Govt. of 18 } Madras.

PUBLIC WORKS.

21/5/90

Dated

Rcd. Encl.

d.o., 16th June 1890 No. 668 R
669 R

S. D. R.

=

Additional workshop accommodation at Nagapatam. Estimate for — forwarded for the sanction of the Govt of India

S. D. R.

=

Additional workshop accommodation at Nagapatam. Estimate for — forwarded for the sanction of the Govt of India.

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Rec 21/5/90

L

7/3

8/2

P.W.C No. 4313.

From

THE CONSULTING ENGINEER
FOR RAILWAYS,
MADRAS,

No. 316

Dated 5th } May 1890
Received 7th }

No. OF ENCLOSURES. 2 1/2 (+15 Plans)

Subject.

Submitting correspondence regarding estimate for providing further workshed of accommodation at Nagapattanam, S.I.Ry.

A
No. 668-69R of 16th May/90

H.C.
Sett:

Please submit this Gp. for Press for D.R's approval.

VK
16/5

Submitted to DR 19/5/90

App'd. SR 19/5/90

Rect
12.5.90
W Sork

Draw with 17 Scale
9/6

The Consulting Engr. for Rys.
- Exam Asst. S.I. Rys. Accts:
Hlm. 12/5/90. R 14.5.90

22

1900

(11) Converting existing privies used by East Indians for Locomotive Foreman. Plan No. 15/90 — Rs 200

(12) Raising pitch of existing verandah roof, and adding upper story over one block of Engine-drivers bungalow. Plan No. 193/88 — 3543

(13) Erection of one new block of quarters to consist of accommodation for 2 foremen inclusive of bookhouse and urinals — 11,750
Plan No: 116/89

(14) Bathroom and kitchen to quarters for running drivers. Plan No: 119/89 — 564

(15)

(15) Sinking a well 20 feet diameter internal, South of workshops, and construct- ing a tankhouse- Rs 11,971

Plan No: 36/86

(16) Completing water pipes arrangements for supply of water to workshops also laying pipes to complete water supply to all the Company's bungalows - 3,220

Plan No: 121/89

(17) Plant (Rs 20,000 being on account of boundines and balances of Engineering department) 22,433

154,446

5. Rs 60,000 the estimated Capital expenditure to December 31st, 1890, is provided for in item 11, schedule B of the Budget Estimate 1890-91.

6. In anticipation of sanction, the Agent has been authorized to proceed with the collection of materials, and to reopen the Kulikarai brick fields.

Sidney Smith
Major R.E.
Dy. Comg. Engrs. Por Ry

(6) Woodcutting machine shop. Extension of roof at North end, and adding rail coping and fixed venetians all round verandah for a depth of 7 feet from eaves of the roof. Plan $\frac{113}{89}$ - Rs. 5068

(7) Carriage shop, Foreman's office on the South east side of carriage shop - 1353

Plan No: $\frac{115}{89}$

(8) Raising to one uniform height and altering the boundary wall on the South East, South West and North side of Locomotives Workshops. Plan $\frac{48}{89}$ A - 4515

(9) Covering in with a 40 feet span roof the space between present Tools and Smith's shops. Plan No: $\frac{239}{89}$ - 25103

(10) Demolishing wall in one bay of Carriage shop and supporting roof with cast iron columns and girders - 2481

Plan No: $\frac{12}{90}$

(11)

(2) Providing extra siding accommodation south side of workshops for parking of carriage and wagon wheels. Plan No: 114/89 — Rs 2,714

(3) Locomotive and tender erecting shop extended 150 linear feet on design of existing shop. Plan No: 110/89 — 41,197

(4) Extending existing wheel tyre shop at the east end by 69 feet 6 inches, and completing the remainder of the verandah on the south and East side, including spring makers furnace. Plan No: 146/89 — 11,537

(5) Adding verandah of corrugated iron on West side of Boiler shop, supported on rail post and office for foreman. Plan No: 117/89 — 3,201

(6)

and that the remainder of the estimate be held over, pending receipt of the Board's approval to the further expenditure, when the balance of the estimate amounting to Rs 40,083 will be submitted for sanction.

The items aggregating Rs 154,446 the sum recommended for sanction, are as follows, and have been selected by the Chief Engineer as being those most urgently required.

(1) Clearing and levelling portion of ground to rail, South of the Locomotive Work shops. Plan No: 114/89 — Rs 3,596

(2)

1100

enable a more efficient supervision to be exercised; to give more room and greater facilities for the storage of materials; to protect the workmen and machinery; to augment the water supply; and to house the increased staff.

4. The approval of the Board has only been obtained for an expenditure of Rs 134446 for engineering purposes, and Rs 20,000 on account of Locomotive plants. I therefore recommend that only so much of the estimate as amounts to this sum be sanctioned, and

as however the last item in the estimate "Removing existing engine to its new position" appears to be a Revenue charge, it is suggested that the allocation should be Rs 179,637 to Capital and Rs 14,892 to Revenue.

3. The necessity for each item embodied in the estimate is explained by the Chief Engineer in the accompanying note, and the additional accommodation and improvements asked for appear to be requisite to meet the increased work in the shops; to prevent theft and to enable

* Rs 3,000

Form No. 1.

PUBLIC WORKS DEPARTMENT.

OFFICE OF CONSULTING ENGINEER FOR RAILWAYS,

Madras, 5th May 1890.

