	1	8	1	6	15.00						
							923.45						
				Deductions for Caulks of timber									
2	64	"	"	9	"	6	48.						
44	"	9	16	9	"	3	6.20						
							54.20						
Total cft of masonry in Engine Pits Deduct							869.25						
Do			Do		2	Do	1738.50						
				Brought to Engine Pit Cubs			64.39		12	"	772	10	11
2	52	"	"	9	1	3	97.50						
1	52	"	"	9	"	6	19.50						
1	32	"	"	9	"	3	6.00						
Total cft of Masonry in Drain							123.00						
				Cubic Yards			4.55		12	"	54	9	7
				Wood work									
1	32	"	"	5	"	11	12.22						
2	17	6	"	4	"	6	5.83						
1	8	3	"	6	"	6	2.06						
2	8	"	"	3	"	6	2.00						
Total cft of Timber in Jones							22.11						
Do				Do		13	Do 287.43						
8	143	"	"	3	"	6	143.00						
1	143	"	"	3	"	6	17.87						
12	35	"	"	2	"	4	23.33						
				Carried Over			471.63				7216	12	5

No	Length Ft	Lw	Breadth Ft	Lw	Height Ft	Lw	Contents	Rate Rs	As	P	Amount Rs	As	P
	Wood work Cont^d Brought forward						471.63				7,216	12	5
106	19	"	"	2	"	4	111.89						
64	3	"	"	4	"	4	21.30						
2	111	"	"	4	"	3	18.50						
60	5	"	"	2	"	4	16.66						
4	111	"	"	2	"	4	24.54						
168	5	3	"	1½	"	2	18.38						
8	108	"	"	6	"	½	18.00						
8	10	"	"	6	"	½	1.67						
24	3	"	"	6	"	3	9.00						
2	64	"	"	9	"	6	48.00						
	Total Cft of Woodwork						759.57						
								4	"	"	3038	4	6
	Sleepers running ft						12,000						
	Doors							5 per 100			600	"	"
4	10	"	"	"	12	6	500.						
1	3	6	"	"	6	6	22.75						
	Total Sft of Doors						522.75						
	Iron work							1	"	"	522	12	"
1	4	6	"	½	"	3	22.54						
2	3	6	"	½	"	3	35.06						
4	"	7"	x½"	Diameter			1.52						
4	Bolt heads & Ends						.65						
	Total weight in these ones Lines						59.77						
	Do		Do	13	Do		777.00						
	Tile Roofing							3	"	"	145	11	"
1	111	"	11	"	"	"	1221.						
2	151	"	16	6	"	"	4,983						
1	16	"	15	"	"	"	240						
	Total Sft Roofing						6,544						
	or Squares of Roofing						65½						
								9	"	"	589	8	"
	Carried Over										12,112	15	11

Engine Shed

3127

	Brought forward				12,112	15 11
Wood oil to all Exposed Timber		6433.8				
Total Squares of wood oil		64½	1	" "	64	8 "
Flooring						
140	20 4 "	2,846.66				
	Squares of flooring	28½	12	" "	342	" "
			Total		12,519	7 11

Abstract

Description	Quantity		Rate Rs	As	P	Amount Rs	As	P
Earthwork	Cy^ds	382.7	"	4	"	95	10	10
Brickwork	"	575.19	12	"	"	6,902	4	6
Open Brickwork	"	36.47	6	"	"	218	13	1
Wood work	C^ft	759.57	4	"	"	3,038	4	6
Sleepers	L^ft	12,000.	per 100	5	"	600	"	"
Doors	S^ft	522.75	1	"	"	522	12	"
Iron works	lb	777.	"	3	"	145	11	"
Tile Roofing	Squares	65.5	9	"	"	589	8	"
Wood oil	"	64.5	1	"	"	64	8	"
Flooring	"	28.5	12	"	"	342	"	"
			Total Rs			12,519	7	11

Madras
14th August

Fredk Dobbs
Chief Engineer

Detail Estimate for Carriage Shed in the Madras Terminal Station. Carnatic Railway Co's L.d

No.	Length Ft	Length In	Breadth Ft	Breadth In	Height Ft	Height In	Contents	Rate Rs	As	P	Amount Rs	As	P	Totals Rs	As	P
			Earthwork													
2	225	"	4	6	3	4½	6,834									
32	4	1½	4	6	0	4½	223									
2	29	"	4	6	3	"	783									
1	39	"	2	7½	3	"	307									
1	220	"	30	"	1	"	6,600									
			C. Yards 546.2 =				14,747	"	4	"	Cyd	136	8	10		
			Brickwork													
2	225	"	3	4½	"	6	759									
2	224	6	3	"	"	6	674									
2	224	"	2	7½	"	6	588									
32	4	"	"	4½	"	6	24									
32	3	9	"	4½	"	6	23									
32	3	4½	"	4½	"	6	20									
2	29	"	3	"	"	6	187									
2	29	3	2	7½	"	6	77									
2	29	7½	2	3	"	6	67									
2	224	"	2	3	4	"	40.32									
2	223	9	1	10½	13	9	11,537									
32	3	"	"	4½	17	9	639									
2	30	"	1	10½	17	9	1997									
1	33	9	1	10½	10	"	633									
2	13	6	2	7½	"	6	35									
2	13	6	2	3	"	6	30									
2	13	6	1	10½	"	6	25									
1	10	10½	2	7½	"	6	14									
1	11	3	2	3	"	6	13									
1	11	7½	1	10½	"	6	11									
2	13	6	1	6	15	"	608									
1	12	"	1	6	11	"	198									
			Carried over				22,091				Carried over			136	8	10

Carriage Shed Madras Terminal Station

No.	Lengths Ft	In	Breadths Ft	In	Height Ft	In	Contents	Rate Rs	As	P	Amount Rs	As	P	Totals Rs	As	P
	Brought forward						2,2091	Brought forward						136	8	10
	Deduction															
4	9	7½	1	10½	2	6	180									
4	10	"	1	10	7	9	568									
30	6	6	1	10½	7	9	2834									
4	25.52 area		1	10½	"	"	191									
30	16.6		1	10½	"	"	934									
1	5	"	1	10½	3	6	33									
3	3	"	1	6	4	6	61									
2	7.06		1	10½	"	"	26									
							4.827									
	Cy: 15639¼ =						17.264	12	"	"	Cyds 7672	12	10			
	Open Brickwork															
30	6 area 6		7	9	"	9	1133									
30	16.6		"	"	"	9	374									
3	3	"	4	6	"	9	30									
	Cyards 56.9 =						1537	6	"	"	"	311	6	5		
	Woodwork in Truss															
1	32	"	"	11	"	5	12.2									
2	17	6	"	6	"	4	5.8									
1	8	3	"	6	"	6	2.0									
2	8	"	"	6	"	3	2.0									
	In each Truss						22.0									
							X 21.0									
	In 21 Trusses =						462.0									

Carried over

Carriage Shed Madras Terminal Station

No.	Lengths Ft	In	Breadths Ft	In	Thickness Ft	In	Contents	Rate Rs	As	P	Amount Rs	As	P	Totals Rs	As	P
								Brought forward						14,941	4	"
	Tile Roofing															
1	210	"	11	"	"	"	2,310									
2	225	"	16	6	"	"	7,425									
1	16	"	15	"	"	"	240									
					Sq: 100 =		9,975	9	"	"	Rs 900	"	"			
	Flooring															
1	220	"	30	"	"	"	6,600									
					Sqbs =		66.00	12	"	"	"	792	"	"		
	Wood Work															
8	10	"	12	6	"	"	1,000									
2	3	6	6	6	"	"	46									
21	151.04	area					3.172									
9	221	6	1	6	"	"	2.990									
430	19	"	1	"	"	"	8.170									
12	35	"	1	"	"	"	420									
104	3	"	1	4	"	"	416									
2	210	"	1	2	"	"	490									
104	5	"	1	"	"	"	520									
4	210	"	1	"	"	"	840									
416	5	3	"	7	"	"	1274									
					Sqrs: 193 =		19,338	1	"	"	Rs 193	"	"	1,885	"	"
														Total Rupees		16,826	4	"

Carriage Shed Madras Terminal Station.

