(1) பக்கங்களின் எண்ணிக்கை 84

(2) புதுக்கித் திருப்பிய நாள் 7/89

(3) ஆதாரங்குறிப்பவர் சுருக்கொப்பம்

தமிழ்நாடு ஆவணக் காப்பகம்.

தமிழ்நாடு அரசு

P.W.D. துறை

அரசாணை எண். மு. கோப்புத் தாள் எண்.	1701	அச்சகம் பலவகை
நாள் :	11-7-1889	~~19~~ .

மடிக்கவோ கண்டபடி கையாளவோ கூடாது

42 Sheets

-18,000—15-6-8

1901

16TH JULY 1889, No. 1901 W., PUBLIC WORKS.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

General.
Establishment.

READ—the following paper :—

G.O., dated 1st July 1889, No. 384, Educational.

Read—the following paper :—

From the Public Works Department, dated 4th June 1889, No. 273 D.

ABSTRACT.—Referring correspondence on the subject (1) of permitting certain unsuccessful students of the Engineer class to undergo the practical course laid down for the passed students of the Engineer Subordinates' class with the view of granting them certificates as overseers; and (2) of raising the pay of Draughtsmen in the Public Works Department.

Order—dated 1st July 1889, No. 384, Educational.

With the foregoing endorsement the Public Works Department refers, for consideration, the recommendations made by the Board of Examiners of the College of Engineering in paras. 10 and 11 of the report on the results of the examination conducted by them during December 1888, together with the opinions recorded on these recommendations by the Acting Chief Engineer, the Director of Public Instruction, and other officers consulted by the latter.

2. The recommendations are—

(1) That four students in the Engineer class who failed to qualify for certificates as Associates of Civil Engineering should be allowed to go through the practical course laid down for the Upper Subordinates' class, and on satisfactory completion of this course, granted certificates as Overseers.

(2) That the scale of pay for Draughtsmen in the Public Works Department should be raised as the present rates are not sufficient to attract men of intelligence and general education to join the college.

3. As regards the first recommendation, the Government agrees with the remarks of the Director of Public Instruction and is not prepared to sanction the proposed concession.

4. In regard to the second recommendation, His Excellency the Governor in Council is of opinion that the present gradation of College certificates and of Draughtsmen in the Public Works Department should be maintained, but that in future Draughtsmen holding second-class certificates shall be eligible for promotion to the first grade if at the end of three years' service they are pronounced competent, and that men in the service shall be allowed to appear at any time as independent candidates for examination for first-class certificates. For the class of special Draughtsmen such certificates should still be required. The necessary orders on this matter will be issued in the Public Works Department.

5. The rule proposed by the Director of Public Instruction that all correspondence between the Principal of the College of Engineering and the Public Works Department should pass through his office, is approved.

(True Extract.)

(Signed) J. F. PRICE,
Chief Secretary.

Order—dated 16th July 1889, No. 1901 W., Public Works.

Communicated to officers of the Public Works Department, for information and guidance. The requisite standing orders for incorporation with the Public Works Code will be framed by the Examiner, in accordance with para. 4 of these Proceedings.

(True Extract.)

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

To Superintending Engineers.
To the Consulting Architect to Government.
" Chief Engineer for Irrigation.
" Examiner, Public Works Accounts.

Exd. P. L. Pereira.
Spare Copies

1901

GENERAL.
ESTABLISHMENT.

Govt. of {1889} Madras.

PUBLIC WORKS.

Dated July, 16th.

Recd. *Encl.*

G.O., 16th July 1889, No. 1901 W.

JULY.

Draughtsmen

Orders on Proceedings in the Educational Department relating to the gradation of College certificates and of — in the Public Works Department.

1901

CHEPÂK,
12th March ~~FEBRUARY~~ 1889.

From

CAPTAIN W. L. C. BADDELEY, R.E.,
President of the Board of Examiners, College of Engineering
Madras.

To

THE DIRECTOR OF PUBLIC INSTRUCTION,
MADRAS.

SIR,

I have the honor to forward a report containing the views of the Board, on the results of the examinations conducted by them, in the College of Engineering during December 1888.

2. The Board was composed as follows:—

Captain W. L. C. Baddeley, R.E., *President.*
Mr. G. H. Stuart, M.A.,
" E. W. Stoney, M.E., M.INST. C.E., } *Members.*
" W. N. Pogson, F.S.A.,

3. Dr. VanGeyzel and Mr. P. Viziaranga Mudaliar also assisted in the examinations; the former examined the Engineer class, 1st division, in physics and geology, and the latter examined the Engineer class, 1st division, and the Engineer Subordinates' class, 1st division, in Tamil and Telugu.

4. The results of the examinations are of more than usual interest, as four classes of students completed their final course of study in the college under the new rules which came into effect from 1st January 1886.

5. The classes referred to in the preceding paragraph, the numbers in each class, and the number who passed and failed are detailed below:—

	No. in class.	Passed.	Failed.
(1) Engineer class, 1st division	8	4	4
(2) Engineer Subordinate's class, 1st division ...	22	14	8
(3) Draftsmen's class, 1st division	15	5	10
(4) Surveyors' class, 1st division	7	5	2

6. In addition to these classes, four batches of independent candidates (men unconnected with the college at the time the examination was held) were examined with the following results:—

	Number.	Passed.	Failed.
Independent candidates for draftsmen's certificates under the old rules	4	0	4
Independent candidates for surveyors' certificates under the old rules	2	0	2
Independent candidates for draftsmen's certificates under the new rules	4	0	4
Independent candidates for surveyors' certificates under the new rules	2	0	2

7. The term examinations for six classes were also conducted by the Board, but as these results (except in the cases of men who have disqualified in an entire subject) will be modified by succeeding examinations, it is not necessary to give the results in detail.

8. It will be seen that the Board had to arrange for the examination of 14 classes or batches of students, necessitating a total of 76 question papers, of which only 5 could be set by the Assistant Examiners. In the opinion of the Board, the very large number of examination papers required is out of all proportion to the total number of students, and they consider that the rules should be carefully revised to enable the examinations to be conducted by means of a moderate number of question papers.

9. With regard to the general conclusions to be drawn from the results of the examinations, Mr. Stuart remarks "on the whole, as far as concerns the purely mathematical subjects in which I have examined, I think the work done in the college classes may be considered satisfactory."

Mr. Viziaranga Mudaliar is of opinion that the results of the vernacular examination are good.

The reports by Mr. Stoney and Mr. Pogson on the examinations conducted by them, respectively, in engineering and drawing, are attached *in extenso*, because they relate to the most important portions of the course of technical instruction of the students, and I feel that it would be impossible for me, by means of extracts, to place their opinions clearly before Government. I may add that the results of the final examinations in surveying are not satisfactory, as very few papers contained really good work, the majority were slovenly and inaccurate and showed a want of knowledge of general principles.

10. In consideration of the fact that the four students in the Engineer class, who have failed to qualify, have obtained the qualifying minimum in each subject and within a small number of the qualifying total, the Board would recommend that they be allowed to go through the practical course laid down for the Upper Subordinates' class, and, on the satisfactory completion of this course, they be granted certificates as overseers.

11. The Board are also of opinion that the scales of pay for draftsmen in the Public Works Department should be raised, as the present rates are not sufficient to attract men of intelligence and general education to join the college. The course of instruction laid down for this class is very comprehensive and none but intelligent men can satisfactorily go through it. The importance to the Public Works Department of good draftsmen cannot be over-estimated, but, as matters now stand, it cannot be expected that able men will join the drawing class.

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

(Signed) W. L. C. BADDELEY, Captain, R.E.,
President of the Board of Examiners,
Madras.

REPORT ON EXAMINATIONS, COLLEGE OF ENGINEERING, MADRAS, 1888-89.

ENGINEER CLASS, 1ST DIVISION.

1. J. M. Lacey is far ahead of all others in this class in every respect, his papers being first-rate, well and concisely expressed, neatly written, and his, arithmetical results *accurate*; if there is any fault it is that he has in some cases cut his work rather too short; it is a pleasure to read his papers and he evidently quite understands what he is writing about. Ramchandra Iyer is next, and after him Daivasikamani Pillai, both of whose papers are neatly written.

2 In contrast to these is Sundram Iyer, a most confused careless, and slovenly worker, his arithmetical work being almost always incorrect and his results consequently wrong.

