Number of Pages : 38
Date of Repair : 5.88
Initials of Reference:
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TAMIL NADU ARCHIVES.

G.O. Ms. No. 669 (W. Public Works.
670
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Date: 27-2-1888.

S.G.M.

28

669-70-71

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

General.
Account.

READ—the following papers:—

From Colonel H. M. VIBART, R.E., Superintending Engineer, V Circle, to the Chief Engineer, Public Works Department (through the Examiner of Public Works Accounts), dated Chepâk, 16th February 1888, No. 4818.

With reference to paragraph 2 of G.O., No. 69 I., dated 30th January 1888, I have the honor to forward an indent, in triplicate, on the Home Government for machinery and plant required to be obtained from England for the Periyár Project works.

2. In the estimate printed with the Government order above alluded to, there is a provision of £ 348 under "Miscellaneous" for minor and unforeseen items. This amount is not included in the indent, as it is evidently intended for such articles as the India Store Department may find it necessary to supply in complying with this indent.

No. 543 S.E./5th.

Forwarded to the Chief Engineer, Public Works Department, with the necessary certificate.

MADRAS,
22nd February 1888.

(Signed) C. H. P. CHRISTIE, Major, R.E.,
Examiner, Public Works Accounts.

ENCLOSURE.

CERTIFICATE by the Examiner, Public Works Accounts.

Number and date of indent or letter with which received.	Description and value of articles indented for.		Work and Division to which the value is chargeable.	Grant.		Certificate attached by the Examiner.
				Amount.	Authority.	
1	2		3	4	5	6
	Provincial.	£ s. d.	*Periyár Project Division.*	RS.		
Superintending Engineer's (V Circle) letter No. 4818, dated 16th February 1888.	Tunnelling and Quarrying machinery, Concrete-making machinery, Wire Tramways, Turbines, Floating Plant and Piping.	12,087 10 0	Tools and Plant.	1,75,000	Preliminary issue of the budget estimate of Irrigation Major Works for 1888-89.	I certify that funds to meet the outlay, which it is estimated will be incurred in England in connection with this indent during the year 1888-89, have been provided for in the estimates of the Public Works Department to the extent of £ 12,087-10-0.

MADRAS,
22nd February 1888.

(Signed) C. H. P. CHRISTIE, Major, R.E.,
Examiner, Public Works Accounts.

Order—dated 27th February 1888, No. 669 W., Public Works.

The indent will be forwarded to the Home Government for compliance.

(Here enter Nos. 670-671 W., dated 27th February 1888.)

(True Extract.)

Colonel, R.E.,
Joint Secy. to Govt., P.W.D.

To the Superintending Engineer, V Circle.
Periyár Project.
" " "
" Chief Engineer for Irrigation.
" Examiner, Public Works Accounts.

Exd. J. Moses.
Spare Copies

669/2

GENERAL.
ACCOUNT.

Govt. of | 1888 | Madras.

PUBLIC WORKS.

Dated February, 27th.

Read. *Encl.*

G.O., 27th Feb. 1888, No. 669 W.

FEBRUARY.

Indent

Ordered that the special — for machinery and plant required for the Periyár Project works be forwarded to the Home Government for compliance.

669/3

PUBLIC WORKS DEPARTMENT.

General.
Account.

LETTER—from

COLONEL H. R. MEAD, R.E.,
Joint Secretary to the Government of Madras,
Public Works Department,

To

THE DIRECTOR-GENERAL OF STORES,
INDIA OFFICE,
LONDON.

SIR,

With reference to paragraph 2 of despatch from this Government to the Right Honorable the Secretary of State for India, No. $\frac{3}{69\ I.}$, dated 30th January 1888, I am directed to forward a special indent for stores required for the Periyár Project in this Presidency, and to state that Colonel Pennycuick, R.E., may be consulted with respect to all details which do not appear in the indent.

2. A copy of the proceedings of this Government, No. 669 W., dated 27th February 1888, embodying the usual certificate by the Examiner of Public Works Accounts, is enclosed.

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

Colonel, R.E.,
Joint Secy. to Govt., P.W.D.

FORT ST. GEORGE,
27th February 1888.

Exd. J. Moses.
Spare Copies

GENERAL.
ACCOUNT.

Govt. of {1888} Madras.

PUBLIC WORKS.

Dated February, 27th.

Rcvd. *Encl.*

27th Feb. 1888, No. 670 W.

FEBRUARY.

Indent

Forwarding a special — for machinery and plant required for the Periyár Project works, together with certificate from the Examiner of Public Works Accounts.

669/5

PUBLIC WORKS DEPARTMENT.

General.
Account.

LETTER—from

COLONEL H. R. MEAD, R.E.,
Joint Secretary to the Government of Madras,
Public Works Department,

To

THE DIRECTOR-GENERAL OF STORES,
INDIA OFFICE,
LONDON.