No.	Length Ft	In	Breadth Ft	In	Height Ft	In	Contents	Rate Rs	As	P	Unit	Amount Rs	As	P	Total Rs	As	P
							Woodwork (Continued)										
							462.0					Brought forward			8150	12	1
9	221	6	"	6	"	3	249.2										
430	19	"	"	2	"	4	453.9										
12	35	"	"	2	"	4	23.3										
104	3	"	"	4	"	4	34.7										
2	210	"	"	4	"	3	35.0										
104	5	"	"	4	"	2	28.9										
4	210	"	"	4	"	2	46.7										
416	5	3	"	2	"	12	45.5										
42	3	"	"	6	"	3	15.8										
							Cft	1,395.0	4	"	Cft	5,580	"	"			
							Reepers										
40	220	"	"	"	"	"	8,800										
18	13	6	"	"	"	"	243										
							Lft	9,043	5	"	100 ft	452	2	5			
							Doors										
4	10	"	12	6	"	"	500										
1	3	6	6	6			23										
							Sup. ft	523	1	"	ft	523	"	"			
							Iron work										
1	4	6	"	½	"	3	22.54										
2	3	6	"	½	"	3	35.06										
4	"	7	"	½	dia		1.52										
4	Heads & Nuts						.65										
	Iron work in one Truss						59.77										
	In 21 Trusses						lbs 1255.17	"	3	"	lbs	235	5	6	6790	7	
												Carried Over			14,941	4	

Abstract

345X

No.	Length Ft	In	Breadth Ft	In	Height Ft	In	Contents	Rate Rs	As	P	Unit	Amount Rs	As	P	Total Rs	As	P
	Earthwork				Cyds:		516.2	"	4	"	Cyd	136	8	10			
	Brickwork				"		639.4	12	"	"	"	7672	12	10			
	Open D°				"		56.9	6	"	"		341	6	5			
	Woodwork				Cft		1,395	4	"	"		5580	"	"			
	Reepers				Lft		9043	5	"	"	100 ft	452	2	5			
	Doors				Sft		523	1	"	"	Sft	523	"	"			
	Iron work				lbs		1255.17	"	3	"	lb	235	5	6			
	Tile Roofing				Sqrs		100	9	"	"	Sqr	900	"	"			
	Flooring				"		66	12	"	"	"	792	"	"			
	Woodwork				"		193	1	"	"	"	193	"	"			
												Total Rupees			16,826	4	"

Madras
14th August 1872

Fredk. Dobbs
Chief Engineer

(1) T6

Estimate for Coal Store house at Madras Terminus

No.	Length Ft	in	Breadth Ft	in	Height Ft	in	Contents	Rate Rs	a	p	Qty	Amount Rs	a	p
												3167		
	Earthwork													
2	112	6	4	"	3	"	2700							
2	27	6	4	"	3	"	660							
40	3	3	4	"	3	"	1560							
8	4	4	4	5	3	"	459							
8	2	10	2	11	1	6	99							
							5478							
							Cyds 203	"	4	0	Cyds	50	12	0
	Brickwork													
	Footings													
2	109	"	2	8	1	6	872							
2	29	3	2	8	1	6	234							
40	3	3	2	8	1	6	520							
8	3	"	3	"	1	6	108							
	Plinth													
2	107	6	1	11	3	6	1442							
2	29	8	1	11	3	6	398							
	Superstructure													
2	107	6	13	6	1	6	4354							
2	30	"	13	6	1	6	1215							
40	Contents 36.56						1462							
	Pillars													
8	14	"	2	3	2	3	567							
	Parapet wall													
2	106	"	2	"	1	2	495							
2	30	"	2	"	1	2	140							
	Cornice													
2	107	6	1	"	"	5	90							
2	33	"	1	"	"	5	27							
							Carried over 11924					50	12	"

No	Length Ft	in	Breadth Ft	in	Height Ft	in	Contents	Rate Rs	a/	Sft	Amount Rs	a/	Sft
							Brought forward 11.924						
							Horizontal Flues						
2	24	"	1	3	"	9	45						
1	"	9	1	3	"	9	1						
1	8	"	"	9	"	3	1						
	8	6	"	9	"	3	2						
							Pillars						
8	1	11	1	11	1	"							
8	4	6	1	6	1	6	81						
							Deduct						
							12083cft						
4	9	6	7	6	1	6	428						
4	area 4.92				1	6	30						
4	10	6	7	6	1	6	133						
18	7	6	3	"	1	6	472						
8	14	"	"	9	"	9	63						
							1734cft						
							10349 .						
Honey Comb Work = Cyd^{rs}							383.3	12	"	"	Cyd^{rs}	4599	9
1506 sqft × 9" thick =							1130cft						
							Cyd^{rs}	41.9	6	"	"	251	6
Terracing													
100	"	30	"										
							Wood Work	305sqft	25	"	Sq	750	"
2	101	6	"	9¾	1	1¾	188.99						
24	32	"	"	3	"	5¾	322.00						
4	3	"	"	9	"	4½	3.37						
10	2	3	2	3	"	4½	18.97						
							Carried over	533.33					
												5651	12

							Brought forward	533.33				5651	12	"
2	101	"	"	6	"	3		25.25						
1	80	"	"	4½	"	6		15.00						
4	9	"	"	4½	"	6		6.75						
1	640	"	"	9	"	2		80.00						
4	Contents 11.2							22.40						
								682.75sft	4	"	" Cft	2730	14	9
							Wood cil & Prepared Timber							
2	100	"	3	"	"	"		600.						
84	30	"	1	2½	"	"		3045						
1	80	"	1	4½	"	"		110						
4	9	"	1	4½	"	"		49.5						
1	640	"	1	10½	"	"		1200.						
4	area 345	"	"	"	"	"		1380.						
								6384.5						
							Square Yds		1	"	" Sq	64	"	"
								Total				8446	10	9

To Madras Terminus
Coal Store house

E.W. 1470/73

		Contents	Rate			Amount		
			R	a	p	R	a	p
Abstract								
Earthwork	Cyds	203	"	4	"	50	12	
Brickwork	"	383.3	12	"	"	4599	9	
Honey Comb work	"	41.9	6	"	"	251	6	
Terracing	Sqrs	30.	25	"	"	750	"	
Wood Work	Cft	682.73	4	"	Cft	2730	14	
Wood ork	Sqrs	64	1	"	Sq	64	"	
					Total	8446	9	

Madras
14th August 1872

Fred. Drobles
Chief Engineer

12411
23
60

A T 7

Estimate for Engine & Carriage Shed

No.	Length ft	Length in	Breadth ft	Breadth in	Thickness ft	Thickness in	Contents	Rate Rs	Rate as	Rate p	£	Amount R	Amount a	Amount p	Total R	Total a	Total p
					Earthwork												
4	305	"	7	4	5	"	44733										
1	315	"	30	"	8	6	80325										
4	45	"	7	4	5	"	6600										
48	5	"	5	"	5	"	6000										
	5098.4 Cyds						137658	"	4	"	Cyd	1274	9	7			
					Brickwork												
4	303	"	4	10	5	"	29290										
2	123	"	4	10	5	"	5945										
2	310	"	5	"	2	"	6200										
*46	40	"	10	sq.	ft	Sect.	18400										
2	300	"	2	4	2	"	2800										
4	44	"	2	4	2	"	821										
48	3 6		3	6	5	"	2910										
2	300	"	28	"	1	11	32200										
2	116	"	28	"	1	11	12451										
6	20	"	10	"	1	6	1800										
							112847										
					Deduct openings												
2	27	"	25	"	1	11	2588										
2	20	"	12	6	1	2	583										
12	20	"	7	6	1	2	2100										
44	20	"	7	6	1	2	7700										
							12971										
	3699.1 Cyds =						99876								44389	3	2
							Carried Over								45663	12	9

12411
23
60

A Estimate for Engine & Carriage Shed

No.	Length Ft	in	Breadth Ft	in	Thickness Ft	in	Contents	Rate Rs	a	p	Amount Rs	a	p	Total Rs	a	p
							Brought forward				76666	8	4			
							Plastering.									
2	300	"	30				18000									
2	120	"	30				7200									
3	40	"	10				1200									
							26400	2	8	"	89	660	"	"		
							Whitewashing									
2	300	"	30				18000									
2	120	"	30				7200									
3	40	"	10				1200									
							26400	"	1/4	"	"	66	"	"		
							Corrugated iron roofing									
6	300	"	22				39600									
6	300	"	5	6			9900									
							49500	90	"	"	"	44550	"	"		
							Painting (pillars)									
48	30	"	3	8			5280									
4	12	"	2	6			120									
							(Girders)									
2	40	"	3	6			280									
							5680	2	"	"	89	113	9	7	122056	1	11

No.	Length Ft	in	Breadth Ft	in	Thickness Ft	in	Contents	Rate Rs	a	p	Amount Rs	a	p	Total Rs	a	p
							Brought forward				45663	12	9			
							Concrete									
1	310	"	28	"	3	6	30380									
1	305	"	20	"	3	"	18300									
							Iw floor									
1	296	"	43	"	"	6	6361									
							2038.7 Cyds									
							Jar and Sand (iw flooring double Coat)									
1	296	"	43				12728	1/4	"	"	8151	12	10			
							Cast iron (in columns)									
48	30	"	3	8												
4	12	"	2	6			4440	1-2" dia								
							90 Tons =	1	10							
								450	@1200	"	"	Ton	18000	"	"	
							Rolled Iron (in girders for overhead traverser									
							Iw webs									
2	40	"	"	11	"	1/2	3.06									
							Iw flanges									
4	40	"	"	5	"	1/2	2.77									
							1.25 Tons =									
								5.83	200	"	"	Ton	350	"	"	
							Teak Timber									
							Iw sills over cesspits									
92	40	"	"	8	"	5	1022.2	1/4	"	"	Cft	4088	12	10			
							Carried Over							76666	8	1/4

only half the whole surface to be floored

A

Abstract

5098.4	Cyds	Earthwork	@	1/4	1274	9 7
3699.1	"	Brickwork	@	12/	44389	3 2
2038.7	"	Concrete	@	4/	8154	12 10
127.28	Squares	Tarring (floor)	@	4/	509	1 11
90.	Tons	Cast iron Pier Columns	@	200/	18000	" "
1.25	"	Rolled iron girders	@	200/	250	" "
1022.2	Cft	Teak Timber	@	4/	4088	12 10
264.	Squares	Plastering	@	2/8	660	" "
264.	"	white washing	@	1/4	66	" "
295.	"	Iron roofing	@	90/	44550	" "
56.8	"	Painting	@	2/	113	9 7
				Rs.	122056	1 11

Madras
14th August 1872

Fredk. Dibble
Chief Engineer.