ENGINEER CLASS, 2ND DIVISION.

3. In this class Rungasawmy Iyer and Everard are far the best.

4. The last man Vencatasooba Aiyar's paper is extremely bad in every way.

1901

5. In question 2, Hydraulics, some men did not send in the map given with the catchment area marked by them, and simply guessed at its area; in other cases they determined this, but, instead of taking the data as to rainfall given in the question, used Captain Ryves' empirical formula; in question 2, Buildings and Bridges, no one thought of specifying for the mortar to be used in the bridge masonry—a very important omission.

6. The sketches and working drawings were as a rule distinctly bad, and, in many cases, no attention was paid to the instructions given in the questions to draw to *scale*, and in very few instances was the scale used, stated in the sketch.

Pencil-drawings and sketches were specially asked for to test the accuracy of the knowledge of the candidates.

ENGINEER SUBORDINATES, 1ST DIVISION.

7. On the whole a bad class, some of the papers on the steam engine being particularly bad; several of the papers in this class were most carelessly written, they could hardly be worse; Nos. 19 and 12 being worst.

8. Plummer and Price answered the most intelligently of the class, what they knew.

The answers of this class to the paper on the steam engine were worst. Some of these showed complete confusion of ideas.

ENGINEER SUBORDINATES, 2ND DIVISION.

9. Also a bad class with the exception of Nos. 3, 6, 8, No. 6, C. J. Mani, being far the best of this class in every way. The papers sent in by No. 7 were very slovenly.

GENERAL REMARKS.

10. The chief faults, I notice, which are more marked in the lower class, are—

1*st*. The questions asked are not carefully read and answered, the result being that
2*nd*. Imaginary questions *not asked* are answered and pages of totally irrelevant matter (often nonsense) written, thus wasting both the candidate's and examiner's time.
3*rd*. Where questions are divided up into two or more parts, no attention is paid to this division, and the answers, instead of being given in the order of the question, are mixed up anyhow.
4*th*. No attention is often paid to the directions given to draw to scale, any sort of rough sketch being given instead of a scale one, and when a scale is used, what it is is not stated.
5*th*. The writing, &c., is often most slovenly and careless, and no pains are taken to do arithmetical work correctly; it would seem as if the candidates thought, if the method adopted be correct, the result obtained is of no consequence.
6*th*. Arithmetical work is often cut so short as to render it difficult to follow the various steps, and labor is thus entailed on the examiner working out the results.
7*th*. The meaning of the symbols used in formulæ is as a rule never stated, as they should be. In conclusion, I would suggest that the students be taught to observe method, order, and neatness in their answering and to—

(1) Read the questions asked carefully.
(2) Answer only what *is asked*, and not waste their own, and the examiner's time by writing irrelevant matter, on the chance of its somehow containing a partial answer.
(3) When questions are divided, to answer these in the order they are put.
(4) To arrange the sheets of each reply in order, and not leave them scattered anyhow, and before handing up papers to arrange all answers in their numerical order, and so save the examiner time and trouble.
(5) Each candidate to put his name and number on his papers.
(6) To make neat, clean, and accurate sketches and pencil-drawings, and when these are drawn to scale, to state what this is.
(7) To write briefly and to the point, to answer a few questions well, instead of trying to cover pages with mere guesses at many.
(8) Sketches and pencil-drawings are specially asked for to test the accuracy of the candidate's knowledge, so that sending up bad sketches to conceal ignorance is mere waste of time.
(9) For each answer, to write the data and formula used, with the meaning of symbols in it, and to show clearly each step in the arithmetical work, to take care that this is correctly done, so as to obtain the proper result.

It cannot be too much impressed on Engineer students that method, neatness, and accuracy are of all things essential to success in Engineering.

(Signed) E. W. STONEY, M.E., M. INST. C.E.

KONDAPURAM,
13th January 1889.

4

REPORT ON EXAMINATIONS, COLLEGE OF ENGINEERING, MADRAS, 1888-89.

ENGINEERS' CLASS, 1ST DIVISION.

Freehand Model and Perspective.—The questions set in perspective have been very fairly answered, showing a good knowledge of the subject. In the model-drawing, I notice a great want of decision as to the position of retiring lines. The students seem to have laid aside their rules of perspective entirely, and sketched the model as a novice unacquainted with perspective would do. I consider that they all lack the knowledge of applying the rules of perspective to sketching natural objects. Had they studied the model perspectively, before they commenced to put pencil to paper, the result would have been far more satisfactory.

Machine-drawing.—The question set in the examination papers has been most creditably answered. Five of the students are fully entitled to the maximum marks.

ENGINEERS' CLASS, 2ND DIVISION.

Estimating.—The results of this paper are all creditably prepared as far as accuracy is concerned, the worst being only 2 per cent. below the correct price. There is a want of neatness in all the papers submitted; this fault in a large estimate is of considerable importance.

Designing and Specification.—In designing, the results are for the most part poor, and especially so, considering that the general style of the building was so clearly set forth in the question paper and plan. Many of the students have failed to produce anything in harmony with the subject given. The specifications in all cases are good, clear and concise; hence the high value of the marks allotted.

ENGINEERS' CLASS, 3RD DIVISION.

Geometrical Drawing.—Only three students submit papers in this division, one of which answers very creditably, the remaining two not having grasped the nature of the question.

Architectural Drawing.—Moderate. I would suggest the adoption of a thicker line so as to obtain more effect. There is also a great want of more careful drawing in the ornamental details; many parts that could have been drawn with bow compasses have been put in by hand in a rather careless manner.

ENGINEER SUBORDINATES' CLASS, 1ST DIVISION.

Freehand Drawing.—Moderate. None of the students were entitled to full marks as the subjects given were very easy, and I consider the best submitted shows an inability to draw reverse sides of the same object alike.

Estimating.—Very good. In this subject, as before in Engineers' class, 2nd division, there is a great want of neatness, especially in the measurement sheets. This fault causes considerable inconvenience when it becomes necessary to refer back from the abstract to the dimensions.

ENGINEER SUBORDINATES' CLASS, 2ND DIVISION.

Architectural Drawing.—Only one of the students is entitled to full marks. I notice a considerable want of knowledge of carpentry, many of the students having adopted an iron-work construction instead of one of timber-work. A better knowledge of the various joints used in wood-work, and their functions in different positions, is much needed. Considering the very excellent details of construction set them during the session, I am surprised that they have profited so little. It is evident that many of them merely copy their studies without inquiring into, or studying, the method of construction.

ENGINEER SUBORDINATES' CLASS, 3RD DIVISION.

Geometrical Drawing.—Very good, three students having obtained full marks, and, with the exception of one, all the papers were answered fairly, and neatly drawn.

DRAFTSMEN'S CLASS, 1ST DIVISION.

Freehand Model and Perspective.—In freehand model-drawing the results are very bad. The model given was extremely simple and for the most part contained only rectangular lines, but the results are nothing but distortion. Here also, as in the Engineers' class, 1st division, the students seem to have ignored all rules of perspective. It is surprising that students with such a good knowledge of the rules of perspective should not know how to apply them to sketching ordinary objects.

The deficiency in marks for freehand and model drawing is made up by their marks in perspective, which latter in most cases is excellently answered.

Machine-drawing.—Very good, and neatly prepared.

1901

Estimating.—The students' papers show great accuracy and care in taking out, and cubing, dimensions. It is to be regretted that greater neatness is not practised in preparing their estimates. A better and more careful spacing out of the various items in the dimension sheets, would facilitate the constant necessity of referring back from abstract to measurements.

Architectural Drawing.—The results produced are exceedingly poor. Their knowledge of elementary bricklaying and of the details of building construction, is far below what ought to be expected. None of them have successfully been able to draw the plan of two courses of brickwork in ordinary bond. In the commonest details of ordinary buildings they show a great lack of constructional knowledge.

Less time and labor spent in producing neatly drawn and elaborately finished plans, and more in carefully studying constructional details, so as to understand what they do draw, would better fit them for useful men in the Public Works Departments.

DRAFTSMEN'S CLASS, 2ND DIVISION.

Freehand, Model and Perspective.—Perspective in general has been fairly answered.

Freehand drawing is very bad. Here again the students seem to think that perspective rules are never to be applied to sketching natural objects. Had they sought out their vanishing points, and other auxiliary guides, before putting pencil to paper, they would not have produced the distortions they all present. They very evidently require to be taught how to analyse an object by the rules of perspective, or in other words "*how to see*" before they draw. It is surprising that students with such a good knowledge of perspective, do not apply it to freehand drawing.