SIR,

With reference to paragraph 2 of despatch from this Government to the Right Honorable the Secretary of State for India, No. $\frac{3}{69\ I.}$, dated 30th January 1888, I am directed to forward a special indent for stores required for the Periyár Project in this Presidency, and to state that Colonel Pennycuick, R.E., may be consulted with respect to all details which do not appear in the indent.

2. A copy of the proceedings of this Government, No. 669 W., dated 27th February 1888, embodying the usual certificate by the Examiner of Public Works Accounts, is enclosed.

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

(Signed) H. R. MEAD, Colonel, R.E.,
Joint Secretary to Govt., P.W.D.

FORT ST. GEORGE,
27th February 1888.

ENDORSEMENT—dated 27th February 1888, No. 671 W., Public Works.

Copy of the above, with copy of the indent, forwarded to the Government of India for information.

Colonel, R.E.,
Joint Secy. to Govt., P.W.D.

Exd. J. Moses.
Spare Copies

GENERAL.
ACCOUNT.

Govt. of {1888} Madras.

PUBLIC WORKS.

Dated February, 27th.

Read. *Encl.*

27th Feb. 1888, No. 671 W.

FEBRUARY.

Indent

Forwarding copy of letter to the Director-General of Stores with copy of special — for certain machinery and plant required for the Periyár Project works.

671/7

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Civil Works.
Irrigation.

READ again—

Proceedings of the Madras Government, Public Works Department, dated 13th August 1887, No. 498 I.

Read—the following letter from Major A. G. BEGBIE, R.E., Officiating Deputy Secretary to the Government of India, Public Works Department (Account—Irrigation), to the Secretary to the Government of Madras, Public Works Department, dated Simla, 1st August 1887, No. 68 A.I.:—

In continuation of my letter, No. 83 A.I., dated 19th November last, I am directed to inform you that the Government of India has been pleased to allot a sum of Rs. 1,50,000 under "48. Irrigation—Capital Expenditure not charged against Revenue" for outlay in the current year on acquiring land and commencing work on the Periyár project. The grant now given is below the amount that was requested in your letter, No. 690 I., dated 14th October 1886, but it is possible the Government of Madras may be able to supplement the allotment by re-appropriation from the grants for existing works. Judging from the actual * transactions of the past three years, the grant as now increased should be amply sufficient for all requirements.

2. I am to add that the Government of India will, if possible, allot Rs. 6,00,000 for the work for 1888-89, and in framing the forecast of probable expenditure during the next five years on Productive Public Works, called for in another letter, that amount should be provided for the Periyár project.

* 48. Irrigation.

Capital Expenditure not charged against Revenue.

	Budget grant.	Actuals.
	Rs.	Rs.
1884-85	19,84,000	16,10,444
1885-86	18,20,000	14,94,677
1886-87 (approximate).	15,05,000	9,90,556

Order—dated 13th August 1887, No. 498 I., Public Works.

Communicated to the Superintending Engineer, VI Circle, who will suggest as soon as possible the arrangements necessary for the commencement of the Periyár project.

(True Extract.)

(Signed) H. R. MEAD, Colonel, R.E.,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

READ also—

No. 88 C.

Note on proposed programme of work in connection with the Periyár Project for the season 1887-88.

In the printed statement, printed with G.O., No. 354 I., of 8th June 1887, the expenditure on works during the first year is entered at Rs. 4,00,000; this was intended to include Rs. 2,40,000 as the cost of the machinery to be ordered from England and Rs. 1,60,000 for local expenditure, made up roughly as follows:—

	Rs.
Construction of road and foot-paths	40,000
Buildings and lines	1,00,000
Preliminary expenditure	20,000

2. This estimate was based on the supposition that sanction to begin work would be notified before the beginning of the official year so that arrangements for the organisation both of labour and establishment could be made at leisure during April, May and June, and work commenced vigorously as soon as the state of the climate admitted.

3. This of course cannot be done this year, as it will be practically impossible to begin work before the beginning of September, and it is possible that not much can be done till a month later.

4. The sanction to begin work was quite unexpected, and for the first month or two the supply of labour will be small, though our former experience shows that, as the news of the commencement of operations spreads, labourers will come in until we have as many as we want.

5. Taking all the circumstances into consideration, I do not think we can reckon with certainty on being able to spend usefully a larger sum than Rs. 50,000 * during the present season, and this sum I would propose to distribute as follows:—

* Exclusive of establishment charges.

	Rs.
On road and foot-paths	25,000
On lines and buildings	20,000
On preliminary expenditure	5,000

6. It is quite possible that more can be spent, as the labour will probably come in freely during December, January and February, but it will be better to begin gradually than to attempt to do too much at first and possibly to waste time and money by working with an imperfect organisation.