No 78

Estimate for Shed for wood cutting and Sawing

No.	Length Ft	In	Breadth Ft	In	Height Ft	In	Cubic Contents	Rate Rs	a	p	per	Amount Rs	a	p	Total Rs	a	p
							Earthwork										
3	305	.	7	11	6	.	23650								350		
1	31	.	7	4	5	.	2647										
			411 Cyds =				26297	-	1	-	Cyd	352	12	-			
							Brickwork										
3	302	6	1	10	5	-	2191										
1	24	.	4	10	5	.	3287										
24	3	6	3	6	5	.	11470										
2	300	.	2	4	2	-	2800										
2	75	11	2	4	2	-	703										
2	300	.	25	.	1	11	29750										
2	76	.	25	.	1	11	7283										
4	20	.	10	"	1	6	1200										
							67424										
			Sedrat openings														
1	20	.	20	.	1	11	3067										
2	20	.	12	6	1	11	958										
114	20	.	7	6	1	2	7700										
							11725										
			2062.9 Cyds =				55699	12	-	-	"	24754	12	10			
							Concrete (floor)										
2	296	-	76	-	-	6	22496										
							833.2	4	-	-	"	3332	12	10			
			Tarring (floor)														
2	296	-	76	-	-	-	44992	1	-	-		1799	10	11			
												30286	-	7			

No.	Length Ft	Length In	Breadth Ft	Breadth In	Thickness Ft	Thickness In	Contents	Rate Rs	Rate a	Rate p	per	Amount Rs	Amount a	Amount p	Total Rs	Total a	Total p
							Brought forward					30240	-	-			
			Cast Iron in Columns 1st & 2nd dia														
24	27	-	3	8	"	1	198										
			39.6 Tons					200	-	-	Ton	7920	-	-			
			Bracketing														
2	300	-	27				16200										
2	76	-	27				4104										
			203	Sq			20304	2	8	-	Sq	507	8	-			
			Whitewashing														
2	300	-	27				16200										
2	76	-	27				4104										
			203	Sq			20304	-	1	-	Sq	50	12	-			
			Painting Columns														
24	27	-	3	8			2376	2	-	-		47	8	4			
			Corrugated Iron roofing														
4	300	-	26	-			312.00	91	-	-		28080	-	-			
															66845	12	11

B

Abstract

1411.0	Cyds	Earthwork	@	1/4	352	12	-
2062.9	"	Brickwork	"	12/	24752	12	10
833.2	"	Concrete	"	4/	3332	12	10
449.92	Sqrs	Tarring (floor)	"	4/	799	10	11
39.6	Tons	Cast Iron (Columns)		200/	7920	-	-
203.0	Sqrs	Bracketing	"	2/8	507	8	-
203.0	"	Whitewashing	"	1/4	50	12	-
23.76	"	Painting	"	2/	47	8	4
312.0	"	Gron. roofing	"	90/	28080	-	-
				Rs	66845	12	11

Madras
14th August 1872

Fredk Dobbs
Chief Engineer

Estimate for Filling Shop

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No.	Length ft	Length in	Breadth ft	Breadth in	Thickness ft	Thickness in	Contents	Rate Rs	Rate a	Rate p	Js	Amount Rs	Amount a	Amount p	Total Rs	Total a	Total p
							Earthwork										
2	105	-	7	4	5	-	7700										
4	31	-	7	4	5	-	4547										
7	5	-	5	-	5	-	875										
			486 C/yds				13122	-	4	-	C/yd	121	8	-			
			Brickwork														
2	102	6	4	10	5	-	4954										
4	34	-	4	10	5	-	3287										
7	3	6	3	6	5	-	429										
2	100	-	2	4	2	-	933										
2	76	4	2	4	2	-	703										
2	100	-	25	-	1	11	9583										
2	76	"	25	-	1	11	7283										
4	20	-	10	-	1	6	1200										
							28372										
			Radial openings														
4	20	-	10	-	1	11	1533										
8	20	-	6	"	1	11	983										
14	20	-	7	6	1	2	2450										
							4916										
			868 ½ C/yds				23456	12	-	-	-	10424	6	5			
								Carried over				10424	6	5			

No.	Lengths Ft	In	Breadths Ft	In	Thickness Ft	In	Contents	Rate Rs	a	p	per	Amount Rs	a	p	Sub. C Rs	a	p
							Brought forward					10545	14	5			
	Concrete (floor)																
1	96	-	76	-	-	6	3648										
			115 Cyds					4	-	-	Cyd	540	-	-			
	Flooring (floor)																
1	96	-	76	-			7296	4	-	-	Sq	291	13	5			
	Cast Iron Cln. 1'-2" dia																
7	27	-	3	8	-	1	57.75										
			11.55	Tons				200	-	-	Ton	2310	-	-			
	Plastering																
2	96	-	27	-			5184										
2	76	-	27	-			4104										
							9288	2	8	-	Sq	232	3	2			
	Whitewashing																
							9288	-	4	-		23	3	6			
	Painting Colms																
7	27	-	3	8			693	2	-	-		13	13	9			
	Corrugated Iron roofing																
4	100	-	26	-			10400	90	-	-		9360	-	-			
	Teak panelled doors																
4	10	-	10				400	1	8	-	Sq ft	600	-	-			
															23,977	-	3

Abstract

186.0	Cyds	Earthwork	@	14	121	8 -
868.7	"	Brickwork	"	12/	10424	6 5
135.0	"	Concrete	"	4/	540	- -
72.96	Squares	Flooring (floor)	"	4/	291	13 5
11.55	Tons	Cast Iron Columns	"	200/	2310	- -
92.88	Squares	Plastering	"	2/8	232	3 2
92.88	"	Whitewashing	"	1/4	23	3 6
6.93	"	Painting	"	2/		13 13 9
1011.0	"	Iron roofing	"	90/	9360	- -
400.0	Sft	Panelled Teak doors		1/8	600	- -
					Rs.	23,977 - 3

Madras
14th August 1872

Fredk Dibdin
Chief Engineer

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3548

Estimate for Smithy.

No.	Length ft	in	Breadth ft	in	Thickness ft	in	Contents	Rate £	s	d	per	Amount £	s	d	Total £	s	d
							Carpenters Work										
2	120	-	7	4	5	-	9167										
2	50	-	7	4	5	-	3667										
	470.3 Cyds						12834	-	4	-	Cyd	115	6	2			
							Brickwork										
2	122	6	4	10	5	-	5921										
2	52	-	4	10	5	-	2573										
2	120	-	2	4	2	-	1120										
2	60	-	2	4	2	-	560										
2	120	-	20	-	1	11	9200										
2	60	-	20	-	1	11	4600										
2	30	-	15	-	1	6	1350										
							25264										
							Arches Openings										
2	20	-	20	-	1	11	1533										
20	18	-	7	6	1	2	3150										
							4683										
	762.2 Cyds						20581	12	-	-	-	9246	6	5			
							Planking										
2	116	-	22	-			5104										
2	56	-	22	-			2464										
							7568	2	8	-	Sq	189	3	2			
	Whitewashing						7568	-	4	-	-	18	4	9			
							Corrugated Iron roof										
2	120	-	30	-			9600	105	-	-	-	10080	-	-	19553	5	6

Abstract

476.3 Cyds Earthwork	@	1/4	118-15-2
762.2 " Brickwork	"	15/	914-6-6
75.68 Superc Plastering	"	2/8	18-9-2
75.68 " Whitewashing	"	1/4	18-14-9
96 Superd Iron paving	"	10 5/	11,080-"-"
		Rs	13,456-8-4

Madras
14th August 1872

Fredk Orlebar
Chief Engineer

Estimate for Loco: Stores building

No.	Length Ft	Length in	Breadth Ft	Breadth in	Thickness Ft	Thickness in	Contents	Rate R	Rate as	Rate p	per	Amount Rs	Amount a	Amount p	Total Rs	Total as	Total p
				Earthwork													
2	85	"	6	7	3	"	3358										
2	30	"	6	7	3	"	1185										
14	3	"	3	"	3	"	378										
1	75	"	34	7	1	"	2594										
1	107	"	30	"	1	6	4815										
1	40	"	30	"	1	6	1800										
	523.3	Cyds	=				14,130	"	4	"	Cyd	130	13	2			
				Brickwork													
2	81	"	4	4	4	6	3159										
2	32	3	4	4	4	6	1258										
11	2	"	2	"	4	6	252										
2	80	3	2	4	2	"	749										
4	11	5	2	4	2	"	213										
2	80	"	23	"	1	11	7053										
2	35	"	23	"	1	11	3086										
1	42	"	10	6	2	1	919										
							16,689										
				Deduct openings													
16	9	"	4	"	1	11	1104										
16	11	"	3	6	1	11	1129										
2	11	10	8	6	1	11	386										
2	11	10	4	6	1	11	204										
							2123										
	539.5	Cyds	=				14,566	12	"	"	"	6472	"	"			
											Carried over				6601	13	2

No.	Length Ft	Length in	Breadth Ft	Breadth in	Thickness Ft	Thickness in	Contents	Rate Rs	Rate as	Rate p	£	Amount Rs	Amount as	Amount p	Total Rs	Total as	Total p
							Brought forward					6604	13	2			
							Cast Iron Columns:										
12	12	"	1	8	"	3/4	2592.0										
2	5	3	1	5/3	"	1/2	109.2										
		3.14	Tons				2701.2	200	"	"	Ton	625	"	"			
			Teak Timber in Gallery														
112	12	"	"	10	"	3	280										
2	40	"	1	3	"	10	83.3										
2	13	6	1	3	"	10	28.1										
1	18	"	1	3	"	10	18.8										
2	40	"	1	6	"	3	30										
2	13	6	1	6	"	3	10.1										
1	18	"	1	6	"	3	6.8										
			Planking														
1	75	4	35	"	"	2	4390										
							896.5										
			Deduct														
1	40	"	11	"	"	2	73.3										
1	17	"	9	3	"	2	26.2										
1	11	10	4	9	"	2	9.4										
							108.9										
							cft 787.6	4	"	"	cft	3150	6	5			
			Stairs														
			Treads				25	10	"	"	tread	250					
							Carried over					10633	3	7			

