Public Works (1898) Department.

RAILWAY BRANCH.

G.O., No. 1163 Rly

DATED 22nd September 1898.

120/3

[Despatch Abstract.]

Tirunalveli Junction station, S. I. Ry.

Sanctioning with remarks the excess expenditure amounting to Rs 7300-9-10, incurred in enlarging the ——— .

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Indexed.

BACK PAPERS.

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RAILWAY.

Government {1898} of Madras.

PUBLIC WORKS.

Recd. } 1898. *Enclosures*

Regd. *Spare copies*

G.O., No. 1163 Ry., 22nd September 1898.

SEPTEMBER.

Tiruvallur Junction Station, South Indian Railway

Sanctioning, with remarks, the excess expenditure amounting to Rs. 7,300–9–10, incurred in enlarging the —.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Railway.

Read again the following papers:—

G.O., No. 2840 R., dated 24th November 1892.
G.O., No. 859 R., dated 13th May 1893.

Read also the following papers:—

From—The Agent, South Indian Railway.
To—The Consulting Engineer for Railways, Madras.
Dated—Trichinopoly, 11th April 1898, No. 317.

Referring to G.O., No. 859 R., dated 13th May 1893, communicating the sanction of the Government of India to a revised estimate for enlarging Tiruvallur station on account of the junction arrangements with the Mayavaram-Mutupet Railway, I have the honour to forward herewith the completion report, No. 670, for the work, and to request sanction to the *excess* expenditure of Rs. 7,300–9–10 incurred.

The causes of the excess are explained in the explanation column.

Kindly return the report when done with.

From—The Consulting Engineer for Railways, Madras.
To—The Agent, South Indian Railway.
Dated—Madras, 9th May 1898, No. 1351.

I beg to acknowledge the receipt of your letter, No. 317, dated the 11th April 1898, applying for sanction to excess expenditure of which the net figure is Rs. 7,300–9–10, as shown in the completion report of the enlargement of Tiruvallur station on account of the junction arrangements between your line and the Mayavaram-Mutupet Railway.

2. Had the net excess been composed of numerous minor excesses, I should probably not have hesitated to recommend it for the sanction of Government. But the analysis of it, given below, shows that it is the net result of such very important discrepancies from the estimate sanctioned by your Board and by the Government of India, that I must refuse to accept it without remarks, and without further explanation as to either (*a*) the badness of the estimating, or (*b*) the failure of your staff to apply for the sanction of competent authority as soon as, in each case, it appeared that the actual cost of a part of the work was likely to differ seriously from the estimate. If savings in part of the work appeared likely to balance excesses in other parts, it was the duty of your staff not to set one against the other when the discrepancies from the estimate were serious, but to apply for the permission to do so of competent authority.

3. The following table shows how serious are the discrepancies between actuals and estimates. I do not say that actuals are wrong, but that, if actuals are right, estimating must have been very bad, and *vice versâ*. You and your Board will, I hope, agree with me that the conduct of business must be seriously interfered with if we cannot secure better co-ordination between estimates and actuals:—

Sub-heads of estimate.	Sanction.	Saving.	Excess.	Difference.
	Rs.	Rs. A. P.	Rs. A. P.	Rs. A. P.
II. Land	1,224	..	228 13 0	228 13 0
III. Formation	5,516	1,799 8 7	..	1,799 8 7
IV. Bridge work	2,920	264 5 0	2,137 1 2	1,872 12 2
V. Fencing	1,094	257 2 0	950 8 3	693 6 3
VII. Ballast and permanent-way	23,062	6,447 9 8	720 11 8	5,726 14 0
VIII. Stations and buildings	56,236	9,958 6 6	21,908 4 4	11,949 13 10
IX. Plant	..	..	82 3 2	82 3 2
Total ..	90,052	18,726 15 9	26,027 9 7	7,300 9 10

4. Another statement A hereto attached will show you how many important items of the work have cost from 40 to 400 per cent. more than were estimated. The mere entry of such a remark in the explanation column as "original estimate insufficient," does not adequately meet the circumstances of the case. You will see that under the accounts head "stations and buildings," actuals in certain items exceeded the estimate for these items by Rs. 22,000, while the reverse was the case to the amount of Rs. 10,000. Something more than the mere routine notice of such results as these seems to me to be necessary.

Statement A.

Items.	As estimated.			As executed.			Excess.	Percentage of excess.
	Quantity.	Rate.	Amount.	Quantity.	Rate.	Amount.		
	C. FT.	Rs.	Rs.	C. FT.	Rs. A. P.	Rs.	Rs.	
Brickwork.								
One 5 ft. culvert	8,598	30	2,579	6,069	60 7 0	3,669	1,090	42
Locomotive well	2,609	30	783	2,753	46 8 0	1,281	498	63
Ashpit and drain	1,005	24	241	2,010	31 12 0	638	397	165
,, M.M. siding	1,005	24	241	1,001	53 15 0	540	299	124
Turn table	1,956	24	469	3,936	32 3 0	1,266	797	170
Woodwork.								
Locomotive well (well curbs) ..	..	..	470	..	..	1,240	770	164
Ashpit and drain	..	..	264	..	..	716	452	171
,, M.M. siding	..	..	264	..	..	716	452	171
Road Crossings.								
Gates, rails and wickets ..	..	..	906	..	..	1,464	558	61
Covered Way.								
Wrought iron roof	..	..	3,779	..	..	7,883	4,104	109
Water Tank.								
Rails, fish plates, bolts and iron work in bolts, &c.	..	..	477	..	..	2,474	1,997	418

From—The Agent, South Indian Railway.
To—The Consulting Engineer for Railways, Madras.
Dated—Trichinopoly, 29th August 1898, No. 808.

[Your No. 1351 of 9th May 1898.]

I have the pleasure to forward herewith the Acting Chief Engineer's further report on the excesses and savings in the Tiruvallur station estimate.

I trust that the information now afforded will enable you to recommend Government to pass the excess.

Enclosure.

Enlargement of Tiruvallur station in connection with the Mayavaram-Mutupet Railway.

	Rs.	A.	P.
Land—			
Excess	228	13	0

The debits for land in connection with this work was charged to the land taken up for the Mayavaram-Mutupet Railway. This was not discovered till the completion report was being compiled. The charges were not in sufficient detail to get at the debit for the Tiruvallur station, so the cost was worked out in the proportion of the acreage shown in the respective schedules.

	Rs.	A.	P.
Earthwork—			
Savings	1,799	8	7

The estimate provides for 750,569 cubic feet at Rs. 7 per 1,000 cub. ft., but actually the following quantities were executed at the rates given below :—

In yard—558,078 cubic feet, average Rs. 5·43 per 1,000 cub. ft.
In goods loading bank—73,131 cubic feet, average Rs. 5·79 per 1,000 cub. ft.

The actual quantities are 16 per cent. below the estimate, but the cause for this is not traceable. The rate of Rs. 7 provides for the trainage of earth, and the actuals include the sum of Rs. 160 for the hire of an engine, but it is probable the earth was not trained to the quantities as estimated.

	Rs.	A.	P.
Bridgework—			
Excess	1,872	12	2
Excavation—			
Excess	338	14	0

The excavation had to be taken down to a greater depth than anticipated and provided for. The quantities exceed the estimate by 27,967 cubic feet. The estimate rate is Rs. 15 and the actual averages Rs. 12·42 per 1,000 cub. ft.

	Rs.	A.	P.
Concrete—			
Excess	625	12	0

This was not provided for. The Executive Engineer, when the foundations were taken out, reported that no concrete was provided and said that none was found in the old foundations. He was told he could put in concrete if he considered it necessary. The rate works out to about Rs. 15·86 per 100 cub. ft.

	Rs.	A.	P.
Brickwork—			
Excess	1,090	3	7

The estimated quantity is 8,598 cubic feet at Rs. 30 per 100 cub. ft., and the actual quantity is 6,069 cubic feet at a rate of about Rs. 60·45 per 100 cub. ft. The smaller quantity is due to concrete being laid.

The excess in rate is commented upon by the Consulting Engineer for Railways, and the following are the details of the rates :—

Per 100 cubic feet.	Estimate. Rs.	Actuals. Rs.
Bricks	15	45·66
Lime, sand, carriage, loading and unloading, pounding chunam and labour in building	15	14·79 *

The cause of the excess is the value of bricks. According to the debits 138,559 bricks at the rate of Rs. 20 per 1,000 were issued from the Tiruvallur brickfield. Taking 1,500 bricks as the equivalent of 100 cub. ft. of brickwork, it will give 91,035 bricks for 6,069 cubic feet against 138,559 charged to this particular work. Either the quantities of work executed have been incorrectly returned or bricks for other works have been charged to this. If the additional bricks

* Paid to contractor for executed work and for building and removing centrings.

equivalent to Rs. 15·66 per 100 cub. ft. is deducted, the rate will be Rs. 30, or double that estimated. The estimate provides for bricks from Kulikarai field at Rs. 10, whereas the issues were made from the Tiruvallur field at Rs. 20 per 1,000.

	Rs.	A.	P.
Plastering—			
Excess	18	3	1
Pointing—			
Excess	49	7	9
Slab Stones—			
Excess	14	8	9

No provision was made for these items in the estimate.

	Rs.	A.	P.
Demolishing face walls—			
Savings	20	0	0

No expenditure has been booked. It is probably included under excavation or brickwork. The work of extension of the culvert was done by contract.

	Rs.	A.	P.
Earthwork in diversion of channels—			
Saving	105	5	0

The estimate is for 26,325 cubic feet at Rs. 5 per 1,000 cub. ft., but only 7,480 cubic feet is returned as executed at a rate averaging Rs. 3·61 per 1,000 cub. ft. Probably, some of the work is included in excavation.

	Rs.	A.	P.
Fencing—			
Saving	216	0	0

The work was not executed. It was probably not found necessary to shift the fence.

	Rs.	A.	P.
Road-crossings—			
Excess	909	6	3

The Consulting Engineer for Railways' statement shows an excess of 61 per cent. over estimate. It is a case of pure under-estimating.

	Rs.	A.	P.
Ballast—			
Saving	6,316	1	0

The estimate quantity is 152,538 cubic feet against an actual of 149,872 cubic feet. The difference is small and need not be considered. The estimated rate is Rs. 60 per 1,000 cub. ft. and the actuals are—

	C. ft.	Rs.	
1. (Description not given)	42,204	at 4·62	per 1,000 cub. ft.
2. Sand	70,000	,, 16	
3. Concrete	30,000	,, 60	
4. Stone	7,668	,, 23·21	

The average rate being Rs. 21·98 per 1,000 cub. ft. most of the expenditure was debited, in the first instance, to the general sanction of the Mayavaram-Mutupet Railway, but in September 1894, when attention was called to the small charge, items 2 and 3 were transferred from the Mayavaram-Mutupet Railway to the special sanction.

	Rs.	A.	P.
Permanent-Way—			
Excess	589	3	0

In this case also most of the charges were debited to the general sanction of the Mayavaram-Mutupet Railway. When attention was drawn in September to the small debits, a transfer was made of Rs. 12,024-2-2 from the Mayavaram-Mutupet Railway to this special sanction.

Rupees 386-4-0, the cost of temporary quarters for guards and drivers, is debited to the contingencies of this head.

