Public Works (1899) Department.

G.O., No. 2243 W

DATED 24 August 1899.

[Despatch Abstract.]

College of Engineering, Madras.

Pro. Educal: Deptt sanctioning, with certain modifications, the proposals of the Director of Public Instruction for strengthening the staff of the —, records

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College of Engineering, Madras.

Sanctioning, with certain modifications, the proposals of the Director of Public Instruction for strengthening the staff of the —.

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GOVERNMENT OF MADRAS.

EDUCATIONAL DEPARTMENT.

Read—the following paper :—

From the Hon'ble Mr. D. DUNCAN, M.A., D.Sc., LL.D., Director of Public Instruction, Madras, to the Secretary to Government, Educational Department (through the Chief Engineer), dated 7th December 1898, No. 13813.

I have the honour to submit, for the consideration and orders of Government, a file of papers, as noted in the margin, relating to additions to the teaching staff and workshop and clerical establishments required for the Madras College of Engineering and the revision of the emoluments of the subordinate teaching staff so as to allow of its being recruited from the Public Works Department.

(1) Letter from the Principal, College of Engineering, dated 25th November 1897, No. 1160-C.
(2) Letter from the Consulting Engineer for Railways, dated 18th February 1898, No. 489.
(3) Letter from the Chief Engineer, dated 31st March 1898, No. 1985-C.
(4) Letter from the Acting Principal, College of Engineering, dated 15th August 1898, No. 391-C, with copy of this office No. 8543.

2. Excluding the gymnastic instructor and the workshop instructor, the staff of the college consists of one Principal, one professor of Engineering, one professor of Mathematics, two warrant officers of the Public Works Department lent to this department, and seven assistants. This staff is considered inadequate for proper teaching of the several classes, and the Principal reports that the following additional teachers are absolutely necessary :—

One professor of Civil Engineering on Rs. 845 a month.
One instructor in Mechanical Engineering on Rs. 350 a month.
One assistant instructor on Rs. 100 a month.

3. The present professor of Engineering is responsible for all the instruction in Civil Engineering and in Mechanical Engineering and in certain other subjects, and has moreover the charge of the workshops and the Engineering laboratory. In the words of Major Love "no one man, even with an efficient subordinate staff, can carry out these duties efficiently," and "the time has arrived when the Civil and Mechanical branches of the profession must be separated." From the particulars furnished on page 6 of the Principal's letter No. 1160-C., dated 25th November 1897, Government will observe that the above principle has been already recognized in the constitution of the superior establishments of the other Engineering Colleges in India, attended, of course, with a considerably larger outlay than in the Madras College. The Consulting Engineer for Railways and the Chief Engineer are both in favour of the appointment of a second professor of Engineering. The former officer thinks that a Public Works Engineer on Rs. 600—700 would suffice. The latter officer was first of opinion that the new professor should be a first-grade Assistant Engineer or a third-grade Executive Engineer of the Public Works Department, lent for a period of three years, with option of extension to five years if satisfactory, and he recommended a salary of Rs. 795, including allowances. But he is now inclined to think with Mr. Davidson that the limits of appointment to the new professorship should include Executive Engineer, second grade. I fully agree in this view. The pay and allowances of a first-grade Assistant Engineer, a third-grade Executive Engineer and a second-grade Executive Engineer are, respectively, Rs. 745, Rs. 845 and Rs. 995, and the average or mean may be taken at Rs. 870 ($\frac{1}{2}$ of 745 + 995). Mr. Davidson would give the professor the Secretariat or local allowance, but the Chief Engineer does not think this concession necessary.

4. A strong case has been made out by the Principal for the employment of an instructor in Mechanical Engineering. This additional officer is considered necessary

also by the Consulting Engineer for Railways and the Chief Engineer, and I agree with them in thinking that the instructor should be got from Europe, on a salary of Rs. 350 a month, with a five years' engagement.

5. I beg to recommend also that the appointment of an additional assistant instructor on Rs. 135 per mensem be sanctioned. The members of the existing junior staff are greatly overworked, and I am convinced that they are in need of some definite and early relief. The salary proposed represents the pay and allowances of an overseer of the second grade, Civil branch, and is the minimum amount required if the post is to be filled by an officer of the Public Works Department as will be explained later on.

6. Of the two warrant officers, one is now in receipt of a pay of Rs. 350 and the other of Rs. 300. In its Order, No. 755, Educational, dated 18th December 1897, Government approved of the recommendation of the Chief Engineer that two warrant officers should be lent to the college for a term of years and that they should, while so employed, receive the pay and allowances which they would get if employed in the Public Works Department. In his letter, No. 1985-C., dated 31st March 1898, the Chief Engineer, however, recommends a salary of Rs. 350 for each of these officers ; and I presume that when the two officers become eligible for higher pay with allowances in the Public Works Department, they will revert to that department and junior officers will be appointed to the two posts in question. The increased allowance to the officer on Rs. 300 would then be Rs. 50 ; an allowance of Rs. 20 has however been recommended for Sergeant Reynolds. I would prefer the Chief Engineer's first recommendation, as that would make it possible to retain an exceptionally good man like Sergeant Goddard, even on a higher salary than Rs. 350, if his pay as an officer of the Public Works Department entitled him to more than Rs. 350. I am informed on all hands that it will be a very difficult task to replace Sergeant Goddard, should he leave the college. While, therefore, accepting the Chief Engineer's latter view which would fix the maximum pay at Rs. 350 as being sufficient in the generality of cases, I think the possibility should be faced of its being expedient to pay a higher salary in order to retain the services of an exceptionally qualified man.

7. Major Love's proposals in regard to the re-constitution of the workshop establishment have the general approval of the Consulting Engineer for Railways and the Chief Engineer. The workshop establishment now consists of an instructor on Rs. 175, an assistant for carpentry on Rs. 45—60 and a foreman fitter on Rs. 30—45. To secure and retain the services of efficient men for these posts and for the better working of this department of the college, the Principal would re-constitute the staff thus :—

	Rs.
One workshop instructor	200 a month
One foreman carpenter	45—60 a month
One foreman fitter	50—75 „
One foreman blacksmith	30—45 „

I beg to recommend that this increased scale be sanctioned. The Principal would have also a workshop writer on Rs. 25 and a draughtsman on Rs. 30. The employment of a temporary workshop writer on Rs. 25 a month has been sanctioned in G.O., No. 78, Educational, dated 12th February 1898, and it is necessary that the appointment should be made permanent. A draughtsman is also necessary in the workshops for the reasons given by Major Love in paragraph 10. He may be given a salary of Rs. 30 as recommended by the Principal.

8. The great development of the college and of the workshops, and the consequent increase in correspondence and account work, has rendered it essential that the clerical establishment should be strengthened proportionately. The Consulting Engineer for Railways and the Chief Engineer are also of the same opinion, and the employment of an accountant on Rs. 100 and an attender on Rs. 12 to help the librarian and storekeeper is considered necessary. But the raising of the head clerk's pay, which Major Love recommends, at the same time that an accountant is appointed, would appear to be unnecessary.

9. The Chief Engineer proposed, in his letter quoted at the head of this letter, to increase the European staff and to do away with the native assistants, excepting two, being of opinion that, by this arrangement, while the number of members would remain the same, the staff would be very greatly increased in efficiency. On a representation from the Acting Principal and on further consideration, the Chief Engineer has no objection to the native assistants; but with a view to recruit the subordinate staff from the Public Works Department and to induce efficient men in that department to accept a place in the college and to serve there for a few years, he would give them, on transfer to the college, the pay and allowances of the grade next above their grade. I quite agree with him in considering that some such encouragement is absolutely necessary if good men are to be drafted into the college from time to time. There are now seven assistants, and an additional assistant has been recommended above. The Acting Principal would fill the eight assistantships with two supervisors of the second grade, four overseers of the first grade and two sub-overseers or draughtsmen. On the principle recommended by the Chief Engineer, the two supervisors of the second grade will draw each Rs. 270, the pay and allowances of first-grade supervisors, the four first-grade overseers will draw each Rs. 220, the pay and allowances of second-grade supervisors, and the Acting Principal would fix the pay of the last two assistants at Rs. 75—100. The adoption of this recommendation would entail an additional expenditure of Rs. 800 as shown below :—

Proposed Scale.