No.	Length Ft	Length in	Breadth Ft	Breadth in	Thickness Ft	Thickness in	Contents	Rate Rs	Rate as	Rate p	£	Amount Rs	Amount as	Amount p	Total Rs	Total as	Total p
							Brought forward					10633	3	7			
							Flooring										
							Carpets										
1	75	4	35	"	"	6	1318										
							Cyds 118.8	4	"	"	Cyd	195	3	2			
							Sur and Sand										
1	75	4	35	"			2636	4	"	"	sq	105	7	"			
							Doors and Windows										
							Double Doors (Venetian & glass)										
16	9	"	4	"			576	3	"	"	Sp: ft	1728	"	"			
							Glazed Shutters										
16	2	"	3	6	"	"	224										
2	11	10	4	6			106.5										
							330.5	1	4	"	Sp: ft	413	2	"			
							Batten doors										
2	11	10	10	"			236.7	1	8	"	"	355	"	10			
							Plastering										
2	75	4	25				376.7										
2	35	"	25				1750										
1	35	"	9				315										
							5832	2	8	"	sq	1165	12	10			
							White washing										
2	75	4	25	"			3767										
2	35	"	25	"			1750										
1	35	"	9	"			315										
							5832	"	4	"	"	14	9	3			
															13500	6	8

No	Length ft	Length in	Breadth ft	Breadth in	Heights ft	Heights in	Contents	Rate Rs	Rate a	Rate p	£	Amount Rs.	Amount a	Amount p	Total Rs	Total a	Total p
							Brought forward					13390	6	8			
							Painting with wood oil										
62	9	"	1				2301										
16	1	"	3	6			221										
2	11	10	1	6			106										
2	11	10	10	"			237										
			Painting of Gallery														
2	73	1	35	"			5273										
			Sisis														
112	12	"	2	2			2912										
2	52	6	1	2			138										
2	13	6	1	2			112										
1	18	"	1	2			75										
2	52	6	3	6			368										
2	13	6	3	6			94										
1	18	"	3	6			63										
			Iron Stairs														
3	50	"	1				600										
							12806										
			Deduct														
2	52	6	11				1155.0										
2	17	"	9	3			314.5										
2	11	10	1	9			112.5										
							1582.										
							112.24	1	"	"	9/	112	3	10			
			Iron roofing														
2	74	6	22	"			32.78	90	"	"	"	2950	3	2			
											Rs	16652	13	8			

E

357

Abstract

523.3 Cyds Earthwork	@	1/4	130	13 2
539.5 " Brickwork	@	12/	6474	" "
3.14 Tons Cast Iron Columns	@	200/	628	" "
787.6 Cft Teak Timber	@	4/	3150	6 5
25 Treads Risers	@	10/	250	" "
48.8 Cyds Concrete (in floor)	@	4/	195	3 2
26.36 Squares Jarring (in floor)	@	4/	105	7 "
576. Sft Double doors (sawe= =tim & glass)	@	3/	1728	" "
330.5 Sft Glazed shutters	@	1/4	413	2 "
236.7 " Batten doors	@	1/8	355	" 10
58.32 Squares Flooring	@	2/8	145	12 10
58.32 " Whitewashing	@	1/4	14	9 3
112.24 " Painting with wood oil	@	1/	112	3 10
32.78 " Iron roofing	@	90/	2950	3 2
			Rs 16,652	13 8

Madras
14th August 1872

Fredk Dickens
Asst Engineer

Estimate for Boiler Shop.

No	Length	Breadth	Thickness or Contents	Rate			Amount			Total		
	ft	in	ft	in	ft	in		Rs	as	P	Rs	as	P
							Earthwork						
2	65	"	74		5	"	4767						
2	30	"	74		5	"	2200						
	258	Cyds	=				6967	" 4	"	Cyd"	64	8	"
							Brickwork						
2	62	6	4		10	5	" 3021						
2	32	"	4		10	5	" 1547						
2	60	"	2		4	2	" 560						
2	40	"	2		4	2	" 373						
2	60	"	20	"	1	11	4600						
2	40	"	20	"	1	11	3067						
2	20	"	10	"	1	6	600						
							13768						
							Reduced openings						
4	20	"	12	6	1	11	1917						
10	18	"	7	6	1	2	1575						
							3492						
	380.6						10276	12	"	"	4567	3	2
							Plastering						
2	56	"	22	"	"	"	2464						
2	36	"	22	"	"	"	1584						
							40.48	2 8	"	Sq:	101	3	2
	Whitewashing						40.48	" 4	"	"	10	1	11
							Corrugated Iron roof						
2	60	"	22	"	"	"	2640	90	"	"	2376	"	" 7119	"	3

7

Abstract

258.2	Cyds	Earthwork @	1/4	64.8. "
380.6	"	Brickwork @	12/	4567.3.2
40.48	Squares	Plastering @	2/8	101.3.2
40.48	"	Whitewashing @	1/4	10.1.11
26.40	"	Iron Roofing @	90/	2376. " "
			Rs	7119. " "3

Madras
14th August 1872

Fred W Dobbs
Offg Engineer

Estimate for Boiler seat and Tank B.

No	Length ft	in	Breadth ft	in	Thickness or mean ft	in	Contents	Rate Rs	as	A	per	Amount Rs	as	P	Total Rs	as	P
							Earthwork										
1	45	"	26	"	5	"	5850										
1	15	"	12	"	5	"	938										
	257.4	Cyds					6788	"	4	"	Cyd	62	13	7			
							Concrete										
1	45	"	26	"	2	"	2340										
1	15	"	12	"	3	"	563										
2	37	"	6	"	4	"	1998										
	181.5	Cyds					4901	4	"	"	"	726	"	"			
							Brickwork										
1	40	"	21	"	2	"	1680										
2	40	"	4	"	2	"	640										
2	40	"	3	"	20	"	5600										
1	36	"	13	"	2	"	936										
1	36	"	14	"	3	"	1512										
2	22	"	14	"	2	"	1232										
1	77	"	7	"	7	"	3773										
							15373										
							Deduct										
1	75	"	2	"	2	"	300										
2	7	"	3	"	2	"	98										
							398										
	554.6	Cyds					14975	12	"	"	"	6655	3	2			
							Asphalte										
1	37	"	18	"	"	"	666										
2	37	"	4	"	"	"	296										
2	18	"	4	"	"	"	144										
							1106	25	"	"	Sq	276	"	7	72089		

G.

Abstract

251.4 Cyds. Earthwork @	1/4	62.13.7	
181.5 " Concrete @	4/	726.-	
534.6 " Brickwork @	12/	6.55.3.2	
11.06 squares Asphalte @	25/	276.8.-	
		Rs 7.720.8.9	

Madras
14th August 1872

Fredk Dobbs
Chief Engineer

H.

I

Estimate for wells

No	Length	Breadth	Thickness	Contents	Rate		Amount		Total		
	Ft	ins	Ft	in	Ft	in		Rs	As	P	Rs As P
							In each well				
							Earthwork				
20	7	6	7	6	3½	"	3536				
						Cyds	131	1	-	-	Cyds 131 - -
							Brickwork				
20	7	6	7	6	3½	"	3536				
							Deduct				
20	6	"	6	-	3½	"	2263				
				47.1	Cyds	=	1273	12	-	-	" 565 3 2
							Timber Curb				
3½	13	6	1	6	"	6	32	2	-	-	Cyds 64 - -
							Wrought Iron				
							Collar for Curb				
147	"	"	6	"	¼		846				
							Hook bolts				
							Washers				
143	"	"	4	"	⅝		1290				
							Tie rods				
8	11	"	"	1	"	1	1056				
				893.76	lbs		3192	" 3	"	lbs	1679 9 27 125
							In 3 Wells				Rs 2783 5 3

3 DK

G.

Abstract

251.4 Cyds. Earthwork @	1/4	62.13.7	
181.5 " Concrete @	4/	726.-	
534.6 " Brickwork @	12/	6.55.3.2	
11.06 squares Asphalte @	25/	276.8.-	
		Rs 7.720.8.9	

Madras
14th August 1872

Fredk Dobbs
Chief Engineer

H.

I

Estimate for wells

No	Length	Breadth	Thickness	Contents	Rate		Amount		Total		
	Ft	ins	Ft	in	Ft	in		Rs	As	P	Rs As P
							In each well				
							Earthwork				
20	7	6	7	6	3½	"	3536				
						Cyds	131	1	-	-	Cyds 131 - -
							Brickwork				
20	7	6	7	6	3½	"	3536				
							Deduct				
20	6	"	6	-	3½	"	2263				
				47.1	Cyds	=	1273	12	-	-	" 565 3 2
							Timber Curb				
3½	13	6	1	6	"	6	32	2	-	-	Cyds 64 - -
							Wrought Iron				
							Collar for Curb				
147	"	"	6	"	¼		846				
							Hook bolts				
							Washers				
143	"	"	4	"	⅝		1290				
							Tie rods				
8	11	"	"	1	"	1	1056				
				893.76	lbs		3192	" 3	"	lbs	1679 9 27 125
							In 3 Wells				Rs 2783 5 3

3 DK

Loco: Workshops

Estimate for Compound wall and Gates &c.

