No. 138 dated 18th January 1886

Communicated to Subdy Engr in supersession of Go No. 1851 dated 11th August 1885.

16/97 Jts.

Govt. of {1886} Madras.

EDUCATIONAL.

Issued

Recd. *Encl.*

G.O., 7th January 1886, No. 7.

JANUARY.

J.Es.
Cr. for J
C.A.G. Govt.

Civil Engineering College.

Approving draft notification regulating the administration of the — and directing its publication in the *Fort St. George Gazette*.

With Order

offered, in order of merit. The number of appointments to be so awarded will be in proportion to the requirements of the service, and will be fixed by the Chief Engineer. The number so determined on will be announced annually, at least six months before the final college examination. It is to be understood, however, that all vacancies in the Supervisor grade will not be filled by selection from the most distinguished of the passed students of this class, as a portion of such vacancies must be reserved for the best qualified subordinates of the Overseer grade.

(2) *Engineer Subordinates.*—Vacancies in the Overseer grades of the Public Works Establishment will be filled by passed men in the order of merit. Prior to each entrance examination, notice will be given of the number of such appointments likely to become available for competition by the then entering batch of candidates.

(3) *Draughtsmen.*—Certificated students of this class will be appointed to the Public Works Department as Draughtsmen and Estimators as vacancies occur. The course of instruction having been extended and the standard for certificate having been raised, passed students under these rules will be entitled to the improved salaries for the different classes of Draughtsmen which will be notified hereafter.

(4) *Surveyors.*—There are no permanent appointments available in the Public Works Establishment for Surveyors only; but, when the services of temporary men are required for special surveys not undertaken by the Public Works subordinate staff, the officers in charge are instructed to select for such employment none but passed Surveyors of the College of Engineering.

Qualified men may be appointed Probationary Deputy Surveyors, Madras Survey, on Rupees 50 with the prospect of rising eventually to the rank of Sub-Assistant Superintendent on Rupees 250.

Note.—It is the duty of the Principal to render all reasonable assistance to passed students who may not be appointed to the Public Works Department in seeking employment under Local and Municipal Boards and other agencies. With this view, lists of qualified men, with remarks as to their attainments, conduct, &c., will be circulated annually to Local Fund Boards and Municipalities, with recommendations that they may be employed in suitable posts when opportunities offer.

Article XI.—General.

(1) Students in the Civil and Mechanical Engineer classes are expected to appear for the B.C.E. degree examination; but they are discouraged from appearing until they have completed the three years' theoretical course.

(2) All students must provide themselves with the text-books in use and with the necessary apparatus, instruments (except surveying instruments), &c. They will, with the exception of military students, be non-resident. Strict observance of the standing rules of the institution as regards attendance, discipline, &c., will be expected from all.

(3) Students during their practical course shall not be under the supervision of the Principal of the College, but officers under whom they are serving will be required in the Public Works Department to furnish to the principal half-yearly reports of their progress in such form as may from time to time be prescribed by Government.

No. 2050.

Forwarded to the Chief Engineer for remarks.

(Signed) W. WILSON,
Acting Chief Secretary.

3rd December 1885.

No. 2162-C.

Returned, with remark that the proposed amendments seem advisable, and that there is no objection thereto in the Public Works department.

Chepak, (Signed) J. SHAW-STEWART, Col., R.E.,
15*th December* 1885. *Chief Engineer and Secy. to Govt., P.W.D.*

Order—dated 7th January 1886, No. 7, Educational.

The draft notification is approved and will be published in the *Fort St. George Gazette*.

(True Extract.)

W. WILSON,
Acting Chief Secretary.

To the Director of Public Instruction.
" Revenue department.
" Public Works department.
" Military department.
" Financial (Local Fund) department.

Exd. P. L. Pereira.

(5) Sub-Overseers, &c.

The courses of study shall be—

Arithmetic.
Elementary Geometry.
Mensuration.
Scales.
Plan-drawing.
Elements of Engineering.

No examinations will be held, but a certificate of attendance shall be given by the Principal after a minimum period of one year's regular study. The instruction shall be given in the Tamil and Telugu languages, and the class shall be an evening one.

Article VI.—Fees.

(*a*) *Civil and Mechanical Engineer Class.*—The fee is fixed at Rupees 85 for each term of six months, payable in advance; or, if candidates so desire, they will be permitted to pay instead a monthly contribution of Rupees 16, but in either case a deposit of Rupees 100 will be demanded at the outset.

A student may compound for the whole theoretical course by the payment of a fee of Rupees 400 in advance. No fee will be demanded for the practical course.

(*b*) *Engineer Subordinate Class.*—The fee is fixed at Rupees 30 for each term of six months, payable in advance; or by a monthly contribution of Rupees 6, with a deposit of Rupees 50 at the outset; or Rupees 125 for the whole theoretical course payable in advance. No fee will be demanded for the practical course.