			Rs.
Two second-grade supervisors	2 × 270	..	540
Four first-grade overseers	4 × 220	..	880
Two sub-overseers or draughtsmen	2 × 93¾	..	187½
		Total ..	1,607½

Present Scale.

			Rs.
One assistant on	Rs. 150—200	..	187½
Two assistants	„ 100—150	..	275
Two „	„ 75—100	..	187½
Two „	„ 60— 80	..	150
		Total ..	800

The increased cost is very heavy. I would fix the following scale and allow each assistant the pay and allowance of the grade next above his grade in the Public Works Department at the time of the transfer :—

	Rs.
One first-grade overseer	220
One second-grade overseer	155
Four third-grade overseers on Rs. 135	540
Two sub-overseers or draughtsmen on Rs. 75—100	187½
Total ..	1,102½

No lower scale can be suggested if recruitment to the college is to be made from the Public Works Department. The total increased cost will then be Rs. 302½ a month, including the pay and allowances of one extra assistant.

10. The financial effect of the above proposals is summarized below :—

	Rs.
One professor of Civil Engineering	870
One instructor in Mechanical Engineering	350
Increase to assistants and one new assistant	302½
Increase to workshop establishment including workshop writer	118¾
One draughtsman	30
One accountant	100
One attender	12
Total ..	1,783¼

The total increased expenditure will be Rs. 1,783¼ per mensem or Rs. 21,399 a year, exclusive of the personal allowance to one of the warrant officers, Sergeant Reynolds, recommended in a separate communication. But this increased expenditure cannot further be postponed, in view of the development of the college in all its departments, the numerical weakness and inadequacy of the staff, and the higher responsibilities devolving on the head of the institution and the members of the staff alike. The Consulting Engineer for Railways, in whose company I visited the Sibpur College, Calcutta, last Christmas, and whose letter recording his views on Major Love's proposals is one of the papers submitted herewith, very effectively concludes his observations in the following terms :—

May I again refer to our recent visit to Calcutta, and recall to your mind how all over the city scores of great public buildings erected by the Public Works Department under what I know to have been a well-selected local staff, were practically untouched by the earthquake of June last. Other large buildings, too, recently erected by intelligent firms and companies, such as the Standard Life Office, were practically untouched. The ordinary buildings, on the other hand, built on the old native methods, some of them, like the Town Hall or the General Hospital costing many lakhs, were as you saw shattered wholesale. This to my mind is a most valuable illustration of how well it will pay, from a strictly commercial point of view, to make your Civil Engineering College in Madras as thoroughly practical and efficient a teaching institution as it is possible to make it.

11. As funds cannot probably be spared for meeting all the increased charges at once, sanction is requested for incurring the following expenditure from 1st March next :—

	Rs.
One assistant instructor	135 a month.
Increase to workshop instructor	25 „
One foreman blacksmith	30—45 „
One accountant	100 „
One draughtsman	30 „
One workshop writer	25 „
One attender	12 „
Average monthly cost ..	368¼

The above additional establishments and increased allowance are absolutely necessary just at present and can no longer be put off. The other charges will be provided in the budget estimate for 1901–1902 and subsequent years gradually.

12. The usual proposition statement will be submitted on receipt of orders on this letter.

Enclosure.

From Major H. D. LOVE, R.E., Principal, College of Engineering, Madras, to the Director of Public Instruction, Madras, dated 25th November 1897, No. 1160-C.

In continuation of my No. 430-C., dated 3rd August, and No. 961-C., dated 4th November 1897, and with reference to verbal instructions received from you, I have the honour to submit my views regarding the additional staff required for this institution.

2. The necessity for additional staff has been shown in the second of the above quoted letters. The additions required may be classed under—

(1) Teaching establishment.
(2) Workshop establishment.
(3) Clerical establishment.

3. *Teaching Establishment.*—The additional requirements are—

(*a*) One professor of Civil Engineering.
(*b*) One instructor in Mechanical Engineering.
(*c*) One assistant instructor.

4. (*a*) *Professor of Civil Engineering.*—When the college was re-organised ten years ago, the Secretary of State appointed to it two European officers of the graded (now Indian Educational) service. There was some misunderstanding as to the precise qualifications which were required, but the fact remains that the India Office intended the college to have two Professors

with special European training in addition to the Principal. After some years one of the professors (an able Mathematician and Cambridge Wrangler) was transferred, first temporarily and afterwards permanently from the college, and a member of the Upper Subordinate Educational Service was appointed in his place. This officer is a competent mathematician, and no objection will be made to his retaining the mathematical chair, provided the second European professor authorised by the Secretary of State is also appointed. The application for a European professor is thus virtually one for a member of the Upper Subordinate Establishment in addition to the two European professors already sanctioned by the India Office.

5. The necessity for a second chair of Engineering is explained partly by the misunderstanding above alluded to, and partly by the great development of the college and of the workshops which has ensued since the re-organisation. The present professor of Engineering is responsible, except in so far as he can be relieved by the Principal, for all the instruction conveyed in Civil Engineering (including Building Construction and Drawing and Surveying) and in Mechanical Engineering (including Machine Construction and Drawing). He also looks after the teaching of Estimating, instructs in Chemistry, and has charge of the workshops and Engineering laboratory. No one man, even with an efficient subordinate staff, can carry out these duties in a large institution efficiently. In my opinion the time has arrived when the Civil and Mechanical branches of the profession must be separated, and I accordingly recommend that two chairs in Engineering be established. That of Mechanical Engineering can best be filled by Mr. Chatterton. The chair of Civil Engineering should be occupied by an Executive Engineer of the Public Works Department, who might be lent to the college for a period of three years, and be replaced at the end of that time by another officer in the same way. He should draw the same pay and allowances as he would draw if he served in the Public Works Department at the Presidency. An Executive Engineer, third grade, would receive Rs. 700 + 100 + 45.

6. To show that the superior staff as proposed to be constituted is not extravagant, I give below the superior establishments of the other Indian Engineering Colleges. As the Poona College is not a purely engineering institution, certain members of its superior establishment are excluded :—

	Rs.	Present or mean salary. Rs.
Roorkee—		
Principal	1,250—1,500	1,375
Assistant Principal (Engineering)	740	740
Professor of Science	750—1,000	875
Do. of Mathematics	500—750	625
Total		3,615
Poona—		
Principal	1,350—1,500	1,425
Professor of Civil Engineering	800	800
Do. of Engineering	800—1,000	900
Do. of Forestry	..	..
Do. of Agriculture	..	..
Do. of Chemistry and Geology	350	350
Total		3,475
Sibpur—		
Principal		1,250
Professor of Surveying		750
Do. of Mathematics		1,100
Do. of Chemistry		500
Do. of Physics		400
Total		4,000
Madras—		
Principal		1,240
Professor of Engineering		750
Do. of Mathematics		500
Total		2,490

If to this last figure be added the salary of a third-grade Executive Engineer, viz., Rs. 845, the cost of the superior establishment of the Madras College will still be less than that of any of the other three colleges.

7. (*b*) *Instructor in Mechanical Engineering.*—There are now two chief instructors, each with two or three assistants. One is responsible for building construction, drawing and estimating, and the other for surveying and machine drawing, as well as geometrical, free-hand, perspective and model drawing. The latter has far more to do than he can accomplish. His duties should be confined to surveying, the teaching and practice of which involve great responsibility and labour. A third instructor should be provided for machine construction and drawing. He should, I consider, be obtained from England on agreement for five years on a salary of about Rs. 350. The qualifications necessary for the other two instructorships and the mode in which they should be filled are fully dealt with in my No. 620-C., dated 8th October 1897.

8. (*c*) *Assistant Instructor.*—An additional assistant instructor on about Rs. 100, the pay of a first-grade overseer, is required to relieve the existing junior staff, the members of which are much overworked.

9. I take this opportunity of expressing the opinion that the majority of the assistant instructors, instead of being members of the Subordinate Educational Service, should be obtained for a term of years from the Public Works Department, and should receive such salaries as they would draw in the Public Works Department, if employed at the Presidency. The adoption of this proposal would greatly increase the efficiency of the assistant instructors, by ensuring the employment of young and vigorous men whose theoretical knowledge is up to date, and who have had ample practical experience in the Public Works Department.