Letter from the Agent, South Indian Railway, No: 311 dated 3rd March 1890.

Do Do

No: 589 dated 26th April 1890, with enclosures.

No. 316.

SUBMITTED. Submitted to Government for transmission to the Government of India.

2. The Agent, South Indian Railway, submits for the sanction of Government, an estimate for additional workshop accommodation at Negapatam, amounting to Rs 1,94,529 chargeable in the proportion of Rs 182,637 to Capital and Rs 11,892 Revenue, as

REGISTER
No 295
FILE
No

P to Lne 4
4313/90

The increase of machinery in the Shops necessitate a larger supply of water than the orginal 6" pipe provided for, a portion of this Service was Sanctioned on the original estimate, it is desired now to complete the arrangement including laying on water pipe to those Staff quarters not already provided with it.

23. Engineering plant has been taken at 2½% on the main heads of account instead of at 5% as heretofore and is intended to provide for the plant required for the carrying out of the work.

24. Locomotive plant. There are new machines required to meet increased work.

A/ Francis D. Smith
for Chief Engineer

Chief Engineers office
Melbourne 5th May 1890

120. From Rly

1020

(7)

for running drivers quarters.

A room was added abve the Store Shed attached to the new running Shed for the accommodation of urker from outstations who ther come to Nellapatam. No bath room or cooking accommodation was provided the want of this is now felt.

20 Sinking a well

In consequence of the increased amount of machinery and work generally, the existing water supply is insufficient.

21. New Tank house

The existing Tank house is insufficient to meet the increased demand for water. The original well and tank house on the South side of the Compound are of too small Capacity and the tank house is at a lower level that the new tank house Sanctioned and erected on the first estimate for workshop extension. The tank house now asked for is to be at the same level as the one last referred to and will be connected with it.

— Man ?

22. Completing the water pipe Service to Shops and bungalows.

The

(6) 920.

There is not sufficient Prisoners accommodation for the Foremen and men of this class, the existing Latrines used by East Indian fitters is to be converted into closets for the use of the Foremen, and provision will be made for the East Indians in general Latrine. Item No 13.

16. Constructing Drain.

This is required to carry off the water from the roof of the Shops on the South side of the main Shops.

17. Raising pitch of verandah roof and Adding upper Storey.

The first floor is readily chargeable to Foremen and is recommended by the Slope of the verandah as originally built being too flat and for consequent Leaky condition. The addition of an upper Storey is required to afford more accommodation which the class of men designated "Foremen" require.

18. Erection of a new block of Staff Quarters.

There is insufficient accommodation for the present Staff of Foremen.

19. Bath room and Kitchen for

(5) 820

Tools and Smiths Shops.

This Space is required to be covered in for repairs and renewals of portable Engines, pump machinery &c which have at present to be done under temporary Covers.

13. Privies at Lootkunw.

The accommodation at present provided is not sufficient for the large increase in the number of men now employed since the time has now arrived when special measures must be adopted for the removal of the deposits of such a large number of men as are now employed.

14 Demolishing wall in rear of Carriage Shop.

The present Carriage Shop consists of 3 bays of 42 feet Span roofs, one valley rests on Columns and girders and the other on a brick wall with arched openings to enable the foreman to have a better view of the whole shop and to give more Space the wall is to be removed and girders and Columns substituted (this is a revenue charge)

15. Converting existing privies used by East Indians fitters for the use of Europeans.

The

"alteration here and utilize
"the boundary wall for the
"Construction of a Shed 45'
"wide to Cover the Repair
"lines between the East end of
"Yard house and East end
"of erecting Shop about 375 feet
"in length the plan of which
"(c.f. No 1897) I Send herewith
"..... it is urgently
"wanted for prosecuting the
"workmen employed on the
"Repair lines and it will
"greatly facilitate the turn-
"out of Vehicles undergoing Repair."

9. Raising boundary wall to one uniform height.

The existing wall is easily climbed and material can be thrown over it, the raising of the wall is required to prevent access to the yard by thieves and Consequent robberies.

10. Raising Chimney.

The draught is at present found insufficient to meet the increased boiler accommodation, the raising of the Chimney will remedy the defect.

11. Fixing Lightning Conductor.

Requirement for the protection of the Chimney.

12. Covering in Space between

Docks.

higher than was at first designed and now affords sufficient protection from sun and rain. The addition of fixed venetians down from the eaves all round the building is therefore now required. In sinking the pit for the foundation of the engine belonging to this Shop a spring was tapped which for a portion of the year flows very freely and requires special pumping arrangements to keep the water down. An "Acqua thruster" a modern form of pump has been provided for in the estimate.

7 Carriage Shop foreman's office.

It is necessary that the foreman should have some place where he can have his papers and drawings and do his office work generally, apart from the men. At present the part of his work is done in the midst of the workmen.

8 Shed over Repair Lines.

Under date 30th November, 1889 in his E/406. the Locomotive Superintendent wrote with regard to the north boundary wall between Line office and Tank house.

"I am anxious to make an alteration

5-28

4. Extending wheel tyre Shop and Completing Verandah.

This extension is required in order to provide increased accommodation for Spring makers.

5. Adding verandah to west side of Boiler Shop.

Additional Space is required for the construction of Frames and pans and Boiler Smiths work, for which, owing to the increase of work, the accommodation in the boiler Shop is inconsequent an Office is also required for the Boiler Shop Foreman.