7. Practically the effect of beginning in this manner in the middle of a season instead of at the beginning will be to throw everything back half a season, and the work will occupy five full seasons and two halves and be completed (assuming that we follow the programme laid down in my original report, and adopted in the forecast printed with G.O., No. 354 I. of 8th June 1887) by October of the seventh season (October 1893) instead of occupying six full seasons and being completed in February of the sixth season.

8. It happens that the working season is divided into two parts very similar in character, each beginning with a very rainy month (July and November) and followed by three months of increasing dryness. Practically therefore all the statements and estimates of progress contained in my original report may hold good, the dates being simply shifted four months back.

9. With regard to the establishment required for the present season's work, it would seem desirable that the operations should be in charge of the officer who is to be selected for the permanent charge of the work on the hills; I understand that it is proposed to select Mr. H. S. Taylor for this duty, and this selection would be in accordance with my own wishes. Whoever the officer is, I would recommend that he should be directed to join as soon as possible and place himself under my orders.

10. In addition to the officer, two upper subordinates will be required, who should, if possible, be military men, and in any case Europeans.

11. The office establishment required would be—

	One clerk on Rs. 40 for Executive Engineer.
Later on an additional clerk on Rs. 30 and a draftsman may probably be required, but they are not necessary at present.	One clerk on Rs. 30 for Superintending Engineer.
	Two clerks on Rs. 25 for subordinates.
	Two peons on Rs. 10 for Executive Engineer.
	Four lascars on Rs. 9 for do.
	Two lascars on Rs. 9 for subordinates.

A medical subordinate would also be required.

12. The Examiner of Public Works Accounts would be best able to judge whether the work should be considered as an independent division as regards accounts or as a sub-division of Madura; at first sight the latter appears the better course, but it must be remembered that Madura is already burdened with the accounts of the Vaigai bridge and of a Tank Maintenance party, both of which are, as regards executive work, independent charges, and if a third independent sub-division were added, it would probably be necessary to provide an additional accountant for that division. As, in any case, the Periyár works next year must form at least two independent divisions, it will probably be better to start one of them at once; in that case, besides the accountant an additional clerk on Rs. 30 will be required for accounts work.

13. It is hoped that both officers and subordinates will be granted the additional allowances specified in paragraph 245 of my report and detailed in statement No. III attached thereto.

14. I presume that Government desire me for the present to superintend these works in addition to the ordinary work of the circle; if so, I must ask to be allowed to delegate a certain amount of the routine work of my office to the Executive Engineer in charge of the head-quarter division (Trichinopoly). This work is very heavy, and, as during the next month or two I shall have to be a good deal out of doors at a place more than 180 miles from my head-quarters, the more of it I can get rid of the better. It is not necessary to specify precisely what work I should propose thus to delegate; the Government may be assured that it will be only what can be delegated without injury to the public service.

15. The above remarks have reference only to the work to be done locally during the current season, but the whole of the machinery should, if possible, be ordered so as to arrive in Madras not later than the end of July 1888, and, if this is to be paid for during this year, an additional grant of Rs. 2,40,000 will be required.

16. In connection with this subject I wish to draw particular attention to paragraph 246 of my report and to paragraph 11 of Colonel Hasted's note, No. 44 I., printed with G.O., No. 355 I., of 27th April 1883. It is of the utmost importance that the machinery should be selected and ordered after personal discussion with the manufacturers, and I have no hesitation in saying that, if it be ordered in the ordinary way by indent through the India Office, delays and misunderstandings will be likely to arise which may seriously affect the economical and efficient execution of the work.

17. I have been studying this subject for years, and can assert confidently that there are numerous points of detail, trivial in appearence but important in reality, which it would be almost impossible to specify in an indent, and that the cost of my deputation to England for a few months would be repaid over and over again by the superior efficiency of plant selected after personal consultation between the India Office officials, the makers, and myself, as compared with that selected by the former on written indents.

18. Four or five months would do all that was necessary, and it would be easy for me to start Mr. Taylor at work this year and return in time for the serious work of next season.

PULIANGUDI,
8th August 1887.

(Signed) J. PENNYCUICK, Lieut.-Col., R.E.,
Superintending Engineer, VI Circle.

No. 25 E.W.

Note by the Chief Engineer for Irrigation.

In forwarding the enclosed note by Colonel Pennycuick on the arrangements he considers advisable for the commencement of the Periyár project, for which the Government of India, in their letter, No. 68 A.I., dated 1st August 1887, have allotted Rs. 1,50,000, I request that an Executive Engineer and two selected European upper subordinates may be, as soon as practicable, appointed to the work and be ordered to join without delay.

2. With regard to office establishment, I consider it advisable that the Periyár project should be an independent division from the commencement of the work and not a sub-division of Madura. The Madura office has as much as it can well carry on, and it should not be burdened with the accounts of the Periyár project, and it will also be better for the Periyár work to start from the beginning as a separate division.