	Rs.	A.	P.
Third-class Waiting-shed—			
Saving	189	10	4

Calls for no special remarks, the differences are small under each item—

	Rs.	A.	P.
Urinals, west end—			
Excess	85	0	6

The principal items requiring explanation are—

	Rs.	A.	P.
Concrete—			
Excess	25	7	9
Corrugated walling, rail posts, &c.—			
Excess	60	2	8
Carriage—			
Excess	10	1	6

Concrete.—The estimate provides for 48 cubic feet of concrete and 8 cubic feet of Ashlar stone, the contractor was paid for 287 cubic feet.

Corrugated walling, &c.—This has been underestimated, the workshop charges for walling, rail posts, buckets and grating amount to Rs. 181–10–8, against an estimate of Rs. 148. In addition to this there is a charge for Rs. 26–9–0 for lamps, which was not estimated for.

The Mayavaram-Mutupet Railway was charged a percentage for supervision, &c., for stores issued by the South Indian Railway. From details under other items I find that, with the exception of issues from the engineering workshops, this percentage was charged to the Tiruvallur station re-arrangements. The work being a South Indian Railway one, no such charge should have been made. It is, however, too late to make adjustments as the expenditure on this as well as the Mayavaram station is included in the joint station accounts sanctioned by the Government of India.

Carriage.—As in many cases the actual charges for carriage are in excess of the estimate, I am under the impression that the special rate charged to the Mayavaram-Mutupet Railway has also been debited to the Tiruvallúr station.

	Rs.	A.	P.
Urinals, east end—			
Saving	48	12	9

The principal items requiring explanation are—

	Rs.	A.	P.
Excavation—			
Excess	5	4	2
Brickwork—			
Excess	14	0	9
Concrete—			
Excess	14	10	2
Flooring—			
Excess	27	11	11
Corrugated walling, rail posts, &c.—			
Saving	115	7	0
Carriage—			
Excess	5	15	6

Excavation.—The quantities are in excess by 75 cubic feet, but the rate works out to Rs. 9·97 per 1,000 cubic feet against the estimate of Rs. 4. The quantities have evidently not been correctly returned.

Brickwork.—The quantities are in excess by 71 cubic feet. The rate works out to Rs. 22·82 against the estimate of Rs. 24 per 100 cubic feet.

Concrete.—Estimate provides for 48 cubic feet concrete and 8 cubic feet Ashlar stone. Contractor was paid for 217 cubic feet of concrete.

Flooring.—The quantity is 33 cubic feet below the estimate, but the rate works out to Rs. 40·97 against an estimate of Rs. 27 per 100 square feet. The flooring stones for the two urinals have not been fairly apportioned. The urinals are of the same area, yet the one at the west end works out to Rs. 30·83 against Rs. 40·97 in the east end. If the expenditure on both is taken together, the rate works out to Rs. 35·90 or Rs. 8·90 per 100 square feet more than the estimate.

Corrugated walling, &c.—The design shows the latrine to be closed as it would be overlooked from the overbridge, but the charge through the engineering workshops for corrugated iron sheets, &c., is the same as for the open latrine at the west end.

Carriage.—This has been underestimated—

	Rs.	A.	P.
Island platform—			
Saving	148	7	0

The items calling for remarks are—

	Rs.	A.	P.
(1) Earthwork—			
Excess	147	13	1
(2) Metalling—			
Saving	1,044	1	3
(3) Ashlar stone curb—			
Excess	293	8	8
(4) Steel pale fencing—			
Excess	254	12	9

Earthwork.—Owing to absence of quantities the excess cannot be satisfactorily explained.

Metalling.—Rupees 244–14–9 shown against this item is the cost of labour, but the value of the material has not been charged.

Ashlar stone curb.—The quantity has exceeded the estimate by 584 cubic feet. The rate is Rs. 108·45 against the estimate of Rs. 125 per 100 cub. ft.

Steel pale fencing.—The following remark was made by the Chief Engineer on the completion report:—

"Steel pale fencing was erected temporarily for works and the labour charges account for the excess."

	Rs.	A.	P.
Covered way—			
Excess	3,917	9	7

The following call for remarks:—

	Rs.	A.	P.
(1) Wrought iron roof—			
Excess	4,104	8	3
(2) Rail posts, &c.—			
Saving	525	9	7
(3) Guttering and pipes—			
Excess	1,217	2	8

Wrought iron roof.—The Consulting Engineer for Railways points out that the cost exceeds the estimate by 109 per cent. On looking over the details of the debits I find Rs. 957–8–5 for rail posts have been incorrectly charged to the roof. This will reduce the excess from Rupees 4,104–8–3 to Rs. 3,146–15–10 and the percentage from 106 to 83. The cost of this roof has been underestimated.

Rail posts, &c.—If the value of the rail posts incorrectly included in the roof is added, the saving of Rs. 525–9–7 will be converted into an excess of Rs. 331–14–10. This item too was underestimated.

Guttering and pipes.—This is a clear case of underestimating.

	Rs.	A.	P.
Overbridge—			
Saving	188	2	3

The principal items calling for remarks are—

	Rs.	A.	P.
(1) Excavation—			
Excess	8	3	5
(2) Concrete—			
Excess	101	13	11
(3) Overbridge—			
Saving	410	4	11
(4) Labour in erecting—			
Excess	285	0	2

Excavation and concrete.—The foundations had to be taken down deeper than anticipated and consequently more work had to be done.

Overbridge.—The drawing office details show that the value of this overbridge was arrived at by working out the proportionate cost of a similar overbridge at some other station. Under these circumstances, no useful comparison can be made.

Labour in erecting.—This was underestimated—

	Rs.	A.	P.
Approaches—			
Saving	1,039	1	5
Passenger approaches—			
Saving	101	0	0

No work was done on this head.

		Rs.	A.	P.
Goods approaches—				
Saving	Earthwork	493	9	6
	Metalling	558	4	0
	Total ...	1,051	13	6

The widening and lengthening do not appear to have been done to the extent estimated. The road was metalled but the value of the metal has not been charged.

	Rs.	A.	P.
Steel pale gate—			
Excess	171	14	1

This was considered necessary when the work was being executed.

	Rs.	A.	P.
Permanent-way Inspector's bungalow—			
Saving	728	0	10
Cook-house—			
Saving	224	10	4
Latrine—			
Excess	38	9	6

The following explanation was given by the Chief Engineer in the completion report :—

"Owing to the loose soil it was doubtful that the arched roof, as per plan No. 133/87, would stand and Calicut tiled roof as per Villupuram-Guntakal section, plan No. 2869, with 4 feet of foundations (having 2 feet brickwork and 2 feet concrete), was therefore adopted."

	Rs.	A.	P.
Water tank—			
Excess	2,839	10	2

The whole of the items have exceeded the sanction.

Excavation—			
Excess	59	1	4

Is due to bailing for which no provision was made.

Earth filling—			
Excess	63	8	0

Due to filling up of tank.

Concrete—			
Excess	111	2	6

More concrete was put in due to wet foundations.

68 lb. rail staging—			
Excess	1,996	15	1

The Consulting Engineer for Railways points out that the expenditure on this item is 418 per cent. over the sanction. There can be no doubt that this has been underestimated. Only the bare cost of the rails, at Rs. 20 per ton, is provided and nothing is allowed for the manufacture of the staging, &c.—

	Rs.	A.	P.
Iron tank—			
Excess	565	12	6

One tank is estimated but on going through the details I find two are debited to the sanction. One in November 1892 for Rs. 653-14-11 and the second for Rs. 544-4-2 in January 1894.

The latter is the one brought down to supplement the supply from the Odamboki, the new well having shown signs of failure in the quantity of water required. The second tank should have been credited to the sanction when the supply from Odamboki was stopped.

	Rs.	A.	P.
Labour in erection—			
Excess	185	3	11

This has been underestimated.

	Rs.	A.	P.
Closing existing well and re-sinking locomotive well 20 feet diameter—			
Excess	2,469	11	9

The items calling for remarks are —

	Rs.	A.	P.
Brickwork—			
Excess	498	1	3
Well curbs—			
Excess	770	1	5
Pumps—			
Excess	1,020	1	6

Brickwork.—The Consulting Engineer for Railways points out that the expenditure is 63 per cent. in excess of the sanction. This is principally due to the steining having to be taken deeper than anticipated.

He also points out that the rate is Rs. 16-8-0 per 100 cubic feet in excess of the sanction. This is due principally to bricks being issued at Rs. 20 per 1,000 against Rs. 10 per 1,000 estimated.

Well curbs.—The Consulting Engineer for Railways points out that the cost of the woodwork in the well curb is in excess by 164 per cent. The following remark was made by the Chief Engineer on the completion report.

"The well curb as estimated was of insufficient strength and had to be increased in size."

The sinking of this well gave a great deal of trouble and it was consequently necessary to increase the size of the curb.

Pumps.—Owing to anticipated failure of water in the new well, it was decided not to close the old well and to provide additional pumping power to keep up a regular supply. Two pumps were issued and charged to the work. This addition was not anticipated when the estimate was drawn up.

	Rs.	A.	P.
Sun-shade—			
Excess	122	3	5
The items requiring explanation are—			
Masonry—			
Excess	40	9	8
Plastering—			
Excess	6	9	1
Pointing—			
Excess	7	12	0
Calicut tiles—			
Excess	44	12	3
Demolishing existing shed—			
Excess	30	2	5

Masonry, plastering and pointing—were not provided for but found necessary when the work was executed.

Calicut tiles—Is due to the trainage of the tiles from Chingleput to Tiruvallur.

Demolishing existing shed.—This was underestimated.

	Rs.	A.	P.
Old ashpit at west end—			
Excess	365	4	0
Old ashpit at east end—			
Excess	366	9	7

This is principally due to two water cranes being charged although not provided for. This was found necessary to complete the watering arrangements.

	Rs.	A.	P.
New ashpit at west end—			
Excess	802	2	1
The principal items calling for remarks are—			
Concrete—			
Excess	122	3	6
Brickwork—			
Excess	396	8	9
Woodwork—			
Excess	452	2	7

Concrete and Brickwork.—More work was necessary owing to bad foundations. The Consulting Engineer for Railways, comments on the cost of the brickwork being 165 per cent. in excess and the rate Rs. 7-12-0 per 100 cub. ft. The extra cost is due first to more work being necessitated and to the high rate at which bricks were issued to work.

Woodwork.—The Consulting Engineer for Railways also comments on this item being 171 per cent. in excess. I do not think the value of the timbers has been fairly apportioned among the four ashpits—two old and two new ones. The estimate provides 66 cubic feet timber for each ashpit at Rs. 4 per cubic foot The total expenditure is Rs. 1,926-9-8, and this is in the completion report distributed as under:—

	Rs.	A.	P.
Old ashpit, west end	247	2	3
Do. east end	247	2	3
New ashpit, west end	716	2	7
Do. east end	716	2	7

The ashpits being of equal length, the expenditure should be divided in equal proportions. This will result in the expenditure being Rs. 481-10-5 for each ashpit. Taking the lengths in the estimate as correct, the actual rate works out to Rs. 7·30 per cubic foot against the estimate of Rs. 4. The estimated rate is, I think, too low.

	Rs.	A.	P.
New ashpit, east end—			
Excess	498	5	0

The following call for remarks:—

	Rs.	A.	P.
Brickwork—			
Excess	299	7	7
Woodwork—			
Excess	452	1	6

The Consulting Engineer for Railways comments on the high cost of brickwork being 124 per cent. in excess and the rate Rs. 29-15-0 in excess of the sanction. The high issue rate will account partly for the excess, but I do not think the work done on the two ashpits has been fairly distributed, or otherwise the rates would not differ so much.

Woodwork.—See remarks against ashpit at west end.