Practical Geometry.—Fairly good and very neatly prepared.

INDEPENDENT CANDIDATES.

The previous remarks contained in the items under practical geometry, freehand, architectural and machine drawing, and estimating, apply also to these students.

Finally.—In the whole set of answers, I find that there is too much labor spent in elaborate finish, such as labored lettering, scales, and lining out plans, and not enough care devoted to technical knowledge and construction. The former produces a mere copyist, the latter a useful and expert assistant. Neatness and good drawing is useless without technical knowledge of construction.

(Signed) W. N. POGSON.

MADRAS,
18th January 1889

5727
6339

1901

20th August 1889, No. 2279 W., Public Works.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

General.
Establishment.

Read—the following paper:—

Office note from the Examiner, Public Works Accounts, dated Madras, 9th August 1889, No. 1129.

With reference to para. 4 of G.O., Educational Department, No. 384, of 1st July 1889, communicated with G.O., No. 1901 W., dated 16th July 1889, please say who is to be the authority competent to pronounce a draftsman fit for promotion to first class without a first-class certificate from the Civil Engineering College.

Order—dated 20th August 1889, No. 2279 W., Public Works.

G.O., No. 1901 W., dated 16th July 1889.

With reference to para. 4 of G.O., dated 1st July 1889, No. 384, Educational, the Chief Engineer, Public Works Department, is declared to be the authority competent to pronounce a second-class draftsman fit for promotion to first class after three years' service. Specific recommendation on behalf of such draftsmen should be submitted to the Chief Engineer by Superintending Engineers or heads of offices in which the men may be serving.

(True Extract.)

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

To the Chief Engineer for Irrigation.
To Superintending Engineers.
To the Consulting Architect to Government.
„ Examiner, Public Works Accounts.

Exd. J. Henricus.
Spare Copies

17 6

GENERAL.
ESTABLISHMENT.

Govt. of {1889} Madras.

PUBLIC WORKS.

Dated August, 20th.

Recd. *Encl.*

G.O., 20th Aug. 1889, No. 2279 W.

AUGUST.

Draftsmen

Orders relating to the promotion of —.

CAW

This cover was just received from W's house. It contains the original of G.O. 552 Revenue d/ 4th July 1889 orders on which were passed on a spare copy received from that dept. and sent down to Madras last night. As SAW was asked to check whether the original was received at Madras, intimation may now be sent to him that the original has since been found in this office.

1901

These copies will be retained with the famine file for refce.

D.W.
13.VII.89

S.A.W.

R.P.
13.VII.89

D.M.

Papers please

C.J.
15/7

Seen
C. No 6573 put up

B.P.
15/7/89

Cir 3000 Oct 13/4

Note by E.W.

1901

I see no objection to allowing the 4 unsuccessful students of the Engineer Class, to continue with the practical course laid down for Upper Subordinates, and granting them certificates as overseers, on the satisfactory completion of the course.

As regards increasing the pay of draughtsmen, I certainly think the initial pay of 20 to 30 Rupees is too low to attract any good men, and from my experience I consider that these 3rd class draughtsmen are of very little use in our office. Competent Draughtsmen are of no use unless they are quick and accurate at estimating and facile with their instruments, and in my opinion it is essential that the standard of draughtsmen employed in the P.W. Dept must be raised in order to meet these qualifications.

P.T.O.

P-10-D

The present scales of pay are

Special 80 to 100
1st class 50 to 70
2nd class 35 to 50
3rd class 20 to 30

and in order to obtain a 3rd class certificate the candidate has to obtain 50 per cent on the total marks, and 35 per cent in each of the subjects comprised in the course of instruction; the result being ~~that~~ the men who do not pass higher than 3rd class having merely a superficial knowledge of estimating and drawing and are of little use except as copyists ~~and to [illegible]~~ with a view to remedying matters. I would recommend the abolition of the 3rd cl certificate, and fix the scales of pay as follows

Special 80 to 100
1st class 60 to 80
2nd class 40 to 60

I would also recommend ~~that~~ after 10 years service in ~~any~~ either of the two lower classes, a ~~draftsmen~~ draftsmen should be eligible for promotion to a higher class on the recommendation of the Supt Prof. 1901

These proposals if carried into effect will I think raise the standard of ~~draftsmen~~ draftsmen very considerably, as inferior men will not join the College, and those who do obtain certificates will be encouraged to improve themselves in the hope of obtaining further promotion

3.4.57

G.O. 1901

The Government are
pleased to permit the
~~[illegible]~~ unsuccessful
students of the Engineer
class of 1888 to go
through the practical course
laid down for the Upper
Subordinates, under the
[illegible] regarding
condition [illegible] tools materials
programme
&c, which will be shortly
issued.

The proposals of the Chief
Engineer to raise the
standard of draughtsmen
employed in the P.W.D. are ~~[illegible]~~ approved
and ~~the~~ the necessary alterations
will be made in ~~the~~ the question of ~~[illegible]~~ revising
P.W. Code and ~~in~~ the
Rules relating to the
College of Engineering, so far as Draughtsmen are concerned,
will be considered in the Edul.
Dept.

3.4.89

Dew.

Should not the orders in
para 2 be issued by the
Educational Dept.?
Questions regarding the
Rules of the College of
Engineering are disposed of
in that Dept and the
general exemption from

P.W.D.

igineer P.W.D.

the higher scale [illegible] who have served for ten years are one grade [illegible] we have to be [illegible] in Educl. Deptt. Promotion could in any case be made only up to sanctioned scale.

JB
3.4.09

1901

W

Under the orders recently issued none of the Students who passed as Supervisors or Overseers under the old rules have as [illegible] of obtaining permanent appointments in the P.W.D.; as these are reserved for the Students of the Engineer Subordinate class who pass out under the new rules.

It is however by no means desirable that the Students of the College should look to the P.W.D. for employment in preference to other fields; and it is also unnecessary that the P.W.D. should increase the number of permanent overseers; though these are more reliable men as a rule than the temporary ones.

The four men referred to have no hope of ever obtaining permanent employment in the P.W.D. but if allowed to go through the practical course, they may get certificates which will qualify them for temporary employment in the [illegible] or [illegible] elsewhere.

The course for Draughtsmen extends over two years and from the syllabus attached, it will be seen that the course is a very comprehensive one.

In my opinion the syllabus might with advantage be curtailed, or a [illegible]

[illegible] them into [illegible] men [illegible] standard of [illegible] is hopeless to suppose that men of sufficient ability will join the drawing class. I have had several years experience of the examinations in the College, and the standard of the general education of the men who join the drawing class

I have looked [illegible] syllabus [illegible] can be [illegible] anything [illegible] Certificates [illegible] the College [illegible] 5 classes forming [illegible] I would have only 3 classes, 3rd class certificated men are of little or no use [illegible] 1st & 2nd class, & the salaries fixed at 80 to 100; 60 to 80; & 40 to 60 [illegible] 1.4.69

is too low to enable them to go through the course satisfactorily.

1901

If the present standard of instruction is to be maintained I am of opinion the pay of Draughtsmen should be considerably raised; but if the syllabus can be cut down, and if the 3rd class of draughtsmen be abolished I think a better class of men would be attracted to the College.

The whole question of the course of instruction at the College requires consideration, and I would suggest that the following gentlemen be asked to form a Committee for the purpose of revising the different Syllabuses.

Mr G. A. Stuart B.A.
Mr W. N. Pogson F.S.A.
Mr E. N. Storey M. Inst. C. E.
or Mr F. B. Hanna
with Capt Lee R.E. as Secretary.

12

WAB
1.4.69

1901 3000.

D.W.

In this case the Principal of the College addressed the Chief Engineer direct and not through the Educational authorities. It is proposed to embody W's note in a "Note by the Chief Engineer" and to put a draft order up sanctg. the first proposal and forwarding the question about the draftsman Examn. to the Educational Dept. The draft order wd. be sent to the Ch: Secry for counter initials.

Will you please note on the subject of raising the standard of the Examn. as in your report as Presdt. Bd. of Exrs: you say that the course of instruction is "very comprehensive".

F.B.

2.4.89.