6. Wood cutting Machine Shop.

In the first proposal the Shop was designed for a position that had no distant reference to the extension of other buildings. The Loco Superintendent afterwards desired that it should be placed so that at a future date if required it might be joined on to the Carriage Shops by the addition of another Span of 42 ft roof. to make the building suitable for this the eaves of the roof had to be raised to the same level as that of the Carriage Shop. The verandah has in Consequence become

higher

Enclosure 476.

Memorandum on Proposed extension of Locomotive Shops at Negapatam.
To accompany Chief Engineer's letter No 6/249 to Agent

Print

1. Clearing and levelling portion of ground &c, &c

The surface of the ground is very unequal. A portion has already been levelled and the remainder requires to be treated in the same way to give a better view of the workshop yard to prevent theft and stacking of wood Rimes and to provide better ground for stacking material.

2. Providing extra Sidings

These Sidings are required for parking carriage and waggon wheels the present accommodation being insufficient for that purpose. Under these there must tracks of 2' gauge throughout the north and south tools shops are also provided to facilitate the removal of heavy pieces of work from one shop to another.

3. Extending Loco: and Tender erecting Shop.

The extension of this shop to the full length first proposed is required to meet increased work

4.

REGISTER
No. 2-95
FILE
No.

P.W. Enc 3
4313/90

From
The Agent,
South Indian Railway,
Trichinopoly.

To
The Consulting Engineer for
Railways,
Madras.

C.R.

Dated 3rd March 1890.
Received 5th
No. 344.

Enclosure. 21

Re. Workshop Accommodation at Negapatam

Enclosure 428.

Memorandum on Proposed extension of Locomotive Shops at Negapatam.
To accompany Chief Engineer's letter No. 6/249 to Agent

Print

1. Clearing and levelling portion of ground to N.

The surface of the ground is very uneven. A portion has already been levelled and the remainder requires to be treated in the same way to give a better view of the workshop yard to prevent theft and stacking of workmen, and to provide better ground for stacking material.

2. Providing extra Sidings

These sidings are required for parking Carriage and waggon wheels the present accommodation being insufficient for that purpose. Under these items track of 2' gauge throughout the North and South tools Shops are also provided to facilitate the removal of heavy pieces of work from one Shop to another.

3. Extending Loco: and Tender erecting Shop.

The extension of this Shop to the full length first proposed is required to meet increased work

4.

Ref. to Dr. in No 465 of 6-3-90
Letter to A No 353 of 25-3-90
Telegram to A of

No. 311

Print

South Indian Railway,
AGENT'S OFFICE,
TRICHINOPOLY, 3rd March 1890.

20

From

The Agent,
SOUTH INDIAN RAILWAY.

To

The CONSULTING ENGINEER FOR RAILWAYS,
MADRAS.

Sir,

I forward herewith, for the sanction of Government, eighteen plans and an estimate (No. 1212, in duplicate) of the cost Rs. 194,444 of providing further workshop accommodation at Negapatam. Of this sum Rs. 182,552 have been allocated to the Capital Account, and Rs. 11,892 to the Revenue account.

2 I attach Copy of a Memorandum drawn up by the Chief Engineer which describes the several works included in this estimate. The Chief Engineer has reported as follows thereon.

3 "After the estimate had been fair copied I received intimation from the Loco. Superintendent
" that he wished provision to be made for a
" Spring makers furnace which he estimates will
" cost Rs. 1,500. and for which he promises to
" submit a design hereafter."

4 "Not wishing to cause the delay to the
" submission of the estimate which recopying in

order

"order to insert this new items in its proper place
"would involve, I have added it in red ink."

"I enclose a memorandum explaining briefly
"the necessity for the various items aggregating
"24 in all, of which 7, 8, 10, 11, 15, and 16, have
"not received directly the approval of the board
"but they are all with the exception of No 8 com-
"-paratively small items and may be considered,
"I think, as having been practically approved of."

"Item No 9 shed over the Repair line has
"been included in this estimate as its necessity
"is admitted by all concerned."

"The gross amount of the estimate as now
"submitted is (Rs. 192,944 + 1500) Rs. 194,444. whereas
"the amount sanctioned by the board for entry
"in the budget amounts to Rs. 13,079."

"I have forwarded a copy of the memo-
"randum explaining the necessity of each item
"to the Loco. Superintendent with a request
"that he will amplify it where he considers
"it required."

"It will be observed that the Loco.
"Superintendents' signature has been affixed
"to all the drawings in token of his approval
"of the same."

"I have to point out that we have
"no bricks in stock with which to construct
"the masonry proposed in the estimate."

I

"I therefore desire that sanction may be
"at once accorded for the collection of material
"under which sanction I propose to re open the
"Kulikarai brick field."

I am
Sir,
Your most obedient Servant

William A Bell

Agent.

P.W. Loc 1
4313/90

From

THE AGENT,
South Indian Railway,
Trichinopoly,

To

THE CONSULTING ENGINEER FOR
RAILWAYS,
Madras.

Papers to D2

Dated 26th April 1890.
Received 28th
Lt
No. 589
ENCLOSURE 2.

Forwarding revised estimate for providing additional workshop accommodation at Negapatam

REGISTER. No 2-95. FILE No

P.W. Loc 3
4313/90

From

THE AGENT,
South Indian Railway,
Trichinopoly,

To

THE CONSULTING ENGINEER FOR
RAILWAYS,
Madras.

CR.