	Rs.	A.	P.
Engine turntable—			
Excess	2,260	6	7

The items calling for remarks are—

	Rs.	A.	P.
Excavation—			
Excess	112	9	1
Concrete—			
Excess	1,170	0	7
Brickwork—			
Excess	796	11	8
Turntable—			
Excess	888	10	1

Excavation, Concrete and Brickwork.—Owing to the foundations having to be taken deeper than anticipated, more work was necessitated. The high cost of brickwork commented on by the Consulting Engineer for Railways is due to the bricks being issued at a higher rate than estimated.

Turntable.—Underestimated and to supervision charges being added.

	Rs.	A.	P.
Tank Machinery—			
Saving	1,710	4	7

In this case the expenditure is within the sanctioned estimate. Sufficient details are not available to arrive at the causes which led to the saving.

	Rs.	A.	P.
Signals—			
Excess	335	12	9

The principal excess is Rs. 278-11-4, and is due to the home and distant signals being underestimated and to supervision charges being added.

	Rs.	A.	P.
Points and crossings—			
Excess	2,161	14	1

The value was primarily underestimated and supervision charges increased the cost.

Plant—Station and office furniture—

	Rs.	A.	P.
Excess	82	3	2

Represents cost of two baggage trollies which were not provided for in the estimate.

Trichinopoly,
27th August 1898.

JAMES RICE,
Offg. Chief Engineer.

SOUTH INDIAN RAILWAY.

Engineering Department.

Enlargement of Tiruvallur Station in connection with the Mayavaram Mutupet Railway.

Name of work.	Estimate Rs.	Expenditure. Rs. A. P.	Savings. Rs. A. P.	Excess. Rs. A. P.	Explanation.
Land	1,224	1,452 13 0	..	228 13 0	No separate debits originally raised. Cost was fixed proportionately.
Earthwork	5,516	3,716 7 5	1,799 8 7	..	Short quantities and low rates.
Bridgework	2,920	4,792 12 2	..	1,872 12 2	More work in excavation and concrete. High issue rate of bricks. More bricks charged than required. Plastering, pointing and slab stones not provided for. No expenditure in demolishing face walls. Short quantity in diversion of channels.
Fencing	216	..	216 0 0	..	No work done.
Road-crossings	878	1,787 6 3	..	909 6 3	Under estimated.
Ballast	9,610	3,293 15 0	6,316 1 0	..	Low rate. Average actual rate Rs. 21·98 against estimate rate of Rs. 60 per 1,000 cub. ft.
Permanent-way	13,452	14,041 3 0	..	589 3 0	Principally cost of temporary quarters for drivers and guards being debited to this head.
Third-class waiting-shed.	1,518	1,328 5 8	189 10 4	..	No remarks.
Urinals, west end	372	457 0 6	..	85 0 6	More concrete executed. Corrugated walling, &c., and carriage of material underestimated.
Urinals, east end	582	533 3 8	48 12 9	..	More work in excavation, brickwork and concrete. High rate of flooring. Stone not properly apportioned between two urinals. Corrugated walling, &c., for open latrine instead of closed latrine estimated. Carriage of materials underestimated.
Island platform	4,937	4,788 9 0	148 7 0	..	Additional earthwork and stone curb. Value of metal not charged. More steel pale fencing than estimated.
Covered way	7,395	11,312 9 7	..	3,917 9 7	Iron roof, rail posts, guttering and pipes underestimated.
Overbridge	4,464	4,275 13 9	188 2 3	..	Additional excavation, concrete and labour in erection. Saving in overbridge reduces excesses on other heads.
Approaches	1,572	532 14 7	1,039 1 5	..	No work in passenger approach. Less work in goods approach. Value of metal not charged. Gate not estimated for.
Permanent-way Inspector's bungalow.	3,567	2,838 15 2	728 0 10	..	Different design adopted.
Cook house	916	691 5 8	224 10 4	..	
Latrine	273	311 9 6	..	38 9 6	
Water tank	1,987	4,826 10 2	..	2,839 10 2	More excavation. Earthfilling, concrete and labour in erection. Rail staging very much underestimated. Two tanks supplied.
Closing well and re-sinking well 20 ft. diameter.	2,993	5,462 11 9	..	2,469 11 9	Additional brickwork and high rate of issue of bricks. Well curbs of greater strength supplied. Two pumps supplied not estimated.
Sun-shade	110	231 7 5	..	121 7 5	Masonry, plastering and pointing not provided. Excessive carriage of tiles. Demolishing underestimated.
Old ashpit, west end	1,052	1,417 4 0	..	365 4 0	Water cranes not estimated.
Old ashpit, east end	1,052	1,418 9 7	..	366 9 7	
New ashpit, west end	988	1,754 10 5	..	766 10 5	More concrete and brickwork. High issue rate of bricks. Woodwork not fairly apportioned between four pits.
New ashpit, east end	988	1,486 5 0	..	498 5 0	More brickwork. High issue rate of bricks. Woodwork not fairly apportioned between four pits.
Engine turntable	6,929	9,189 6 7	..	2,260 6 7	More excavation. Concrete and brickwork. High issue rate of bricks. Turn-table underestimated.
Tank machinery	4,533	2,822 11 5	1,710 4 7	..	Sufficient details not available to explain cause of saving.
Signals	1,118	1,453 12 9	..	335 12 9	Home and distant signals underestimated.
Points and crossings	8,890	11,051 14 1	..	2,161 14 1	Under estimated.
Station and office furniture.	..	82 3 2	..	82 3 2	Baggage trollies not estimated.
Total	90,052	97,352 9 10	12,608 11 1	19,909 4 11	
Net Excess	..	..	..	7,300 9 10	

Order—No. 1163 Ry., dated 22nd September 1898.

Government fully endorses the severe strictures passed by the Consulting Engineer in his letter to the Agent, No. 1351, dated May 9th, 1898, in regard to the laxity displayed by the South Indian Railway staff who were concerned with the estimate under reference, in (*a*) submitting an insufficient estimate, and (*b*) not bringing the insufficiency to notice as soon as it became apparent to them, as it ought to have become apparent had proper scrutiny of the accounts been carried out during the progress of the work.

2. Under the explanation now afforded, the excess expenditure, amounting to Rs. 7,300–9–10, incurred in enlarging the Tiruvalur station, South Indian Railway, is sanctioned.

(True Extract.)

Francis J. E. Spring,
Joint Secretary.

To the Agent, South Indian Railway.
" Examiner, Guaranteed Railway Accounts.
" Consulting Engineer for Railways.

Ed. A. Rungasawmy Aiyangar.

No. 317

South Indian Railway Co., Ld.

AGENT'S OFFICE,

TRICHINOPOLY, 11th April 1898.

From

The AGENT,
SOUTH INDIAN RAILWAY.

To

The CONSULTING ENGINEER FOR RAILWAYS,
MADRAS.

Sir,

Referring to Government Order No. 857 R. dated 13th May 1893 communicating the sanction of the Government of India to a revised estimate for enlarging Tiruvallur Station on account of the Junction arrangements with the Mayavaram Mutupet Railway, I have the honor to forward herewith the Completion Report, No. 670, for the work, and to request sanction to the excess expenditure of Rs. 7,300-9-10 incurred.

The causes of the excess are explained in the explanation columns.

Kindly return the Report when done with.

I have the honor to be
Sir
Your most obedient Servant
A.B.G. Shelley.
Captain R.E.
Agent

1 Enclosure by Ry parcel, to be returned

Exd.

From
THE AGENT,
South Indian Railway,
Trichinopoly,

To
THE CONSULTING ENGINEER FOR
RAILWAYS,
Madras.

Dated
Received } 189

No.

ENCLOSURE.

Fcp. No. 33.

EXAMINER
Regr. No. 185
14 APR. 1898
Enclosures
RAILWAY ACCOUNTS, MADRAS.

OFFICE OF THE CONSULTING ENGINEER FOR RAILWAYS,
Madras, ~~13th~~ April 1898.

No. 1042

OFFICE NOTE.

Letter from the Agent, South Indian Railway, No. 317, dated ~~11th~~ April 1898, forwarded to the Examiner of Railway Accounts, for favour of remarks.

for E. R.

EXAMINER'S REPLY.

The excess of Rs 7.300-9-10 over the Revised estimate requires the sanction of the Local Govt.

A few of the more important excesses in rates and amounts over the revised estimate are given in the statement below for the Rs' information. If satisfied with the explanation given of the excesses, the completion report may be recommended for sanction of the Local Government.

U.G. Br.

A.

	As Estimated			As executed			Increase	Decrease
	Quantity	Rate	Amount	Quantity	Rate	Amount		
Brick work								
1-5 feet culvert	8.598	30/	2.579	6.069	60/7	3669	1090	
Loco well	2609	30	783	2.753	46/8	1281	498	
Ash pit and drain	1.005	24	241	2.010	31/12	638	397	
Ash pit, M.M. Siding	1.005	24	241	1.001	53/15	540	299	
Turn table	1.956	24	469	3.936	32/3	1266	797	
Wood work								
Loco well (well curbs)			470			1240	770	
Ash pit and drain			264			716	452	
— Do — M.M. Siding			264			716	452	
Road Crossings								
Gates, rails and wickets			906			1464	558	
Removing 9 ft. gate and fixing 4-15 feet gates			25			317	292	
Covered Way								
Wrought iron roof			3.779			7.883	4104	
Water tank								
Rails fish plates, bolts & iron work in bolts etc.			477			2.474	1997	
Points and Crossings								
Points and Crossings, Lapper stops, Sloteh blocks and points iron boxes			8467			10.677	2,210	

Madras
22nd Apl 98

Eswallen

Form No. 1.

Reminders.

1351 / 3 17.8.98
1 / 2nd 18/8/98 VMS.

Reply No.

dated

Despatched on 9/5/98

No. 1351

Madras, 9th May 1898.

From

THE CONSULTING ENGINEER FOR RAILWAYS,

MADRAS,

To

~~THE AGENT AND MANAGER, M. RY.~~
" " S. I. RY.
~~" " H. H. THE N. G. S. RY.~~
" " AND CHIEF ENGR., N. RY.
" " S. M. RY.
" ENGR.-IN-CHIEF, B. M. RY.
~~" MANAGER, E. C. RY.~~

SIR,

I beg to acknowledge the receipt of your letter No. 317. dated the 11th inst. 98. applying for sanction to heavy expenditure of which the net figure is Rs 7300-9-10, as shown in the completion report of the enlargement of Trivalam station on account of the junction arrangements between your line and the Nagercoil-Tuticorin Ry.

2.— Had the net excess been confined of numerous minor excesses I should probably not have hesitated to recommend it for the sanction of Government. But the analysis of it, given below, shows that it is the net result of such very important divergences from the estimate sanctioned by your Board and by the Govt. of India, that I must propose to except it without remarks and without further explanation as to either (a) the badness of the estimate or (b) the failure of your staff to apply for the sanction

Encs two
Stte A & Completion report

48

that the actual cost of a part of the work may be likely to differ from the estimate allowing for a part of the work appears likely to balance each other. It was the duty of your staff not to set one against the other when the divergence from the estimate was obvious. But to apply for sanction to do so if sanction authority.

3. The following table shows how each of the divergences between actuals & estimate. I do not say that actuals are wrong, but that, if actuals are right, the estimate must have been very bad, and vice versa. You & your Board with I hope agree with me that the conduct of business must be seriously interfered with if we cannot secure better coordination between estimates & actuals.