10. *Workshop Establishment.*—In the workshop and engineering laboratory, a much larger and better-paid staff is needed. The present staff consists of a workshop instructor on Rs. 100, an assistant for carpentry on Rs. 45 (maximum salary Rs. 60), and one for fitting on Rs. 33 (Rs. 30—45). I have repeatedly pointed out that the head of the shops should receive not less than Rs. 200, and my view is supported by expert opinion. I accordingly enter this figure in my proposition. To train the college students efficiently and to entertain apprentices under the scheme approved by Government we require at the least —

Workshop instructor	Rs. 200
Assistant instructor in carpentry	„ 60
Foreman carpenter	„ 45 to 60
Do. fitter	„ 50 to 75
Do. blacksmith	„ 30 to 45
Draftsman	„ 30
Writer	„ 25

representing a total charge of about Rs. 400 per mensem. Eventually there should be a founder in addition on, perhaps, Rs. 75 to 100.

11. For comparison, I give below the cost of the workshop establishments at Sibpur, Poona and Madras. Roorkee is at present without a workshop.

	Rs.	Rs.
Sibpur—		
Foreman instructor	250	
Do	220	
Eleven native instructors on Rs. 50 and less	428	
	—	898
Poona—		
Superintendent	150	
Foreman fitter	60	
Do. machinist	45	
Blacksmith maistry	40	
Pattern-maker	30	
Foreman moulder	30	
Carpenter maistry	30	
Draftsman	35	
Timekeeper	25	
	—	445
Madras—		
Instructor	100	
Assistant instructor in carpentry	45	
Do. in fitting	33	
	—	178

12. *Office Establishment.*—The office establishment, as I have elsewhere pointed out, is undermanned. The financial transactions are very numerous, and the head clerk cannot perform the duties of accountant in addition to his own duties. I believe I was able to convince you of the excessive work falling on the office establishment on the occasion of your recent visit to the college. In the head clerk's office I consider that an accountant must be appointed. The salary of a sixth-grade accountant, Public Works Department, is Rs. 100, and I do not suppose that a qualified man can be obtained for much less. The head clerk's pay is insufficient and should be raised to Rs. 60—80. In the office of librarian and storekeeper an attender is required on Rs. 12.

13. Until some general resolution has been arrived at regarding the proposed increase to and re-organisation of the staff, it does not appear necessary to submit a formal proposition statement. At a rough estimate, the total additional cost of my scheme may be taken at Rs. 1,645 per mensem or Rs. 19,740 per annum as follows :—

	Rs.
Professor of Civil Engineering	845
Instructor in Mechanical Engineering	350
Assistant instructor	100
Workshop instructor, Rs. 200, *i.e.*, an addition of	100
Foreman fitter, Rs. 50—75, *i.e.*, an addition of	25
Do. blacksmith, Rs. 30 to 45	37½
Workshop writer	25
Draftsman	30
Head clerk, Rs. 60—80, *i.e.*, an addition of	20
Accountant	100
Attender	12
Total ..	1,645

14. The net cost to Government of the Madras College in 1896 was Rs. 51,700, and if the whole increase now proposed, viz., Rs. 19,740, were added to this, the cost would still be less than that of any of the other three Indian colleges. The figures for all the colleges, for the latest year for which they are published, were given in my No. 961-C., dated 4th November 1897. For convenience of reference, I insert them here :—

—	Madras.	Roorkee.	Sibpur.	Poona.
	Rs.	Rs.	Rs.	Rs.
Total charges	66,290	1,57,540	1,09,226	86,713
Receipts	14,590	*26,792	12,745	13,377
Net charges	51,700	1,30,747	96,481	73,336
Number of students	220	180	†318	‡245

* Receipts from fees alone Rs. 3,764.
† The majority are workshop apprentices, the course for whom extends over five years.
‡ College students, 136; workshop apprentices, 109.

15. The above figures show how backward Madras is, as compared with other provinces, in expenditure on engineering education. I am strongly of opinion that greater expenditure would meet with ample if indirect returns.

16. Where all departments of the college are overworked, it is difficult to say where increase is most urgently required. Having regard, however, to the time which must be occupied in the consideration of some of the proposals now made, I beg to recommend the immediate appointment of—

One Assistant Instructor.
One Accountant.

costing, say, Rs. 200 per mensem, or Rs. 2,400 per annum.

17. If the arguments already used, and your own observation of the manner in which the staff is overworked are not considered sufficient to justify immediate sanction to this expenditure, I would point out that a small portion of the excess work is the result of the transfer from the

Board of Examiners to the college staff of the conduct of the entrance examinations. The registration and examination fees paid by candidates in 1896 amounted to Rs. 2,506 as follows :—

	Rs.
Engineer class, 21 candidates, at Rs. 20	420
Engineer Subordinate class, 85 candidates, at Rs. 15	1,275
Sub-Overseer and Surveyor class, 92 candidates, at Rs. 5	460
Draftsman class, 59 candidates, at Rs. 5	295
Artisan class, 113 candidates, at As. 8	56
Total ..	2,506

The above rates were fixed to meet the cost of examination. As the examinations now cost Government nothing, the amount may be regarded as a saving resulting from part of the excess work devolving on the staff. It is considered that the staff may fairly be relieved from this source.

18. This paper will no doubt be seen by the Chief Engineer, Public Works Department. Perhaps, I might suggest that it be referred also to the Consulting Engineer for Railways, since Mr. Spring is understood to have been to some extent responsible for the development of the Sibpur College.

From F. J. E. SPRING, Esq., C.I.E., L.C.E., M.I.C.E., M.I.M.E., M.A.S.C.E., Consulting Engineer for Railways, to the Director of Public Instruction, dated Madras, 18th February 1898, No. 489.

I have the honour to acknowledge the receipt of your letter No. 1249, dated the 9th February 1898, in which you invite an expression of my opinion on the subject of the proposals made by the Principal of the Madras Civil Engineering College for improving its efficiency. This subject, and the wider ones of technical education and manual training in general, have as you know already formed the subject of conversation between us, and you are aware that I am predisposed to support Major Love's proposals on the general grounds that I am convinced that it is a wise measure for an Indian Province to spend on such education a larger proportion of its educational grant than is now anywhere usual. But in offering you the opinion which you ask for I shall endeavour to lay my predispositions aside and to examine this minor question on its own merits. Since the receipt of your letter I have had the advantage of an afternoon spent at the college, and have gone closely into time-tables, available space, figures of attendance, &c., and being more or less familiar with the matter already I have the less hesitation in offering the following remarks.

2 *Teaching Establishment.*—I certainly think that the demand for a separate Professor of Civil as distinguished from Mechanical Engineering is a reasonable one, and the more so if it is at all likely that, in the future, Professor A. Chatterton may find much of his time occupied by wider duties, outside the Civil Engineering College. As the Principal points out, his demand is virtually for a member of the Upper Subordinate establishment, in other words for the retention on the college staff of the present Native Professor of Mathematics, while the Secretary of State's original intention that there should be two European Professors of the officer class is adhered to. I gather that a considerable part, indeed the chief part, of what may more strictly be called Civil Engineering instruction is now in the hands of subordinate teachers, because since Mr. H. T. Keeling's departure, Mr. Chatterton has naturally enough found it best that he should personally teach the subjects that he knows best. I fully agree with Major Love that the Professor of Civil Engineering had better be an Engineer of the Public Works Department. One with varied practice in ordinary canal, roads, and building construction in this Presidency would be preferred. It must be recollected that the routine of duties to be performed by the college student, once he has been launched on his future career will be for the most part, for many years at least, of a very humble nature, and it is desirable that on leaving college he should not fail to realise this, stuffed as he will then be with formulæ. What a practising Engineer of local experience can teach him is likely to be a good antidote to overmuch formulæ. If I may illustrate what I mean I would say that, while the mere Professor is certain to teach well enough that good mortar is composed of certain percentages of ingredients, the practical Engineer Professor will be at more pains to teach that it must be well mixed, because good mixing is worth a considerable extra percentage of lime, and cheaper. I think that the Principal's suggestion that the Public Works Engineering Professor should be changed every three years is a good one. I would, however, have younger men than Major Love proposes; say from Rs. 600 to Rs. 700 inclusive of Presidency allowance and house-rent, and I would pick them. I observe that while Poona, Roorkee, and Sibpur spend, respectively, Rs. 3,475, Rs. 3,615 and Rs. 4,000 per month on their professional staff, Madras only spends Rs. 2,490.