No.	Length Ft	In.	Breadth & Height Ft	In.	Ft	In.	Contents	Rate Rs	a	p	Ft	Amount Rs	a	p	Total Rs	a	p
			Earthwork														
1	4350	-	1	4	1	-	5800										
							215	-	4	-	Cyd	53	12	-			
			Cyds														
			Concrete Walling														
1			1	4			1.34										
1	1	-					7.00										
1	1		7	-			0.45										
1	1	4	-	4			0.45										
1		8	-	8			9.24										
							9¼ nearly										
	Imp: Area =						40237										
	4350 × 9¼						1490	4	-	-	"	5960	-	-	6013	12	-
			Cyds														
			Gates														
2	24 feet gates 8 ft high boarded							250	-	-	Pair	500	-	-			
1	12 feet gate 8 ft high boarded							125	-	-	@	125	-	-	625	-	-
	Metalling in road from gate to Loco: Superintendant's Office																
1	500	-	12	-	6		3000										
			Cyds				111.1	-	9	-	Cyd	62	7	11	62	7	11

Abstract

393. Cyds Earthwork	@	1/	393-4-0
1745.3 " Brickwork	@	12/	1695-9-6
96 Cft Country wood	@	2/	192-0-0
2681.28 lbs Iron work	@	1/3	502-11-9
		Rs	2,783-5-3

Madras
14th August 1872

Fredk Dibdin
Chief Engineer

N

Abstract

215.0 Cyds Earthwork	@	/4	63-12-0
1490.0 " Concrete	"	/4/	5960-0-0
		Rs	6013-12-0
2-24 ft Gates	@	250/	500-0-0
1-12 " do	"	125/	125-0-0
		Rs	625-0-0
111.1 Cyds Metalling	@	/9	Rs 62-7-11

Madras
14th August 1872

Fredk Dibdin
Chief Engineer

T/5

Estimate for Temporary Workshop (Chief Engineer)

No	Length Ft	In	Breadth Ft	In	Height Ft	In	Quantity	Rate Rs	As	Amount Rs	As	Total Rs	As
							Earthwork						
22	2	6	2	6	2	0	275						
20	7	6	1	6	0	9	169						
2	15	0	1	6	0	9	34						
1	100	0	20	0	0	9	1500						
					Cyds		73.2	1978	4	Cyds	18	4	10
							Brickwork						
22	2	6	2	6	3	0	413						
20	7	6	2	6	0	9	281						
2	15	0	2	6	0	9	56						
22	2	0	2	0	10	0	880						
					Cyds		60.4	1630	7	0	Cyds	422	12 10
							Roofing						
2	105	0	14	0			2940						
					Square		29½	20	0	0	Sqs	590	0 0
							Gravel in Flooring						
1	100	0	20	0	0	3	500						
					Cyds		18.5	9	6	Cyds	10	15	9 1042 1 5

Total in One Shop Rupees 1042 1 5

" " Three " " 3126 4 3

Madras
14th August 1872

Fredk Dibdin
Chief Engineer

Estimate for Loco: Workmen's Houses

No:	Length Ft	in	Breadth Ft	in	Thickness Ft	in	Contents	Rate Rs	a	p	℔	Amount R	a	℔	Total Rs	a.	℔
							Earthwork										
2	402	2	2	2	1	6	2614.0										
2	402	2	1	10	1	6	2211.9										
2	13	4	2	2	1	6	86.7										
4	6	"	2	2	1	6	78.0										
11	13	4	1	10	1	6	403.3										
46	6	"	1	10	1	6	759.0										
24	9	6	1	9	"	6	85.5										
24	15	6	14	"	"	6	2604.0										
12	6	6	32	2	"	6	1254.5										
24	6	6	6	6	"	6	507.0										
12	16	6	6	6	"	6	643.5										
	416.	6	Cyds				11247.4	"	4	"	Cyd	104	2	5			
							Brickwork										
2	402	2	2	2	1	6	2614.0										
2	402	2	1	10	1	6	2211.9										
2	13	4	2	2	1	6	86.7										
4	6	"	2	2	1	6	78.0										
11	13	4	1	10	1	6	403.3										
46	6	"	1	10	1	6	759.0										
24	9	6	1	9	1	"	171.0										
2	401	10	1	10	1	"	1463.4										
2	401	10	1	6	1	"	1205.5										
2	13	8	1	10	1	"	50.1										
4	6	4	1	10	1	"	46.4										
11	13	8	1	6	1	"	225.5										
46	6	4	1	6	1	"	437.0										
	Carried over						9751.8								104	2	5

No.	Length ft	in	Breadth ft	in	Thickness ft	in	Contents	Rate Rs	a	p	per	Amount Rs	a	p	Total Rs	a	p
							Brought forward										
2	401	10	16	3	1	6	9751.8					104	2	5			
2	14	"	16	3	1	6	19589.4										
4	8	"	10	"	1	6	682.5										
46	7	10	10	"	1	2	480.0										
24	6	8	8	"	1	2	4203.9										
11	14	"	14	6	1	2	1493.3										
48	7	"	1	2	1	2	2605.1										
							457.3										
							39263.3										
							Deduct										
48	7	"	3	6	1	6	1764										
12	7	"	3	6	1	2	343										
24	6	"	3	"	1	2	504										
24	4	"	3	"	1	2	336										
							2947										
	1345 Cyds =						36316.3										
	Terracing (roof)							7	"	"	Cyd	9415	"	"			
1	400	"	14	6	"	"	5800										
	Sloped Terracing (roof)							25	"	"	sq	1450	"	"			
2	400	"	10	"			8000										
								12	8	"	"	1000	"	"			
	Concrete (in floor)																
24	15	6	"	74	"	6	2604										
12	6	6	32	2	"	6	1254.5										
24	6	6	6	6	"	6	507.0										
12	16	6	6	6	"	6	643.5										
	185.5	Cyds					5009	4	"	"	Cyd	742	"	"			
							Carried over								12,711	2	5

No.	Length ft	in	Breadth ft	in	Thickness ft	in	Contents	Rate Rs	a	p	per	Amount Rs	a	p	Total Rs	a	p
							Brought forward								12711	2	5
	Tarring (in floor)																
	7018 Sq. ft						1006.18	4	11		Sq	400	11	6			
							Plastering										
4	401	10	16	3	"	"	26119.1										
2	17	"	16	3	"	"	552.5										
2	14	"	16	3	"	"	435.0										
22	14	"	14	"	"	"	4312.0										
100	8	"	10	"	"	"	8000.0										
24	6	8	8	"	"	"	1280.0										
48	7	"	4	8	"	"	1568.0										
	422.87 Sq						42286.6	2	8	"	"	1057	2	10			
	white washing																
	Squares						422.87	"	2	1	"	105	11	6			
							Teak Timber										
26	15	6	"	6	"	2¼	37.8										
54	11	"	"	5	"	2	41.3										
1	32	6	"	6	"	4	5.4										
1	18	1	2	6	"	4	3.0										
							87.5										
							12										
							1050	4	"	"	cft	4200	"	"			
							Rafters										
2	400	"	20	"	"	"	16000	5	"	"	100ft	800	"	"			
							Carried over								19274	12	3

No.	Length Ft	in	Breadth Ft	in	Heights Ft	in	Contents	Rate Rs	a	p	Per	Amount Rs	a	p	Totals Rs	a	p
							Brought forward					19274	12	3			
							Venitian Doors										
48	7	"	3	6			1176	2	14		Sq/ft	2646					
							Pannelled doors & windows										
12	7	"	3	6			294										
24	6	"	3	"			432										
24	4	"	3	"			288										
							1014										
								1	8	"	"	1521	11	"			
							Painting with wood Oil										
26	15	6	10	s/p			554										
54	11	"	1	2			693										
1	32	6	1	8		"	54										
1	18	"	1	8		"	30										
							1331										
							12										
							15972										
120	7	"	3	6			2940										
48	6	"	3	"			864										
48	4	"	3	"			576										
							20352										
											Sq/	2038	4				
											Rs	23645	4	7			

J

Abstract

416.6	Cyds	Earthwork	@	1/4	104	2 5
1345.0	"	Brickwork	@	7/	9415	" "
58.	Squares	Flat Terracing	@	25/	1450	" "
80.	"	Sloped do	@	12/8	1000	" "
185.5	Cyds	Concrete (in floor)	@	4/	742	" "
100.18	Squares	Jarring (floor)	@	4/	400	11 6
422.87	"	Plastering	@	2/8	1057	2 10
422.87	"	whitewashing	@	1/4	105	11 6
1050.	C/ft	Teak Timber	@	4/	4200	" "
16000.	£/t	Rupees	@	5/	800	" "
1176	S/s: ft	Venitian doors	@	2/4	2646	" "
1014	"	Pannelled doors	@	1/8	1521	" "
203.52	Squares	Painting with wood Oil	@	1/	203	8 4
					Rs	23645.4-7

Madras
14th August 1873

Rud. Dobbs
Chief Engineer

Estimate for Loco: Workmen's out houses

No.	Length Ft	Length in	Breadth Ft	Breadth in	Thickness Ft	Thickness in	Contents	Rate Rs	Rate as	Rate p	℔	Amount Rs	Amount as	Amount p	Total Rs	Total a	Total p
							Earthwork in foundation										
2	401	11	1	6	1	"	1205.8										
2	9	8	1	6	1	"	29.0										
11	9	8	1	1	1	"	115.2										
36	4	"	"	6	"	7	42.0										
			Earthfilling				1865.0										
36	10	1⅓	40	"	"	6	3257.0	"	4	"	Cyd	30	2	5			
			120⅔ Cyds														
			Brickwork				1205.8										
2	401	11	1	6	1	"	29.0										
2	9	8	1	6	1	"	115.2										
11	9	8	1	1	1	"	42.0										
36	4	"	"	7	"	6	8233.2										
2	401	7	1	2	9	"	210.0										
2	10	"	1	2	9	"	742.5										
11	10	"	"	9	9	"	57.5										
2	12	4	1	2	2	"	184.3										
11	11	2	"	9	2	"	618.0										
36	4	"	"	9	"	6	11467.5										
			Deduct				756.0										
36	6	"	3	"	1	2	315.0										
36	3	"	2	6	1	2	1071.0										
							11396.5	7	"	"	"	2954	11	2			
			422.1 Cyds														
			Plastering														
2	401	7	9	"			72285										
24	10	4½	8	"			1992.0										
2	12	11	11	"			271.3										
24	10	"	10	"			2400.0										
			118.9 ℔				11891.8	2	8	"	℔	297	4	"	3282	1	7

K

Abstract.