3. The office should be a third-class divisional office, consisting of —

	Rs.
1 Accountant, 5th grade	57½
1 Clerk, 3rd class, 3rd grade	55
1 Do. 4th „ 2nd „	35
2 Clerks, 4th „ 3rd „	50
1 Draftsman, 2nd class	42½
1 Do. 3rd „	25
1 Messenger	7
1 Do.	6
Petty—	
4 Lascars (each)	6

For the two upper subordinates there should be two clerks on Rs. 20 each, and two lascars on the ordinary pay of Rs. 6 per month.

4. It is, I consider, necessary that a selected medical subordinate should be attached to the work, and he should join the party as soon as possible.

5. It is supposed that all officers, subordinates and office establishment, including lascars, &c., will be granted the additional allowances named in paragraph 245 of Colonel Pennycuick's report on the project when employed on the head works, these allowances to cease when they are in the plains. I request that early orders regarding these allowances may be passed, and also that Colonel Pennycuick may be authorised to entertain the office establishment asked for.

6. With regard to obtaining the machinery required for the work, I consider it absolutely necessary that an officer acquainted with the work to be done should proceed to England and order the greater portion of it after personal discussion with the manufacturers, and Colonel Pennycuick, who has for years studied the subject, should be deputed to go to England for a few months on this duty, and I request early orders sanctioning this arrangement.

7. Some of the machinery can be ordered at once in the ordinary manner by special indent on the Secretary of State. Colonel Pennycuick has been requested to submit an indent as soon as practicable for this, and it is proposed that, as soon as received, it be sent home, so that a portion of the grant allotted this official year for the work may be utilised in the purchase of this machinery; the special machinery to be selected by Colonel Pennycuick, in consultation with the India Office officials and manufacturers, will be purchased from the grant for the next official year.

8. With the establishment proposed, Colonel Pennycuick, it is thought, might continue in charge of the VI Circle for a few months, being relieved of this charge at the end of December or early in January, as there is much to be done in preliminary work, construction of roads, paths, &c., and in building lines for the coolies, &c.

9. Until the machinery is procured and shelter for the establishment and coolies is built, not much work can be done. Colonel Pennycuick should proceed home about the end of January, but before doing so will set the Executive Engineer and his establishment at work and lay out what they are to do. He will be able to return by the end of June, when the first burst of the south-west monsoon is over, and be ready to superintend the work as soon as weather will permit, arranging for the carriage of the machinery, and it is hoped that most of it will be in place and ready for work in December, a portion of it perhaps in August.

10. The Government of India proposes to allot Rs. 1,50,000 for the work this official year, and the following distribution is proposed and approved of :—

	Rs.
Works—	
Construction of road and foot-paths	25,000
Buildings and lines	20,000
Preliminary expenses	5,000
Establishment and tools and plant	12,650
Total ...	62,650

The remainder of the grant, Rs. 87,350, it is proposed to spend in the purchase of the ordinary machinery that can be procured by special indent on the Secretary of State.

CHEPÁK, (Signed) H. R. MEAD, Colonel, R.E.,
13th August 1887. Chief Engineer for Irrigation.

To the Chief Engineer, Public Works Department.

ORDER—dated 29th August 1887, No. 2314 W., Public Works.

In the foregoing papers, the Superintending Engineer, VI Circle, and the Chief Engineer for Irrigation submit proposals for commencing work on the Periyár project, for outlay on which the Government of India have allotted Rs. 1,50,000 during the current official year.

2. Mr. H. S. Taylor, Executive Engineer, and two military upper subordinates have already been posted to the work and directed to report themselves to Lieutenant-Colonel Pennycuick without delay.

3. The project will now be organised as a temporary third-class division, and the Superintending Engineer will proceed to appoint the office and petty establishment mentioned in paragraph 3 of the Chief Engineer's note. The Examiner, Public Works Accounts, will arrange for the requisite temporary accounts establishment.

4. The Surgeon-General will be requested, in the Public Department, to post a selected medical subordinate to the work.

5. The Government of India will be addressed with respect to granting the staff employed on the project the extra allowances detailed in paragraph 245 of Lieutenant-Colonel Pennycuick's report of 1882.

6. The Government fully concur in the remarks of the Superintending Engineer and the Chief Engineer for Irrigation as to the desirableness of Lieutenant-Colonel Pennycuick proceeding to England to select, in communication with the Store Department and the manufacturers, the more important part of the machinery required, and the Secretary of State will be requested to sanction his deputation in accordance with the rules laid down in section 17 of the Civil Leave Code.

7. An emergent indent on the Home Government, for such of the machinery as can be procured in the ordinary course, should be submitted without delay.

8. The arrangement proposed in paragraph 14 of the Superintending Engineer's note with respect to the routine work of his office is sanctioned.

9. The distribution of the current year's grant, proposed in paragraph 10 of the Chief Engineer's note, is approved.

(Here enter No. 2315 W., dated 29th August 1887).