Sub-Heads of Estimate	Sanction	Saving	Excess	Difference
II. Land				
III. Formation	1,224	-	228-13-0	228-13-0
IV. Bridgework	5,516	1,799-8-7	-	1,799-8-7
V. Fencing	2,920	264-5-0	2,137-1-2	1,872-12-2
VII. Ballast and Permanent way	1094	257-2-0	950-8-3	693-6-3
VIII. Stations and Buildings	23,062	6447-9-8	720-11-8	5,726-14-0
IX. Plant	56,236	9,958-6-6	21,908-4-4	11,949-13-10
	"	-	82-3-2	82-3-2
	90,052	18,726-15-9	26,027-9-7	7300-9-10

4. Another statement hereto attached will show you how many important items of the work have cost from 40 to 400 per cent more than were estimated. The mere entry of such remarks in the explanation column as "original estimate insufficient," does not adequately meet the circumstances of the case. You will see that under the account head "Stations & Buildings" actuals in certain items exceed the estimate for those items by Rs 22,000 while the savings on the case to the amount of Rs 10,000. Something more than the mere routine notice of such results in these seems to me to be necessary. I have

No. 808

SERIAL No. 19

58

South Indian Railway Co., Ld.,

AGENT'S OFFICE,

TRICHINOPOLY, 29th August 1898.

From

The AGENT,

SOUTH INDIAN RAILWAY,

To

The CONSULTING ENGINEER FOR RAILWAYS,

MADRAS.

4028 30.8.98

RECEIVED 30 AUG 1898 CONSULTING ENGINEER FOR RAILWAYS MADRAS

Sir

SN017

Your No. 1351 of 9th May 1898

I have the pleasure to forward herewith the Acting Chief Engineer's further report on the excesses and savings in the Tiruvallur Station estimate.

I trust that the information now afforded will enable you to recommend Government to pass the excess.

I have the honor to be
Sir
Your most obedient Servant

Francis T. Smith

Offg. Agent

2 Enclosures A. and B.

Statement A shewing estimate and cost side by side

" B giving detailed explanation of cause of difference of each item.

Enclosure 6 SY

Enlargement of Tiruvallur station in connection with the Mayavaram Mutupet Railway

Land — Excess Rs 228-13-0

The debits for land in connection with this work was charged to the Land taken up for the Mayavaram Mutupet Railway. This was not discovered till the Completion Report was being Compiled. The Charges were not in sufficient detail to get at the debit for the Tiruvallur station, so the cost was worked out in the proportion of the acreage shown in the respective schedules.

Earthwork — Savings Rs 1799-8-7

The estimate provides for 750569 Cft. at Rs 7/- per 1000 Cft. but actually the following quantities were executed at the rates given below:—

In yard. 558078 Cft. average Rs 5.43 per 1000 Cft.
In Goods loading bank. 73131 Cft. average Rs 5.79 — do —

The actual quantities are 16 per cent below the estimate but the cause for this is not traceable. The rate of Rs 7/- provides for the trainage of earth and the actuals include the sum of Rs 160 for the hire of an engine, but it is probable the earth was not trained to the quantities as estimated.

Bridgework — Excess Rs 1872-12-2

Excavation — Excess Rs 338-14-0

The excavation had to be taken down to

to a greater depth than anticipated and provided for. The quantities exceed the estimate by 27.967 Cft. The estimate rate is Rs 15/- and the actual averages Rs 12.42 per 1000 Cft.

Bridgework — Concrete — Excess Rs 625-12-0

This was not provided for. The Executive Engineer, when the foundations were taken out, reported that no concrete was provided and said that none was found in the old foundations. He was told he could put in concrete if he considered it necessary. The rate works out to about Rs 15.86 per 100 Cft.

Bridgework — Brickwork — Excess Rs 1090-3-7½

The estimated quantity is 8598 Cft at Rs 30 per 100 Cft and the Actual quantity is 6069 Cfeet at a rate of about Rs 60.45 per 100 Cft. The smaller quantity is due to Concrete being laid.

The excess in rate is commented upon by the Consulting Engineer for Railways and the following are the details of the rates.

Per 100 Cft.	Estimate Rs	Actuals Rs
Bricks	15	45.66
Lime, Sand, Carriage, loading and unloading, pounding Chunam and labor in building	15	* 14.79

* Paid to Contractor for executed work and for building and removing centrings.

The cause of the excess is the value of bricks. According to the debits 138559 bricks at the rate of Rs 20/- per 1000 were issued from the Tiruvallur brickfield

brickfield. Taking 1500 bricks as the equivalent of 100 cft of brickwork it will give 91035 bricks for 6069 cft against 138559 charged to this particular work. Either the quantities of work executed have been incorrectly returned or bricks for other works have been charged to this. If the additional bricks equivalent to Rs 15.66 per 100 cft is deducted the rate will be Rs 30/- or double that estimated. The estimate provides for bricks from Kulitkarai field at Rs 10/- whereas the issues were made from the Tiruvallur field at Rs 20/- per 1000.

Bridgework — Plastering — Excess Rs 18-3-1

Pointing — do Rs 49-7-9

Slab Stones — do Rs 14-8-9

No provision was made for these items in the estimate.

Bridgework — Demolishing face walls. — Savings Rs 20-0-0

No expenditure has been booked. It is probably included under excavation or brickwork. The work of extension of the culvert was done by contract.

Bridgework — Earthwork in diversion of Channels. — Saving Rs 105-5-2

The estimate is for 26325 cft at Rs 5/- per 1000 cft. but only 7480 cft. is returned as executed at a rate averaging Rs 3.61 per 1000 cft. Probably some of the work is included in excavation.

Fencing — Saving Rs 216-0-0

The work was not executed. It was probably not found necessary to shift the fence.

4

Road crossings _____ Excess Rs 909-6-

The Consulting Engineer for Railways Statement shows an excess of 61 per cent over estimate. It is a case of pure under estimating.

Ballast _____ Saving Rs 6316-1-0

The estimate quantity is 152538 Cft. against an actual of 149872 Cft. The difference is small and need not be considered. The estimated rate is Rs 60/- per 1000 Cft and the actuals are:—

1. (Description not given)	42204 Cft.	at Rs	4.62	Per 1000 Cft.
2. Sand	70000 Cft	"	16	
3. Concrete	30000 Cft	"	60	
4. Stone	7668 Cft	"	23.21	

The average rate being Rs 21.98 per 1000 Cft. most of the expenditure was debited in the first instance to the general sanction of the Mayavaram Mutupet Railway but in September 1894 when attention was called to the Small Charges, items 2 and 3 were transferred from the Mayavaram Mutupet Railway to the Special sanction.

Permanent Way _____ Excess Rs 589-3-0

In this case also most of the charges were debited to the general sanction of the M. M. Railway. When attention was drawn in September to the Small debits, a transfer was made of Rs 12,024-2-2 from the M. M. Railway to this Special sanction.

Rs 386-4-0 the cost of temporary quarters for Guards and Drivers is debited to the Contingencies of this head.

Third class Waiting shed ——— Saving Rs 189-10-4

Calls for no special remarks, the differences are small under each item.

Urinals West end ——— Excess Rs 85-4-6

The principal items requiring explanation are:-

Concrete	———	Excess Rs 25-7-9
Corrugated walling, rail posts &c.	———	Excess Rs 60-2-8
Carriage	———	Excess Rs 10-1-6

Concrete.

The estimate provides for 48 Cft of Concrete and 8 Cft of Ashlar stone, the Contractor was paid for 287 Cft.

Corrugated walling &c.

This has been underestimated, the Workshop Charges for walling, rail posts, buckets and grating amount to Rs 181-10-8 against an estimate of Rs 148/- In addition to this there is a charge for Rs 26-9-0 for lamps which was not estimated for.

The Mayavaram Mutupet Railway was charged a percentage for Supervision &c for Stores issued by the South Indian Railway. From details under other items I find that with the exception of issues from the Engineering Workshops this percentage was charged to the Tiruvallur station rearrangement. The work being a South Indian Railway one, no such charge should have been made. It is, however, too late to make adjustments as the expenditure on this

to the actual cost

this as well as the Mayavaram station is included in the joint station accounts sanctioned by the Government of India.

Carriage.

As in many cases the actual charges for carriage are in excess of the estimate, I am under the impression that the Special rate charged to the Mayavaram Mutupet Railway has also been debited to the Tirivallur Station.

Urinals East end. ——— Saving Rs 48-12-9

The principal items requiring explanation are:-

Excavation	———	Excess Rs 5-4-2
Brickwork	———	Excess Rs 14-0-9
Concrete	———	Excess Rs 14-10-2
Flooring	———	Excess Rs 27-11-11
Corrugated walling rail posts &c.		Saving Rs 115-7-0
Carriage	———	Excess Rs 5-15-6

Excavation.

The quantities are in excess by 75 cft, but the works out to Rs 9·97 per 1000 cft. against the est of Rs 4/. The quantities have evidently not been correctly returned.

Brickwork

The quantities are in excess by 71 cft rate works out to Rs 22·82 against the estima Rs 24 per 100 cft.

Concrete.

Estimate provides for 48 cft concrete ashlar stone. Contractor was paid for 217 cft

Flooring.

The quantity is 33 cft below the but the rate works out to Rs 40·97 against

Excess Rs 280 - 0

Corrugating

12 8 P

of Rs 27 per 100 sqft. The flooring stones for the two urinals have not been fairly apportioned. The urinals are of the same area yet the one at the West end works out to Rs 30.83 against Rs 40.97 in the East end. If the expenditure on the both is taken together the rate works out to Rs 35.90 or Rs 8.90 per 100 sqft more than the estimate.

Corrugated walling &c. The design shows the latrine to be closed as it would be overlooked from the overbridge but the charge through the Engineering Workshops for corrugated iron sheets &c is the same as for the open latrine at the West end.

Carriage. This has been under estimated.

Island Platform ——— Saving Rs 148-7-

The items calling for remarks are:—

1. Earthwork ——— Excess Rs 147-13-1
2. Metalling ——— Saving Rs 1044-1-3
3. Ashlar stone curb ——— Excess Rs 293-8-8
4. Steel pale fencing ——— Excess Rs 254-12-9

Earthwork. Owing to absence of quantities excess cannot be satisfactorily explained.

Metalling Rs 244-14-9 shown against this is the cost of labor but the value of the material not been charged.

Ashlar stone curb. The quantity has exceeded estimate by 584 cft. The rate is Rs 108.45 a the estimate of Rs 125 per 100 cft.

Steel pale fencing. The following remarks made by the Chief Engineer on the Comple Report.

"Steel pale fencing was erected temp "for works and the labor charges accou "the excess"

to the actual cost

"adopted"

1551 -

8

1385

Covered Way ——— Excess Rs 3917-9-7

The following call for remarks.

1. Wrought iron roof. ——— Excess Rs 4104-8-3
2. Rail posts &c ——— Saving Rs 525-9-7
3. Guttering and pipes ——— Excess Rs 1217-2-8

Wrought iron roof.

The Consulting Engineer for Railways points out that the cost exceeds the estimate by 106 per cent. On looking over the details of the debits I find Rs 957-8-5 for rail posts have been incorrectly charged to the roof. This will reduce the excess from Rs 4104-8-3 to Rs 3146-15-10 and the percentage from 106 to 83. The cost of this roof has been under estimated.

Rail posts &c.

If the value of the rail posts incorrectly included in the roof is added, the saving of Rs 525-9-7 will be converted into an excess of Rs 331-14-10. This item too was under estimated.