3. *Class-room Instructor.*—I see that Sibpur has a drawing teacher on Rs. 500, an "European teacher" on Rs. 200, two assistant lecturers on Rs. 100 each, and two masters on Rupees 100—150. Total for class-room teachers of this sort, other than Professors, Rs. 1,400 per mensem. Major Love says that he has now got two chief class-room instructors, each with two or three assistants. One of them is virtually the drawing master, as well as the teacher of surveying. I agree with Major Love that it ought to take all the time of one man to teach surveying properly, and I think that, in view of the extreme difficulty experienced, to my knowledge, by engineers, in getting intelligent surveyors and intelligent draughtsmen fresh from college, it is right that more attention should be given to these branches. I think that Major Love's suggestion is a good one, viz., that a *Mechanical Drawing Master* on Rs. 350, with a five years' engagement, should be got out from England. I would leave it to Mr. Chatterton to select the right man. England, Europe and America are full of first-rate men of this sort, but they are extraordinarily scarce in India. With all the drawing teaching that goes on in all the Indian colleges I do not believe that in my 27½ years' service I have seen a single Indian taught man who would command thirty shillings a week in an English drawing office. This state of things is surely susceptible of remedy, and it ought to be remedied. The school that goes nearest to remedying it is the School of Arts, Lahore, where Mr. John Lockwood Kipling some years ago started a class to teach drawing to carpenters' sons. If fifty men, of the sort that Mr. Kipling used to turn out, were annually trained in other colleges, they could easily command remunerative employment. My only objection to Major Love's proposal that assistant instructors should be got from the Public Works Department for a term of years, is that this class of man as a rule degenerates fast into slovenly native habits, smears mortar on the tops of the layers of bricks for example, omitting the joints, and so on. I would rather put picked college students through a careful course of practical training under the Government Architect, or under some Engineer-in-charge of good work who would take a personal interest in them, and then get them back into the college for two or three years at a time, in rotation. It is fatal to deliberately introduce dirt into the filter itself.

4. *Workshop Instructors.*—My parable of the filter is here even more applicable than to the case of the class-room. The whole aim of our workshop training is to teach how things should be done in the European manner instead of in the Indian manner. The very essence of the European manner is perfection of appliances and sharpness of tools. The essence of the native manner is slovenly bluntness. You want no amateur jacks-of-all-trade about a *teaching workshop*. Your instructors ought to be the best of their sort procurable. I really think that as Mr. A. Chatterton is (under Major Love) responsible for the success of this branch of the teaching, it would only be fair to accept his advice about details. It is not easy to compare the requirements of Madras with those of Sibpur in the matter of workshop subordinate teaching staff. When we visited Sibpur together in December last, you saw how very much larger is the area, and how very much better are the appliances, devoted there to manual education than is the case at Madras. I have no figures, but I suppose that the magnitude of the Sibpur manual work is fully ten to twenty times greater than that of Madras. Still that of Madras is very good indeed in its small way, and it will doubtless extend as times goes on. It seems to me therefore to be very important that the Professor who is responsible for its success should not be hampered for the sake of a few hundreds per mensem, especially when it is borne in mind that the difference in after results between good training and bad training, in cost of repairs of buildings, roads, &c., all over the Presidency, is surely to be measured not in hundreds but in thousands of rupees per mensem. I see that Poona and Sibpur spend respectively 2½ times and 5 times as much as Madras does on the staff for workshop instruction.

5. Major Love's remaining suggestions speak for themselves. They seem to me to be very reasonable. He complains bitterly of being so poorly served in routine clerical work and accounts-keeping, a state of things that strikes me as bad economy commercially, as the salary of a Principal is rather a high price to pay for the labour of a clerk. I take it to be false economy to *spare* money from a college of this sort whose sole object it is to turn out men whose very business it will be to *spend* money. The only way to secure economical and efficient expenditure of money in the Public Works Department is to place within the reach of its highly trained Cooper's Hill Engineers, men of the subordinate class and Indian trained men of the "Provincial Engineer" class, who have been properly taught the difference between good and bad work, and who have a fair idea of the scientific principles on which good work depends.

6. I have heard a good deal of argument as to whether this can best be taught in the Educational department, or in the Public Works department. Personally I have strongly advocated the former and with this in view I was largely instrumental in getting the large Public Workshops at Sibpur handed over to the College Educational Authorities, and, as I believe, with the best results. But if good results are to be got they cannot be got on the cheap, especially when the object in view is to produce men who will not waste public money by doing bad work: for of all work bad work is the most expensive.

7. When going over the College I looked closely into the question of available accommodation. Major Love showed me figures which proved that without abating in the least the preliminary standard of education required of postulants for entrance, he could very considerably

increase the numbers taught, provided of course that he gets the staff he now asks for. Taking as a standard a lecture room of thirty as about the largest that in such special teaching as this is properly manageable, Major Love and I agreed that with the staff now asked for he ought to be able to train an increased number, as follows: an increase of 70 students.

Classes.	Present number.	Number who could be taught.
Engineers proper	24	30
Engineer Subordinates	76	100
Sub-Overseers, Supervisors, and Draughtsmen	120	66
		66
Artizans	40	68
Total ..	260	330

Considerable numbers who pass the first tests quite satisfactorily are now rejected simply for want of room. This seems to me to be a great pity. The half lakh or three-quarter lakh that is apparently needed to provide additional room may just at present be very hard to find. But it seemed to me, and Major Love agreed, that even if Rs. 8,000 or Rs. 10,000 were available, it would be quite possible, by minor alterations, re-arrangement of rooms, furniture, &c., in the existing building, to go a long way towards providing for the extra seventy students. Thus, for example, I would get a very large class-room or drawing-room by covering the larger open inner quadrangle by a regular workshop roof with its lights towards the north and capable of having its sashes quite open except during actual rain. Again, the Royal Engineer library which takes up a great deal of room might, I think, be better arranged and much space thereby gained. For the best expenditure of this small sum I would not trouble the Government Architect; but as is, as you know, invariably done in such a case at Sibpur, I would make over the money to the college to be spent to the best advantage.

8. I see that the eleven Professors and Instructors have between them about 250 lectures, or attendances, of about 1½ hours each per week. This seems high. If one man did fifteen per week the number of attendances that are necessary would require seventeen teachers.

9. May I again refer to our recent visit to Calcutta, and recall to your mind how all over the city scores of great public buildings erected by the Public Works department, under what I know to have been a well-selected local staff, were practically untouched by the earthquake of June last. Other large buildings too, recently erected by intelligent Firms and Companies, such as the Standard Life Office, were practically untouched. The ordinary buildings on the other hand, built on the old native methods, some of them like the Town Hall or the General Hospital costing many lakhs, were as you saw shattered wholesale. This to my mind is a most valuable illustration of how well it will pay, from a strictly commercial point of view, to make your Civil Engineering College in Madras as thoroughly practical and efficient a teaching institution as it is possible to make it.

Sibur College.