(True Extract.)

(Signed) J. O. HASTED, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
" Superintending Engineer, VI Circle.
" Examiner, Public Works Accounts.
" Public Department.
" Political Department.
" Revenue Department.

LETTER—to the Secretary to the Government of India, Public Works Department, dated Ootacamund, 29th August 1887, No. 2315 W.

In acknowledging the receipt of your letter, No. 68 A.I., dated 1st August 1887, allotting a sum of Rs. 1,50,000 under "48. Irrigation—Capital Expenditure not charged against Revenue" for outlay in the current year on the Periyár project, I am directed to state that arrangements are being made for the immediate commencement of the work.

2. Meanwhile, I am directed to request the very early sanction of the Government of India to the grant to the staff employed on the work of the extra allowances detailed in paragraph 245 and statement III of Lieutenant-Colonel Pennycuick's report forwarded with this office endorsement, No. 356 I., dated 27th April 1883.

(Signed) J. O. HASTED, Colonel, R.E.,
Secretary to Govt., P.W.D.

Exd. J. Moses.
Spare Copies

669/10

CIVIL WORKS.
IRRIGATION.

Govt. of {1887} Madras.

PUBLIC WORKS.

Dated August, 29th.

Encl.

Read.

G.O., 29th Aug. 1887, Nos. 2314, 2315 W.

AUGUST.

Periyar Project

Stating that arrangements are being made for the immediate commencement of the —, and requesting sanction to the grant of certain extra allowances to the staff employed on the work.

669
11

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.

READ—the following papers :—

From Colonel J. PENNYCUICK, R.E., Superintending Engineer, Periyár Project, to the Chief Engineer for Irrigation, dated Tekady, 7th January 1888, No. 498 P.R.

I have the honor to submit, for your consideration, a note on the subject of the work to be done in connection with the Periyár Project from February to June next.

ENCLOSURE.

NOTE on work to be done in connection with the Periyár Project from 1st February to 1st July 1888.

During February all that has to be done is to push on the work now in progress; that is, the removal of the earth from the site of the dam, escape and watershed cutting, the construction of the dams and locks and of the permanent buildings, collection of timber and clearing of ground, to which should be added, if possible, the completion of the dam for forming a reservoir on the Mulya Panjan, which can be done much better during February, when the stream is nearly dry, than at any other time, and, at least, on commencement of the work of boat-building.

2. The time of closing operations for the season must, I think, be left to Mr. Taylor's discretion. It has always been assumed that work should stop in the end of February, but I am not, and never have been, satisfied that this is necessary. As long as the supply of labor is steady and the health of the workmen good, there seems no reason why we should not go on at the Periyár at all events. It is very possible that want of water will compel the Tekady camp to be broken up.

3. The principal work to be done after the work in the Periyár valley is stopped will be the landing and transport of the machinery already ordered from England, to superintend which Mr. Mackenzie should be ordered to Tuticorin, and the laying out and taking up of the land required for next season's work in the plains. This should be done in communication with the Collector of Madura, and should be limited to the amount required for the head works at the Perany, the first reach of the main channel, and the first branch channel.

4. Arrangements should also be made for the commencement of executive operations on the works provided for in the budget for 1888-89 as soon as the land is handed over.

5. It is probable that the establishment of the existing division will be sufficient for this work until the end of May, though it is possible that one or two more subordinates will be wanted, and those will, no doubt, be provided if applied for; but after that date the second division should be formed and the work in the plains transferred to it, the establishment of the first division returning to Gúdalúr about the middle of June so as to be ready to resume work in the Periyár valley as soon as the weather allows.

6. The executive establishment of the second division should, it is thought, consist at first of an Executive Engineer, an Assistant Engineer and three upper subordinates, and two upper subordinates should be added to the present establishment of the first division. Later on, when the works get into full swing, application will probably be made for the additional hands necessary to bring the establishment up to the strength provided in the project estimates, namely :—

	1st Division.	2nd Division.
Executive Engineer	1	1
Assistant Engineers	2	3
Sub-Engineers and Supervisors	2	2
Overseers	5	6

7. The office establishment of both divisions should, it is thought, be on the scale of a first-class division, and, as increments are not given to men in temporary employment, their salaries should be fixed at the average rates for the various grades.

8. The appointments to these establishments should be made by Mr. Taylor in communication with the officer selected for the charge of the second division, and should be made in time for the latter to take up the work in the plains from the 1st of June.

9. In addition to the office establishment of the two divisions, one will be required for the Superintending Engineer; it is not easy to say exactly what strength will be required, but for the present, and subject to modification hereafter as experience may dictate, it is thought that the following will be suitable:—

	Rs.
1 Head Clerk	100
1 Clerk	60
1 Clerk	40
1 First-class Draftsman	60
2 Messengers	20
4 Lascars	36
Total ...	316

10. Mr. Taylor will be asked to select the men for this establishment and to appoint them in time for them to join just before my return, the exact date of which will be communicated to him a mail or two in advance.