Dated 3rd March 1890.
Received 5th
Lt
No. 311.
ENCLOSURE. 21

Re. workshop accommodation at Negapatam

"latrine will be further considered as requested."

I will apply to my Board for sanction to the amount in excess of the sum they have already approved of for expenditure on this work.

I am
Sir,
Your most obedient Servant

Williams & Betts.
Agents.

(2 - Encls.)

Board in their letter No. 748 of 11th January 1889 and 791 of 22nd November 1889."

"The figures Rs. 131,079 quoted by the Consulting Engineer appear to have been taken from the Budget Estimate and I regret that I am unable to account for the difference that exists between these and the amount approved of by the Board."

"In the Boards letter No. 791 of 22nd November, 1889, a sum of Rs. 20,000. for Plant was approved of whereas the details as now submitted amount to Rs. 34411. of which Rs. 30707. represent the Loco. Superintendents' requirements as revised up to date and Rs. 3704. is the amount under the head of Plant required by the Engineering Department for carrying out the work."

"I beg to suggest that the Government be asked to apply for sanction for Rs. 154446. which represents the revised estimate cost of the first 16 items and Rs. 22433 on account of item No. VII 17 Plant instead of Rs. 34412. the full amount of the revised estimate under that head."

"In the aggregate the Boards approval is required to a further sum of Rs. 40033."

"I presume you will advise the Consulting Engineer that it is your intention to apply to the Board for sanction to the increased amount."

"The details of the design for the workmens' latrine

Vide further No 5-98 dy 28-4-90.
Letter to A No 46 dy 3-5-90.

No. 589

Privé

30

South Indian Railway,

AGENT'S OFFICE,

TRICHINOPOLY, 26th April 1890.

REGISTER
No. 5-53
FILE
No

Fw Enc 2
4313/90.

From

The Agent,
SOUTH INDIAN RAILWAY.

To

The CONSULTING ENGINEER FOR RAILWAYS,
MADRAS.

Sir,

Your letter No 353 of the 25th ultimo. I forward herewith, in duplicate, a revised estimate for providing additional workshop accommodation at Negapatam.

The following copy of a report from the Chief Engineer explains how the revised figures have been arrived at.

"I have the pleasure to return herewith "a revised fair copy of the estimate in which the "numerical errors referred to have been duly correct-"-ed, a duplicate copy corrected in red ink and a "statement in duplicate shewing how the figures "approved of by the board compare with the "detail estimate now submitted for sanction of "Government."

"From this statement it will appear "that the details as now submitted for the sanc-"-tion of Government aggregate Rs. 194529. as "compared with Rs. 154446 approved of by the Board

Description of Work	Estimated amount as submitted to the Board & approved of their letter No. 748 of 11/1/89	Estimate as now submitted for sanction of the Govt. of India	Remarks.
Brought forward.		19481	
20. Fixing Lightning Conductor to Chimney of Furnace Shop		187	
21 Privies for Loco: workmen to be Constructed of old 40 lbs rails and Corrugated Sheets		4335	
22 Constructing Drain from General Stores East boundary wall to large drain near Loco: Superintendent's Office		3723	
23. Switches and Crossings		378	
Total amount of which the Board has not approved.		28104	
Amount already approved by the Board		154446	
Difference between original & Revised estimate of item 1 to 17 both inclusive		11979	
Total of estimate is now Submitted to Government of India for Sanction		194529	

Chief Engineers office
Trichinopoly 2nd April 1890

Copied by M.S
Comp. 4.

Hanc. F. Smith
for Chief Engineer
(20.4.90)

William Betts.
Agent

	Description of work	Estimated amount as submitted to the Board and approved of by their letter No. 748 of 4/1/89	Estimate as now submitted for sanction of the Govt. of India	Remarks.
2	Brought forward.	108494	104508	
13	Erection of one new block of quarters to Consist of accommodation for 2 Firemen			
2	inclusive of Cook House & Urinals	10532	11750 ✓	
14.	Bath room & Kitchen to quarters for Running Drivers	622	564 ✓	
2.				
15	Sinking a well 20 ft. diameter internal South of workshops and Constructing a Tank House.	9972	11971 ✓	Excess of Rs 1,999 is due to a Jangyes pump having been included in the revised estimate.
2	16 Completing water pipe arrangements for supply of water to workshops also laying pipes to Complete water supply to all the Company's Bungalows	4826	3220 ✓	
	17 Plant	20000	22433 34412	
	Total	154446	166425 154446 11979	34412 22433 11979
	Items of which the Board has not yet approved.			
	18. Constructing a shed 45 wide to Cover the repair lines between East end of Tank House and East end of erecting shop.		18777	
	19 Raising Chimney between Smiths and Tool Shops.		704	
	Carried over		19481	

Description of work.	Estimated amount as submitted to the Board and approved of by by their letter No 7th 8 of 11/1/89	Estimate as now Submitted for sanction of the Government of India	Remarks.
Brought forward	58981	62245	
6. Wood cutting Machine shop. Extension of roof at North end & adding rail coping & fixed venetians all round verandah for a depth of 7 ft. from eaves of the roof.	11207	5068	The saving of 6139 under this item is due to flooring having been included in the amount Submitted to the Board which have already been executed.
7. Carriage shop Foreman's Office on the South East side of Carriage shop	1367	1353	
8 Raising to one uniform height and altering the boundary wall on the South East, South West and North side of Loco: Workshops	4727	4515	
9 Covering in with a 40 ft span roof the space between present Tools and Smiths shops	25401	25103	
10 Demolishing wall in one bay of Carriage Shop & Supporting roof with Cast iron Columns & girders	2481	2481	
11 Converting existing privies used by East Indians for Loco: Foreman	698	200	
12. Raising pitch of existing verandah roof & adding upper Story over one block of Engine Driver's Bungalow.	3632	3543	
Carried over	108494	104508	

South Indian Railway

Engineering Department.