(*c*) *Draughtsmen's and Surveyors' Classes.*—A term fee of Rupees 18 to be paid in advance, or a monthly contribution of Rupees 4.

(*d*) *Sub-Overseer and Maistry Class.*—No fee shall be required except a registration fee of five rupees.

Note.—Fees will, under no circumstances, be returned after a student has been admitted to the institution.

Article VII.—Certificates.

(*a*) The Board of Examiners shall issue, under their signatures, a certificate to each candidate setting forth the class of study in which he has qualified; but, in the case of students of the Engineer and Engineer Subordinate classes, the final certificate, in the nature of a diploma, shall be issued under the signatures of the Principal of the College and of the Director of Public Instruction, in proof that the student concerned has satisfactorily completed the prescribed practical course.

(*b*) A candidate who has failed to obtain a certificate from the Board at the final examination may appear before the Board for examination at any subsequent year, provided he is certified to have put in the necessary attendance at the college and pays a fee as follows:—

	Rs.	A.	P.
Civil and Mechanical Engineers.	30	0	0
Engineer Subordinates ..	20	0	0
Other classes	10	0	0

(*c*) The names of the candidates so passing shall be published in the *Fort St. George Gazette* in a separate list, and they shall simply be declared to have satisfied the Board of Examiners.

Article VIII.—Scholarships, &c.

The following scholarships and prizes are allowed for students during their college course:—

(1) *Engineer Classes.*—One scholarship of Rupees 30 per mensem will be awarded annually to the candidate who passes first in the admission examination. The scholarships are re-awardable annually on the results of each term examination.

A gold medal of the value of Rupees 120 will be awarded to the student who passes first in the final examination.

Prizes consisting of instruments or books will be given for special proficiency in particular subjects.

(2) *Engineer Subordinate Class.*—Two scholarships, each of Rupees 10 per mensem, will be awarded annually to the two candidates who pass highest on the list at the admission examination. The scholarships are re-awardable after each term examination.

A gold medal of the value of Rupees 60 will be awarded to the student who passes first in the final examination.

Prizes consisting of instruments or books will be given for special proficiency in particular subjects.

(3) *Draughtsmen's Class.*—Two scholarships, each of Rupees 8 per mensem, tenable during the second year of study, will be granted to the students who stand highest on the list at the term examination at the end of the first year.

A silver medal of the value of Rupees 10 will be given to the student who passes first in the final examination.

(4) *Surveyors' Class.*—Two scholarships, each of Rupees 8 per mensem, tenable during the second year of study, will be granted to the students who stand highest on the list at the term examination at the end of the first year.

A silver medal of the value of Rupees 10 will be given to the student who passes first in the final examination.

Note.—Scholarships may be reduced or forfeited for misbehaviour or other cause.

Article IX.—Practical Courses.

All allowances during the practical course will be debitable to the Department of Public Works.

(1) *Civil and Mechanical Engineers.*—During the final year of practical training on works, subsistence allowances of Rupees 50 per mensem for Europeans and Eurasians and Rupees 25 per mensem for natives will be granted. Such allowances will, however, be contingent on the good conduct and satisfactory progress of the student under instruction; and on proof of misconduct or idleness the allowances may be cut down or withdrawn altogether by the officers in charge of the works.

(2) *Engineer Subordinates.*—As in the case of the Civil and Mechanical Engineer pupils, no fee will be exacted during the workshop year; and during the year of practical study on works stipends will be granted of Rupees 30 per mensem for Europeans and Eurasians and Rupees 20 per mensem for natives, subject to the conditions of good conduct, regular attendance, &c.

Soldier students will, during the workshop course, draw pay, rations, and clothing from their regiments, and the stipends prescribed for the theoretical course. During their year of practical training on works, they will cease to draw those allowances, and will be brought on to the Public Works Department scale of establishment as apprentice overseers, drawing the pay and allowances laid down in the Public Works regulations.

Article X.—Prospects of Students.

(1) *Civil and Mechanical Engineers.*—One appointment annually as Assistant Engineer, third grade, in the Public Works Department, will for the present be conferred on the student highest on the list at the final examination who has also obtained the degree of B.C.E. To those next on the list appointments as Supervisors, second grade, will be

Draughtsmen's and Surveyors' classes, except when specially exempted, a certificate of having passed the Middle School examination. For the sixth class selection will be made from the sons of artisans or maistries or from youths who have already had practical training in some of the building trades.

(4) All candidates must produce satisfactory testimony of good character, physical fitness, age, and freedom from liability to small-pox. Candidates whose certificates are unsatisfactory in any respect will be excluded from the test for admission.