Guttering and pipes.

This is a clear case of under estimating.

Overbridge ——— Saving Rs 188-2-

The principal items calling for remarks are:—

1. Excavation ——— Excess Rs 8-3-
2. Concrete ——— Excess Rs 101-13-
3. Overbridge ——— Saving Rs 410-4-
4. Piers erecting ——— Excess Rs 285-0-

to ∠ actual cost

"adopted."

1554

1484

Excavation and Concrete. The foundations had to be taken down deeper than anticipated and consequently more work had to be done.

Over bridge. The drawing office details show that the value of this overbridge was arrived at by working out the proportionate cost of a similar overbridge at some other station. Under these circumstances, no useful comparison can be made.

Labor in erecting This was under estimated.

Approaches ——— Saving Rs 1039-1-5

Passenger approaches ——— Saving Rs 101.

No work was done on this head.

Goods Approaches ——— Saving Rs 1051-13-6

(Earthwork Rs 493-9-6. Metalling Rs 558-4-0)

The widening and lengthening do not appear to have been done to the extent estimate The road was metalled but the value of the metal has not been charged.

Steel pale gate ——— Excess Rs 171-14-1

This was considered necessary when the work was being executed.

P.W. Inspector's bungalow ——— Saving Rs 728-0-

Cook house ——— Saving Rs 224-10

Latrine ——— Excess Rs 38-9

The following explanation was g... by the Chief Engineer in the Completion Report

"Owing to the loose soil it was doubtf... "that the arched roof as per plan No. 133/87 wou... "Stand and Calicut tiled roof as per V. G. ... ... with 4 feet of foundations (...

to L retard cost

1554 -

"adopted".

Water Tank. _____ Excess Rs

The whole of the items have e
the sanction.

Excavation _____ Excess Rs 54

Is due to bailing for which no
provision was made.

Earthfilling _____ Excess Rs 63-

Due to filling up of tank.

Concrete. _____ Excess Rs 111-

More concrete was put in due t
foundations.

68 ft rail staging _____ Excess Rs 194

The Consulting Engineer for Ra
points out that the expenditure on this item
cent over the Sanction. There can be no
that this has been under estimated. Only
cost of the rails at Rs 20/- per ton is provide
nothing is allowed for the manufacture o
Staging &c.

Iron Tank _____ Excess Rs 565

One tank is estimated but on go
through the details I find two are debited
Sanction. One in November 1892 for Rs 653-14-
Second for Rs 544-4-2 in January 1894.

The latter is the one brought a
to supplement the supply from the Odambo
new well having shown signs of failure in
quantity of water required. The Second
should have been credited to the Sanctio
when the supply from Odamboki was stopped

Labor in erection _____ Excess Rs 18

This has been under estimated.

to L actual cost

Closing existing well and resinking Loco: well 20ft diam:	Excess Rs 240-6
The items calling for remark	
Brickwork	Excess Rs 498-1-
Well curbs	Excess Rs 770-1-
Pumps	Excess Rs 1020-1-

Brickwork

The Consulting Engineer for Railways p... out that the expenditure is 63 per cent in ex... of the sanction. This is principally due to Steining having to be taken deeper than an...

He also points out that the rate is Rs 16-8-0 per 100 Cft in excess of the sanct... This is due principally to bricks being issue... Rs 20/- per 1000 against Rs 10/- per 1000 estim...

Well curbs.

The Consulting Engineer for Rai... points out that the cost of the wood work i... well curb is in excess by 164 per cent. The f... ing remark was made by the Chief Engin... on the Completion Report.

"The well curb as estimated was "insufficient strength and had to be in... "in size".

The sinking of this well gave a g... deal of trouble and it was consequently necessary to increase the size of the curb...

Pumps.

Owing to anticipated failu... of water in the new well, it was de... not to close the old well and to provi... additional pumping power to keep up... regular supply. Two pumps were insu...

and charged to the work. This addition not anticipated when the estimate was up.

Sun Shade ——— Excess Rs 12

The items requiring explanation are :-

Masonry	Excess Rs 40-9
Plastering	Excess Rs 6-9
Pointing	Excess Rs 7-12
Calicut tiles	Excess Rs 44-1
Demolishing existing shed	Excess Rs 30-

Masonry, Plastering and Pointing- were not pro for but found necessary when the work was exec Calicut tiles- Is due to the trainage of the from Chinglepet to Tiruvallur.
Demolishing existing shed. This was un estimated.

Old Ashpit at West End	Excess Rs 366-
Old Ashpit at East End	Excess Rs 366-

This is principally due to two u cranes being charged although not provid for. This was found necessary to compl the watering arrangements.

New Ashpit at West end.	Excess Rs 80:

The principal items calling for r are :-

Concrete	Excess Rs 122-3
Brickwork	Excess Rs 396-8
Wood work	Excess Rs 452-

Concrete and Brickwork.

More work was necessary to bad foundations. The Consulting Engineer for Railways, comments on the cost of the being 166 per cent in excess and the rate Rs per 100 Cft. The extra cost is due 1st to mo being necessitated and to the high rate at bricks were issued to work.

Wood work.

The Consulting Engineer f Railways also comments on this item 170 per cent in excess. I do not think t of the timbers have been fairly apportion among the four Ashpits – two old and new ones. The estimate provides 66 Cft for each Ashpit at Rs 4/- per cubic foot. total expenditure is Rs 1926-9-8 and in the Completion Report distributed a

Old Ashpit West end	Rs	247-2-
Do East end	Rs	247-2-
New Ashpit West end	Rs	716-2-
Do East end	Rs	716-2-

The Ashpits being of equal leng the expenditure should be divided in eq proportions. This will result in the experi being Rs 481-10-5 for each Ashpit. Taki the lengths in the estimate as correct t actual rate works out to Rs 7·30 per foot against the estimate of Rs 4/- estimated rate is I think too low.

New Ashpit East end. ——— Excess Rs 498-

The following Call for remar

to 1 actual cost

Brickwork ——— Excess Rs 299-7-7
Wood work ——— Excess Rs 452-1-6

The Consulting Engineer for Railways Commento[illegible]n the high cost of brickwork being 124 [illegible]rent in excess and the rate Rs 29-15-0 [illegible]xcess of the Sanction. The high issue rat[illegible] account partly for the excess but I d[illegible] not think the work done on the two Ashpits has been fairly distributed or otherwise th[illegible]es would not differ so much.

Wood work - See remarks against Ashpit at West end.

Engine Turntable ——— Excess Rs 2260-6-7

The items calling for remarks are :—

Excavation ——— Excess Rs 112-9-1
Concrete ——— Excess Rs 1170-0-7
Brickwork ——— Excess Rs 796-11-8
Turntable ——— Excess Rs 888-10-1

Excavation, Concrete and Brickwork.

Owing to the foundations having to be taken deeper than anticipated more work was necessitated. The high cost of brickwork commented on by the Consulting Engineer for Railways is due to the bricks being issued at a higher rate than estimated.

Turntable. Under estimated and to Supervision Charges being added.

Tank Machinery ——— Saving Rs 1710-4-7

In this case the expenditure is within the sanctioned estimate. Sufficient details are not available to arrive at the causes which led to the saving.

Signals. ——— Excess Rs 335-12-9

The principal excess is Rs 278-11-4 and is due to the Home and Distant Signals being under estimated and to supervision Charges being added.

Points and Crossings. ——— Excess Rs 2161-14-1

The value was primarily under estimated and supervision Charges increased the cost.

Plant

Station and Office Furniture Excess Rs 82-3-2

Represents cost of two baggage trollies which were not provided for in the estimate.

Chief Engineer's Office
Trichinopoly 27th August 1898

Offg: Chief Engineer

1 To ERo cert. 4028/98
808 di 29. 8. 98
A

2 ERo cert. 4028/98
808 29. 8 98
A

Explanation

Different design adopted.

More excavation. Earthfilling Concrete and Labor in erection. Rail staging very much under estimated. Two tanks supplied.
Additional Brickwork and high rate of issue of bricks. Well curbs of greater strength supplied. Two pumps supplied not estimated.
Masonry - Plastering and Pointing not provided. Excessive Carriage of tiles. Demolishing underestimated.
Water Cranes not estimated.

More concrete & Brickwork. High issue rate of bricks. Woodwork not fairly apportioned between 4 Pits.
More Brickwork. High issue rate of bricks. Wood work not fairly apportioned between 4 Pits.
More Excavation. Concrete & Brickwork. High issue rate of bricks. Turntable under estimated.
Sufficient details not available to explain cause of saving.
Home and Distant signals under estimated.
Under estimated.
Baggage Tollies not estimated.

20 #

M. Rao
Offg: Chief Engineer

M.R.

21 Bz

South Indian Railway
Engineer Department

Enlargement of Tiruvallur Station in connection with the Mayavaram Mutupet Railway

Name of work	Page of detailed explanation	Estimate	Expenditure	Savings	Excess	Explanation
Land	1	1224	1452 13 0	" " "	228 13 0	No separate debits originally raised. Cost was fixed proportionately.
Earthwork	1	5516	3716 7 5	1799 8 7	" " "	Short quantities and low rates.
Bridgework	1-3	2920	4792 12 2	" " "	1872 12 2	More work in Excavation & Concrete. High issue rate of bricks – more bricks charged than required. Plastering, Pointing and Slab stones not provided for. No expenditure in demolishing face walls. Short quantity in diversion of Channels.
Fencing	3	216	" " "	216 " "	" " "	No work done.
Road Crossings	4	878	1787 6 3	" " "	909 6 3	Under estimated.
Ballast	4	9610	3293 15 0	6316 1 0	" " "	Low rate. Average actual rate Rs 21.98 against estimate rate of Rs 60/- per 1000 cft.
Permanent Way	4-5	18452	14041 3 0	" " "	589 3 0	Principally cost of temporary Quarters for Drivers and Guards being debited to this head.
3rd Class Waiting shed	5	1518	1328 5 8	189 10 4	" "	No remarks.
Urinals West end	5-6	372	457 " 6	" " "	85 " 6	More Concrete executed. Corrugated Walling &c and Carriage of material under estimated.
Urinals East End	6-7	582	533 3 3	48 12 9	" "	More work in Excavation. Brickwork and Concrete. High rate of flooring. Stone not properly apportioned between two Urinals. Corrugated Walling &c for Open Latrine instead of closed Latrine estimated. Carriage of materials under estimated.
Island Platform	7	4937	4788 9 0	148 7 0	" "	Additional Earthwork and Stone curb. Value of metal not charged. More steel pale fencing than estimated.
Covered way	8	7395	11312 9 7	" " "	3917 9 7	Iron roof. Rail posts. Guttering and Pipes under estimated.
Over bridge	8-9	4464	4275 13 9	188 2 3	" "	Additional Excavation, Concrete and Labor in erection. Saving in over bridge reduces excesses on other heads.
Approaches	9	1572	532 14 7	1039 1 5	" "	No work in Passenger Approach. Less work in Goods Approach. Value of metal not charged. Gate not estimated for.
Carried Over.		54656	52313 1 2	9946 11 4	7602 12 6	

Name of work	Page of detailed explanation	Estimate	Expenditure	Savings	Excess
Brought forward		54656	52313 1 2	9945 11 4	7602 12 6
Permanent Way Inspectors Bungalow		3567	2838 15 2	728 4 10	" " "
Cook house	9+10	916	691 5 8	224 10 4	" " "
Latrine		273	311 9 6	" " "	38 9 6
Water Tank	10	1987	4826 10 2	" " "	2839 10 2
Closing Well & resinking well 20ft dia.	11+12	2993	5462 11 9	" " "	2469 11 9
Sun shade	12	110	231 7 5	" " "	121 7 5
Old Ash pit West end	12	1052	1417 4 "	" " "	365 4 "
Do East end		1052	1418 9 7	" " "	366 9 7
New Ash pit West end	12-13	988	1754 10 5	" " "	766 10 5
Do East end	13-14	988	1486 5 "	" " "	498 5 "
Engine Turntable	14	6929	9189 6 7	" " "	2260 6 7
Tank Machinery	15	4533	2822 11 5	1710 4 7	" " "
Signals	15	1118	1453 12 9	" " "	335 12 9
Points and Crossings	15	8890	11051 14 1	" " "	2161 14 1
Station & Office furniture	15	6	82 3 2	" " "	82 3 2
8 # Total		90052	97352 9 10	12608 11 1	19909 4 10
		3 4	6	6	

Net Excess Rs 7300-9-

Chief Engineer's Office
Trichinopoly 27th August 1898

300—30-6-98.