Numbers. 1896-97.	Numbers. 1897-98.	Heads and items.	Actuals, 1895-96.	Budget estimate, 1896-97.	Actuals for twelve months ending 30th September 1896. Last six months of 1895-96.	First six months of 1896-97.	Total.	Estimate of 1897-98. Proposed by Director of Public Instruction.	Revised by Accountant-General.	Passed by Government.	Explanatory remarks.
		1	2	3	4	5	6	7	8	9	10
			Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
		Civil Engineering College.									
1	1	Workshop clerk	181	..	181	180	361	2,520	2,520	2,520	
1	1	European Inspector (below 205) ..	4,850	2,440	4,850	2,480	7,330	2,640	2,640	2,640	
1	1	European Inspector (170—220) ..		2,600				5,130	5,130	5,130	
		Native Instructors (50)	4,759	5,130	9,135	2,558	11,693	9,940	9,940	9,940	
		Native Instructors (40—50) ..									
11	11	Native Instructors (40)						1,000	1,000	1,000	
		Native Instructors (25)	9,940	9,940							
		Materials and tools for 284 students at Rs. 35 each.	..	1,000							
		Twenty artisans at Rs. 50 each ..									
		Deduct probable savings ..						21,230	21,230	21,230	
		Total, Workshop ..	19,730	21,110	14,166	5,218	19,384				
		Salaries.									
		(a) Principal (1,000—1,250) ..	14,950	13,800	6,900	7,100	14,000	14,400	14,400	14,400	Increase due to grade increment.
1	1	(a) Professor (1,000)		12,000				12,000	12,000	12,000	Do. do.
1	1	(a) Do. (500—750)		8,400				9,000	9,000	9,000	
1	1	(a) Do. (300)		3,600		20,665	36,864	3,600	3,600	3,600	
1	1	Lecturer in Engineering Science ..	27,842	..	15,153			..	..	..	Do. do.
..	..	European Teacher (200)		2,630				2,760	2,760	2,760	Increased provision made for the salary of an assistant lecturer sanctioned in B. G. letter No. 1521, dated 10th April 1896.
1	1	Assistant Lecturers (100)		1,200				2,520	2,520	2,520	
1	2							5,520	*5,520	5,520	* Increase due to increment.
				5,400		1,046		6,000	6,000	6,000	
				6,000				480	480	480	
2	2	Masters (300) (100—150)		480				1,440	1,440	1,440	
1	1	Teacher of Drawing (500)		1,440				6,394	6,394	6,394	Calculated at 1s 2¼d the rupee.
1	1	Gymnastic Teacher (40)		6,000				64,114	64,114	64,114	
		Teacher of freehand and ornamental drawing (120).	6,256		3,097	3,280	6,377	114	4,686	4,686	
		Exchange compensation allowance..		60,950				64,000	59,428	59,428	
		Deduct probable savings ..		5,214							
		Total, Salaries ..	49,048	55,736	25,150	32,091	57,241				

Sibpur College—*cont.*

Numbers. 1896-97.	Numbers. 1897-98.	Heads and items.	Actuals, 1895-96.	Budget estimate, 1896-97.	Actuals for twelve months ending 30th September 1896. Last six months of 1895-96.	Fist six months of 1896-97.	Total.	Estimate of 1897-98. Proposed by Director of Public Instruction.	Revised by Accountant-General.	Passed by Government.	Explanatory remarks.
		1	2	3	4	5	6	7	8	9	10
		Civil Engineering College—*cont.*	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
		Establishment.									
1	1	Clerk (75—100)	4,115	1,200	1,320	1.826	3,146	1,200	1,200	1,200	Increase due to the appointment of an additional clerk sanctioned in Bengal Government letter No. 1572, dated 15th April 1896.
7	8	Clerks (50 less)		3,390				3,948	3,948	3,948	
1	1	Draftsman 50		600				600	600	600	
		Monitors	756	..	756	..	756	..	..	..	
	1	Compounder	..	..	..	..	..	..	..	..	
	2	Copper Smith (30)	..	..	..	282	282	..	..	360	
		Fitters (30)	..	720	..			720	720	720	
31	31	Chemical Assistants	792	..	660	822	1,482	..	..	..	
		Servants 1 (12), 5 (9), 4 (8), 2 (7—8), 11 (7), 8 chainman for Rs. 46 a month.	3,885	2,724	1,666	1,759	3,425	2,724	2,724	2,724	
1	1	Temporary establishment (10) ..	453	120	205	237	442	120	120	1,090	
		Agriculture class	..	10,000	..	..	..	10,000	10,000	10,000	
		Total establishment ..	10,001	18,754	4,607	4,926	9,533	19,312	19,312	20,642	
		Allowances.									
		Local allowance of the head clerk of the Civil Engineering College.	..	..	..	..	..	300	300	300	
		Mining stipend	500	1,000	500	..	500	1,000	1,000	1,000	Increased provision sanctioned in Bengal Government, No. 572, dated 15th April 1896.
		Allowance for steam-launch ..	..	2,400	..	..	..	2,400	2,400	2,400	
		Remuneration to lecturers	1,200	1,200	1,200	..	1,200	1,200	1,200	1,200	
		Travelling allowances	3,577	3,000	2,868	1,062	3,939	4,000	4,000	4,000	
		Allowance for medical establishment.	3,606	4,320	1,806	1,479	3,285	4,320	4,320	4,320	
		Allowance to Roman Catholic Priest.	550	600	250	250	500	600	600	600	
		Do. to Monitors	242	600	46	300	254	600	600	600	
		Do. for pipe-water	..	360	..	..	..	..	..	..	
		Total allowance ..	9,675	13,480	6,575	3,091	9,669	14,420	14,420	14,420	
		Supplies and Services.									
		Cost of printing diagrams required for special lectures on engineering.	..	..	..	..	..	500	500	500	
		Library allowance	365	600	247	81	328	600	600	600	
		Survey do.	2,431	2,000	2,083	41	2,124	2,000	2,000	2,000	In accordance with this office Circular No. 4-T., dated 3rd May 1897, no expendjture should be incurred on account of library books.
		Model do.		600		..		600	600	600	
		For mechanic tools and appliances ..	..	1,000	4,657	3,933	724	1,000	1,000	1,000	
		Boarding charges	25,494	24,860	13,975	12,484	26,459	24,860	84,860	4,860	

Sibpur College—*cont.*

Numbers. 1896-97.	Numbers. 1897-98.	Heads and items.	Actuals, 1895-96.	Budget estimate, 1896-97.	Actuals for twelve months ending 30th September 1896. Last six months of 1895-96.	Actuals for twelve months ending 30th September 1896. First six months of 1896-97.	Estimate of 1897-98. Proposed by Director of Public Instruction.	Estimate of 1897-98. Revised by Accountant-General.	Estimate of 1897-98. Passed by Government.	Explanatory remarks.
1			2	3	4	5	7	8	9	10
		CIVIL ENGINEERING COLLEGE—*cont.*	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
		Supplies and Services—cont.								
		Charges for chemicals	..	240	..	..	..	..	500	Contract contingent item. The allotment will be communicated afterwards.
		Raw materials	..	..	..	..	..	..	..	Sanctioned in Bengal Government Resolution, dated 2nd April 1896.
			288	350	288	..	350	350	350	
		Cost of publication of college calendar.	288	100	288	..	350	350	350	
		Purchase of tents and carries	508	..	508	..	2,800	2,800	2,800	Increased provision made according to annual requirements.
		Cost and freight of Europe stores ..	..	..	..	8,190	100	100	100	
1896-97.	1897-98.	Total supplies and services ..	29,086	29,400	12,444	24,729	..	..	..	
		Contingencies								
		Allowance for instruments for apprentices.	..	360	18	..	210	210	210	
		Books for apprentices ..	227	..	227	68				
		Rent, rates, and taxes ..	3,042	6,000	1,521	..	150	150	150	The allotment for contract contingencies will be communicated afterwards.
		Subscriptions to newspapers ..	445	..	445	..	7,000	7,000	7,000	
		Postage charges	161	..	86	91				
		Telegram charges	22	..	17	8				
		Steam-launch relief establishment and contingencies.	1,716	..	972	694	..	..	..	
		Office expenses and miscellaneous ..	3,391	3,160	1,816	2,374				
		Purchase and repair of furniture ..	248	..	248	..				
		Total contingencies ..	9,252	9,520	5,314	3,225				
		Total Civil Engineering College, Howrah.	1,26,792	1,47,300	68,259	73,260	1,500	8,000	8,000	Increase provisionally sanctioned in G.O., No. 3954, dated 30th November 1896.
		Expenditure on furniture and apparatus (in Government Colleges Professional, paid from the Education budget).	2,919	1,600	2,919	..	2,919	..	..	
		Expenditure on petty construction.								
		Engineering College	12,200	..	12,200	1,906	14,106	..	..	The Director of Public Instruction explains that provision has been made under this head for the anticipated unspent balance of the grant for 1896-97 of Rs. 29,060. Owing to the reduction of the Educational budget for 1897-98 a reduction of Rs. 4,000 has been proposed under this head. No expenditure should be incurred under this head until the exact amount is known.
		Apparatus required for the teaching of the mining course.	..	29,000	..	..	..	10,340	10,340	
		Add for rounding	..	..	..	..	..	..	..	
			..	..	..	..	..	..	170	

From W. B. DEWINTON, Esq., Acting Chief Engineer, Public Works Department, to the Director of Public Instruction, dated Madras, 31st March 1898, No. 1985-C.