(5) Admission to the Civil and Mechanical Engineer classes shall be decided by open competition in the following branches of mathematics; but, to insure a high standard of general knowledge, to the total marks obtained in mathematics will be added one-half of the marks obtained in the F.A. examination :—

	Marks.
Arithmetic	100
Algebra, including quadratic equations and binomial theorem	75
Geometry, the first four books and the sixth book of Euclid	75
Mensuration	50
Trigonometry, including the solution of plane triangles	100
Total ..	400
F.A. examination ..	300
Grand Total ..	700

Candidates failing to obtain one-third of the combined total marks shall not be admitted. Selection shall be made in order of merit: provided that, if four Europeans and Eurasians and three Muhammadans are not within the first fifteen, the number under each may be made good in order of merit from the other qualified candidates. Before joining the college, the candidates shall inform the Principal whether they intend to be Civil or Mechanical Engineers.

(6) The fee for admission to this examination shall be Rupees 10. The names of the successful candidates shall be published in the *Fort St. George Gazette*.

(7) Admission to the Engineer Subordinate class shall, except in the case of soldier students, be decided by open competition in the following branches of mathematics; but, to ensure the requisite standard of general knowledge, to the total marks obtained in mathematics will be added one-half of the marks gained in the Matriculation examination :—

	Marks.
Arithmetic	125
Algebra	75
Geometry	100
	300
Proportion of marks in the Matriculation examination	225
Total ..	525

(8) Candidates failing to obtain one-third of the total combined marks shall not be admitted. Selection shall be made in order of merit: provided that, if six Europeans and Eurasians and four Muhammadans are not within the first thirty, the number under each may be made good in order of merit from the other qualified candidates. The fee for admission to this examination shall be Rupees 5. The names of the successful candidates shall be published in the *Fort St. George Gazette*.

(9) *Soldier Students.*—Non-commissioned officers and soldiers of Her Majesty's British service desirous of qualifying for employment in the Public Works Department will, to the number of five annually, be admitted to the college on passing an entrance examination in arithmetic and English. After one year's study of arithmetic, algebra, geometry, and vernacular language, they will, provided they pass a satisfactory examination in these subjects, join the subordinate class for the ordinary theoretical and practical courses. Each student will draw a stipend of Rupees 10 per mensem for three and-a-half years, commencing from the date of joining the subordinate class. His pay, rations and clothing will be drawn from his regiment throughout the whole course of study. A fixed proportion between the number of soldiers and civilians to be appointed to the Public Works Department will be established.

(10) Admission to the Draughtsmen's and Surveyors' classes shall be regulated by the order in which the candidates have passed the Middle School or some higher examination, the selection proceeding from those that have passed a higher examination to those who have passed a lower.

ARTICLE V.—COURSES.

The course and subjects of study in the several classes shall be as follows :—

(1) CIVIL AND MECHANICAL ENGINEER CLASSES.

(*a*) THEORETICAL COURSE.—The theoretical course, which extends over three years, will embrace the subjects and carry the marks enumerated below :—

	Marks.
I. *Pure* and applied *Mathematics.*—Algebra, geometry, and arithmetic; mensuration and trigonometry; mechanics; hydro-mechanics; algebraic geometry, and the differential and integral calculus ..	675
II. *Science.*—Chemistry, physics, and geology	325
III. *Engineering.*—Building materials; building and bridge construction; hydraulics, irrigation works and sanitary engineering; road and railway construction; applied mechanics; principles of mechanism; prime movers; the steam-engine.	800
IV. *Surveying.*—Surveying with chain, compass and plane table; levelling; theodolite surveying; topographical drawing	400
V. *Drawing.*—Geometrical drawing; freehand model, and perspective drawing; architectural drawing; machine drawing; estimating; designing; specification ..	500
VI. *Language.*—Tamil or Telugu * ..	200
VII. *Physique.*—Physical fitness; gymnastics, &c.	100
Final Total ..	3,000

* NOTE.—Tamil to be obligatory for natives of Telugu districts, and *vice versâ*. The choice of one of these two languages to be open to all other students.

Of the total marks, 2,700 shall be awarded by the Board of Examiners for examination work; and 300 by the College Staff for drawings, notes, fieldwork, &c., executed during the course. The Board, however, shall call for and inspect such drawings, notes, &c., before finally accepting the marks given by the staff.

Term examinations will be held at the end of the first and second years of study, at which portions of the above subjects will be finally disposed of by the Board of Examiners. The marks awardable at these examinations are included in the final total.

Candidates must obtain one-third of the total marks in each of the subject heads I, III, IV, and V, one-fourth in each of the subject heads II, VI, and VII, and one-half of the final total marks. They shall be arranged in two classes in order of merit; the first, or honor class, containing those who have obtained not less than three-fourths of the total marks.