Form 83.

OFFICE OF THE CONSULTING ENGINEER FOR RAILWAYS,

Madras, 30th August 1898.

EXAMIN
Regr. No. 441
31 AUG. 1898
Enclosures
RAILWAY ACCOUNTS, MADRAS

No 2440

OFFICE NOTE.

Letter from the Agent, South Indian Railway, No 808,
dated 29th August 1898, forwarded to the Examiner of Railway
Accounts. for favour of remarks.

for E. R.

EXAMINER'S REPLY.

ER

If the explanation now offered by the Company is considered satisfactory, the excess over the estimate may be sanctioned by the Local Government.

3.9.98.

C. R.

Form No. 29.

Letter from A
No. 808
Dated 29.8.98.

To E. R.

Excess over estimate for the enlargement of Tirowallen station S.I.R^y.

I think we must sanction this The long note on the discrepancies shows that the Engineering staff have done their best to explain the errors & this scrutiny must have entailed more trouble than a proper inspection & check of the accounts at the time would have done.

Many of the ex reasons given for exceeding the estimate are proper ones - such as depth of foundations increased - rates changed owing to a different source of supply of materials - etc.

Part of the explanation is very unsatisfactory. For instance — Bridgework, Brickwork " ..... Either the quantities of work executed have been incorrectly returned on bricks for other works have been charged to this .... Apparently the accounts of this work have been mixed up with the accounts of the Ry. Dr. R^y & it

page 3 of C.E.'s letter.

would be a hopeless matter to now open up accounts & apportion the charges correctly.

JLA
8/9/98

Form No. 1.

PUBLIC WORKS DEPARTMENT,

RAILWAY BRANCH.

Papers to be read in Proceedings:—

Again G.O., dated 24th November 1892, No. 2840 · R.

Again G.O., dated 13th May 1893, No. 859 · R.

Print these & fill the endorsing in Quote in Small Type.

Current No. 317 of 189, dated 11th April 98, from Agent S.I.R. & Co. Engr. for Rys.

" " 1351 " 189, " 9th May 98, " Co. Engr for Rys & Agent S.I.R.

" " 808 " 189, " 29th Aug 98, " Agent S.I.R. & Co. Engr. for Rys with its endorsement

ORDER. No. 1163 Dy dated 22/9/98

Government fully endorse the same structures passed by the Consulting Engineer in ~~[illegible]~~ his letter to the Agent. No. 1351 dated May 9th 1898, in regard to the hasty dispatch by the S.I.Ry. staff who were concerned with the Estimate under reference, in (a) submitting an insufficient estimate & (b) not bringing the insufficiency to notice as soon as it became apparent to them, or it ought to have become apparent to them, when the progress sanctioned had progressed to the amount to which the account has been carried at closing the progress of the work.

Under the explanation now afforded, the excess expenditure, amounting to Rs. 7300-9-10, incurred in enlarging the Trivandrum Station S.I.R. is sanctioned.

JLA
R. 8/9/98

for the information & guidance
JLA
8/9/98

23/9

Secy S.I.R.
Secy to Govt Rly Accts
Consy Engr for Rys.

Revised estimate for enlarging Tiruvallur station in accordance of junction arrangements with the Nellore Railway - Submitted by

RAILWAY.

Government {1898} of Madras.

PUBLIC WORKS.

Read for approval

H.E. The Governor.
G.O. for approval on page 11.
7/9/98

Recd.	1898.	*Enclosures*
Regd.		*Spare copies*

20/9/98

Ahlad
S.Sk
21.9.98

G.O., No. 1163 Ry., 22nd September 1898.

SEPTEMBER.

Tiruvallur Junction Station, S.Ry.

Sanctioning, with remarks, the excess expenditure amounting to Rs 7300-9-10 incurred on the enlarging the ——.

Ry.
20/9/98
R/22/9/98.

A return from HE
Let me know the
Govt. Order No 1163 R

A.R.

I ordered some trimming to be shown
correctly these groups. Make clear how to make the
tunnel free erection. Arrange it once please
with the Press Supdt. to have him taught. He
ought to please in our hours. a lot the most
in our Dy.

F/9
22/9/98

No. 1163 Ry., 22nd September 1898.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Railway.

Read again the following papers:—

G.O., No. 2840 R., dated 24th November 1892.
G.O., No. 859 R., dated 13th May 1893.

Read also the following papers:—

From—The Agent, South Indian Railway.
To—The Consulting Engineer for Railways, Madras.
Dated—Trichinopoly, 11th April 1898, No. 317.

Referring to G.O., No. 859 R., dated 13th May 1893, communicating the sanction of the Government of India to a revised estimate for enlarging Tiruvallur station on account of the junction arrangements with the Mayavaram-Mutupet Railway, I have the honour to forward herewith the completion report, No. 670, for the work, and to request sanction to the *excess* expenditure of Rs. 7,300–9–10 incurred.

The causes of the excess are explained in the explanation column.

Kindly return the report when done with.

From—The Consulting Engineer for Railways, Madras.
To—The Agent, South Indian Railway.
Dated—Madras, 9th May 1898, No. 1351.

I beg to acknowledge the receipt of your letter, No. 317, dated the 11th April 1898, applying for sanction to excess expenditure of which the net figure is Rs. 7,300–9–10, as shown in the completion report of the enlargement of Tiruvallur station on account of the junction arrangements between your line and the Mayavaram-Mutupet Railway.

2. Had the net excess been composed of numerous minor excesses, I should probably not have hesitated to recommend it for the sanction of Government. But the analysis of it, given below, shows that it is the net result of such very important discrepancies from the estimate sanctioned by your Board and by the Government of India, that I must refuse to accept it without remarks, and without further explanation as to either (*a*) the badness of the estimating, or (*b*) the failure of your staff to apply for the sanction of competent authority as soon as, in each case, it appeared that the actual cost of a part of the work was likely to differ seriously from the estimate. If savings in part of the work appeared likely to balance excess in other parts, it was the duty of your staff not to set one against the other when the discrepancies from the estimate were serious, but to apply for the permission to do so of competent authority.

3. The following table shows how serious are the discrepancies between actuals and estimates. I do not say that actuals are wrong, but that, if actuals are right, estimating must have been very bad, and *vice versâ*. You and your Board will, I hope, agree with me that the conduct of business must be seriously interfered with if we cannot secure better co-ordination between estimates and actuals:—

Sub-heads of estimate.	Sanction.	Saving.	Excess.	Difference.
	Rs.	Rs. A. P.	Rs. A. P.	Rs. A. P.
II. Land	1,224	..	228 13 0	228 13 0
III. Formation	5,516	1,799 8 7	..	1,799 8 7
IV. Bridge work	2,920	264 5 0	2,137 1 2	1,872 12 2
V. Fencing	1,094	257 2 0	950 8 3	693 6 3
VII. Ballast and permanent-way	23,062	6,447 9 8	720 11 8	5,726 14 0
VIII. Stations and buildings	56,236	9,958 6 6	21,908 4 4	11,949 13 10
IX. Plant	..	..	82 3 2	82 3 2
Total ..	90,052	18,726 15 9	26,027 9 7	7,300 9 10

4. Another statement A hereto attached will show you how many important items of the work have cost from 40 to 400 per cent. more than were estimated. The mere entry of such a remark in the explanation column as "original estimate insufficient," does not adequately meet the circumstances of the case. You will see that under the accounts head "stations and buildings," actuals in certain items exceeded the estimate for these items by Rs. 22,000, while the reverse was the case to the amount of Rs. 10,000. Something more than the mere routine notice of such results as these seems to me to be necessary.

STATEMENT A.

	As estimated.			As executed.			Excess.	Percentage of excess.
	Quantity.	Rate.	Amount.	Quantity.	Rate.	Amount.		
Brickwork.		Rs.	Rs.		Rs. A. P.	Rs.	Rs.	
One 5 feet culvert	8,598	30	2,579	6,069	60 7 0	3,669	1,090	42
Locomotive well	2,609	30	783	2,753	46 8 0	1,281	498	63
Ashpit and drain	1,005	24	241	2,010	31 12 0	638	397	165
„ M.M. siding	1,005	24	241	1,001	53 15 0	540	299	124
Turn table	1,956	24	469	3,936	32 3 0	1,266	797	170
Woodwork.								
Locomotive well (well curbs)	470			..		1,240	770	164
Ashpit and drain	264			..		716	452	171
„ M.M. siding	264			..		716	452	171
Road Crossings.								
Gates, rails and wickets	906			..		1,464	558	61
Covered Way.								
Wrought iron roof	3,779			..		7,883	4,104	109
Water Tank.								
Rails, fish plates, bolts and iron work in bolts, &c.	..			477		2,474	1,997	418

From—The Agent, South Indian Railway.
To—The Consulting Engineer for Railways, Madras.
Dated—Trichinopoly, 29th August 1898, No. 808.

[Your No. 1351 of 9th May 1898.]

I have the pleasure to forward herewith the Acting Chief Engineer's further report on the excesses and savings in the Tiruvallur station estimate.

I trust that the information now afforded will enable you to recommend Government to pass the excess.

ENCLOSURE.

ENLARGEMENT of Tiruvallur station in connection with the Mayavaram-Mutupet Railway.

	Rs. A. P.
Land—	
Excess	228 13 0

The debits for land in connection with this work was charged to the land taken up for the Mayavaram-Mutupet Railway. This was not discovered till the completion report was being compiled. The charges were not in sufficient detail to get at the debit for the Tiruvallur station, so the cost was worked out in the proportion of the acreage shown in the respective schedules.

	Rs. A. P.
Earthwork—	
Savings	1,799 8 7

The estimate provides for 750,569 cubic feet at Rs. 7 per 1,000 cub. ft., but actually the following quantities were executed at the rates given below:—

In yard—558,078 cubic feet, average Rs. 5·43 per 1,000 cub. ft.
In goods loading bank—73,131 cubic feet, average Rs. 5·79 per 1,000 cub. ft.

The actual quantities are 16 per cent. below the estimate, but the cause for this is not traceable. The rate of Rs. 7 provides for the trainage of earth, and the actuals include the sum of Rs. 160 for the hire of an engine, but it is probable the earth was not trained to the quantities as estimated.

	Rs. A. P.
Bridgework—	
Excess	1,872 12 2
Excavation—	
Excess	338 14 0

The excavation had to be taken down to a greater depth than anticipated and provided for. The quantities exceed the estimate by 27,967 cubic feet. The estimate rate is Rs. 15 and the actual averages Rs. 12·42 per 1,000 cub. ft.