Statement to accompany Estimate for further workshop accommodation at Negapatam.

Description of work	Estimated amount as submitted to the Board and approved of by their letter No 7480 of 11/1/89	Estimate as now submitted for Sanction of the Govt of India	Remarks
1. Clearing & levelling portion of ground to rail level South of Locos: Workshops	3776	3596	
2. Providing extra Siding accommodation South Side of workshops for parking of Carriage and waggon wheels	1407	2714	The difference between the amount as submitted to the Board & as now forwarded is due to the former being approximate estimate whereas the latter have been arrived after going into greater details.
3 Loco and Tender erecting shop extended 150 Ft on the design of existing Shop.	42431	41197	
4 Extending existing wheel type shop at the East end by 69 ft. 6 inches and completing the remainder of Verandah on the South and East side including Spring makers furnace	8229	11537	The excess of Rs 3308 is due to a Verandah having been added & spring makers furnace which were not included in the amount submitted to the Board.
5. Adding verandah of Corrugated iron on west side of Boiler Shop Supported on rail posts & office for Foreman.	3136	3201	
Carried over	58981	62245	

RAILWAY.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated May, 16th.

Recd. *Encl.*

G.O., 16th May 1890, Nos. 668 R., 669 R.

MAY.

South Indian Railway

Additional Workshop accommodation at Negapatam.—Estimate for —, forwarded for the sanction of the Government of India.

Encl

1220

South Indian Railway

Engineering Department.

Statement to accompany Estimate for further workshop accommodation at Negapatam.

Description of work	Estimated amount as submitted to the Board and approved of by their letter No. 714 of 11/5/89	Estimate as now submitted for sanction of the Govt of India	Remarks
1. Clearing & levelling portion of ground to rail level South of Locos: Workshops	3776	3596	
2. Providing extra Siding accommodation South side of workshops for parking of Carriage and waggon wheels	1409	2714	
3 Loco and Tender erecting shop extended 150 Lft on the design of existing Shop.	42431	41197	The difference between the amount as submitted to the Board & as now forwarded is due to the former being approximate estimate whereas the latter have been arrived at after going into details.
4. Extending existing wheel tyre shop at the East end by 69 ft. 6 inches and completing the remainder of Verandah on the South and East side including Spring makers furnace	8229	11537	The excess of Rs 3308 is due to a Verandah having been added & spring makers furnace which were not included in the amount submitted to the Board.
5. Adding verandah of Corrugated iron on west side of Boiler Shop supported on rail posts & office for Foreman.	3136	3201	
Carried over	58981	62245	

16TH MAY 1890, No. 668 R., PUBLIC WORKS.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Railway.

Read the following papers:—

From the Consulting Engineer for Railways, dated Madras, 5th May 1890, No. 316.

From the Agent, South Indian Railway, to the Consulting Engineer for Railways, dated Trichinopoly, 3rd March 1890, No. 311.

I forward, herewith, for the sanction of Government, eighteen plans and an estimate (No. 1212, in duplicate) of the cost (Rs. 1,94,444) of providing further workshop accommodation at Negapatam. Of this sum Rs. 1,82,552 have been allocated to the Capital Account and Rs. 11,892 to the Revenue Account.

2. I attach copy of a memorandum drawn up by the Chief Engineer which describes the several works included in this estimate. The Chief Engineer has reported as follows thereon:—

"After the estimate had been fair copied, I received intimation from the Locomotive Superintendent that he wished provision to be made for a spring-maker's furnace which he estimates will cost Rs. 1,500, and for which he promises to submit a design hereafter.

"Not wishing to cause the delay to the submission of the estimate, which recopying in order to insert this new item in its proper place would involve, I have added it in red ink.

"I enclose a memorandum explaining briefly the necessity for the various items aggregating 24 in all, of which 7, 8, 10, 11, 15 and 16 have not received directly the approval of the Board, but they are all with the exception of No. 8 comparatively small items and may be considered, I think, as having been practically approved of.

"Item No. 8, shed over the repairs' line, has been included in this estimate as its necessity is admitted by all concerned.

"The gross amount of the estimate as now submitted is (Rs. 1,92,944 + 1,500) Rs. 1,94,444, whereas the amount sanctioned by the Board for entry in the budget amounts to Rs. 1,31,079.

"I have forwarded a copy of the memorandum explaining the necessity of each item to the Locomotive Superintendent with a request that he will amplify it where he considers it required.

"It will be observed that the Locomotive Superintendent's signature has been affixed to all the drawings in token of his approval of the same.

"I have to point out that we have no bricks in stock with which to construct the masonry proposed in the estimate.

"I therefore desire that sanction may be at once accorded for the collection of material under which sanction I propose to re-open the Kulikarai brickfield.

ENCLOSURE.

MEMORANDUM on proposed extension of Locomotive shops at Negapatam, to accompany Chief Engineer's letter No. C. 249 to Agent.