(*b*) PRACTICAL COURSE. *Civil Engineers.*—After completing the theoretical course, the pupils of the Civil Engineer class will spend one year in the Public Works Workshop, going through the carpenters' shop, the smithy, the foundry, and the fitting shop. They will then be placed for one year under the Public Works Department, and will be stationed at places where large works are in progress. They will be regularly instructed in the practical details of brick-making, bricklaying, quarrying, blasting, masonry, building of all sorts, the management of labor, accounts, &c.

Mechanical Engineers.—The course will comprise two years of practical study at the chief workshops of the presidency.

(2) ENGINEER SUBORDINATE CLASS.

(*a*) THEORETICAL COURSE.—The theoretical course, which extends over two and-a-half years, will embrace the subjects and carry the marks enumerated below :—

	Marks.
I. *Mathematics.*—Arithmetic, algebra and geometry; plane trigonometry and mensuration; elementary statics..	370
II. *Engineering.*—Building materials; strength of materials; building and bridge construction; earthwork and roads; hydraulics and irrigation works; elementary applied mechanics; mechanism and the steam-engine; designing and estimating	600
III. *Surveying.*—Surveying with chain, compass and plane table; levelling; theodolite surveying; topographical drawing	350
IV. *Drawing.*—Geometrical drawing; freehand drawing; mechanical drawing; estimating	400
V. *Language.*—Tamil or Telugu * ..	180
VI. *Physique.*—Physical fitness; gymnastics, &c.	100
Final Total ..	2,000

Of the total marks, 1,800 shall be awarded by the Board of Examiners for examination work, and 200 by the College Staff for drawings, notes, fieldwork, &c., executed during the course. The Board however shall call for and inspect such drawings, notes, &c., before finally accepting the marks given by the staff.

* NOTE.—Tamil to be obligatory for natives of Telugu districts, and *vice versâ*. The choice of one of these two languages to be open to all other students.

Term examinations will be held at the end of the first and third half-years of study, at which portions of the above subjects will be finally disposed of by the Board of Examiners. The marks awardable at these examinations are included in the final total.

Candidates must obtain one-third of the total marks in each of the subject heads I, II, III, and IV, one-fourth in each of the subject heads V and VI, and one-half of the final total marks. They shall be arranged in two classes in order of merit; the first containing those who have obtained at least three-fourths of the total marks.

(*b*) PRACTICAL COURSE.—The practical course will comprise one year of practical study in workshops, and one year on large engineering works, on which instruction will be afforded similar to that given to the Civil Engineer pupils.

(3) DRAUGHTSMEN'S CLASS.

The course, which extends over two years, will embrace the subjects, and carry the marks enumerated below :—

	Marks.
(1) Practical and Descriptive Geometry.	150
(2) Freehand, perspective, and model drawing	150
(3) Architectural and topographical drawing	240
(4) Machine drawing	200
(5) Estimating	260
Total ..	1,000

Of the total marks, 800 shall be awarded by the Board of Examiners for examination work, and 200 by the College Staff for plans, &c., executed during the course. The Board however shall call for and inspect such drawings, &c., before finally accepting the marks given by the staff.

A term examination will be held at the end of the first year.

Candidates obtaining 66 per cent. in each of the above five subjects and 75 per cent. on the total shall receive *First-class* Certificates: those obtaining 50 and 66 per cent., respectively, *Second-class* Certificates: those obtaining 36 and 50 per cent., respectively, *Third-class* Certificates.

(4) SURVEYORS' CLASS.

The course, which extends over two years, will embrace the subjects and carry the marks enumerated below :—

	Marks.
(1) Surveying with chain, compass, and plane table	275
(2) Levelling	225
(3) Theodolite surveying	200
(4) Topographical drawing ..	300
Total ..	1,000

Of the total marks, 800 shall be awarded by the Board of Examiners for examination work, and 200 by the College Staff for fieldwork and drawings executed during the course. The Board however shall call for and inspect such drawings, notes, &c., before finally accepting the marks given by the staff.

A term examination will be held at the end of the first year.

Candidates obtaining 66 per cent. in each of the above four subjects and 75 per cent. on the total shall receive *First-class* Certificates: those obtaining 50 and 66 per cent., respectively, *Second-class* Certificates: those obtaining 36 and 50 per cent., respectively, *Third-class* Certificates.

(5) SUB-OVERSEERS, &c.

The courses of study shall be—

Arithmetic.
Elementary Geometry.
Mensuration.
Scales.
Plan-drawing.
Elements of Engineering.

No examinations will be held, but a certificate of attendance shall be given by the Principal after a minimum period of one year's regular study. The instruction shall be given in the Tamil and Telugu languages, and the class shall be an evening one.

ARTICLE VI.—FEES.

(*a*) *Civil and Mechanical Engineer Class.*—The fee is fixed at Rupees 85 for each term of six months, payable in advance; or, if candidates so desire, they will be permitted to pay instead a monthly contribution of Rupees 16, but in either case a deposit of Rupees 100 will be demanded at the outset.