	Rs. A. P.
Concrete—	
Excess	625 12 0

This was not provided for. The Executive Engineer, when the foundations were taken out, reported that no concrete was provided and said that none was found in the old foundations. He was told he could put in concrete if he considered it necessary. The rate works out to about Rs. 15·86 per 100 cub. ft.

	Rs. A. P.
Brickwork—	
Excess	1,090 3 7

The estimated quantity is 8,598 cubic feet at Rs. 30 per 100 cub. ft., and the actual quantity is 6,069 cubic feet at a rate of about Rs. 60·45 per 100 cub. ft. The smaller quantity is due to concrete being laid.

The excess in rate is commented upon by the Consulting Engineer for Railways, and the following are the details of the rates:—

Per 100 cubic feet.	Estimate. Rs.	Actuals. Rs.
Bricks	15	45·66
Lime, sand, carriage, loading and unloading, pounding chunam and labour in building	15	14·79 *

The cause of the excess is the value of bricks. According to the debits 138,559 bricks at the rate of Rs. 20 per 1,000 were issued from the Tiruvallur brickfield. Taking 1,500 bricks as the equivalent of 100 cub. ft. of brickwork, it will give 91,035 bricks for 6,069 cubic feet against 138,559 charged to this particular work. Either the quantities of work executed have been incorrectly returned or bricks for other works have been charged to this. If the additional bricks

* Paid to contractor for executed work and for building and removing centrings.

equivalent to Rs. 15·66 per 100 cub. ft. is deducted, the rate will be Rs. 30; or double that estimated. The estimate provides for bricks from Kulikarai field at Rs. 10, whereas the issues were made from the Tiruvallur field at Rs. 20 per 1,000.

	Rs.	A.	P.
Plastering—			
Excess	18	3	1
Pointing—			
Excess	49	7	9
Slab Stones—			
Excess	14	8	9

No provision was made for these items in the estimate.

	Rs.	A.	P.
Demolishing face walls—			
Savings	20	0	0

No expenditure has been booked. It is probably included under excavation or brickwork. The work of extension of the culvert was done by contract.

	Rs.	A.	P.
Earthwork in diversion of channels—			
Saving	105	5	0

The estimate is for 26,325 cubic feet at Rs. 5 per 1,000 cub. ft., but only 7,480 cubic feet is returned as executed at a rate averaging Rs. 3·61 per 1,000 cub. ft. Probably, some of the work is included in excavation.

	Rs.	A.	P.
Fencing—			
Saving	216	0	0

The work was not executed. It was probably not found necessary to shift the fence.

	Rs.	A.	P.
Road-crossings—			
Excess	909	6	3

The Consulting Engineer for Railways' statement shows an excess of 61 per cent. over estimate. It is a case of pure under-estimating.

	Rs.	A.	P.
Ballast—			
Saving	6,316	1	0

The estimate quantity is 152,538 cubic feet against an actual of 149,872 cubic feet. The difference is small and need not be considered. The estimated rate is Rs. 60 per 1,000 cub. ft. and the actuals are—

	C. ft.	Rs.	
1. (Description not given)	42,204 at	4·62	per 1,000 cub. ft.
2. Sand	70,000 „	16	
3. Concrete	30,000 „	60	
4. Stone	7,668 „	23·21	

The average rate being Rs. 21·98 per 1,000 cub. ft. most of the expenditure was debited, in the first instance, to the general sanction of the Mayavaram-Mutupet Railway, but in September 1894. When attention was called to the small charge, items 2 and 3 were transferred from the Mayavaram-Mutupet Railway to the special sanction.

	Rs.	A.	P.
Permanent-Way—			
Excess	589	3	0

In this case also most of the charges were debited to the general Sanction of the Mayavaram-Mutupet Railway. When attention was drawn in September to the small debits, a transfer was made of Rs. 12,024–2–2 from the Mayavaram-Mutupet Railway to this special sanction.

Rupees 386–4–0, the cost of temporary quarters for guards and drivers, is debited to the contingencies of this head.

	Rs.	A.	P.
Third-class Waiting-shed—			
Saving	189	10	4

Calls for no special remarks, the differences are small under each item—

	Rs.	A.	P.
Urinals, west end—			
Excess	85	0	6

The principal items requiring explanation are—

	Rs.	A.	P.
Concrete—			
Excess	25	7	9
Corrugated walling, rail posts, &c.—			
Excess	60	2	8
Carriage—			
Excess	10	1	6

Concrete.—The estimate provides for 48 cubic feet of concrete and 8 cubic feet of Ashlar stone, the contractor was paid for 287 cubic feet.

Corrugated walling, &c.—This has been underestimated, the workshop charges for walling, rail posts, buckets and grating amount to Rs. 181–10–8, against an estimate of Rs. 148. In addition to this there is a charge for Rs. 26–9–0 for lamps, which was not estimated for.

The Mayavaram-Mutupet Railway was charged a percentage for supervision, &c., for stores issued by the South Indian Railway. From details under other items I find that, with the exception of issues from the engineering workshops, this percentage was charged to the Tiruvallúr station re-arrangements. The work being a South Indian Railway one, no such charge should have been made. It is, however, too late to make adjustments as the expenditure on this as well as the Mayavaram station is included in the joint station accounts sanctioned by the Government of India.

Carriage.—As in many cases the actual charges for carriage are in excess of the estimate, I am under the impression that the special rate charged to the Mayavaram-Mutupet Railway has also been debited to the Tiruvallúr station.

	Rs.	A.	P.
Urinals, east end—			
Saving	48	12	9

The principal items requiring explanation are—

	Rs.	A.	P.
Excavation—			
Excess	5	4	2
Brickwork—			
Excess	14	0	9
Concrete—			
Excess	14	10	2
Flooring—			
Excess	27	11	11
Corrugated walling, rail posts, &c.—			
Saving	115	7	0
Carriage—			
Excess	5	15	6

Excavation.—The quantities are in excess by 75 cubic feet, but the rate works out to Rs. 9·97 per 1,000 cubic feet against the estimate of Rs. 4. The quantities have evidently not been correctly returned.

Brickwork.—The quantities are in excess by 71 cubic feet. The rate works out to Rs. 22·82 against the estimate of Rs. 24 per 100 cubic feet.

Concrete.—Estimate provides for 48 cubic feet concrete and 8 cubic feet Ashlar stone. Contractor was paid for 217 cubic feet of concrete.

Flooring.—The quantity is 33 cubic feet below the estimate, but the rate works out to Rs. 40·97 against an estimate of Rs. 27 per 100 square feet. The flooring stones for the two urinals have not been fairly apportioned. The urinals are of the same area, yet the one at the west end works out to Rs. 30·83 against Rs. 40·97 in the east end. If the expenditure on the both is taken together, the rate works out to Rs. 35·90 or Rs. 8·90 per 100 square feet more than the estimate.

Corrugated walling, &c.—The design shows the latrine to be closed as it would be overlooked from the overbridge, but the charge through the engineering workshops for corrugated iron sheets, &c., is the same as for the open latrine at the west end.

Carriage.—This has been underestimated—

	Rs.	A.	P.
Island platform—			
Saving	148	7	0

The items calling for remarks are—

	Rs.	A.	P.
(1) Earthwork—			
Excess	147	13	1
(2) Metalling—			
Saving	1,044	1	3
(3) Ashlar stone curb—			
Excess	293	8	8
(4) Steel pale fencing—			
Excess	254	12	9

Earthwork.—Owing to absence of quantities the excess cannot be satisfactorily explained.

Metalling.—Rupees 244–14–9 shown against this item is the cost of labour, but the value of the material has not been charged.

Ashlar stone curb.—The quantity has exceeded the estimate by 584 cubic feet. The rate is Rs. 108·45 against the estimate of Rs. 125 per 100 cub. ft.

Steel pale fencing.—The following remark was made by the Chief Engineer on the completion report:—

"Steel pale fencing was erected temporarily for works and the labour charges account for the excess."

	Rs.	A.	P.
Covered way—			
Excess	3,917	9	7

The following call for remarks:—

	Rs.	A.	P.
(1) Wrought iron roof—			
Excess	4,104	8	3
(2) Rail posts, &c.—			
Saving	525	9	7
(3) Guttering and pipes—			
Excess	1,217	2	8

Wrought iron roof.—The Consulting Engineer for Railways points out that the cost exceeds the estimate by 109 per cent. On looking over the details of the debits I find Rs. 957–8–5 for rail posts have been incorrectly charged to the roof. This will reduce the excess from Rupees 4,104–8–3 to Rs. 3,146–15–10 and the percentage from 106 to 83. The cost of this roof has been underestimated.

Rail posts, &c.—If the value of the rail posts incorrectly included in the roof is added, the saving of Rs. 525–9–7 will be converted into an excess of Rs. 331–14–10. This item too was underestimated.

Guttering and pipes.—This is a clear case of underestimating.

	Rs.	A.	P.
Overbridge—			
Saving	188	2	3

The principal items calling for remarks are—

	Rs.	A.	P.
(1) Excavation—			
Excess	8	3	5
(2) Concrete—			
Excess	101	13	11
(3) Overbridge—			
Saving	410	4	11
(4) Labour in erecting—			
Excess	285	0	2

Excaration and concrete.—The foundations had to be taken down deeper than anticipated and consequently more work had to be done.

Overbridge.—The drawing office details show that the value of this overbridge was arrived at by working out the proportionate cost of a similar overbridge at some other station. Under these circumstances, no useful comparison can be made.

Labour in erecting.—This was underestimated—

	Rs.	A.	P.
Approaches—			
Saving	1,039	1	5
Passenger approaches—			
Saving	101	0	0

No work was done on this head.

		Rs.	A.	P.
Goods approaches—				
Saving	Earthwork	493	9	6
	Metalling	558	4	0
	Total	1,051	13	6

The widening and lengthening do not appear to have been done to the extent estimated. The road was metalled but the value of the metal has not been charged.

	Rs.	A.	P.
Steel pale gate—			
Excess	171	14	1

This was considered necessary when the work was being executed.

	Rs.	A.	P.
Permanent-way Inspector's bungalow—			
Saving	728	0	10
Cook-house—			
Saving	224	10	4
Latrine—			
Excess	38	9	6

The following explanation was given by the Chief Engineer in the completion report:—

"Owing to the loose soil it was doubtful that the arched roof, as per plan No. 133/87, would stand and Calicut tiled roof as per Villupuram-Guntakal section, plan No. 2869, with 4 feet of foundations (having 2 feet brickwork and 2 feet concrete), was therefore adopted."

	Rs.	A.	P.
Water tank—			
Excess	2,839	10	2

The whole of the items have exceeded the sanction.

	Rs.	A.	P.
Excavation—			
Excess	59	1	4

Is due to bailing for which no provision was made.

	Rs.	A.	P.
Earth filling—			
Excess	63	8	0

Due to filling up of tank.

	Rs.	A.	P.
Concrete—			
Excess	111	2	6

More concrete was put in due to wet foundations.

	Rs.	A.	P.
68 lb. rail staging—			
Excess	1,996	15	1

The Consulting Engineer for Railways points out that the expenditure on this item is 418 per cent. over the sanction. There can be no doubt that this has been underestimated. Only the bare cost of the rails, at Rs. 20 per ton, is provided and nothing is allowed for the manufacture of the staging, &c.—

	Rs.	A.	P.
Iron tank—			
Excess	565	12	6

One tank is estimated but on going through the details I find two are debited to the sanction. One in November 1892 for Rs. 653–14–11 and second for Rs. 544–4–2 in January 1894.