11. In a separate letter permission has been asked for the retention of a clerk on Rs. 50 per month and two peons on Rs. 10, now forming part of my own establishment, during my absence; these men will, of course, be absorbed in the office when the latter is organised.

12. During my absence Mr. Taylor should, it is thought, be placed under the immediate orders of the Chief Engineer for Irrigation, and have the powers of a Superintendent of Works; this course is believed to have the approval of the Chief Engineer for Irrigation and of the Superintending Engineer, VI Circle. Mr. Taylor is in full possession of my views regarding the work to be done, and may, it is thought, be allowed a large measure of discretion.

13. With regard to my own movements, I propose, with the approval of Government, to leave for England by the first mail in February, which is the latest date which will give me a reasonable certainty of being back by the end of June.

14. It is presumed that I shall be placed by the Government in communication with the India Office, and the actual procedure to be followed in the selection and purchase of machinery may no doubt be left to be settled in accordance with instructions which I shall obtain there.

15. The revised estimates lately submitted to the Chief Engineer for Irrigation include a list of the plant which it is proposed to purchase, but Government will doubtless approve of my exercising a certain amount of discretion in the matter should modifications or alterations appear desirable.

(Signed) J. PENNYCUICK, Colonel, R. E.,
Suptg. Engineer, Periyár Project.

Tekady,
7th January 1888.

To the Chief Engineer for Irrigation.

No. 13 I.

Submitted to Government.

2. Colonel J. Pennycuick's proposal to leave this country for England by the first mail next month, to select machinery required for the Periyár Project from England, for which the permission of the Secretary of State has already been obtained (*vide* Proceedings of Madras Government, No. 3075 W., dated 15th November 1887), and his programme of work proposed to be done on the project during his absence are recommended for approval.

3. A copy of the list of machinery required for the project is appended, and the General Superintendent, Public Works Stores, may be directed to submit at once a special indent for transmission to the Secretary of State for such of the machinery therein enumerated as has not yet been indented for.

4. It is suggested that arrangements may be made for allowing Col. Pennycuick considerable discretion in the selection of machinery, provided that the total estimated cost for machinery is not materially exceeded without the previous acquiescence of this Government.

5. The proposal regarding establishment required for the project and the suggestion to invest the Executive Engineer in charge of the project with the powers of a Superintendent of Works have, in a separate note, been recommended for the approval of the Chief Engineer, Public Works Department.

6. The revised estimates for head works of the project have, with note No. 5 I., dated the 17th instant, been submitted to Government for sanction.

(Signed) H. R. MEAD, Col., R.E.,
Chief Engineer for Irrigation.

Chepák,
24th January 1888.

To the Joint Secretary to Government,
Public Works Department, Irrigation Branch.

Enclosure.

No. 11.

Tools, Plant and Machinery; Estimate.

Number of Units.	Description.	Rate.	Unit.	Amount.	Total.
		£		£	£
	Tunnelling and Quarrying Machinery.				
8	Rock-boring machines, complete	75	Each.	600	
	Carriage for four drills	..	..	80	
	Air compressor	..	..	150	
	Air distributor	..	..	45	
	Air receiver	..	..	50	
	Water injector	..	..	15	
	Fan to exhaust 6,000 cubic feet of air per minute	..	..	60	
	Apparatus for electrical firing	..	..	400	
8	Hand power machines, complete	65	Each.	520	
					1,920
	Concrete-making Machinery.				
6	Stone breakers, 16" × 9" *	150	Each.	900	
6	Disintegrators No. 3 for grinding lime and surkhi	110	,,	660	
2	Mortar mixers to mix 150 cubic feet per hour each	60	,,	120	
2	Concrete mixers to mix 360 cubic feet per hour each	120	,,	240	
	Mortar and stone measurers	..	..	160	
	Main shaft belting and gearing	..	..	400	
	Pump to throw 3,000 gallons per hour with section pipe	..	..	80	
					2,560
	*Railway Plant.**				
2	Miles portable railway, 12 lb. to the yard, 30" gauge	500	Mile.	1,000	
12	Sets points and crossings	7½	Set.	90	
6	Turntables	7½	Each.	45	
40	Waggons to contain 20 cubic feet each	5	,,	200	
					1,335
	*Hoisting Gear.**				
6	One-ton portable cranes complete with brakes, &c.	75	Each.	450	
6	Half-ton do. do. do.	60	,,	360	
2	Crab winches to lift 5 tons each, complete with brakes, &c.	12½	,,	25	
4	Do. do. 3 do. do. do.	10	,,	40	
2	Do. do. 2 do. do. do.	8	,,	16	
6	Hold-fast hydraulic lifting jacks to lift 4 tons each	5	,,	30	
2	Do. lifting and traversing, &c.	8	,,	16	
					937
	Wire Tramways.				
6	Miles wire tramway to carry 100 tons per day with 6 angles and driving gear *	..	..	3,500	
¼	Mile wire tramway to carry 200 tons per day with 3 angles and driving gears	..	..	700	
					4,200
	Turbines.				
	Turbine to indicate 150 horse power with head of 20 feet including casing, draft tube and gearing to main shaft	..	..	450	
2	Turbines to indicate 60 horse power with head of 160 feet including casing	80	Each.	160	
					610

Note.—The items marked * have already been ordered from England.