A student may compound for the whole theoretical course by the payment of a fee of Rupees 400 in advance. No fee will be demanded for the practical course.

(*b*) *Engineer Subordinate Class.*—The fee is fixed at Rupees 30 for each term of six months, payable in advance; or by a monthly contribution of Rupees 6, with a deposit of Rupees 50 at the outset; or Rupees 125 for the whole theoretical course payable in advance. No fee will be demanded for the practical course.

(*c*) *Draughtsmen's and Surveyors' Classes.*—A term fee of Rupees 18 to be paid in advance, or a monthly contribution of Rupees 4.

(*d*) *Sub-Overseer and Maistry Class.*—No fee shall be required except a registration fee of five rupees.

NOTE.—Fees will, under no circumstances, be returned after a student has been admitted to the institution.

ARTICLE VII.—CERTIFICATES.

(*a*) The Board of Examiners shall issue, under their signatures, a certificate to each candidate setting forth the class of study in which he has qualified; but, in the case of students of the Engineer and Engineer Subordinate classes, the final certificate, in the nature of a diploma, shall be issued under the signatures of the Principal of the College and of the Director of Public Instruction, in proof that the student concerned has satisfactorily completed the prescribed practical course.

(*b*) A candidate who has failed to obtain a certificate from the Board at the final examination may appear before the Board for examination at any subsequent year, provided he is certified to have put in the necessary attendance at the college and pays a fee as follows:—

	RS.	A.	P.
Civil and Mechanical Engineers.	30	0	0
Engineer Subordinates ..	20	0	0
Other classes	10	0	0

(*c*) The names of the candidates so passing shall be published in the *Fort St. George Gazette* in a separate list, and they shall simply be declared to have satisfied the Board of Examiners.

ARTICLE VIII.—SCHOLARSHIPS, &c.

The following scholarships and prizes are allowed for students during their college course:—

(1) *Engineer Classes.*—One scholarship of Rupees 30 per mensem will be awarded annually to the candidate who passes first in the admission examination. The scholarships are re-awardable annually on the results of each term examination.

A gold medal of the value of Rupees 120 will be awarded to the student who passes first in the final examination.

Prizes consisting of instruments or books will be given for special proficiency in particular subjects.

(2) *Engineer Subordinate Class.*—Two scholarships, each of Rupees 10 per mensem, will be awarded annually to the two candidates who pass highest on the list at the admission examination. The scholarships are re-awardable after each term examination.

A gold medal of the value of Rupees 60 will be awarded to the student who passes first in the final examination.

Prizes consisting of instruments or books will be given for special proficiency in particular subjects.

(3) *Draughtsmen's Class.*—Two scholarships, each of Rupees 8 per mensem, tenable during the second year of study, will be granted to the students who stand highest on the list at the term examination at the end of the first year.

A silver medal of the value of Rupees 10 will be given to the student who passes first in the final examination.

(4) *Surveyors' Class.*—Two scholarships, each of Rupees 8 per mensem, tenable during the second year of study, will be granted to the students who stand highest on the list at the term examination at the end of the first year.

A silver medal of the value of Rupees 10 will be given to the student who passes first in the final examination.

NOTE.—Scholarships may be reduced or forfeited for misbehaviour or other cause.

ARTICLE IX.—PRACTICAL COURSES.

All allowances during the practical course will be debitable to the Department of Public Works.

(1) *Civil and Mechanical Engineers.*—During the final year of practical training on works, subsistence allowances of Rupees 50 per mensem for Europeans and Eurasians and Rupees 25 per mensem for natives will be granted. Such allowances will, however, be contingent on the good conduct and satisfactory progress of the student under instruction; and on proof of misconduct or idleness the allowances may be cut down or withdrawn altogether by the officers in charge of the works.

(2) *Engineer Subordinates.*—As in the case of the Civil and Mechanical Engineer pupils, no fee will be exacted during the workshop year; and during the year of practical study on works stipends will be granted of Rupees 30 per mensem for Europeans and Eurasians and Rupees 20 per mensem for natives, subject to the conditions of good conduct, regular attendance, &c.

Soldier students will, during the workshop course, draw pay, rations, and clothing from their regiments, and the stipends prescribed for the theoretical course. During their year of practical training on works, they will cease to draw those allowances, and will be brought on to the Public Works Department scale of establishment as apprentice overseers, drawing the pay and allowances laid down in the Public Works regulations.

ARTICLE X.—PROSPECTS OF STUDENTS.

(1) *Civil and Mechanical Engineers.*—One appointment annually as Assistant Engineer, third grade, in the Public Works Department, will for the present be conferred on the student highest on the list at the final examination who has also obtained the degree of B.C.E. To those next on the list appointments as Supervisors, second grade, will be

responsible for the examination and that they should not be left to the staff. These examinations this year are being held by the Board.