In reply to your No. 2640, dated 11th March 1898, I have the honour to state that I am not in a position to give any very valuable opinion upon the staff required for the Civil Engineering College, Madras, because I have never been connected with that or any similar institution, and I have no materials upon which to base an opinion beyond the statistics of other colleges, conversations I have had with Major Love and Mr. Davidson, and my own personal views. Neither have I seen the previous letters quoted by Major Love in the first paragraph of his letter. I am therefore only able to do the best I can with the above materials.

2. I take first the statistics of other colleges. I have drawn up from the figures at my disposal the following comparative table of the teaching staff of Coopers' Hill and the Indian colleges and the number of students at each institution. The Engineering professors include the principals of the colleges given with the exception of Poona. The assistant instructors are included in the lists for Coopers' Hill, Sibpur and Madras, and excluded for Rurki and Poona for which I have no figures:—

Subject of instruction.	Number of instructors at Coopers' Hill.	Rurki.	Poona.	Sibpur	Madras.	Remarks.
Engineering	3	2	2	1	3	These figures are for teaching staff only.
Surveying	2	..	..	1	6	
Drawing	2	1	..	2		
Mathematics	2			1	1	
Chemistry	2	1	1	1	..	
Geology	1			..	..	
Physics	2		..	1	..	
Total ..	14	4	3	7	10	
Number of students	120	180	245	318	220	

Thus Coopers' Hill has fourteen professors of high attainments for 120 men, while Madras has only three such professors including the Principal, and seven of inferior calibre for 220 men. Yet the Civil Engineering College, Madras, is expected to turn out engineers capable of performing the same duties as Coopers' Hill men! This is clearly an impossible task, and the result will be that in the future, the engineering problems of the country will be entrusted to men who are incompetent to deal with them, and mistakes and heavy loss to Government are certain.

3. Now to take Major Love's proposals, the following statement shows the existing teaching staff, and the staff now proposed :—

PRESENT and proposed teaching staff of Civil Engineering College, Madras.

No.	Subject of instruction.	Description of instructor.	Number. Present.	Number. Proposed.	Remarks.
1	Engineering	Principal	1	1	
		Professor of Civil Engineering ..	..	1	
		Instructor in Civil Engineering ..	1	1	
		Professor of Mechanical Engineering ..	1	1	
		Instructor in Mechanical Engineering.	..	1	
		Assistant Instructor in Mechanical Engineering	..	1	
		Total ..	3	6	
2	Mathematics	Professor	1	1	
		Instructor	1	1	The present instructor also teaches drawing.
3	Surveying	Assistant instructor	1	1	
..	Drawing	Second assistant instructor	3	3	
		Assistant instructors	6	6	
		Total ..	10	13	
		Grand Total ..			

I have asked Mr. Davidson, the officer who is just about to succeed Major Love as Acting Principal, and I find that he strongly supports Major Love's views. My own opinion is that the college wants more quality rather than quantity in its teaching staff, and I base this opinion on the following principles:—

(1) Thoroughness and accuracy should be the watchwords of the college.

(2) These qualities are more characteristic of the West than the East, and it will be to the greatest possible advantage of the young native engineer and of Government if he has them instilled into him by those to the manner born.

4. I would therefore increase the European staff and reduce the native subordinate staff. I believe the following staff would turn out a much more satisfactory class of students and be well worth the extra cost to Government:—

No.	Description.	Pay.	Remarks.
		Rs.	
1	Principal	1,240	In general charge.
2	Professor of Civil Engineering	795	Should be an Assistant Engineer, first grade, or Executive Engineer, third grade, of Public Works Department, lent for a period of three years, with option of extension to five, if satisfactory.
3	Instructor in Civil Engineering	350	A European Upper Subordinate of Public Works Department lent on same terms.
4	Professor of Mechanical Engineering	750	Mr. Chatterton should give his whole time to the college, and not be "occupied by wider duties outside".
5	Instructor in Mechanical Engineering ..	350	A European to be obtained from England.
6	Professor of Mathematics	500	A Native of India.
7	Instructor in Surveying and Levelling ..	350	A European Upper Subordinate of Public Works Department lent on above terms.
8	Assistant Instructor in Surveying and Levelling.	100	A Native Overseer of Public Works Department lent on same terms.
9	Instructor in Mechanical and Geometrical Drawing.	350	A European to be obtained from England.
10	Assistant Instructor in Mechanical and Geometrical Drawing.	100	A Native Overseer or special Draftsman of Public Works Department.
	Total ..	4,885 per mensem. or 58,620 per annum.	

By the above arrangement the number of the staff remains the same, but it is very greatly increased in efficiency.

5. With regard to the workshop establishment, I think the instructor should be given a salary sufficient to attract a good man from England, and the foremen should be given salaries sufficient to attract good men from railway and other well-ordered workshops in the country. It is very essential, as stated by Mr. Spring, that only the best methods of work should be taught, and this is especially true of carpentry.

6. In the *clerical branch* I think an accountant is absolutely indispensable, but if he is entertained a clerk on Rs. 30 ought to be able to do the rest.

7. I think the students should be taken round in batches one day in each week to the works in progress in Madras under the Consulting Architect, including the lime-kilns, and ordered to make notes on all they see, prizes being given at intervals for the best note-book. By so doing they will learn more of the methods of good workmanship than by many hours of lectures in class rooms.

Proceedings of the Director of Public Instruction, dated 4th August 1898, No. 8543.

The sanctioned scale of establishment of the College of Engineering provides for the employment of the following subordinate teaching staff:—

—	Minimum.	Maximum.	Average.
	Rs.	Rs.	Rs. A. P.
1. Assistant Instructor in Surveying and Drawing.	150	200	187 8 0
2. ,, in Drawing	100	150	137 8 0
3. ,, in Surveying	100	150	137 8 0
4. Second Assistant in Drawing	75	100	93 12 0
5. ,, in Surveying	75	100	93 12 0
6. Assistant in Vernaculars	60	80	75 0 0
7. ,, ,, ...	60	80	75 0 0

Major Love has recommended the employment of another technical assistant on Rs. 100 which the Director is prepared to recommend to Government. One of the vernacular assistantships as at present or both the vernacular assistantships may also be conferred on men technically qualified.

2. The Acting Principal is requested to be good enough to furnish the Director at a very early date with a revised scale of establishment providing for the recruitment from the Public Works Department of all the eight assistantships above referred to or of the seven assistantships if one of the vernacular assistantships should continue to be filled up as at present from this department, assuming—

first, that the officers so selected will be allowed to draw, while on temporary duty at the college for a specified period, the pay they are in receipt of at the time of their transfer to the college; and

secondly, that the officers so selected will be allowed to draw, while on temporary duty at the college, the pay of the grade in the Public Works Department next higher to the grade they were in at the time of such transfer.

(Signed) D. DUNCAN,
Director of Public Instruction.

From J. P. DAVIDSON, Esq., Acting Principal, College of Engineering, Madras, to the Director of Public Instruction, dated 15th August 1898, No. 391 C.

I have the honour to acknowledge your No. 8543, dated 4th August 1898. I presume the word "pay" as used by you is intended to include the allowances which a Public Works Department subordinate, if transferred in that department from an up-country station to the Presidency Town, would as a matter of course draw. These allowances are (1) Presidency allowance, (2) house-rent, (3) horse allowance. Overseers of all three grades receive Rs. 15 Presidency allowance, Rs. 10 house-rent and Rs. 30 horse allowance, or in all Rs. 55 in addition to their actual pay.

The pay runs as follows, viz.—

Overseer, first grade, Rs. 100
,, second ,, ,, 80
,, third ,, ,, 60
} or with allowances .. { Rs. 155 ,, 135 ,, 115

A supervisor of the second gradedraws Rs. 150 pay and Rs. 30 Presidency allowance, Rs. 10 house-rent and Rs. 30 horse allowance, consequently pay and allowances of this grade would be Rs. 220.