Clearing and levelling portion of ground, &c.—The surface of the ground is very uneven; a portion has already been levelled and the remainder requires to be treated in the same way to give a better view of the workshop yard to prevent theft and skulking of workmen, and to provide better ground for stacking material.

2. *Providing extra sidings.*—These sidings are required for parking carriage and wagon wheels, the present accommodation being insufficient for that purpose. Under these items tracks of 2-feet gauge throughout the north and south tools' shop are also provided to facilitate the removal of heavy pieces of work from one shop to another.

3. *Extending locomotive and tender erecting shop.*—The extension of this shop to the full length first proposed is required to meet increased work.

4. *Extending wheel tyre shop and completing verandah.*—This extension is required in order to provide increased accommodation for spring-makers.

5. *Adding verandah to west side of boiler shop.*—Additional space is required for the construction of frames and pans and boiler-smith's work, for which, owing to the increase of work, the accommodation in the boiler shop is insufficient; an office is also required for the boiler-shop foreman.

6. *Wood-cutting machine shop.*—In the first proposal the shop was designed for a position that had no direct reference to the extension of other buildings. The Locomotive Superintendent afterwards desired that it should be placed so that at a future date, if required, it might be joined on to the carriage shop by the addition of another span of 42-feet roof; to make the building suitable for this the eaves of the roof had to be raised to the same level as that of the carriage shop. The verandah has in consequence become higher than was at first designed and now affords insufficient protection from sun and rain. The addition of fixed venetians down from the eaves all round the building is therefore now required. In sinking the pit for the foundation of the engine belonging to this shop a spring was tapped which for a portion of the year flows very freely and requires special pumping arrangements to keep the water down; an "acquathruster," a modern form of pump, has been provided for in the estimate.

7. *Carriage-shop foreman's office.*—It is necessary that the foreman should have some place where he can have his papers and drawings and do his office work generally apart from the men. At present this part of his work is done in the midst of the workmen.

8. *Shed over repair lines.*—Under date 20th November 1889, in his E-406, the Locomotive Superintendent wrote with regard to the north boundary wall between time office and tank-house.

"I am anxious to make an alteration here and utilise the boundary wall for the construction of a shed 45 feet wide to cover the repair lines between the east end of tank-house and east end of erecting shop about 375 feet in length, plan of which (No. M. 89) I send you herewith * * * * it is urgently wanted for protecting the workmen employed on the repair lines and it will greatly facilitate the turnout of vehicles undergoing repair."

9. *Raising boundary wall to one uniform height.*—The existing wall is easily climbed and material can be thrown over it; the raising of the wall is required to prevent access to the yard by thieves and consequent robbery.

10. *Raising chimney.*—The draught is at present found insufficient to meet the increased boiler accommodation; the raising of the chimney will remedy the defect.

11. *Fixing lightning conductor.*—Requirement for the protection of the chimney.

12. *Covering-in space between tools' and smiths' shops.*—This space is required to be covered in for repairs and renewals of portable engines, pump machinery, &c., which have at present to be done under temporary covers.

13. *Privies of workmen.*—The accommodation at present provided is not sufficient for the large increase in the number of men using it. The time has now arrived when special measures must be adopted for the removal of the deposits of such a large number of men as are now employed.

14. *Demolishing wall in one bay of carriage shop.*—The present carriage shop consists of three bays of 42-feet span roof; one valley rests on columns and girders and the other on a brick wall with arched openings. To enable the foreman to have a better view of the whole shop and to give more space, the wall is to be removed and girders and columns substituted (this is a Revenue charge.)

15. *Converting existing privies used by East Indian fitters for the use of foremen.*—There is not sufficient privy accommodation for the foremen and men of this class; the existing latrines used by East Indian fitters is to be converted into closets for the use of the foremen, and provision will be made for the East Indians in general latrine, item No. 13.

16. *Constructing drain.*—This is required to carry off the water from the roof of the shops on the south side of the main shops.

17. *Raising pitch of verandah roof and adding upper storey.*—The first item is really chargeable to Revenue and is necessitated by the slope of the verandah as originally built being too flat and

in consequence they leak badly. The addition of an upper storey is required to afford more accommodation which the class of men designated "foremen" require.

18. *Erection of a new block of staff quarters.*—There is insufficient accommodation for the present staff of foremen.

19. *Bath-room and kitchen for running drivers' quarters.*—A room was added above the store-shed attached to the new running shed for the accommodation of men from out-stations when they come to Negapatam. No bath-room or cooking accommodation was provided; the want of this is now felt.

20. *Sinking a well.*—In consequence of the increased amount of machinery and work generally, the existing water-supply is insufficient.

21. *New tank-house.*—The existing tank-house is insufficient to meet the increased demand for water. The original well and tank-house on the south side of the compound are of too small capacity and the tank-house is at a lower level than the new tank-house sanctioned and erected on the first estimate for workshop extension. The tank-house now asked for is to be at the same level as the one last referred to and will be connected with it.

22. *Completing the water pipe service to shops and bungalows.*—The increase of machinery in the shops necessitate a large supply of water than the original 3-inch pipe provided for; a portion of this service was sanctioned on the original estimate; it is desired now to complete the arrangement including laying on water-pipe to those staff quarters not already provided with it.

23. *Engineering plant.*—Has been taken at 2½ per cent. on the main heads of account instead of at 5 per cent. as heretofore and is intended to provide for the plant required for the carrying out of the work.

24. *Locomotive plant.*—These are new machines required to meet increased work.