ENCLOSURE.

From Captain H. D. LOVE, R.E., Principal, Civil Engineering College, to the Director of Public Instruction, Madras, dated 19th October 1885, No. 589-C.

With reference to your Proceedings, No. 6113, dated 15th September, and No. 6407, dated 29th September 1885, I have the honor to submit the revised draft notification therein called for.

2. Before entering into detailed explanations of the modifications proposed, I wish to observe that, although the original draft notification was sent to me early in the year by the Chief Engineer, Public Works department, for perusal and remarks, I was not aware that it was intended to publish it in exactly the form it had then assumed. This must be my apology for some of the modifications now submitted, especially for the changes made under Article V—"Courses of Study." At the Chief Engineer's request I indicated roughly the portions of each course which I considered might be disposed of finally at the term examinations; but these cannot be definitely settled until the constitution of the new staff has been decided on and time tables and syllabuses drawn up. Other modifications are rendered necessary by the publication, subsequently to the notification, of G.O., Educational, No. 523, dated 1st September 1885; and others again by the fact that the detailed working out of the scheme shows certain minor changes to be desirable.

3. In *Article I* and elsewhere, the designation *College of Engineering* has been substituted for *Civil Engineering College*, as approved in your Proceedings, No. 6159, dated 16th September 1885.

4. *Article IV—Admission.*—In clauses 7 and 8 the rules for admission to the Engineer Subordinate class are detailed, the expression "*mutatis mutandis*" in the published notification being so vague as to be likely to occasion difficulty.

5. *Article V—Courses.*—The portions to be finally disposed at the term examinations have been omitted for the reason given in paragraph 2 *supra*. The subjects have been regrouped, and an additional one, "Physique," introduced as a test of the physical qualifications of candidates. This test is enforced at Rurki, and its desirableness was strongly urged by the Madras College Committee.

6. In Proceedings of Government, No. 523, Educational, dated 1st September 1885, it is laid down that the Board of Examiners shall—

(1) assign all marks for class and field work as well as for examination work;
(2) fix the proportion of the total marks which shall be assigned to class work;
(3) fix the maximum number of marks to be given to each subject.

I deem these provisions undesirable, for reasons given below, and I respectfully request that Government be asked to reconsider them. While agreeing in the principle that the responsibility of passing students should practically rest with the Board, I consider, with regard to (1), that the marks for class work should be awarded by the College staff, because—

(*a*) such practice will conduce to the discipline of the institution by ensuring regular attendance and attention to class work during the long intervals between examinations;

(*b*) the class work, from its nature and amount, could not possibly be valued by the Board of Examiners unless some members of the Board were in frequent attendance at the college. The prominent items of class work will be engineering, architectural, and machine drawings from specifications, from models and from actual measurements; estimates; notes of inspections of engineering works; survey plans plotted from field books; field work. The quantity of work of this nature which will be executed by, say, 150 students in the course of twelve months, will be enormous, and the labor of attempting to value it would, at a moderate estimate, quadruple the examining work of the Board. The marks assigned to class work ought no doubt to bear but a small ratio to those awarded in examination; and I propose one-tenth for the Engineer and Engineer Subordinate classes, and one-fifth for the Draftsmen's and Surveyors' classes, the higher proportion in the latter being due to the work of those classes consisting almost entirely of drawings, estimates, and work in the field.

With reference to (2) and (3), I submit that the total marks for each subject-head should be fixed by Government. Unless this is done, the views of the Board as to the marks assignable to each subject will be liable to vary as its *personnel* changes; and no uniformity or permanence of system can be expected. The Government have laid down the subjects in which instruction shall be given, and I trust that they will therefore indicate the relative importance of those subjects in the different courses of study. In the revised draft notification I have proposed the number of marks to be awarded in each class to the different subject-heads.

GOVERNMENT OF MADRAS.

EDUCATIONAL DEPARTMENT.

READ—the following paper :—

From H. B. GRIGG, Esq., M.A., Director of Public Instruction, to the Acting Chief Secretary to Government, dated Madras, 25th November 1885, No. 7776.

I have the honor to request, after reference to the Chief Engineer, the sanction of Government for the enclosed revised draft notification regulating the administration of the Civil Engineering College, in substitution of that sanctioned in G.O., 16th July 1885, No. 443, and its publication, if approved, in three issues of the *Fort St. George Gazette*.

2. I enclose Captain Love's letter showing the desirability of revising the notification and also the draft submitted by him.

3. I think with him that it is desirable to revise the notification in several respects before it comes into full operation, but in the draft submitted for sanction, I have made some important changes in his amended draft

4. I think with him the term "College of Engineering" is more appropriate than "Civil Engineering College."

5. The definite statement of the terms of admission into the minor examinations instead of simply stating that they will be on the same principles as to the Engineer class seems to me desirable.