120.6	Cyds	Earthwork	@	1/4	30-2-5
422.1	"	Brickwork	@	7/	2954-11-2
118.9	Squares	Plastering	@	2/8	297-4-"
118.9	"	whitewashing	@	1/4	29-11-7
37.2	"	flooring with jelly	@	4/	148-12-10
37.2	"	Tarring (floor)	@	2/	74-6-5
918	Sp:ft	Pannelled Doors	@	1/3	1377-"-"
18.36	Squares	painting with Wood Oil	@	1/-	18-5-9
68.51	Squares	Palmyra and tile roofing	@	20/	1370-3-2
					Rs 6300-9-4

Madras
14th August 1872.

Asst Engr
Chief Engineer

No.	Length Ft	in	Breadth Ft	in	Thickness Ft	in	Contents	Rate Rs	as	ps	per	Amount Rs	as	ps	Total Rs	as	ps
							Brought forward					3282	1	7			
							Whitewashing										
							118:9 Squares	"	4	"	Sq	29	11	7			
							Flooring with Jelly										
36	10	4	10	"			3720 Squares 37.2	4	"	"	"	148	12	10			
							Tarring (floor)										
							37.2 Squares	2	"	"	"	74	6	5			
							Pannelled Doors & Windows										
36	6	"	3	"			648										
36	3	"	2	6			270										
							918	1	8	"	Sp:ft	1377	"	"			
							Painting with wood oil										
72	6	"	3				1296										
72	3	"	2	6			540										
							18:36	1	"	"	Sq	18	5	9			
							Palmyra & tile roofing										
2	403	"	8	6	"	"	6851	20	"	"	"	1370	3	2			
															Rs 6300	9	4

Estimate for Loco: Superintendents' out houses

No	Length ft	Length in	Breadth ft	Breadth in	Thickness ft	Thickness in	Contents	Rate Rs	Rate as	Rate d	Ø	Amount Rs	Amount a	Amount P	Total Rs	Total a	Total P
	Earthwork in foundation																
2	80	4	1	6	1	"	24										
2	9	8	1	6	1	"	29										
6	9	8	1	2	1	"	67.6										
7	4	"	"	7	"	6	8.2										
	Earthfilling																
7	10	6	18	"	6	6	367.5										
	26.4	Cyds					713.3		4	"	Cyds	6	9	7			
	Brickwork																
2	80	4	1	6	1	"	241										
2	9	8	1	6	1	"	29										
6	9	8	1	2	1	"	67.6										
7	4	"	"	7	"	6	8.2										
2	80	"	1	2	9	"	1680.0										
2	10	"	1	2	9	"	210.0										
6	10	"	"	9	9	"	405.0										
2	12	4	1	2	2	"	57.6										
6	11	2	"	9	2	"	100.5										
7	4	"	"	9	"	6	10.5										
							2809.4										
	Deduct																
7	6	"	3	"	1	2	147.0										
7	3	"	2	6	1	2	61.2										
							208.2										
	96.3	Cyds					2601.2	7	"	"	"	674	1	7			
	Plastering																
							1440										
2	80	"	9	"			1176										
14	10	6	8	"			271	2	8	"	Sq	107	2	10			
2	12	4	11	"			1400								787	14	"
14	10	"	10	"			42.87										

L

Abstract

26.4	Cyds	Earthwork	@	1/4	6 9 7	
96.3	"	Brickwork	@	1/	67 1 7	
42.87	Squares	Plastering	@	2/8	107 2 10	
42.87	"	whitewashing	@	/4	10 11 6	
7.35	"	Flooring with Jelly	@	4/	29 6 5	
7.35	"	Jarring (floor)	@	2/	14 11 2	
178.5	Sp:ft	Pannelled doors	@	1/8	267 12 "	
3.57	Squares	painting with wood oil	@	1/	3 9 1	
13.94	"	Palmyra and tile roofing	@	20/	278 12 10	
					Rs. 1392-13- "	

Madras
14th August 1872

Fredk Dibdin
Asst Engineer

No.	Length Ft	in	Breadth Ft	in	Thickness Ft	in	Contents	Rate Rs	as	p	₹	Amount Rs	as	p	Total Rs	as	p
							Brought forward					787	14	"			
							White washing										
							42.87	"	4	"	Sq	10	11	6			
							Flooring with Jelly										
7	10	6	10	"			7.35										
							7.35	4	"	"	"	29	6	5			
							Jarring (floor) 7.35	2	"	"	"	14	11	2			
							Pannelled Doors & windows										
							126										
7	6	"	3	"			52.5										
7	3	"	2	6			178.5	1	8	"	Sp:ft	267	12	"			
							Painting with wood oil										
							252										
14	6	"	3	"			105										
14	3	"	2	6			3.57	1	"	"	Sq	3	9	1			
							Palmyrah & tile roofing										
2	82	"	8	6			13.94	20	"	"	"	278	12	10			
															Rs	1392	13 "

Loco: Workshops

Estimate for 2 Gate Keepers Lodges.

No	Length Ft	in	Breadth Ft	in	Thickness or Contents Ft	in	Rate Rs	As	P.	Amount Rs	As	P.	Total Rs	As	P.
					Earthwork										
2	12	"	1	11	1	6	69.0								
2	9	6	1	2	1	6	33.3								
1	8	"	1	2	1	6	14.0								
2	4	6	1	2	1	6	15.8								
			5. Cyds	=			132.1		4					4	"
					Brickwork in										
2	12	"	1	11	2	"	92.0								
2	9	6	1	2	2	"	44.3								
1	8	"	1	2	2	"	18.6								
2	4	6	1	2	2	"	21.0								
2	11	6	7	"	1	6	241.5								
2	10	"	5	4½	"	9	80.1								
5	5	"	3	4	"	9	58.9								
1	7	6	8	"	"	9	45.0								
2	5	"	8	"	"	9	60.0								
1	17	"	13	9	"	9	175.4								
							837.3								
					Deduct openings										
2	2	"	1	6	1	6	9.0								
1	4	"	5	"	"	9	15.0								
2	5	6	2	"	"	9	16.5								
1	6	"	3	3	"	9	14.6								
							55.1								
			29	Cyds			782.2	10	"						
										Carried over			290	"	"
													291	4	"

No.

Abstract

5.0	Cyds Earthwork	@	1/4	1-14--
29.0	" Brickwork	@	10/	290--
2.48	squares Jelly over arch	@	4/	9-11-8
1.3	" Jelly flooring tarred & Sanded	@	6/	7 12 9
6.22	" Plastering	@	2/8	15 8 9
6.22	" Whitewashing	@	1/4	1 8 9
25.5	sq/ft Doors & Windows	@	1/8	38 14 "
.9	cft Teak Joists	@	4/	3 9 7
.79	squares Painting with wood Oil	@	1/	" 12 7
.48	" sloped terracing	@	12/8	6 " "
			Rs	374-11-1
			2	
			Rs	749-6-2

Madras
14th August 1872

Fredk Dibbs
Chief Engineer

No. 11

Loco: Workshops.

Estimate for 2 Gate-Keepers' Lodges - 3rd

No.	Length	Breadth	Thickness or Height	Contents	Rate	Per	Amount	Total
	ft in	ft in	ft in		Rs as P.		Rs as P.	Rs as P.
								291 14 "
				Brought forward				
				Jelly in Covering over arch				9 11 8
1	18 "	13 9 "	" "	248	4 " "	Sq.		
				Flooring with Jelly tarred and sanded				
1	10 "	10 "	" "	100				
1	6 "	5 "	" "	30				
				130	6 " "	Sq.		7 12 9
				Plastering (interior)				
1	10 "	26 "	" "	260				
2	10 "	5 4½	" "	107.5				
5	5 "	3 7	" "	78.6				
2	6 "	8 "	" "	96				
2	5 "	8 "	" "	80				
				622.1	2 8 "	Sq.		15 8 9
				Whitewashing 622	4 "	"		1 8 9
				Doors & Windows				
1	6 "	3 3	" "	19.5				
2	2 "	1 6	" "	6.0				
				25.5	1 8 "	sq/ft		38 4 "
				Teakwood Joists				
7	6 "	" 3	1	0.96 cft	4 " "	cft		3 9 7
				Painting with wood Oil 79 sq/ft	1 " "	Sq.		" 12 7
				Sloped terracing				
1	8 "	6 "	" "	48	12 8 "	Sq.		6 " "
							Rs	374 11 1
							Rs	749 6 2

£ N. 14792.

Estimate for "General Stores" Building.