3000

1901

I see no objection to allowing the 4 unsuccessful students to continue with the practical part of their course - and giving them certificates of Overseers after having so done satisfactorily. But they must not expect that this would give them any preference to appointments over the students who have passed out as Overseers under the old rules -

As to increasing the pay of the draftsmen, I certainly think the initial pay of 20 to 30 rupees is too small to attract any good men. But then good would not be content with passing out as 3d class draftsmen. From my experience I have found the latter class of men of very little use in an office - I think the standard is placed too low - Draftsmen are of no material use unless they are quick and accurate at estimating and facile with their instruments – I contend that the lowest standard as it exists is too low, and with the raising of the standard the pay might be raised. A lad very soon finds out whether he is likely to make a good draftsman or not – I noted this in my career at Addiscombe & Chatham. Those who were poor hands at drawing at the former establishment did not improve materially whilst going through their course at the latter, nor did they ever take a liking to it later on in their career – Raise the initial standard & raise the pay accordingly – The ultimate salaries are ample as already provided in the Code.

28. 3. 89

1901

P.W.D

C

Note by the Chief Engineer P.W.D.

I see no objection to allowing the 4 unsuccessful students of the Engineer Class, to continue with the practical course laid down for upper Subordinates and granting them certificates as Overseers on the satisfactory completion of the courses.

2. As regards increasing the pay of draftsmen I certainly think the initial pay of Rs 20 — 30 is too low to attract any good men, and from my experience I consider that these 3rd class draftsmen are of very little use in an office.

3. Draftsmen are of no material use unless they are quick and accurate at estimating and facile with their instruments, and in my opinion it is essential that the standard

of draftsmen employed in the P. W. department should be raised in order to meet these qualifications

4.. The present scales of pay are

Special 80 to 100.
1st class 50 to 70.
2nd class 35 to 50.
3rd class 20 to 30.

and in order to obtain a 3rd class certificate the candidate has to obtain 50 per cent on the total marks, and 36 per cent in each of the subjects comprised in the course of instruction; the result being that the men who do not pass higher than 3rd class possess merely a superficial knowledge of estimating and drawing and are of little use except as copyists. With a view to remedying matters I would recommend the abolition of the 3rd class certificate and fix the scales of pay as follows:-

Special

1901

Special 80 – 100 Rs.
1st class 60 – 80 "
2nd class 40 – 60 "

I would also recommend that after 10 years service in either of the two lower classes, a draftsman should be eligible for promotion to a higher class on the recommendation of the Superintending Engineer.

5.. These proposals if carried into effect will I think, raise the standard of draftsmen very considerably as inferior men will not join the College, and those who do obtain certificates will be encouraged to improve themselves in the hope of obtaining further promotion.

4.4.89

9.4.89

Hm.

A

1901

PROCEEDINGS OF THE MADRAS GOVERNMENT.

UNDER date the

Read the following:—

Note by the Chief Engineer Public Works Department } H. E. No. dy:

The Government are pleased to permit the four unsuccessful students of the Engineer class of 1888 to go through the practical Course laid down for Upper Subordinates, under the Conditions regarding payment for tools, material &c which will be shortly issued.

2. The proposals of the Chief Engineer to raise the Standard of Draftsmen Employed in the Public Works Department are approved and the necessary alterations will be made in the Public Works Code, and the question of revising the rules relating to the College of Engineering So far as Draftsmen are Concerned will be considered in the Educational Department.

Back Correspondence

1561 Caf. 25. 3. 89
938 C " 25. 11. 89
913 C " 22. 2. 89
873 C " 21. 2. 89
847 C " 20. 2. 89
779 C " 16. 2. 89
609-10 C " 8. 2. 89
313 C " 22. 1. 89
345 W " 7. 2 89
97 W " 11-1-88
3348/3349 W " 7-12. 87
74 W " 9-1-85
3063 W " 1-10. 88
Despt. 40/3051 W " 24. 10. 83
15 W " 6-1-83
3104 W " 24 11. 82
3051/3052 W " 26-10. 83
3257 W " 11-2. 82
1361 W 9-5-83
560 W 22-2-83
3008 W " 14-11. 82
2722 W " 18. 10. 82
2183 W " 24. 8. 82
1512 W " 16. 6. 82
138 W " 18-1-86
1851 W " 11. 8. 85
317 C " 11-2. 84
2849 W " 30-11. 82

To
The Educational Dept. with 1 enclo for return to the Principal of the College of Engg. In
" Supg. Engr. V. Circle
" Exr. P. W. accts.

1817

10 Apr

4. 4. 89

9. 4. 89

P.W. Dept.

P.W.C. No 3000 —

…ller from the Principal College of Engineering No. 804 Cap. 28th March 1889.

Enquiring whether the certain unsuccessful Students of the Engineer Class may undergo the practical course laid down for the passed Students of the Engineer Subordinates' Class & Expressing a hope that it would be practicable to raise the remuneration of skilled Draftsmen —

Note by the Chief Engineer. Ap. 9th April 1889

I think that the Principal Civil Engineering College is entirely out of order in writing direct to the Chief Engineer either as to the grant of these special certificates or as to the draughtsmen — certainly as to the former.

Ref. No 52 D of 13th April 1889.

Returned for the remarks of the Director of Pub. Instn. through whom the Principal's letter should have been submitted to Govt.

H.C.S.
12 Apr.

12 Apr.

To The Chief Secretary for favour of counter-initials.

Recd.
12.4.89 W

To The D. of P. I. with papers original [illegible]

H.M.

No 52 Dat. 13 April 1889

CHIEF SECRETARY
19 APL 89
GOVERNMENT OF MADRAS

0/5/4 O.G.S. 13/4. H M W/4 Pstd 12/4.

Fair copy for [illegible]

despd. 13/4/89

Office of the Director of
Public Instruction,
~~Madras,~~ Ootacamund 29th May 1889.

No. 8/214 -

1901

From
H. B. GRIGG, Esq., M.A.,
Director of Public Instruction,
Madras,

To
The Hon'ble the Chief Secretary to Govt.
Fort St. George.

Sir,

In returning the papers forwarded to me for remarks under Endorsement No 52 D. Public Works Department, dated 13th April 1889, I have the honor to draw the attention of Govt. to the papers noted in the margin containing the opinions of the Principal of the College of Engineering and of the Members of the Board of Examiners in Engineering on the second point raised in the Acting Chief Engineer's note. I thought it desirable that the opinion of these gentlemen should be obtained

Letter from the Principal College of Engineering, d/ 25th April /89. No 79 C.
Letter from the President Board of Examiners College of Engineering dated 15 May /89. with enclosures.

on the new system of training Draughtsmen.

2. The first point raised in the Note is the propriety of allowing unsuccessful students of the Engineer class to enter on the practical course laid down for Upper subordinates in view, if that course be successfully passed of granting them Overseers' certificates. The recommendation is based on the recommendation of the Board of Examiners, vide para 10 of the report dated 12th March. To this proposal I submit an unqualified opposition (1) because it seems to me to amount to annulling Article X (2) of the College Code by which "Vacancies in the Overseer grades of the Public Works Establishment will, as a rule, be filled by passed men in the order of merit"; (2) because it would appear that these men are to be given Overseers' certificates without passing even the test for Engineer Subordinates, and consequently, they having failed in the Engineer Examination, without passing any test at all; (3) because such a measure really introduces a

1901

provision of very doubtful expediency into the Rules which was not contemplated when the Code was sanctioned by Govt: and (4) because I believe such a concession will have the effect of seriously injuring the working of the Engineer Subordinate classes of the College. For if failed candidates for the Engineer Examination are to be preferred to passed candidates of the subordinate grade it is improbable that good men will readily join the subordinate class. I submit that it would be better for the Govt. to declare that even for the Overseer grades they will in future require an Engineer's certificate than to allow men to incur expense in obtaining an Engineer education of a lower order and then to set them aside in favor of the failures of a superior grade, however good such failures may be. If such failures are to be considered this might be done by laying down a rule in the Code that men who have failed on first appearing at the Engineer Examination may on passing that examination subsequently be admitted to the practical courses and on completion of their courses satisfactorily be considered eligible for appointment in the Overseer grades after the claims of men passing for these grades have been duly considered.