The latter is the one brought down to supplement the supply from the Odamboki, the new well having shown signs of failure in the quantity of water required. The second tank should have been credited to the sanction when the supply from Odamboki was stopped.

	Rs.	A.	P.
Labour in erection—			
Excess	185	3	11

This has been underestimated.

	Rs.	A.	P.
Closing existing well and re-sinking locomotive well 20 feet diameter—			
Excess	2,469	11	9

The items calling for remarks are —

	Rs.	A.	P.
Brickwork—			
Excess	498	1	3
Well curbs—			
Excess	770	1	5
Pumps—			
Excess	1,020	1	6

Brickwork.—The Consulting Engineer for Railways points out that the expenditure is 63 per cent. in excess of the sanction. This is principally due to the steining having to be taken deeper than anticipated.

He also points out that the rate is Rs. 16–8–0 per 100 cubic feet in excess of the sanction. This is due principally to bricks being issued at Rs. 20 per 1,000 against Rs. 10 per 1,000 estimated.

Well curbs.—The Consulting Engineer for Railways points out that the cost of the woodwork in the well curb is in excess by 164 per cent. The following remark was made by the Chief Engineer on the completion report.

"The well curb as estimated was of insufficient strength and had to be increased in size."

The sinking of this well gave a great deal of trouble and it was consequently necessary to increase the size of the curb.

Pumps.—Owing to anticipated failure of water in the new well, it was decided not to close the old well and to provide additional pumping power to keep up a regular supply. Two pumps were issued and charged to the work. This addition was not anticipated when the estimate was drawn up.

	Rs.	A.	P.
Sun-shade—			
Excess	122	3	5
The items requiring explanation are—			
Masonry—			
Excess	40	9	8
Plastering—			
Excess	6	9	1
Pointing—			
Excess	7	12	0
Calicut tiles—			
Excess	44	12	3
Demolishing existing shed—			
Excess	30	2	5

Masonry, plastering and pointing—were not provided for but found necessary when the work was executed.

Calicut tiles—Is due to the trainage of the tiles from Chingleput to Tiruvallur.

Demolishing existing shed.—This was underestimated.

	Rs.	A.	P.
Old ashpit at west end—			
Excess	365	4	0
Old ashpit at east end—			
Excess	366	9	7

This is principally due to two water cranes being charged although not provided for. This was found necessary to complete the watering arrangements.

	Rs.	A.	P.
New ashpit at west end—			
Excess	802	2	1
The principal items calling for remarks are—			
Concrete—			
Excess	122	3	6
Brickwork—			
Excess	396	8	9
Woodwork—			
Excess	452	2	7

Concrete and Brickwork.—More work was necessary owing to bad foundations. The Consulting Engineer for Railways, comments on the cost of the brickwork being 165 per cent. in excess and the rate Rs. 7–12–0 per 100 cub. ft. The extra cost is due first to more work being necessitated and to the high rate at which bricks were issued to work.

Woodwork.—The Consulting Engineer for Railways also comments on this item being 171 per cent. in excess. I do not think the value of the timbers has been fairly apportioned among the four ashpits—two old and two new ones. The estimate provides 66 cubic feet timber for each ashpit at Rs. 4 per cubic foot. The total expenditure is Rs. 1,926–9–8, and this is in the completion report distributed as under:—

	Rs.	A.	P.
Old ashpit, west end	247	2	3
Do. east end	247	2	3
New ashpit, west end	716	2	7
Do. east end	716	2	7

The ashpits being of equal length, the expenditure should be divided in equal proportions. This will result in the expenditure being Rs. 481–10–5 for each ashpit. Taking the lengths in the estimate as correct, the actual rate works out to Rs. 7·30 per cubic foot against the estimate of Rs. 4. The estimated rate is, I think, too low.

	Rs.	A.	P.
New ashpit, east end—			
Excess	498	5	0
The following call for remarks:—			
Brickwork—			
Excess	299	7	7
Woodwork—			
Excess	452	1	6

The Consulting Engineer for Railways comments on the high cost of brickwork being 124 per cent. in excess and the rate Rs. 29–15–0 in excess of the sanction. The high issue rate will account partly for the excess, but I do not think the work done on the two ashpits has been fairly distributed, or otherwise the rates would not differ so much.

Woodwork.—See remarks against ashpit at west end.

	Rs.	A.	P.
Engine turntable—			
Excess	2,260	6	7
The items calling for remarks are—			
Excavation—			
Excess	112	9	1
Concrete—			
Excess	1,170	0	7
Brickwork—			
Excess	796	11	8
Turntable—			
Excess	888	10	1

Excavation, Concrete and Brickwork.—Owing to the foundations having to be taken deeper than anticipated, more work was necessitated. The high cost of brickwork commented on by the Consulting Engineer for Railways is due to the bricks being issued at a higher rate than estimated.

Turntable.—Underestimated and to supervision charges being added.

	Rs.	A.	P.
Tank Machinery—			
Saving	1,710	4	7

In this case the expenditure is within the sanctioned estimate. Sufficient details are not available to arrive at the causes which led to the saving.

	Rs.	A.	P.
Signals—			
Excess	335	12	9

The principal excess is Rs. 278–11–4, and is due to the home and distant signals being underestimated and to supervision charges being added.

	Rs.	A.	P.
Points and crossings—			
Excess	2,161	14	1

The value was primarily underestimated and supervision charges increased the cost.

Plant—Station and office furniture—

	Rs.	A.	P.
Excess	82	3	2

Represents cost of two baggage trollies which were not provided for in the estimate.

TRICHINOPOLY,
27th August 1898.

JAMES RICE,
Offg. Chief Engineer.

SOUTH INDIAN RAILWAY.

Engineer Department.

Enlargement of Tiruvalluir Station in connection with the Mayavaram Mutupet Railway.

Name of work.	Page of detailed explanation.	Estimate Rs.	Expenditure. Rs. A. P.	Savings. Rs. A. P.	Excess. Rs. A. P.	Explanation.
Land	4	1,224	1,452 13 0	..	228 13 0	No separate debits originally raised. Cost was fixed proportionately.
Earthwork ..	4	5,516	3,716 7 5	1,799 8 7	..	Short quantities and low rates.
Bridgework ..	4 & 5	2,920	4,792 12 2	..	1,872 12 2	More work in excavation and concrete. High issue rate of bricks. More bricks charged than required. Plastering, pointing and slab stones not provided for. No expenditure in demolishing face walls. Short quantity in diversion of channels.
Fencing ..	5	216	..	216 0 0	..	No work done.
Road-crossings ..	5	878	1,787 6 3	..	909 6 3	Under estimated.
Ballast ..	5	9,610	3,293 15 0	6,316 1 0	..	Low rate. Average actual rate Rs. 21·98 against estimate rate of Rs 60 per 1,000 cub. ft.
Permanent-way.	5	13,452	14,041 3 0	..	589 3 0	Principally cost of temporary quarters for drivers and guards being debited to this head.
Third-class waiting-shed.	5	1,518	1,328 5 8	189 10 4	..	No remarks.
Urinals, west end.	6	372	457 0 6	..	85 0 6	More concrete executed. Corrugated walling, &c., and carriage of material underestimated.
Urinals, east end.	6	582	533 3 3	48 12 9	..	More work in excavation, brickwork and concrete. High rate of flooring. Stone not properly apportioned between two urinals. Corrugated walling, &c., for open latrine instead of closed latrine estimated.
Island platform.	6 & 7	4,937	4,788 9 0	148 7 0	..	Carriage of materials underestimated. Additional earthwork and stone curb. Value of metal not charged. More steel pale fencing than estimated.
Covered way ..	7	7,895	11,312 9 7	..	3,917 9 7	Iron roof, rail posts, guttering and pipes underestimated.
Overbridge ..	7	4,464	4,275 13 9	188 2 3	..	Additional excavation, concrete and labour in erection. Saving in overbridge reduces excesses on other heads.
Approaches ..	7 & 8	1,572	532 14 7	1,039 1 5	..	No work in passenger approach. Less work in goods approach. Value of metal not charged. Gate not estimated for.
Permanent-way Inspector's bungalow.	8	3,567	2,838 15 2	728 0 10	..	Different design adopted.
Cook house ..		916	691 5 8	224 10 4	..	
Latrine ..		273	311 9 6	..	38 9 6	
Water tank ..	8	1,987	4,826 10 2	..	2,839 10 2	More excavation. Earthfilling concrete and labour in erection. Rail staging very much underestimated. Two tanks supplied.
Closing well and re-sinking well 20 ft. diameter.	8 & 9	2,993	5,462 11 9	..	2,469 11 9	Additional brickwork and high rate of issue of bricks. Well curbs of greater strength supplied. Two pumps supplied not estimated.
Sun-shade ..	9	110	231 7 5	..	121 7 5	Masonry, plastering and pointing not provided. Excessive carriage of tiles. Demolishing underestimated.
Old ashpit, west end.	9	1,052	1,417 4 0	..	365 4 0	Water cranes not estimated.
Old ashpit, east end.		1,052	1,418 9 7	..	366 9 7	
New ashpit, west end.	9 & 10	988	1,754 10 5	..	766 10 5	More concrete and brickwork. High issue rate of bricks. Woodwork not fairly apportioned between four pits.
New ashpit, east end.	10	988	1,486 5 0	..	498 5 0	More brickwork. High issue rate of bricks. Woodwork not fairly apportioned between four pits.
Engine turntable.	10	6,929	9,189 6 7	..	2,260 6 7	More excavation. Concrete and brickwork. High issue rate of bricks. Turn-table underestimated.
Tank machinery.	10	4,533	2,822 11 5	1,710 4 7	..	Sufficient details not available to explain cause of saving.
Signals ..	10	1,118	1,453 12 9	..	335 12 9	Home and distant signals underestimated.
Points and crossings.	10	8,890	11,051 14 1	..	2,161 14 1	Under estimated.
Station and office furniture.	10	..	82 3 2	..	82 3 2	Baggage trollies not estimated.
Total ..		90,052	97,352 9 10	12,608 11 1	19,909 4 11	
Net Excess ..		..	..	..	7,300 9 10	

Order—No. Ry., dated September 1898.

Government fully endorse the severe strictures passed by the Consulting Engineer in his letter to the Agent, No. 1351, dated May 9th, 1898, in regard to the laxity displayed by the South Indian Railway staff who were concerned with the estimate under reference in (*a*) submitting an insufficient estimate and (*b*) not bringing the insufficiency to notice as soon as it became apparent to them, as it ought to have become apparent had proper scrutiny of the accounts been carried out during the progress of the work.

Under the explanation now afforded, the excess expenditure, amounting to Rupees 7,300–9–10, incurred in enlarging the Tiruvalur station, South Indian Railway, is sanctioned.

(True Extract.)

Under Secretary.

To the Agent, South Indian Railway.
" Examiner, Guaranteed Railway Accounts.
" Consulting Engineer for Railways.

Exd. A. Rungasawmy Aiyangar.

Public Works (1898) Department.

RAILWAY BRANCH.

G.O., No. 1164. Dy

DATED 22nd Septr 1898.

PR

120/3

for abstract

Ref

[Despatch Abstract.]

General offices at Rayapuram, Madras Railway

Sanctioning an estimate amounting to Rs 14,292-465 for additions + alterations to the —.

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[P. W. 28. 191—64-3-98.]

Indexed.