(Signed) F. F. SMITH,
for Chief Engineer.

TRICHINOPOLY,
5th February 1890.

From the Agent, South Indian Railway, to the Consulting Engineer for Railways, dated Trichinopoly, 26th April 1890, No. 589.

Your letter No. 353 of the 25th ultimo. I forward, herewith, in duplicate, a revised estimate for providing additional workshop accommodation at Negapatam.

2. The following copy of a report from the Chief Engineer explains how the revised figures have been arrived at.

"I have the pleasure to return, herewith, a revised fair copy of the estimate in which the numerical errors referred to have been duly corrected, a duplicate copy corrected in red ink and a statement in duplicate showing how the figures approved of by the Board compare with the detail estimate now submitted for sanction of Government.

"From this statement it will appear that the details as now submitted for the sanction of Government aggregate Rs. 1,94,529 as compared with Rs. 1,54,446 approved of by the Board in their letter No. 746 of 11th January 1889 and No. 791 of 22nd November 1889.

"The figures (Rs. 1,31,079) quoted by the Consulting Engineer appear to have been taken from the budget estimate and I regret that I am unable to account for the difference that exists between these and the amount approved of by the Board.

"In the Board's letter No. 791 of 22nd November 1889, a sum of Rs. 20,000 for plant was approved of, whereas the details as now submitted amount to Rs. 34,411, of which Rs. 30,707 represent the Locomotive Superintendent's requirements as revised up to date, and Rs. 3,704 is the amount under the head of plant required by the Engineering Department for carrying out the work.

"I beg to suggest that the Government be asked to apply for sanction for Rs. 1,54,446 which represents the revised estimate cost of the first 16 items and Rs. 22,433 on account of item No. 17, plant, instead of Rs. 34,412, the full amount of the revised estimate under that head.

"In the aggregate the Board's approval is required to a further sum of Rs. 40,033.

"I presume you will advise the Consulting Engineer that it is your intention to apply to the Board for sanction to the increased amount.

"The details of the design for the workmen's latrine will be further considered as requested."

3. I will apply to my Board for sanction to the amount in excess of the sum they have already approved of for expenditure on this work.

Enclosure.

SOUTH INDIAN RAILWAY.

ENGINEERING DEPARTMENT.

STATEMENT to accompany estimate for further workshop accommodation at Negapatam.

Description of work.	Estimated amount as submitted to the Board and approved of by their letter No. 748 of 11th January 1889.	Estimate as now submitted for sanction of the Government of India.	Remarks.
	RS.	RS.	
1. Clearing and levelling portion of ground to rail level south of Locomotive workshops.	3,776	3,596	The difference between the amount as submitted to the Board and as now forwarded is due to the former being approximate estimate, whereas the latter have been arrived at after going into greater details.
2. Providing extra siding accommodation south side of workshops for parking of carriage and wagon wheels.	1,409	2,714	
3. Locomotive and tender-erecting shop extended 150 linear feet on the design of existing shop.	42,431	41,197	
4. Extending existing wheel tyre shop at the east end by 69 feet 6 inches and completing the remainder of verandah on the south and east side including spring-maker's furnace.	8,229	11,537	The excess of Rs. 3,308 is due to a verandah having been added and spring-maker's furnace which were not included in the amount submitted to the Board.
5. Adding verandah of corrugated iron on west side of boiler shop supported on rail posts and office for foreman.	3,136	3,201	
6. Wood-cutting machine shop. Extension of roof at north end and adding rail coping and fixed venetians all round verandah for a depth of 7 feet from eaves of the roof.	11,207	5,068	The saving of Rs. 6,139 under this item is due to flooring having been included in the amount submitted to the Board which have already been executed.
7. Carriage-shop foreman's office on the south-east side of carriage shop.	1,367	1,353	
8. Raising to one uniform height and altering the boundary wall on the south-east, south-west and north side of Locomotive workshops.	4,727	4,515	
9. Covering in with a 40-feet span roof the space between present tools' and smiths' shops.	25,401	25,103	
10. Demolishing wall in one bay of carriage shop and supporting roof with cast-iron columns and girders.	2,481	2,481	
11. Converting existing privies used by East Indians for Locomotive foreman.	698	200	
12. Raising pitch of existing verandah roof and adding upper storey over one block of engine-driver's bungalow.	3,632	3,543	
13. Erection of one new block of quarters to consist of accommodation for two foremen inclusive of cook-house and urinals.	10,532	11,750	
14. Bath-room and kitchen to quarters for running drivers.	622	564	
15. Sinking a well 20-feet diameter, internal, south of workshops, and constructing a tank-house.	9,972	11,971	Excess of Rs. 1,999 is due to a Tangye's pump having been included in the revised estimate.

Statement to accompany estimate for further workshop accommodation at Negapatam—*cont.*

Description of work.	Estimated amount as submitted to the Board and approved of by their letter No. 748 of 11th January 1889.	Estimate as now submitted for sanction of the Government of India.	Remarks.
	RS.	RS.	
16. Completing water-pipe arrangements for supply of water to workshops; also laying pipes to complete water-supply to all the Company's bungalows.	4,826	3,220	
17. Plant	20,000	34,412	
Total ...	1,54,446	1,66,425	
Items of which the Board has not yet approved.			
18. Constructing a shed 45 feet wide to cover the repair lines between east end of tank-house and east end of erecting shop.	...	18,777	
19. Raising chimney between smiths' and tools' shops.	...	704	
20. Fixing lightning conductor to chimney of furnace shop.	...	187	
21. Privies for Locomotive workmen to be constructed of old 40-lb. rails and corrugated sheets.	...	4,335	
22. Constructing drain from General stores east boundary wall to large drain near Locomotive Superintendent's office.	...	3,723	
23. Switches and crossings	...	378	
Total amount of which the Board has not approved.	...	28,104	
Amount already approved by the Board ...	...	1,54,446	
Difference between original and revised estimate of items 1 to 17, both inclusive ..	...	11,979	
Total of estimate as now submitted to Government of India for sanction.	...	1,94,529	

TRICHINOPOLY,
2nd April 1890.