3. Passing to the second point - the position of Draughtsmen - I concur in the opinion that the 3rd class according to the present standard is sufficiently high for admission to the Public Works Establishment of Draughtsmen and also that the pay at present offered is not sufficient to attract men of high attainments. But I am of opinion that it is unnecessary for the Public Works Department to arrange its classification in accordance with the classification of the college. If the pay of the lowest grade is sufficiently high to attract good men, and if such men have the prospect of rising to a maximum pay of, say Rs 100, I do not doubt that the Govt. might limit

the

the appointments to men having 1st class certificates - to be chosen annually in order of merit. But the preferable plan seems to me to be for the Public Works Department to select men annually by open competition among men having the Draughtsman's certificate, the only other restrictions being the age limit and testimonials of good character and health. This examination could be held annually by the Commissioners for the U.C.S. Examinations. The Examiners would be appointed in communication with the Chief Engineer. The great advantage of this system is that it would secure for Government men who have made great progress and who have had much experience after obtaining the college certificate. One of the members of the Board of Examiners points out how many of them improve and ultimately equal men with higher certificates. The system would also have the advantage of encouraging men to take employment under private employers and to do every thing to improve themselves at least until they are 25 years of age, in the hopes of entering Govt Service. This after-college education should add greatly to the acquirements of a man who works under a talented employer because his subsequent Knowledge is based, more than his collegiate, on actual experience. Should this suggestion not be approved I would recommend that the former be adopted, viz. that after a fixed date only 1st class Draughtsmen will be admitted to the Public Works Establishment and that their service will begin in the lowest grade; and I would add that in no case should a candidate be confirmed until after one year's probation.

4. In conclusion I beg that the Government will lay down a rule that all correspondence between the Principal of the College of Engineering and the Public Works Department

shall

shall pass through this office. In the present case two important points of principle were raised by him without ascertaining my views or giving me an opportunity of remarking thereon.

I have the honor to be,
Sir,
Your most obdt Servant

Director of Public Instn

R/.

No. 173 D d/ 4 June/89

1901 **P. W. Department**

Letter from the Principal, College of Engineering, No. 804 C d/28 March/89
Note by the Chief Engineer P.W.D d/ 9 April/89
Memo: to the Director of Public Instruction, No. 52 D d/ 13 April/89
Letter from the ——— Do ———, No. O/214 d/ 29 May/89

Subject

Reg: the propriety of allowing unsuccessful students of the Engineer class to continue with the practical course laid down for upper subordinates & granting them certificates as overseers on the satisfactory completion of the course & the desirability of increasing the pay of skilled Draftsmen.

Note by the Chief Engr: P.W.D

I concur in the proposals of the Director of Public Instruction, and modify accordingly the opinions expressed in my note d/ 9 April/89.

3.6.89 E.W

Order thereon

Referred to the Educational Department.

3.6.89 W

To
The Educational Dept:
with papers.

L.S. 22

52 D af 13-4-89
1561. C af 25-3-89
938. C af 25-2-89
913 C af 22-2-89
873 C af 21-2-89
847 C af 20-2-89
779 C af 16-2-89
609/610 C af 8-2-89
313 C af 22-1-89
345 W af 7-2-89
97 W af 11-1-88
3348/3349 W af 7-12-87
74 W af 9-1-88
3063 W af 1-10-88
15 W af 6-1-83
3051/3052/3051A W af 26-10-83
1361 W af 9-5-83
138 W af 18-1-86

Called for

5/6/89

O&S. 122/S.

desp^d 11/6/89

Civil
Branch.

COLLEGE OF ENGINEERING
MADRAS.

No. 804. C.

1901

Dated 28th March 1889.

FROM
THE PRINCIPAL,
COLLEGE OF ENGINEERING,

To
The Chief Engineer,
Public Works Department, Madras.

SIR,

Enclosure
One.

I have the honour to forward herewith a copy of the report of the Board of Examiners, College of Engineering, on the Examinations of December 1888, and to enquire, with reference to paragraph 10, whether you have any objection to the four unsuccessful Engineer Students therein mentioned undergoing the practical course laid down for the successful Students of the Engineer Subordinates' Class. If you have no objection, they can be called on to join the Public Works Workshops at once.

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2. I have the honour also to invite your attention to paragraph 11 of the Board's Report, and to express a hope that you may be able to offer such remuneration to skilled draftsmen as will induce a better class of men to join the College Draftsmen's Class.

I have the honour to be,
Sir,
Your Most obedient Servant,
H. D. Love Capt., R.E.,
Principal

Memo No 1561 C d/ 25-3-89.
" " 938 C d/ 25-11-89
" " 913 C d/ 22-2-89
" " 873 C d/ 21-2-89.
" " 847 C d/ 20-2-89
" " 779 C d/ 16-2-89.
" " 609-10 C d/ 8-2-89
" " 313 C d/ 22-1-89.
G.O. A No 345 W d/ 7-2-89
" " " 97 W d/ 11-1-89.
" B " 3348/3349 W d/ 7-12-87
" A " 74 W d/ 9-1-85
" " " 3068 W d/ 1-10-88
Despatch No 40/3051 W d/ 24-10-83
G.O. A No 15 W d/ 6-1-83
" " " 3104 W d/ 24-11-82
" " " 3057/3052 W d/ 26-10-83
" " " 3257 W d/ 11-12-82
" " " 1361 W d/ 9-5-83
" " " 580 W d/ 22-2-83
" " " 3005 W d/ 14-11-82
" " " 2722 W d/ 18-10-82
" " " 2183 W d/ 24-8-82
" " " 1522 W d/ 16-6-82
G.O. B. No 138 W d/ 18-1-86
" " " 1851 W d/ 11-8-85
Memo No 317 C d/ 11-2-84
G.O. [illegible] No 2849 W d/ 30-11-82.

O/S/14 [illegible] 13/4

E.9/10

P.W.C.N. ~~3000~~

~~5721~~
6337/89

1888-89.

College of Engineering.

To the Chief Engineer, P.W.D.
Madras.

No. 804 C.

Dated 28th }
Despatched 28th } March 1889.
Received 29 }

E.1

Previous Paper.

Index No.

Letter No. dated

Abstract.

Enquiring whether the unsuccessful Students of the Engineer Class referred to may undergo the practical course laid down for the passed Students of the Engineer Subordinates Class, and expressing a hope that it would be practicable to raise the remuneration of skilled Draftsmen.

1901

P.W. Department.
9th April 1889

Note by the Chief Engineer

I see no objection to allowing the 4 unsuccessful students of the Engineer Class, to continue with the practical course laid down for upper Subordinates and granting them Certificates as Overseers on the satisfactory completion of the course.

2. As regards increasing the pay of draftsmen I certainly think the initial pay of Rs 20 - 30 is too low to attract any good men, and from my experience I consider that these 3rd class draftsmen are of very little use in an office.

3. Draftsmen are of no material use unless they are quick and accurate at estimating and facile with their instruments, and in my opinion it is essential that the Standard of draftsmen employed in the

P. W. Department should be raised in order to meet these qualifications.

4. The present scales of pay are:—

Special	80 to 100.
1st Class	50 to 70
2nd Class	35 to 50
3rd Class	20 to 30.

and in order to obtain a 3rd Class Certificate the Candidate has to obtain 50 per cent on the total marks, and 36 per cent in Each of the subjects comprised in the course of instruction; the result being that the men who do not pass higher than 3rd Class possess merely a superficial knowledge of Estimating and drawing and are of little use except as Copyists. With a view to remedying matters I would recommend the abolition of the 3rd Class Certificate and fix the scales of pay as follows:—

Special

1901

Special	Rs 80 – 100.
1st Class	60 – 80
2nd Class	40 – 60.

I would also recommend that after 10 years Service in either of the two lower Classes, a draftsman should be eligible for promotion to a higher Class on the recommendation of the Supdg Engineer.

5. These proposals if carried into effect will I think raise the Standard of draftsmen very considerably as inferior men will not join the College, and those who do obtain Certificates will be encouraged to improve themselves in the hope of obtaining further promotion—

Lt Colonel R.E.
Ag Chief Engineer P. W. Deptt.

Ex: DHC

No 5124/89
6337

(901)

No. 52 D.

Public Works Department.
Ootacamund 13th April 1889.

Memorandum

Letter from the Principal College of Engineering No. 804 Cal. 28 March 1889.

Note by the Chief Engineer dated 9th April 1889

Referred for the remarks of the Director of Public Instruction through whom the Principal's letter should have been submitted to Government.