Tools, Plant and Machinery; Estimate—*cont.*

Number of Units.	Description.	Rate.	Unit.	Amount.	Total.
		£		£	£
	*Wood-working Machinery.**				
	Semi-portable saw frame 18" frame	..	..	190	
	General joiner complete with mortising and boring apparatus ..	..	..	90	
					280
	Floating Plant.				
	Steamer about 8 tons displacement 35 horse power	..	..	800	
	Four-oared rowing boat	..	..	80	
	Pair do.	..	..	60	
					940
	Piping.				
600	Feet of 3" cast-iron piping	..	..	25	
6,600	Feet of 2½" do.	..	..	280	
1,200	Feet of 1" do.	..	..	25	
	Bends, fittings and cocks	..	..	10	
					340
	Miscellaneous.				
	Hydraulic press, 50 tons, table 18" × 18", with pump and pressure gauge*	..	..	80	
2	Weighing machines, 4 tons, platform 6' × 4'*	..	..	50	
	Minor and unforeseen items	..	..	348	
					478
					13,600
	25 per cent. for freight ..	..	..	..	3,400
					17,000
	At Rs. 14 per £1 sterling, Rs. ..	..	..	..	2,38,000
				Rs.	Rs.
	Items to be made up locally or purchased in India.				
500	Feet of 12" wrought-iron pipe for high pressure turbines	..	..	4,800	
20	Barges each 20 tons displacement	..	..	12,000	
200	Posts for wire rope line	..	..	3,000	
	Eight horse power portable engine	..	..	1,000	
	Eight inch centrifugal pump	..	..	5,000	
	Hoist for landing goods at site of dam	..	..		
					45,800
	Land carriage to site of works	..	..	..	20,000
	Cost of erection and fitting	..	..	..	30,000
	Repairs, maintenance and renewals	..	..	..	50,000
	Minor and unforeseen items	..	..	..	66,200
	In India ..	..	..	..	2,12,000
	In England ..	..	..	..	2,38,000
	Total ..	..	..	..	4,50,000

NOTE.—The items marked * have already been ordered from England.

PEKALY,
15th December 1887.

(Signed) J. PENNYCUICK, Lieut.-Col., R.E.,
Superintending Engineer, VI Circle.

(True Copy.)

(Signed) H. R. MEAD, Col., R.E.,
Chief Engineer for Irrigation.

ORDER—dated 30th January 1888, No. 69 I., Public Works.

The proposed departure of Colonel Pennycuick to England to select machinery and his programme of work to be done on the Periyár Project during his absence are approved. On arrival in England he will place himself in communication with the India Office, and, subject to the instructions which he may there receive, he is authorised to arrange for the selection and early despatch to India of the machinery required for the project. In this matter the Secretary of State will be requested to allow Colonel Pennycuick considerable discretion, but the estimated cost of the machinery must not be exceeded to any material extent without the previous sanction of this Government.

2. The General Superintendent, Public Works Stores, will submit, at once, for transmission to the Secretary of State, a special indent for such of the machinery and

668/3

other articles shown in the list attached to the foregoing endorsement as have not already been indented for.

3. The Executive Engineer in charge of the project, during the absence of the Superintending Engineer, will see that the arrangements laid down in Col. Pennycuick's programme are carefully followed.

4. Ordered that the following despatch be sent to the Secretary of State.

(True Extract.)

(Signed) H. R. MEAD, Colonel, R.E.,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, Periyár Project Division.
" Examiner, Public Works Accounts.
" Superintending Engineer, V Circle.
" " " VI "

Exd. E. Fernandez.
Spare Copies.

IRRIGATION.

Govt. of {1888} Madras.

PUBLIC WORKS.

Dated January, 30th.

Read. *Encl.*

G.O., 30th Jan. 1888, No. 69 I.

JANUARY.

Periyar Project

Orders on note by the Chief Engineer for Irrigation submitting letter from the Superintending Engineer proposing to leave for England by the first mail next month to select machinery for the — and forwarding a programme of work to be done during his absence.

P. 1

SUPERINTENDING ENGINEER'S OFFICE,
V Circle, Madras,
Chepák, 14 February 1888.