2. The above are the scales of pay of Civil subordinates, the pay of Military subordinates is more complicated as it consists of Military and Civil pay; these men, moreover, join the department as overseers, first grade, and would, therefore, in my opinion, be too expensive for the posts of assistant instructors. The posts of assistant instructors should, I consider, be restricted to subordinates of the overseer grades, who are Civil subordinates; this is, of course, nearly equivalent to saying that these appointments should be held by natives of the country. The chief instructorships should, on the other hand, be invariably held by Europeans, that is, as a rule, by Military subordinates.

3. Assuming that the above suggestions are accepted, then, if the incumbents of the different appointments are to draw the pay they would receive in the Public Works Department, there should be—

Two assistant instructorships on Rs. 115—220.
Four ,, ,, ,, 115—155.
Two ,, ,, ,, 75—100.

The first two appointments would meet the case of an overseer of the first grade, who while in the college was promoted to supervisor, second grade; the next four appointments would meet the case of all overseers from third grade to first grade, while the two appointments of Rs. 75—100 would be just as efficiently filled by draftsmen or sub-overseers of the first class as by subordinates of the Public Works Department.

4. In the event of the second of your proposals, viz., that of the pay and allowances of the next higher grade, being accepted, the cost would be somewhat greater, as the initial salary would have to be that of an overseer, second grade, instead of an overseer, third grade, while the possibility of a supervisor, second grade, being employed in the college would have to be provided for. There would therefore be—

Two assistant instructorships on Rs. 135—270.
Four ,, ,, ,, 135—220.
Two ,, ,, ,, 75—100.

5. I am strongly of opinion that the second scale of salaries is the one which should be adopted, as this scale would make a college appointment distinctly valuable to the Public Works Department subordinate. I have drawn up a table showing the three scales of pay, but it is not possible to compare the existing scale with either of the proposed scales, because the present scale differs essentially from either of the proposed scales, in that it is incremental, while the proposed scales are not.

6. By arranging that, as far as possible, no appointment should be made to the college in the assistant instructor classes from any grade above that of overseer, second grade, the cost of staff could almost to a certainty be kept down below the maximum allowed in either of the two new scales, but such restriction would restrict the choice and would make the college dependent almost entirely on the more junior subordinates of the Public Works Department.

7. The two appointments 7 and 8 on Rs. 75—100 which I have stated could be satisfactorily filled by first-class draftsmen or sub-overseers, would be (1) a drawing assistant and (2) a vernacular assistant, who might be also available for instruction in technical subjects. M.R.Ry. P G. Vanchi Aiyar is an assistant instructor of this description.

Scale of Salaries.

	As existing.	As proposed on actual pay and allowances of Public Works Department.	As proposed on pay and allowances of next higher grade in Public Works Department.
1. Assistant Instructor ?.	Rs 150—200	Rs. 115—220	Rs. 135—270
2. ,, ,, ...	,, 100—150	,, 115—220	,, 135—270
3. ,, ,, ...	,, 100—150	,, 115—155	,, 135—220
4. ,, ,, ...	,, 75—100	,, 115—155	,, 135—220
5. ,, ,, ...	,, 75—100	,, 115—155	,, 135—220
6. ,, ,, ...	,, 60— 80	,, 115—155	,, 135—220
7. ,, ,, ...	,, 60— 80	,, 115—155	,, 135—220
8. ,, ,, ...	Non-existent.	,, 75—100	,, 135—220
		,, 75—100	,, 75—100
			,, 75—100

Note.—The proposed scale of salaries would only be incremental for appointments 7 and 8, in the other appointments the salaries would not be incremental, inasmuch as each man would, under proposal I, draw the actual pay and allowances of his rank in the Public Works Department and under proposal II, the actual pay and allowances of the grade above him.

Promotion in the Public Works Department during incumbency at the college would mean immediate increase of pay at the college.

It is difficult for this reason to compare the cost of either of the new proposals with the old scale.

Endt. No. 307 C.

Forwarded. My proposal is hardly explained with sufficient clearness. It is to give *every* member of the Public Works Department who joins the college staff, whether officer or subordinate, the pay of the next higher grade, *plus* the allowances he would draw in Madras.

16*th January* 1899. (Signed) W. B. deWINTON,
Chief Engineer, Public Works Department.

Order—No. 383, Educational, dated 23rd June 1899.

With his letter read above the Director submits correspondence from the Principal of the College of Engineering, the Consulting Engineer for Railways, the Chief Engineer and the Acting Principal of the College of Engineering relating to proposed additions to the teaching staff, and workshop and clerical establishments required for the college, and to the revision of emoluments of the subordinate teaching staff so as to admit of its being recruited from the Public Works Department.

2. The scheme set forth in the Director's letter and in the papers which accompany it has been carefully considered and the Government has no doubt that the staff of the college requires to be considerably strengthened. As, however, the total increase of expenditure involved in the proposals amounts to Rs. 21,399 a year, it is impossible, as the Director surmises, for the entire scheme to be introduced at once. In

paragraph 11 of his letter the Director requests sanction for certain additional expenditure on establishment and increased allowances which it is proposed to incur at once, and he proposes that the other charges should be gradually provided in the budget estimate for 1901–1902 and subsequent years. With regard to the latter part of this proposal the Government observes that it is not clear why the Director has left the ensuing year 1900–1901 out of account, and considers that it may be found possible to introduce part of the scheme in that year, should funds permit. The additional establishment, which it is proposed to provide at once, is sanctioned with the modification that the pay of the assistant instructor should be fixed at Rs. 75—100 instead of Rs. 135, as the Director proposes, and that of the accountant at Rs. 80. The total cost of this establishment will thus amount to Rs. 307 a month.

3. The Director further requests sanction for the following staff and additional expenditure to be provided subsequently:—

(1) Professor of Civil Engineering, Rs. 870.
(2) Instructor in Mechanical Engineering, Rs. 350.
(3) Increase in pay of the Foreman Fitter from Rs. 30—45 to Rs. 50—75 a month.
(4) Foreman Carpenter on Rs. 45—60 to replace the present Assistant in Carpentry on Rs. 60.

(1) With regard to the appointment of a professor of Civil Engineering the officers consulted are unanimously of opinion that one professor cannot properly superintend both Civil and Mechanical Engineering, a fact which is recognized in the other Engineering colleges in India. With this view the Government concurs and the Government of India will be addressed with a view to obtain the sanction of the Secretary of State to this appointment. The Government also agrees that the professor of Civil Engineering should be obtained from the Public Works Department, but considers that the officer should not be of higher standing than an Executive Engineer of the third grade, who may be selected either from this grade or from the first grade of Assistant Engineers, and that the officer so selected should be given the pay of his grade with the addition of Rs. 100 Presidency allowance and Rs. 45 house-rent, and should not be permitted to hold the office for more than three years without the special sanction of Government.

(2) The Government considers that the branch of Mechanical Engineering requires developing, and the Government of India will be addressed with a view to obtain the sanction of the Secretary of State to the appointment of an instructor in Mechanical Engineering on Rs. 350 a month to be sent out from Europe on a five years' engagement.

(3) & (4) These additions are sanctioned.

4. In paragraph 6 of his letter the Director makes certain proposals about the two warrant officers. Orders will be separately passed on this point.

5. With regard to the proposals contained in paragraph 9 of the Director's letter, the Government considers that a sufficiently strong case has not been made out for the recruitment of assistant instructors from the Public Works Department, and the Acting Principal's scheme is needlessly expensive. For the present, therefore, the system now in force should continue, but the Director is at liberty to bring up the subject again after consulting the Chief Engineer and the Principal of the college.

(True Extract.)

Ag. Secretary to Government.

To the Director of Public Instruction.
,, Public Works Department.
,, Accountant-General.

Exd A. F. Eccleston.

L-O R-25.

Public Works (1899) Department.

CURRENT No. 5112

1985C 31.3.98

3409

From

The Educational Dept.

~~Order~~ Telephone

To

The Educl. Dept.

Please furnish this Office with a copy of the Director's letter No. 13813 of 7.12.98 read in G.O. No. 383 of 23.6.99.

HLl 29/6

Dw.

Rur

Desp.d 29.6.99.

No. 383.

Dated 23rd June 1899.