Lt. Colonel R.E.
Ag. Jt. Secy to Govt. P. W. Department.

Ex. D.M.

To

The Director of Public Instruction with papers in original to be returned.

R. No 22[illegible]

No 3477 - 17th April 1889.

Returned to the Principal College of Engineering. When replying the Principal is requested to explain why he addressed the Chief Engineer direct on the subject referred to in para 2 of his letter [illegible]

[illegible] 15.4.89

No. 3845/89.

From
The Chief Engineer,
P. W. D.

15/4 [illegible]

Dated - 13th of April 1889.
Recd. 16th

E.9

P.W. 5124/89
6337

Referring for remarks letter from the Principal, College of Engineering, enquiring whether certain unsuccessful candidates of the Engineer class may undergo the practical course, and his note thereon.

1901

DRAFTSMEN'S CLASS.

SYLLABUS OF THE COURSE OF INSTRUCTION.

[*Note.*—Class instruction will be conveyed chiefly by the aid of the Blackboard and Models. None of the Geometrical drawing will be from copies. The Teacher will explain the mode of construction of a problem to the Class, after which each Student will proceed to make the drawing in his own way. The main object to be kept in view throughout the course is, that Students should be made intelligent draftsmen and not mere copyists.

It is in contemplation to introduce Perspective, Freehand and Model Drawing when the College re-organization scheme comes into full operation.

Students will be sent out from time to time to inspect works. Written reports are not required, but dimensioned sketches will be made, and the Note-books containing these sketches will be put up at the end of each year with the plans and estimates which have been executed.]

I. **Practical Plane Geometry.**—Use of drawing instruments. Printing. Simple problems on straight lines. Construction of plain and diagonal scales. Simple problems on lines and circles. Regular polygons. Reduction of a rectilineal figure to a triangle. Parabola. Ellipse.

II. **Practical Solid Geometry.**—Planes of Projection. Representation of a point in space in all possible positions with respect to the plane of projection. Plans and elevation of straight line; cube; square, triangular and polygonal prism, placed in any position. Plans and elevations of pyramid, cone and cylinder in any position. Sections of the above solids made by any plane. Representation of points, lines, and planes by their figured plans. Isometric projection.

III. **Buildings.**—Conventional colours. Conventional rules for shade lines and shadows. Projection of shadows. Details of Masonry, such as foundations; walls; segmental, pointed, flat and relieving arches. Details of carpentry, such as joints; roof-frames; doors; windows; staircases. Details of roofs and floors, such as terracing; roof-coverings; fire-proof floors. Details of iron-work, such as rolled beams; cast-iron columns; iron-roof joints. General dimensions of rooms. Tracing on cloth. Drawing buildings from models, specification and actual measurement. Taking out quantities, and preparing detail and abstract estimates of quantities and cost.

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No. 3845/8

IV. **Earthwork.**—Delineation of cuttings and embankments. Retaining walls. Gradients. Areas of earthwork sections by plotting. Estimation of volumes by prismoidal formula.

V. **Masonry Bridges.**—Bridge foundations on rock, or on wells. Construction of piers, abutments, and wingwalls, with empiric rules for their dimensions. Arches, segmental, elliptic, and many centred. Modes of filling spandrils. Face and parapet walls. Oblique arches. Drawing bridges from models, specification and actual measurement. Estimates.

VI. **Timber Bridges.**—Frames of timber, or timber and iron combined. Trapezoidal truss. Lattice frames. Joints. Superstructure. Drawing timber bridges from models and specifications. Estimates.

VII. **Iron Bridges.**—Wrought ironplates and bars. Rivets. Construction of plate girders; flanges, web, angles, stiffeners, covers, wrappers. Usual proportions. Support of ends. Main and cross girders. Superstructure. Construction of braced girders. Bow string girders. Cylinder foundations. Iron piers. Drawing iron bridges from models, specification or actual measurement. Estimating.

VIII. **Irrigation works.**—Nature of the storage, distribution and regulating works of an irrigation system. Anicuts. Head sluices. Distribution sluices. Canal falls. Locks. Inlets and outlets. Tank escapes. Tank irrigation sluices. Drawing irrigation works from models or specification. Estimating.

IX. **Machinery.**—Conventional shading and colouring. Drawing simple pieces of machinery from models, such as a belt-pulley; a plummer block; a pulley block and chain; a toothed wheel; a V or square screw thread. Drawing simple machines from models.

X. **Topographical Drawing.**—Conventional signs. Copying and colouring a map to a changed scale. Contouring and hill-shading.

Text books—

RAWLE's Practical Plane Geometry, with introduction to Solid Geometry.
CIVIL ENGINEERING COLLEGE PAPERS, No. IX, Estimating.

1901

PLANS AND ESTIMATES

TO BE PREPARED DURING THE COURSE.

First year, February to May, (about 65 working days).

Plate I.	Printing.
Plate II.	Scales.
Plate III.	Practical Plane Geometry.
Plate IV.	Do. do.
Plate V.	Do. do.
Plate VI.	Practical Solid Geometry.
Plate VII.	Do. do.
Plate VIII.	Masonry details, drawn in orthographic or isometric projection, and coloured.
Plate IX.	Timber details. Do.
Plate X.	Iron roof on cast iron columns, shewing details.
Plate XI.	Tracing on cloth and colouring a drawing of a building.

First year, August to December, (about 85 working days).

Plate XII.	Small building, drawn from model. Taking out quantities.
Plate XIII.	Building, drawn from specification. Do. do.
Plate XIV.	Building, drawn from actual measurements. Taking out quantities.
Plate XV.	Earthwork embankment and cutting. Taking out quantities.
Plate XVI.	Masonry bridge, drawn from model. Do. do.
Plate XVII.	Masonry bridge, from specification. Do. do.
Plate XVIII.	Masonry bridge, from actual measurement. Do. do.
Plate XIX.	Skew bridge, from copy.
Plate XX.	Timber bridge, from model. Taking out quantities.
Plate XXI.	Timber bridge from specification. Do. do.

Second year, January to May, (about 75 working days).

Plate XXII.	Plate girder bridge, from model.
Plate XXIII.	Plate girder bridge, (or a portion thereof) from actual measurements. Taking out quantities.
Plate XXIV.	Braced girder, from copy.
Plate XXV.	Head sluice, drawn from model. Taking out quantities.
Plate XXVI.	Canal fall, from specification.
Plate XXVII.	Inlet and outlet, from specification.
Plate XXVIII.	Canal lock, from model. Taking out quantities.
Plate XXIX.	Tank escape, from model. Do. do.
Plate XXX.	Tank distribution sluice, from model. Do.

No. 3845/8

Second year, August to December, (about 85 working days).

Plate XXXI.	Machine details from copies.
Plate XXXII.	Do. do. models.
Plate XXXIII.	Do. do. do.
Plate XXXIV.	Topographical plan, showing conventional signs, from a copy.
Plate XXXV.	Finished elevation of a large building.
Plate XXXVI.	Finished drawing of a large machine, from model, or actual measurements.

DISTRIBUTION OF MARKS.

Examination at end of first year.		
By Board of Examiners	240	
By College	60	300
Examination at end of second year.		
By Board of Examiners	560	
By College	140	700
Total......		1,000

H. D. LOVE, Capt., R. E.,
Principal, College of Engineering.

1887.

VEST & CO., PRINTERS, MADRAS.

Old Syllabus

College of Engineering, Madras.

EXAMINATION FOR CERTIFICATES AS DRAFTSMAN AND ESTIMATOR.

The Examination is held annually in May, and is open to Second-year Students of the College Draftsmen's Class; and, on payment of a fee of Rupees 7-8-0, to independent candidates. The Examination takes place at the College of Engineering; but papers will be sent to certain* Public Works Department Divisional Offices which will be specified annually. Notice of the date of the commencement of the Examination is given in the *Fort St. George Gazette* issues of the previous March. Applications will be received up to 15th April.

The Test comprises :—

I. Drawing, from Specification, Plans and Sections of Buildings of all kinds, Bridges and Irrigation Works.

II. Copying Architectural and Topographical Drawings to changed scales, and Colouring and finishing the copies.

III. Estimating; including taking out quantities, from Plans and Notes, for Earthwork, and for Buildings, Bridges and Irrigation Works. Text Book: *Civil Engineering College Papers, No. IX.*

THE SCHEME OF MARKS IS AS FOLLOWS :—

I.	Drawing from Specification	100
II.	Copying and Colouring	100
III.	Estimating	100
IV.	Session Work†	100
V.	Session Examinations†	100
		500

First, Second, and Third Class Certificates are granted to successful candidates.