No. 4818 688/14

From Colonel A. M. Vibart. R.E.
SUPERINTENDING ENGINEER, V CIRCLE,

To
THE Chief Engineer
P. W. Department
Thro
The Examiner P. W. Accounts.

SIR,

Enclosures.

With reference to para 2 of G. O
N° 69 I, dated 30th January 1888, I have
the honor to forward an Indent in
triplicate, on the Home Government
for machinery and Plant required
to be obtained from England for
the Periyar Project works.

2 In the estimate printed with
the G.O. above alluded to, there is a
provision of £348 under "Miscellaneous"
for minor and unforeseen items. This
amount is not included in the Indent
as it is evidently intended for such
articles

articles, as the India Store Department may find it necessary to supply in complying with this Indent.

EXAMINER
No. 543
17 FEB 1893
ENCLOSURES
P. W. ACCOUNTS.

I have the honor to be,

Sir

Your most Obedient Servant

Col. RE

Supty. Engineer V circle

Endorsement No. 513 dated 22nd February 1888.

Forwarded to the Chief Engineer, Public Works Department, with the necessary certificate.

Major. R.E.
Examiner. P. W. Accounts
Madras.

22/2

22/2

Encs: 2.

669/15

certificate by the Examiner of Grant P.W. account

Number and date of Sanction or Letter in which estimate was received	Description and value of articles indented for			Work and Division to which the value is chargeable	Nominal	Not Nominal	Certificate attached by the Examiner	Remarks
1	2			3	4	5	6	7
Superintending Engineer's (Irrigation) letter No 2288 dated 16th February 1888.	Provincial Tunnelling and Quarrying Machinery, Concrete making Machinery Wire Ropeways, Turbines, Hoisting Plant and Piping	£ 12	s 0	d 0	Rs 175000	Preliminary Issue of the Budget Estimate of Irrigation Major works for 1888-89	I certify that funds to meet the outlay which it is estimated will be incurred in England in connection with this indent during the year 1888-89, have been provided for in the estimates of the Public works Department to the extent of £ 12057-10-	
		12057	10	-				

Madras
22nd February 1888.

Major R.E.
Examiner P.W. Accounts Madras

Draft
Fair

69/9

P.W.C. № 1787

No. 2314-15 W d/ 29.8.87
" 15/2314 W d/ 29.8.87
" 2600-2 W d/ 30.9.87
" 2785-90 W d/ 19.10.87
" 3075 W d/ 15.11.87
" 4864-885 W d/ 1.2.88
" 69 I d/ 30.1.88
" 3/69 I d/ 30.1.88

From

Major C.A.P. Christie R.E.
Examiner P.W. Accounts
Madras.

To

The Chief Engineer
Public Works Department

R 23.2.88

Encs: 3.2
(1 indent in triplicate)

Endorsement № 543 S.65th
dated 22nd February 1888.

Indent in triplicate, for machinery and Plant for the Periyar Project — Forwards letter № 4818, dated 16th February/88 from the Superintending Engineer 5th Circle, regarding the —

SAW

Gen
Genl

A/ Genl

PUBLIC WORKS DEPARTMENT.

№ 669 W

PROCEEDINGS OF THE MADRAS GOVERNMENT.

UNDER date the 27th Feb 8/88

READ the following

From the S.E. V Circle No 4818 d/ 16 Feb 1888
" Gen Nos No 543 d/ 22 " " "

The indent will be forwarded to the Home Govt. for compliance.

Supdg Engr V Circle ✓
" Periyar Project ✓
Ch. E. for Info ✓ 24/2
Gen Nos

H.S. No. 670 W 27 Feb/88

To The Director Genl of Stores
India Office
London

Sir,

With reference to para 2 of despatch from this Govt. to the Rt. Hon. the Secy of State for India No 3/69 I dated 30 January 1888

669/19

1888. Dem directed to forward a special indent for stores required for the Periyar Project in this Presidency, & to state that Colonel Pennycuick R.E. may be consulted with respect to all details which do not appear in the indent.

a copy of the Proc. of this Govt. No. 169 W dated 27th February 1888, enclosing the usual certificate by the Exr. P.W. Accts. is enclosed

A.S. No 671 W dt 27 Febry/89

Copy of the above, with copy of the indent, forwarded to the Govt. of India for information.

24.2.88

Cr

No. 20. 12.86

Govt. of India. Works.

PUBLIC WORKS.

Special

Govt.

G.O. 27 Dec 1888 No. 669 / 670 W / 671

Index

Ordered that the Special — for Machinery & Plant required for the Bergan Project Works be forwarded to the Home Govt. for completion.

Index

Recommending a Special — for Machinery & Plant req^d for the Bergan Project Works together with the enclosures from the Chief Engineer's Recommendation

Index

Forwarding copy of letter No. — from the Secretary of State in Council — for Special Machinery & Plant for the Bergan Project

Index

Special — for Machinery & Plant for the Bergan Project

Stores

W 27/12 27/12