(Signed) W. S. BETTS,
Agent.

(Signed) F. F. SMITH,
for Chief Engineer.

Submitted to Government for transmission to the Government of India.

2. The Agent, South Indian Railway, submits, for the sanction of Government, an estimate for additional workshop accommodation at Negapatam, amounting to Rs. 1,94,529, chargeable in the proportion of Rs. 1,82,637 to Capital and Rs. 11,892 Revenue. As, however, the last item* in the estimate, "removing existing engine to its new position," appears to be a revenue charge, it is suggested that the allocation should be Rs. 1,79,637 to Capital and Rs. 14,892 to Revenue.

* Rs. 3,000.

3. The necessity for each item embodied in the estimate is explained by the Chief Engineer in the accompanying note, and the additional accommodation and improvements asked for appear to be requisite to meet the increased work in the shops; to

prevent theft and to enable a more efficient supervision to be exercised; to give more room and greater facilities for the storage of materials; to protect the workmen and machinery; to augment the water-supply; and to house the increased staff.

4. The approval of the Board has only been obtained for an expenditure of Rs. 1,34,446 for engineering purposes, and Rs. 20,000 on account of locomotive plant. I therefore recommend that only so much of the estimate as amounts to this sum be sanctioned, and that the remainder of the estimate be held over, pending receipt of the Board's approval to the further expenditure, when the balance of the estimate amounting to Rs. 40,083 will be submitted for sanction. The items aggregating Rs. 1,54,446, the sum recommended for sanction, are as follows, and have been selected by the Chief Engineer as being those most urgently required:—

	RS.
(1) Clearing and levelling portion of ground to rail south of the Locomotive workshops, plan No. 114/89	3,596
(2) Providing extra siding accommodation south side of workshops for parking of carriage and wagon wheels, plan No. 114/89.	2,714
(3) Locomotive and tender-erecting shop extended 150 linear feet on design of existing shop, plan No. 110/89	41,197
(4) Extending existing wheel tyre shop at the east end by 69 feet 6 inches and completing the remainder of the verandah on the south and east side, including spring-maker's furnace, plan No. 146/89	11,537
(5) Adding verandah of corrugated iron on west side of boiler shop, supported on rail posts and office for foreman, plan No. 117/89	3,201
(6) Wood-cutting machine shop, extension of roof at north end, and adding rail coping and fixed venetians all round verandah for a depth of 7 feet from eaves of the roof, plan No. 113/89	5,068
(7) Carriage-shop foreman's office on the south-east side of carriage shop, plan No. 115/89	1,353
(8) Raising to one uniform height and altering the boundary wall on the south-east, south-west and north side of Locomotive workshops, plan No. 48-A/89	4,515
(9) Covering in with a 40-feet span roof the space between present tools' and smiths' shops, plan No. 239/89	25,103
(10) Demolishing wall in one bay of carriage shop and supporting roof with cast-iron columns and girders, plan No. 12/90 ...	2,481
(11) Converting existing privies used by East Indians for Locomotive foreman, plan No. 15/90	200
(12) Raising pitch of existing verandah roof and adding upper storey over one block of engine-driver's bungalow, plan No. 193/85	3,543
(13) Erection of one new block of quarters to consist of accommodation for two foremen inclusive of cook-house and urinals, plan No. 116/89	11,750
(14) Bath-room and kitchen to quarters for running drivers, plan No. 119/89	564
(15) Sinking a well 20 feet diameter, internal, south of workshops, and constructing a tank-house, plan No. 36/86 ..	11,971
(16) Completing water-pipe arrangements for supply of water to workshops; also laying pipes to complete water-supply to all the Company's bungalows, plan No. 121/89	3,220
(17) Plant (Rs. 25,000, being on account of Locomotive and balance of Engineering department)	22,433
Total ...	1,54,466

5. Rs 60,000, the estimated capital expenditure to December 31st, 1890, is provided for in item 11, schedule B of the budget estimate, 1890-91.

6. In anticipation of sanction the Agent has been authorised to proceed with the collection of materials and to re-open the Kulikarai brickfields.

ORDER—dated 16th May 1890, No. 668 R., Public Works.

Ordered to be forwarded to the Government of India for favor of sanction to the extent of the estimate recommended by the Consulting Engineer for Railways in para. 4 of his endorsement.

(Here enter No. 669 R., dated 16th May 1890.)

(True Extract.)

(Signed) SIDNEY SMITH, Major, R.E.,
Under-Secy. to Govt., P.W.D.,
Railway Branch.

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

ENDORSEMENT—dated 16th May 1890, No. 669 R., Public Works.

(By Order.)

Forwarded.

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Joint Secy. to Govt., P.W.D.

Exd. A. Aubert.
Spare Copies