A First Class Certificate requires 66 per cent. of the marks on each of the five subject-heads, and 75 per cent. of the total marks.

A Second Class Certificate 50 per cent. and 66 per cent. respectively.

A Third Class Certificate 33 per cent. and 50 per cent respectively.

No person can be employed as a Draftsman in the Public Works Department unless he holds a Certificate from the College of Engineering.

---

* The centres of Examination is 1887 will be Madras, Berhampore, Vizagapatam, Dowlaishweram, Bezvada, Nellore, Bellary, Kurnool, Coimbatore, Calicut, Mangalore, Bangalore, Trichinopoly and Tinnevelly.

† These marks are not awardable to canditates who are not College Students.

Note.—An independent canditate must submit his application by the date notified and send with it his fee *by Money Order, Curreney Note or Cash.* A canditate not in Government employ must in addition produce a Certificate from a Government Medical Officer showing his fitness for the Public Service.

Civil Engineering College,
Madras,
8th March, 1887.

H. D. LOVE, Capt., R.E.,
Principal, C. E. College.

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E.5 6

P.W. 5124/87
6337

EP Aa 445/87

Civil
Branch.

109

No. 79 C.

Dated 25th April 1889.

FROM

THE PRINCIPAL,

COLLEGE OF ENGINEERING, Madras.

TO

The Director of Public Instruction,
Madras.

Enclosures.
Six.

SIR,

Referring to your Endorsement No. 3477, dated 17th April 1889, on a note by the Chief Engineer, Public Works Department, regarding the pay of Draftsmen, I have the honour to state that measures have already been taken to raise the standard of Draftsmen's training as advocated by Colonel Drake-Brockman. The nature of the change in standard will be realised on comparing the two syllabuses enclosed.

2. In the old scheme, under which all or nearly all the Draftsmen now employed in the Public Works Department have qualified, there were practically four tests viz (1) Copying and colouring a plan (2) Drawing a building, bridge or irrigation work from specification (3) Estimating for a building or bridge, (4) Session work. The first and fourth tests always produced high marks,

and as no less than two-fifths of the total marks were assigned to work done during the Session, it was no easy matter for any College student, however stupid, to fail for a third-Class Certificate. These are the Third-Class Draftsmen of whom the Chief Engineer has had experience, and I am not surprised that under the circumstances he desires to see the old type of third-class Certificate abolished.

3. In the new scheme, the course comprises (1) Practical and Descriptive Geometry, (2) Freehand, perspective and model drawing, (3) Drawings of buildings, bridges and irrigation works from specification, models, and actual measurement, (4) Machine Drawing, (5) Topographical Drawing, (6) Estimating for earthwork, buildings, bridges, and irrigation works. The percentage of marks for a third-Class Certificate has also been raised from what was virtually 33 per cent in each of *two* subjects only (*viz* *Drawing from Specification*, and *Estimating*) to 36 per cent in each of *five* subjects (*viz* *Practical and Descriptive Geometry*; *Freehand, perspective and model Drawing*; *Architectural and Topographical Drawing*; *Machine Drawing*; and *Estimating*.) A percentage of half the total marks is further required to qualify for the lowest

lowest class of Certificate. The percentages of marks needed for a second Class Certificate are 50 per cent on each subjec and 66 per cent on the total; and for a first Class Certificate 66 per cent and 75 per cent respectively. The marks awarded for Session work have been reduced from two-fifths to one-fifth of the total. Under the new scheme only six Candidates have yet qualified *viz* one in December 1887 and five in December 1888. An unprecedented proportion of failures indicates the severity of the present Standard as compared with the former one; and the result has been a rapid diminution in the number of Students attending the Draftsmen's Class. The effect of the revised Standard cannot of course be appreciably felt in the Public Works Department generally for several years to come.

4. The above remarks will, I think, bear out my conviction that a third-class Certificate under the new scheme is more than equal to a second Class Certificate under the old, and that a new Second-class is superior to an old first. The Chief Engineer's proposal that the old third-class Certificate should be abolished has thus been carried out in everything but the name, and it would therefore appear that the higher rates

of pay indicated in the note should be assigned as follows:—

	Rs	Rs.
First Class draftsman	80 to	100.
Second ———	60 to	80
Third ———	40 to	60.

5. The Chief Engineer makes special reference to the percentages of marks required for a third-class Certificate, and observes that men who have obtained 36 per cent in each of five subjects, and independently 50 per cent of the total marks "possess merely a superficial knowledge "of estimating and drawing, and are of little use "except as Copyists". In this view I am unable to agree, and I cannot but think that Colonel Drake-Brockman must, when making this statement, have been influenced by his knowledge of the third-class draftsman of the past. The percentages assigned are by no means low, as may be seen by comparing them with those fixed for the University and other examinations, and I should earnestly deprecate any interference with a matter which engaged the anxious attention of the College Committee, and which was settled by Government after long and careful consideration.

6. 19 Should the Chief Engineer dissent from the opinions I express, I beg to point out that there is no absolute necessity for the three classes of Draftsmen's Certificate given by the College Board of Examiners to correspond with the three grades of Draftsmen, similarly named, in the Public Works Department. Thus the Third-class Draftsman with the salary attached to that grade might be abolished without interfering with the third-class Certificate conferred by the College; but if that abolition were sanctioned, I doubt whether the Public Works Department would be able to fill its vacancies.

7. I suggest for consideration the propriety of raising the salaries of all three classes of Draftsmen. When by this means a fair annual efflux of passed men from the College has been secured, it may be well to enquire into the desirableness of employing none but first and second-class Certificate holders in the Department.

8. With regard to the last sentence of your endorsement, I have the honour to explain that my No. 804 C, dated 28th March 1889, to the Chief Engineer, Public Works Department, was addressed with the object of eliciting that officer's views on certain

matters mentioned in the Board's Report. It was not intended as a reference to Government as may be seen from the circumstance that it was directed to Colonel Drake-Brockman as Chief Engineer, and not as Joint Secretary to Government. All references to Government are made through you.

I have the honour to be,
Sir,
Your most obedient Servant,
J. Shore. Capt. R.E.,
Principal.

No. 3697-
Referred for the opinion of the President of the Board of Examiners for the College of Engineering, in consultation with his colleagues

W. B. [illegible]
D.P.I.

Madras
26. 4. 89
29 - 4 - 89

No. 4171/89.

1889-90.

College of Engineering.

To the Director of Public Instruction, Madras.

No. 79. C.

Dated 25 }
Despatched 25 } April 1889.
Received 3 }

PREVIOUS PAPER.

Index No.

Letter No. dated

ABSTRACT.

Furnishes his opinion regarding the raising of the pay of Draftsmen in the Public Works Department.

3.4.5

P.W. ~~5724~~
6337/89

1901

From Captain R. L. C. Baddeley Bt.
President of Board of Examiners
College of Engineering

To
The Director of
Public Instructions
Madras

Sir,
15th May 1889

With reference to your endorsement No. 3697 of 26th April 1889 on letter No. 79 C of 25th April 1889, from the Principal of the College of Engineering, I have the honor to return the papers forwarded to me, and to submit copies of the opinions expressed by Mr. Stoney and Mr. Pogson regarding the steps necessary to ensure a supply of qualified Draftsmen from the College of Engineering.

2. My own views may be summed up as follows:-

(a) The Syllabus of the course of instruction to remain unaltered.

(b) The scale of pay to be as follows:-
1st Class - 80 to 100
2d Class - 60 to 80
3d Class - 40 to 60.

(c). Draftsmen to be allowed to compete as independent candidates for higher certificates-

3. I am convinced that it is a mistake to fix a man's status for the whole of his service by the result of the examination which gives him his pass to employment.

There is no reason why a man who leaves the College with a 3rd Class certificate should not after some years of practical work, be fully qualified for the 1st Class.

5. It is useless to arrange for a comprehensive course of instruction in the College unless there is sufficient inducement in the shape of remunerative employment to attract men of good ability and general education; and I consider that the scale of pay now proposed is the lowest that can be reasonably offered to Draftsmen who may qualify under the new rules.