6. The amendment of the groups and subjects of examination I think also necessary, but the Principal has omitted several important subjects in the several courses, the omission of which I consider inexpedient. Such subjects I have retained.

7. The Principal gives good reasons for modifying the rules suggested by me regarding marks for class work, but I do not think that even a fixed proportion of marks should be left absolutely at the disposal of the College staff, or that the Board of Examiners should not have an opportunity of inspecting class drawings, field notes, &c. I have therefore provided that, before the marks assigned by the staff are accepted, the Board shall call for and inspect some of the class work.

8. Marks may, I think, with advantage, be fixed in the notification for each and Physique included as a branch; but I have raised the proportion of assigned to Science in the Engineer course and to Drawing in the Engineer dinate class, reducing for this purpose the marks assigned for Physique.

9. I approve the amendments proposed in regard to fees, and have also raised the registration fee for the Sub-Overseer class from Re. 1 to Rs. 5.

10. The only other change of importance is the inclusion of the admission examination definitely with the examination to be conducted by the Board. This was my intention from the first, as these examinations are of a public nature, and, like those for admission to the Civil Service or to the great Military Colleges, settle the claim of admission to the department. It is most important that the Board should be

(5) SUB-OVERSEERS, &C.

The courses of study shall be—

Arithmetic.
Elementary Geometry.
Mensuration.
Scales.
Plan-drawing.
Elements of Engineering.

No examinations will be held, but a certificate of attendance shall be given by the Principal after a minimum period of one year's regular study. The instruction shall be given in the Tamil and Telugu languages, and the class shall be an evening one.

ARTICLE VI.—FEES.

(*a*) *Civil and Mechanical Engineer Class.*—The fee is fixed at Rupees 85 for each term of six months, payable in advance; or, if candidates so desire, they will be permitted to pay instead a monthly contribution of Rupees 16, but in either case a deposit of Rupees 100 will be demanded at the outset.

A student may compound for the whole theoretical course by the payment of a fee of Rupees 400 in advance. No fee will be demanded for the practical course.

(*b*) *Engineer Subordinate Class.*—The fee is fixed at Rupees 30 for each term of six months, payable in advance; or by a monthly contribution of Rupees 6, with a deposit of Rupees 50 at the outset; or Rupees 125 for the whole theoretical course payable in advance. No fee will be demanded for the practical course.

(*c*) *Draughtsmen's and Surveyors' Classes.*—A term fee of Rupees 18 to be paid in advance, or a monthly contribution of Rupees 4.

(*d*) *Sub-Overseer and Maistry Class.*—No fee shall be required except a registration fee of five rupees.

NOTE.—Fees will, under no circumstances, be returned after a student has been admitted to the institution.

ARTICLE VII.—CERTIFICATES.

(*a*) The Board of Examiners shall issue, under their signatures, a certificate to each candidate setting forth the class of study in which he has qualified; but, in the case of students of the Engineer and Engineer Subordinate classes, the final certificate, in the nature of a diploma, shall be issued under the signatures of the Principal of the College and of the Director of Public Instruction, in proof that the student concerned has satisfactorily completed the prescribed practical course.

(*b*) A candidate who has failed to obtain a certificate from the Board at the final examination may appear before the Board for examination at any subsequent year, provided he is certified to have put in the necessary attendance at the college and pays a fee as follows :—

	RS.	A.	P.
Civil and Mechanical Engineers.	30	0	0
Engineer Subordinates	15	0	0
Other classes	10	0	0

(*c*) The names of the candidates so passing shall be published in the *Fort St. George Gazette* in a separate list, and they shall simply be declared to have satisfied the Board of Examiners.

ARTICLE VIII.—SCHOLARSHIPS, &C.

The following scholarships and prizes are allowed for students during their college course:—

(1) *Engineer Classes.*—One scholarship of Rupees 30 per mensem will be awarded annually to the candidate who passes first in the admission examination. The scholarships are re-awardable annually on the results of each term examination.

A gold medal of the value of Rupees 120 will be awarded to the student who passes first in the final examination.

Prizes consisting of instruments or books will be given for special proficiency in particular subjects.

(2) *Engineer Subordinate Class.*—Two scholarships, each of Rupees 10 per mensem, will be awarded annually to the two candidates who pass highest on the list at the admission examination. The scholarships are re-awardable after each term examination.

A gold medal of the value of Rupees 60 will be awarded to the student who passes first in the final examination.

Prizes consisting of instruments or books will be given for special proficiency in particular subjects.

(3) *Draughtsmen's Class.*—Two scholarships, each of Rupees 8 per mensem, tenable during the second year of study, will be granted to the students who stand highest on the list at the term examination at the end of the first year.

A silver medal of the value of Rupees 10 will be given to the student who passes first in the final examination.