No.	Length ft	in	Breadth ft	in	Thickness ft	in	Contents	Rate No.	ao	p	£	Amount No.	ao	p	Total No.	ao	p
							Earthwork										
	298	"	6	7	3	"	3871										
	240	"	6	7	3	"	1580										
	16 3	"	3	"	3	"	432										
	188	"	44	7	1	"	3923										
	1120	"	30	"	1	6	5400										
	1150	"	30	"	1	6	2250										
	64	6.5	Lo.	yds =			17456		4	"	Lo. yds				161	10	"
							Brickwork										
					1	6	3666										
	294	"	4	4	4	6	1647.8										
	242.3		4	4	4	6	288.0										
	16	2	"	2	"	4	6										
	293	3	2	4	2	"	870.3										
	416.5		2	4	2	"	306.4										
	292	10	23	"	1	11	8184.8										
	245	"	23	"	1	11	3967.5										
	152	"	13	3	2	1	1435.4										
							20366.2										
							Deduct Openings										
	189	"	4	"	1	11	1242										
	184	"	3	6	1	11	483										
	211	10	8	6	1	11	385.6										
	211	10	4	6	1	11	204.1										
							2314.7										
	668.6	C	yds =				18051.5	12	"	"	Lo. yds				8023	3	2
															8184	13	2

T21

Abstract

646.5	C. Yds.	Earthworks	@	1/4	161 10 ..
668.6	"	Brickwork	"	12/-	8023 3 2
3.64	Tons	Cast iron Columns	"	200/-	728 .. ..
1203.6	C. ft	Teak timber	"	4/-	1814 6 5
25	Treads Risers		"	10/-	250 .. ..
73.6	C. Yds.	Concrete	"	4/-	294 6 5
39.75	Squares	Tarring (floor)	"	2/-	7 19 8
648	Sq. ft	Double Doors (venetian & glass)	"	3/-	1944 .. ..
358.5	"	Glazed Shutters	"	1/1	448 2 ..
236.7	"	Ballew Doors	"	1/8	355 .. 10
71.62	Squares	Plastering	"	2/8	179 .. 9
71.62	"	Whitewashing	"	1/4	17 14 6
160.94	"	Painting with wood oil	"	1/-	160 15 ..
47.25	"	Corrugated iron roofing	"	95/-	1488 12 ..
				Rs	21941 15 1

Madras
14th August 1872

Fredk Dobbs
Asst Engineer

No	Length ft	Length in	Breadth ft	Breadth in	Scantling	Contents	Rate Rs	Rate as	Rate p	Unit	Amount Rs	Amount as	Amount p	Total Rs	Total as	Total p
														8784	13	2
						Brought forward										
						Steel Iron Columns										
14	12	-	1	8	"	3/4 30240										
2	5	63	1	53	"	1/2 1092				Ton				728	-	-
						31332	200	..	..							
						Teak timber in Gallery										
130	17	-	..	10	"	3 460.4										
2	52	6	1	3	"	10 109.4										
2	13	6	1	3	"	10 28.1										
1	15	-	1	3	"	10 18.8										
2	52	6	1	6	"	3 39.4										
2	13	6	1	6	"	3 10.1										
1	18	-	1	6	"	3 6.8										
			Planking			2 662.5										
1	88	4	1	5	"	" 1335.5										
			Decking													
1	52	6	11	..	"	2 96.3										
1	17	-	9	3	"	2 26.2										
1	11	10	1	9	"	2 9.4										
						131.9										
						1203.6	4	"	"	Cft				4814	6	5
			Stairs											250	..	-
			Treads			25	10	"	"	Head				13977	8	7

No.	Length Ft	in	Breadth Ft	in	Thickness Ft	in	Contents	Rate Rs	as	p	per	Amount Rs	as	p	Total Rs	as	p
							Brought forward								13977	3	7
							Flooring										
							Concrete										
1	88	4	45	"	"	6	1987.5										
							Cyard	73.6	1	"	"	C. yd			294	6	5
							Tar & Sand										
1	88	4	45	"			3975	2	"	"	Sq				79	8	"
							Doors & Windows										
							Double doors (Venetian & Glass)										
18	9	"	4	"			648	3	"	"	Sft				194	4	"
							Glazed Shutters										
18	4	"	3	6	"	"	252										
2	11	10	4	6	"	"	106.5										
								358.5	1	4	"				418	2	"
							Batten door										
2	11	10	10	"			236.7	1	8	"					355	"	10
							Plastering										
2	88	4	25				4416.7										
2	45	"	25				2250										
1	45	"	11				495										
			71.62	Sq			7161.7	2	8	"	Sq				179	"	9
							Whitewashing										
							71.62	"	4	"	"				17	14	6
															17295	4	1

No.	Length Ft.	in	Breadth Ft	in	Thickness Ft	in	Contents	Rate Rs	as	p	per	Amount Rs	as	p	Total Rs	as	p
							Brought forward								17295	4	1
							Painting with wood oil										
72	9	"	4	"			2592										
18	4	"	3	6			252										
2	11	10	4	6			106.5										
2	11	10	10	"			236.7										
							Planing of gallery										
2	82	4	45				7950										
							Joists										
130	17	"	2	2			4788.3										
2	52	6	4	2			437.5										
2	13	6	4	2			112.5										
1	18	"	4	2			75.0										
2	52	6	3	6			367.5										
2	13	6	3	6			94.5										
1	18	"	3	6			63.										
								17075.5									
							Deduct	1155.0									
2	52	6	11	"			314.5										
2	17	"	9	3			112.4										
2	11	10	4	9			1581.9										
								15493.6									
							Dw Stairs	600.0									
3	50	"	4				16093.6	1	"	"	Sq				160	15	"
							Corrugated Iron Roofing										
2	87	6	27	"			47.25	95	"	"	Sq				4488	12	"
															21944	15	1

Miscellaneous Papers

1. Sketch of Catchwater Drain and Memorandum on
2. Do & Road Diversion do do do
3. Estimate for Level crossings
4. Memorandum upon cost of Fencing
5. Do do do do Permanent Wa
6. Estimate for Platt.
7. Do do Rolling Stock.
8. Memorandum of proposed Establishmen

Carnatic Railway Company Ltd.

Memorandum of Establishment to be entertained on sanction for Construction

3761

Nos	Capacity		Est Amount per annum
	Covenanted		
	Chief Engineer - Salary & allowances	1,200 " "	14,400 " "
4	1st Class Assistant ——— Do ———	3,728 " "	44,736 " "
4	1st Class Assistant ——— Do ———	4,164 " "	49,968 " "
6	2nd ——— Do ——— Do ———	1,012 " "	12,144 " "
2	3rd ——— Do ——— Do ———		
	Average Salary & allowances	742 " "	8,904 " "
	Head Quarters Establishment		
	———	1,200 " "	14,400 " "
1	Chief Engineer ———	742 " "	8,904 " "
1	Assistant Engineer ——— average	250 " "	3,000 " "
1	Manager & Accountant ———	100 " "	1,200 " "
1	Native Assistant ———	400 " "	4,800 " "
	Clerks (aggregate) ———	150 " "	1,800 " "
1	Head Draughtsman ———	700 " "	8,400 " "
	Draughtsman of and under 100 Rs ———	30 " "	360 " "
1	Lithographist ———	15 " "	180 " "
1	Moochie ———	65 " "	780 " "
1	Apothecary ———	99 " "	1,188 " "
	Peons & Lascars &c ———		
		3,751 " "	45,012 " "
	Chief Engineer's Workshop		
	———	250 " "	3,000 " "
1	Foreman ———	80 " "	960 " "
1	Assistant - Do ———	210 " "	2520 " "
7	Clerks ———	28 " "	336 " "
10	Peons & Lascars ———		
		568 " "	6,816 " "

Establishment	No.	Rate per Annum	Amount per Annum
Not each of 10 Districts			
1 Assistant Engineer (average)	1	900	3,900
1 Engineering Assistant	1	180	1,800
2 Inspectors	2	300	3,600
1 Sub-Inspectors	1	120	1,440
5 Clerks	5	50	600
1 Apothecary	1	220	2,640
14 Lascars	14	65	780
	14	98	1,176
		1,765	20,940
For 10 Districts		17,650	209,400
Unallotted			
1 Assistant Engineer (for creation of terminable lines Drigs to take duty in case of casualty in a Dist (average)	1	742	8,904
3 Sub-Assistant Engineers for temporary works when required	3	930	11,160
4 Special Inspectors for temporary works	4	1,000	12,000
1 Consulting Physician	1	150	1,800
		2,822	33,864
Locomotive			
1 Superintendant	1	650	7,800
1 Assistant Do	1	300	3,600
4 Foremen	4	800	9,600
10 Drivers and Fillers	10	1,750	21,000
1 Head Clerk	1	120	1,440
8 Clerks	8	280	3,360
1 Coalkeeper	1	50	600
14 Beers & Lascars	14	98	1,176
		1048	18576

Madras
11th August 1873

Fred Dibdin
Chief Engineer

Summary.