I have the honor to be,
Sir,
Your most obdt. servant
W O Bouldeler
Captn. R.E.

Madras
15 May 1889

E.3^{4}

P.W. 5747
6337/59

1901

Memo

Referring to the correspondence forwarded to me for my remarks regarding the desirability of offering increased pay to draftsmen, I consider that an increase in pay is very desirable, and that the revised scale mentioned in the letter by the Chief Engineer P.W.D. will induce and attract a more intelligent class of men.

2 I consider that draftsmen under the new syllabus of the College will meet the requirements mentioned in the Chief Engineer's letter d/ 9th April, para 3.

3. As regards the abolition of 3rd class certificates as proposed by the Chief Engineer, I do not think that this would be at all desirable. Although these 3rd class men may be of little use in the Offices of the P.W.D. still they meet a great want in Local Fund Offices and other agencies as is apparent from their constantly being in employment.

I myself find them very useful as tracers and copyists, and if they were abolished I should have to employ men to trace and Copy whose time would be better employed on more skilful work.

Their abolition would tend to increase the present falling off of the strength of the College.

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4. Although I am not certain whether rules to the following effect exist in the College, I would strongly advise that 3d class certificated draftsmen should be allowed to present themselves in the following and subsequent years as Independent Candidates for 2d class certificates, and 2d class candidates for 1st class certificates.

I quite agree with this.

A 3d class certificated man often benefits by the experience gained in the various offices in which he finds employment, and by this experience virtually becomes in time as fully qualified as a newly passed 1st class certificated draftsman. If such a man knew that he could enter himself again for the examination, he would probably pass out as a 1st class man, after a few year's employment.

I am under the impression that such allowances to 3d class certificated draftsmen do not exist in the College. If I am right in my conjectures I feel sure that such privileges would materially encourage draftsmen to improve themselves, and would also add to the strength of the College.

5. I would even suggest some stepping stone being given to specially clever 1st class certificated draftsmen so as to allow them to enter for study and examination as Candidates for the Engineer Subordinates' Class.

Such chances of promotion would call forth more earnest and studious men to enter as Draftsmen. The extra subjects might be taught to these men in evening classes at reduced fees.

(Signed) W. N. Pogson.

C ~~2~~ 3
PW 5422/6337/89

Memo

1. The present Civil Engineering College course laid down for Draftsmen is very comprehensive, and an immense improvement in every way on the old one, and I quite agree with what Captain Lowe says in para 6 of his letter as to the very much higher relative value of new over old certificates.

2. I should like to see more stress laid on Practical solid, or Descriptive Geometry, as for Draftsmen a good knowledge of this subject is essential, in the syllabus under this head no mention is made of the projection of intersection of solids, such as Cylinders with each other and Cones with Cylinders, these occur very frequently in all Mechanical Drawing, Developments are also omitted.

3. So far as I can understand from the papers sent me, Draftsmen who obtain 1st, 2d or 3d class certificates, become when employed in the D.P.W. entitled to the scales of pay fixed for these classes, and may continue to draw these, no matter whether they improve, are useful or work well or not.

4. If this be the case, the system is to my mind a bad one, as a

man with a first Class Certificate, may after being say a year in an Engineer's office, not be so useful, as another man who joined about the same time with a 2d or even a 3d Class Certificate, but who worked hard and improved, while the other stood still, knowing he was drawing as high pay as he could get-

5. If possible I would suggest that Draftsmen should be taken by the D.P.W. on probation for a year or so, and paid for this time according to the grade Civil Engineering College Certificate they get, at the end of their probation, it could be seen what the men were worth, and their grade and pay be fixed accordingly, irrespective of the Civil Engineering College Certificate held by them, while those not likely to do well could be dismissed-

6. Small annual or biennial increase of pay might be given to those deserving them, and no limit of time be fixed for promotion from one grade to another, so that promotions might be by merit and as much encouragement as possible be thus given to men to improve.

(Signed) C. W. Stoney

Note— } on para 6 }
The difficulty is the selection, some officers will recommend men on slight grounds, while others would only promote a man to a higher class under very exceptional circumstances
W C Boulderson

5+2
PW5t21/6337/59

5121

P.W.C. No. ~~5121~~ E1
6387/89

1889.

P.W. ~~Educational~~ Department.

From

The Director of Public Instruction,
Madras.

To The Hon'ble
The Chief Secretary to Government,
Fort St. George.

No. UNDER SECRETARY 30 MAY 89 PUBLIC ETC. DEPT.

Dated 29
Despatched } May/89
Received 10.6.89

No. J/214-

Enclosures. 3.

Subject.

Submitting with remarks the
Endorsement of the D.P.
on the subject of allowing
unsuccessful Students of
Engineer class to undergo
practical course laid
for passed Students a
regarding the raising
the pay of Draughts
in the P.W. Department

Educational Department.

1

1901

PROCEEDINGS OF THE MADRAS GOVERNMENT.

Read the following paper :—

at Ooty

From the Public Works Department, dated 4th June 1889 No: 273 D, referring correspondence on the subject (1) of permitting certain unsuccessful Students of the Engineer Class to undergo the practical course laid down for the passed students of the Engineer Subordinates class with the view of granting them certificates as overseers; and (2) of raising the pay of Draughtsmen in the Public Works Department.

Order 1st July 1889 No: 384.

With the foregoing endorsement the Public Works Department refers for consideration the recommendations made by the Board of Examiners of the College of Engineering in paras 10 and 11 of the report on the results of the Examination conducted by them during December 1888, together with the opinions recorded on these recommendations by the Ag. Chief Engineer, the Director of Public Instruction and other officers consulted by the latter.

2. The recommendations are :—

(1) That four students in the Engineer class who failed to qualify for certificates as Associates of Civil Engineering should be allowed to go through the practical course laid down for the Upper Subordinates class; and on satisfactory completion of this course, granted certificates as overseers.

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(2) That the scale of pay for draughtsmen in the Public Works Department should be raised as the present rates are not sufficient to attract men of intelligence and general education to join the college.

3. As regards the first recommendation the Government agrees with the remarks of the Director of Public Instruction and is not prepared to sanction the proposed concession.

4. In regard to the 2d recommendation, His Excellency the Governor in Council is of opinion that the present gradation of College Certificates and of draughtsmen in the Public Works Department should be maintained, but that in future draughtsmen holding second class certificates shall be eligible for promotion to the first grade if at the end of three years' service they are pronounced competent, and that men in the Service shall be allowed to appear at any time as independent candidates for examination for 1st class certificates. For the class of Special draughtsmen such certificates should still be required. The necessary orders on this matter will be issued in the Public Works Department.

5. The rule proposed by the Director of Public Instruction that all correspondence between the Principal of the College of Engineering and the Public Works Department should pass through his office, is approved.

(True extract.)

Captain R. E.
Under Secretary P. W. D.
For Chief Secretary.

I think this will meet the case. Mr Cripps' proposals for an extension is quite impracticable as Draftsmen are only taken on as reqd. & the P.W.D. cannot guarantee any appointment to the successful students.

To

The Public Works Department (with correspondence returned.)
The Director of Public Instruction.

X^c S. D.

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[6]

Govt. of (188) Madras.

2

1901

To

Proceedings, dated 188
No.

Subject.

41

[8] P.W.C. No. 6337

Govt. of {188 } Madras.

A

Smith the Exl Depts orders without enclosures

Genl & Estabt

P. 1901 W.D/16th July 1889

9

To

The P.W.D.

E.11

Rg 10-7-89

Proceedings, dated 1st July 1889

No. 384

Subject.

Passing orders relative to certain recommendations that unsuccessful students of the Engineer Class should undergo practical course laid down for passed men and ~~that~~ the scale of pay for draftsmen in the P.W.D. should be raised.

Communicated to officers of the Public Works Dept. for information and guidance – The requisite Standing orders for incorporation with the Public Works Code will be framed by the Examiner, in accordance with para 4 of these Proceedings

13-7-89

S. Engr

C.A. Polgase

C Clifford

Ex Pl W.D.

25/7

CAW 13-7-89

3

42

Govt. of 1889 Madras.

PUBLIC WORKS.

Dated

Recd. Encl.

G.O. 16 July 1889 No. 1901W

Draftsmen

Orders as Pro in the Revl. Depts. relating to the production of College certificates & ~~[illegible]~~ in the P.W. Dept.-

210/14

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