Received / *Registered* 27.6.99

Enclosures

Spare copies

SUBJECT.

Sanctioning with certain modifications the proposals of the D.P.I. for strengthening the staff of the College of Engineering, Madras.

S.A.W.

BACK PAPERS.

No.	Date.
2264C	4-5-99
307C	16-1-99
531D	27-6-98
6D	13-4-98
1985C	31-3-98

FURTHER PAPERS.

No.	Date.

[E. / 100—12-1-99]

EDUCATIONAL DEPARTMENT.

GOVERNMENT OF MADRAS.

PROCEEDINGS OF THE MADRAS GOVERNMENT.

READ the following paper :—

From the Director of Public Instruction, Madras, No. 15813, dated 7th December 1899.

1898

ORDER :- No. 383, dated 23rd June 1899.

With his letter read above the Director submits correspondence from the Principal of the College of Engineering, the Consulting Engineer for Railways, the Chief Engineer and the Acting Principal of the College of Engineering relating to proposed additions to the teaching staff, and workshop and clerical establishments required for the College, and to the revision of emoluments of the subordinate teaching staff so as to admit of its being recruited from the Public Works Department.

2. The scheme set forth in the Director's letter and in the papers which accompany it has been carefully considered and the Government has no doubt that the staff of the College requires to be considerably strengthened. As however, the total increase of expenditure involved in the proposals amounts to Rs. 21,599 a year, it is impossible, as the Director surmises, for the entire scheme to be introduced at once. In paragraph 11 of his letter the Director requests sanction for certain additional expenditure on establishment

and

should not be of higher ~~rank~~ standing than an Executive Engineer of the 3rd grade, who may be selected either from this grade or from the 1st grade of Assistant Engineers, and that the officer so selected should be given the pay of his grade with the addition of Rs.100/- Presidency allowance and Rs. 45 house rent and should not be permitted to hold the office for more than three years without the special sanction of Government.

(2) The Government considers that the branch of Mechanical Engineering requires developing, and the Govt. of India will be addressed with a view to obtain the sanctio of the Secretary of State to the appointment of an Instructo in Mechanical Engineering on Rs.350 a month to be sent out from Europe on a five years' engagement.

(3) and (4) These additions are sanctioned.

(4) In paragraph 6 of his letter the Director makes certain proposals about the two warrant officers. Orders will be separately ppassed on this point.

(5) With regard to the propsals contained in paragraph 9 of the Director's letter, the Govt. considers that a suffi ciently strong case has not been made out for the recruitment of Assistant Instructors from the Public Works Department and the Ag. Principal's scheme is needlessly expensive. For the peresent therefore the system now in force should continue, but the Director is at liberty to bring up the subject again after consulting the Chief Engineer and the Principal of the College.

(True Extract)

for Secretary to Govt.

To the Director of Public Instruction.
,, ,, Public Works Department.
,, ,, Accountant-General, Madras.

the printed copies may be awaited. It is not clear what additional establishments have now been sanctioned. In any case no action on this s.v. is required. The Principal, College of Engineering, will get a copy of the order from the D.P.I.

Rm
29.6.55

printed copies may be awaited
HBL
30/6

Printed copies.
recd 12.8.55

(2)

should not be of higher ~~rank~~ standing than an Executive Engineer of the 3rd grade, who may be selected either from this grade or from the 1st grade of Assistant Engineers, and that the officer so selected should be given the pay of his grade with the addition of Rs.100/- Presidency allowance and Rs. 45 house rent and should not be permitted to hold the office for more than three years without the special sanction of Government.

(3) The Government considers that the branch of Mechanical Engineering requires developing, and the Govt. of India will be addressed with a view to obtain the sanction of the Secretary of State to the appointment of an Instructor in Mechanical Engineering on Rs.550 a month to be sent out from Europe on a five years' engagement.

(3) and (4) These additions are sanctioned.

(4) In paragraph 6 of his letter the Director makes certain proposals about the two warrant officers. Orders will be separately passed on this point.

(5) With regard to the proposals contained in paragraph 9 of the Director's letter, the Govt. considers that a sufficiently strong case has not been made out for the recruitment of Assistant Instructors from the Public Works Department and the Rs. Principal's scheme is needlessly expensive. For the present therefore the system now in force should continue, but the Director is at liberty to bring up the subject again after consulting the Chief Engineer and the Principal of the College.

(True Extract)

To the Director of Public Instruction. For Secretary to Govt.
" " Public Works Department.
" " Accountant-General. Madras.

(2)

should not be of higher ~~rank~~ standing than an Executive Engineer of the 3rd grade, who may be selected either from this grade or from the 1st grade of Assistant Engineers, and that the officer so selected should be given the pay of his grade with the addition of Rs.100/- Presidency allowance and Rs. 45 house rent and should not be permitted to hold the office for more than three years without the special sanction of Government.

(3) The Government considers that the branch of Mechanical Engineering requires developing, and the Govt. of India will be addressed with a view to obtain the sanction of the Secretary of State to the appointment of an Inspector in Mechanical Engineering on Rs.350 a month to be sent out from Europe on a five years' engagement.

(3) and (4) These additions are sanctioned.

(4) In paragraph 8 of his letter the Director makes certain proposals about the two warrant of 1certs. Orders will be separately passed on this point.

(5) With regard to the proposals contained in paragraph 9 of the Director's letter, the Govt. considers that a sufficiently strong case has not been made out for the recruitment of Assistant Inspectors from the Public Works Department and the Rs. Principal's scheme is needlessly expensive. For the present therefore the system now in force should continue, but the Director is at liberty to bring up the subject again after consulting the Chief Engineer and the Principal of the College.

(True Extract)

To the Director of Public Instruction. For Secretary to Govt.
" " Public Works Department.
" " Accountant-General. Madras.

Telephone

Telephone

From
The Headclerk,
Educational Deptt

To
P. W. D.

Your telephonic message of 29th inst

Copies of G. O. No. 384 Educational, dated 23 June 1899 are not available.

Note this message was intended for the Current section & as it was dealt to them today.

Reply In your telephone message of the 29th June last you promised to supply us with the usual number of spare copies of G.O. No. 383 Edl of 23/6/99, hence my message to you yesterday

Telephone No. 75

From
The Head Clerk.
Educational Dept.

To
The Second Assistant-
P. W. D.

Reply —
G.O. No. 383 Edl dated 23-6-99 has not yet been received back from Ootacamund. I shall furnish a copy of the Director of Public Instruction's letter as soon as the G.O is received.

Rcvd. at
1.30 Pm.
KR 20/7

RV- 20/7/99.

SAW Proof copy received

inquiring when copies
may be expected. The MS.
Copy of G.O. 383 Educl
d/ 23.6.99 ~~SAW~~
is not clear without
the Directors' letter read therein. Please
send a copy of that
letter.

RW
15.7.99.

Despd. at
1.30 P.M.
KR 19/7

Telephone message

HC/Edl.

I now find that my yesterday's telephone message of the 18th inquiring when printed copies of G.O. 383, Edl, d/23.6.99 may be expected was not [redacted] sent to you. Please let me know however whether you can send a copy of the Director's letter read in the G.O. above alluded to.

RW
SAW 19.7.99

Despd. at
12.30 KR 20/7

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and submitted.

SAW
14/8/99

Telephone Reply

From
The H.C.
Educational & Legislative Depts.
To
H.C.
P.W.D.

G.O. No. 383 Educational d/23rd June 99 is at Ooty. Cannot therefore furnish copy of the D.P.I's letter No. 13813 d/7th Decr 98. The G.O. is to be printed after the letter to the Govt. of India is despatched. The usual number of spare copies will be then sent to you.

Recd 3.40 P.M.
WCL
19/6

Dr/

For orders whether the

To the ...

RH ...

As it is now nearly a fortnight since the Educational G.O. No. 383 of 23-6-99 was received in this Dept, the Educational Dept may perhaps be asked now by telephone when the printed copy of the above G.O. may be expected.

[signature]
18/7/99

Telephone

To

HC, Educational

When may we expect to receive printed copies of G.O. 383, Edl, d/23.6.99 please?

RW
18/7/99
SAW

RW
18/7/99.
SAW

SAW This message was not despd. after all, and inquiries are