3771

Head Quarters Establishment	3,751	45,012	
Chief Engineer's Workshop	568	6,816	
Establishment for 10 Districts	17,460	209,400	
Unallotted	2,822	33,864	
	24,591	295,092	
Locomotive Establishment	1048	18576	

R-S

Estimate for rolling Stock required for line from Madras to Cuddalore

Nos.	Description	Rate Rs.	Amount Rs.	A	P
18	Locomotive Engines	28,000	5,04,000	"	"
84	3d Class Carriages	1,200	1,00800	"	"
12	2d do do	2,300	27,600	"	"
18	1st & 2d do composites	3,000	54,000	"	"
6	1st do	4,500	27,000	"	"
6	Post office Vans	1,200	7,200	"	"
12	Brake Vans (passenger)	1,200	14,400	"	"
6	Goods do	800	4,800	"	"
12	Flat bottom trucks without sides	600	7,200	"	"
48	Low sided trucks (ballast-Coal &c.)	600	28,800	"	"
24	High sided open goods trucks	900	21,600	"	"
100	Covered goods	1,150	1,15,000	"	"
6	Horse boxes	1,450	8,700	"	"
6	Carriage trucks	700	4,200	"	"
12	Cattle do	1,200	14,400	"	"
1	Gunpowder Van	2,000	2,000	"	"
20	Platelayers trollies	106	2,120	"	"
6	Engineer's do	400	2,400	"	"
			9,46,220	"	"
	Superintendance & Contingencies 10 %		94622	"	"
	Total Rupees		10,40,842	"	"

Madras
12th August 1873

Fred Dobbs
Chief Engineer

Carnatic Railway Co. Ltd.

Estimate for Rolling Stock

VIII

	Description	as per Schedule	amount Rs	a	p
1	Locomotive Stock	R-S	5.54.400	"	"
2	Carriage and wagon Stock	"	4.81.470	"	"
	Grand Total		10.35.870	"	"

Madras
14th August 1872

Fred. Dibble
Chief Engineer

3214

Estimate
Public Works

Copy No. 17/0

Carnatic Railway Co. Ld.
Estimate for Plant

VII

Description	As per Schedule	Amount Rs	A	P	Total Rs	A	P
1 Engineering							
Tools		4,548	12	6			
Machinary		10,972	-	-			
Instruments		1,148	-	-			
Camp Equipage		3,820	-	-	20,488	12	6
2 Locomotive							
Tools		6,002	1	-			
Machinary		53,823	8	-	59,825	9	-
3 Carriage and Wagon							
Tools		6,002	-	-			
Machinary		53,823	8	-	59,825	8	-
4 Station and Office furniture		31,677	-	-	31,677	-	-
Grand Total					171,816	13	6

Madras
14th August 1872

Fredk Dibble
Chief Engineer

~~P.W. 4046/72.~~
P.W. 1470/73.

Estimate

Plant

Permanent Way

Rails 40 lbs to the yard, of Best Best Steely iron

Cost per ton at Home in 1871	£ 8 . 5 . 0
Insurance &c per 4 years	
Add 3 £ per ton for rise in price as per advice of 22/3/72	3 . 0 . 0
	11 . 5 . 0
Price at present	1 . 13 . 0
Freight per ton	0 . 9 . 0
Insurance 3½ p cent	0 . 4 . 0
Landing Charges	0 . 2 . 3
Customs 1 p cent	£ 13 . 13 . 3
Say 134 Rs per ton	£560 . 0 . 0
Iron Sleepers – per mile	168 . 0 . 0
Add 30 p cent for freight &c	£728 . 0 . 0

Rs. 7300 per Mile

Clips 3s per joint – add ⅓ = 2 Rs.

Weight of Rails in 1 Mile of Single line 62.857 Tons

62.857 Tons at 137/- per Ton =	8611-7--
Iron Sleepers for 1 Mile.	7300---.
528 Steel Clips & bolt for joints at 2/-	1056---
	Total 16967-7--

Jam over

Weight of Rails	40 lbs	per lin yard
" Sleepers	45 "	Each
" Tie bars	7 "	"
" Clips	8.5 "	"
" Fish plates	3.36 "	"
" Bolt heads	.14 "	"

Weight of Rails per Mile	62.857 Tons
" Sleepers "	84.9
" Tie bars "	6.6
" Clips Fish plates "	2.8
Total	157.157

Madras
14th August 1872

Fredk Dibbles
Chief Engineer

W.

Memorandum upon the cost of Fencing

Cost in England per Mile	1153 Rs
Add 33 P. Cent for freight insurance, landing charges &c	384 "
Erection per Mile	73
Cartage up 16 Tons (1 Mile) Carried 30 Miles (average distance) at 5 Annas per ton per Mile	150
	1760 "

14. 8. 72

Fredk Dibbles
Chief Engr

Level Crossings

S

Average height at Shoulder of bank —— 3 ft.
—"— Length —— 75 "
Side Slopes —— 2:1
Width at top — 20 ft
—"— of Metalling — 12 ft
Depth —— " —— 6 Inches
Cubic yards of Earthwork —— 216
—" —— Metalling —— 33
Squares of Turfing —— 10.5
5 yards long guard rails —— 2

Estimate

216	Cyds	Earthwork	@ 3/	40 . 8 . 0
33	"	Metalling	@ 9/	18 . 9 . 0
10.55	Squares	Turfing	@ 8/	5 . 4 . 5
.18	Tons	Iron work	@ 137/	24 . 10 . 7
				89 — . — .

Rs 89.—.—.

Madras
14th August 1872

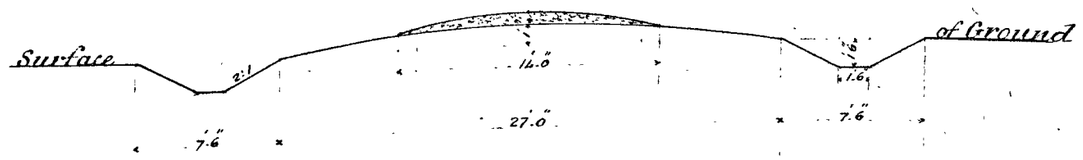
Fredk Dibble
Chief Engineer

2547

R

Road Diversion

Section



Estimate for 1 lin Yard

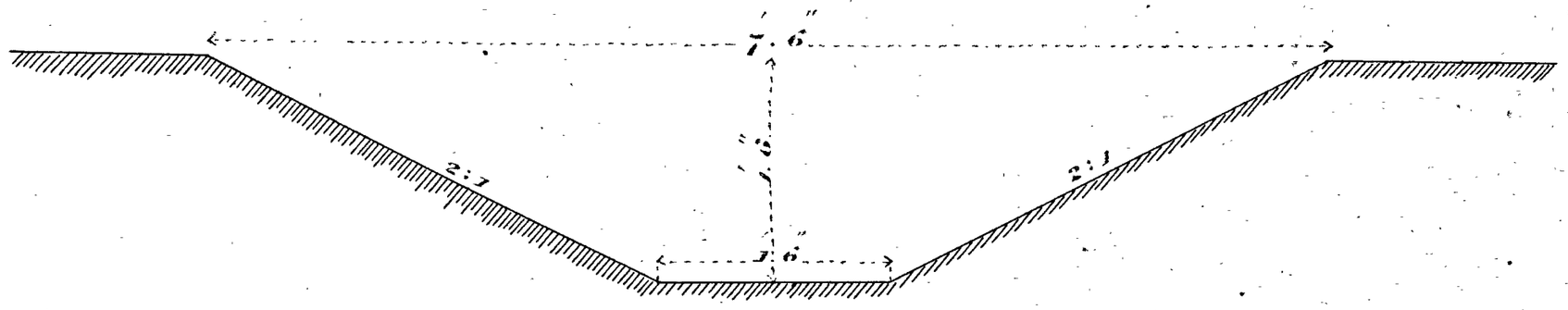
1½	C Yds	Earthwork at /3	=	0	4	6
2/3	"	Metal at /9	=	0	6	0
.81	Squares	trimming of formation surface	=	0	1	6
				"	12	"

Madras
14th August 1872

Fred. Dibble
Chief Engineer

Section of Catchwater Drain

B



Superficial area of Cross Section.....75 Sq. Yds.

Drain to run parallel with centre line, intended to protect low banks and Cuttings.

Madras
14th August 1872

Fred. Dibben
Chief Engineer

No. 947 P.W. & Railway

Proceedings of the Madras

Read the following

From

The Government of India.

(H. E. No. 3068 R. of 25th July 1873.)

Communicated

to the Consulting Engineer

for Railways.

The line in ques-

-tion being the Northern

as the line with which

it is compared is the

Southern, extension of the

Great Southern of India

Railway, and both

having to be carried out

eventually

ventually under the same
Agency and professional
supervision; and the Con-
sulting Engineer having
proposed that the affairs of
the amalgamated Company
shall be carried on by the
Gentlemen who directed,
supervised, and designed
the works of the separate
Companies; he will obtain
from the Agents and
Chief Engineers of both
Companies an expression
of their joint opinion as
to the adequacy of the Re-
-vised Estimates to meet
the cost of the proposed
works. He will also obtain
such joint Report from the
Chief

387X

Chief Engineers as shall
set at rest all doubts
of the adequacy of the
designs and estimates
of the Bridges on the
Northern extension, &c
have been raised in
the mind of the Government
of India by comparison
with those sanctions for
the Southern extension.

Para 8 of the
letter from the Government
of India will be commu-
-nicated to the Agent
of the Carnatic Com-
-pany for the information
of his Board at home.

G.W.W.

To The Consg Engr for Railways
Ex: Rg: Rect: 8/4/73
+ 5 Orders Pursuant to Board Aug 6th 26-6-73

C. No 1470

Govt. of {1873} Madras.

PUBLIC WORKS.

To The Consulting Engr. for Railways

Dated

Rec'd. Read.

G. O. 26th March 1874 No. 947.

Nos. to 359 636

Carnatic Railway.

Letter from the Sec. to Govt. India Sanctioning, with Remarks, an Expenditure of Rs: 69,10,522 for the Construction of a Rail. Way from Madras to Beddalore, Com.d to the Engr. with instructions.