(4) *Surveyors' Class.*—Two scholarships, each of Rupees 8 per mensem, tenable during the second year of study, will be granted to the students who stand highest on the list at the term examination at the end of the first year.

A silver medal of the value of Rupees 10 will be given to the student who passes first in the final examination.

NOTE.—Scholarships may be reduced or forfeited for misbehaviour or other cause.

ARTICLE IX.—PRACTICAL COURSES.

All allowances during the practical course will be debitable to the Department of Public Works.

(1) *Civil and Mechanical Engineers.*—During the final year of practical training on works, subsistence allowances of Rupees 50 per mensem for Europeans and Eurasians and Rupees 25 per mensem for natives will be granted. Such allowances will, however, be contingent on the good conduct and satisfactory progress of the student under instruction; and on proof of misconduct or idleness the allowances may be cut down or withdrawn altogether by the officers in charge of the works.

(2) *Engineer Subordinates.*—As in the case of the Civil and Mechanical Engineer pupils, no fee will be exacted during the workshop year; and during the year of practical study on works stipends will be granted of Rupees 30 per mensem for Europeans and Eurasians and Rupees 20 per mensem for natives, subject to the conditions of good conduct, regular attendance, &c.

Soldier students will, during the workshop course, draw pay, rations, and clothing from their regiments, and the stipends prescribed for the theoretical course. During their year of practical training on works, they will cease to draw those allowances, and will be brought on to the Public Works Department scale of establishment as apprentice overseers, drawing the pay and allowances laid down in the Public Works regulations.

ARTICLE X.—PROSPECTS OF STUDENTS.

(1) *Civil and Mechanical Engineers.*—One appointment annually as Assistant Engineer, third grade, in the Public Works Department, will for the present be conferred on the student highest on the list at the final examination who has also obtained the degree of B.C.E. To those next on the list appointments as Supervisors, second grade, will be

Of the total marks, 2,700 shall be awarded by the Board of Examiners for examination work; and 300 by the College Staff for drawings, notes, field-work, &c., executed during the course. The Board, however, shall call for and inspect such drawings, notes, &c., before finally accepting the marks given by the staff.

Term examinations will be held at the end of the first and second years of study, at which portions of the above subjects will be finally disposed of by the Board of Examiners. The marks awardable at these examinations are included in the final total.

Candidates must obtain one-third of the total marks in each of the subject heads I, III, IV, and V, one-fourth in each of the subject heads II, VI, and VII, and one-half of the final total marks. They shall be arranged in two classes in order of merit; the first, or honor class, containing those who have obtained not less than three-fourths of the total marks.

(*b*) PRACTICAL COURSE. *Civil Engineers.*—After completing the theoretical course, the pupils of the Civil Engineer class will spend one year in the Public Works Workshop, going through the carpenters' shop, the smithy, the foundry, and the fitting shop. They will then be placed for one year under the Public Works Department, and will be stationed at places where large works are in progress. They will be regularly instructed in the practical details of brick-making, brick-laying, quarrying, blasting, masonry, building of all sorts, the management of labor, accounts, &c.

Mechanical Engineers.—The course will comprise two years of practical study at the chief work-shops of the presidency.

(2) ENGINEER SUBORDINATE CLASS.

(*a*) THEORETICAL COURSE.—The theoretical course, which extends over two and-a-half years, will embrace the subjects and carry the marks enumerated below :—

	Marks.
I. *Mathematics.*—Arithmetic, algebra and geometry; plane trigonometry and mensuration; elementary statics..	370
II. *Engineering.*—Building materials; strength of materials; building and bridge construction; earthwork and roads; hydraulics and irrigation works; elementary applied mechanics; mechanism and the steam-engine; designing and estimating	600
III. *Surveying.*—Surveying with chain, compass and plane table; levelling; theodolite surveying; topographical drawing	350
IV. *Drawing.*—Geometrical drawing; freehand drawing; mechanical drawing; estimating	400
V. *Language.*—Tamil or Telugu * ..	180
VI. *Physique.*—Physical fitness; gymnastics, &c.	100
Final Total ..	2,000

Of the total marks, 1,800 shall be awarded by the Board of Examiners for examination work, and 200 by the College Staff for drawings, notes, fieldwork, &c., executed during the course. The Board however shall call for and inspect such drawings, notes, &c., before finally accepting the marks given by the staff.

*NOTE.—Tamil to be obligatory for natives of Telugu districts, and *vice versâ*. The choice of one of these two languages to be open to all other students.

Term examinations will be held at the end of the first and third half-years of study, at which portions of the above subjects will be finally disposed of by the Board of Examiners. The marks awardable at these examinations are included in the final total.

Candidates must obtain one-third of the total marks in each of the subject heads I, II, III, and IV, one-fourth in each of the subject heads V and VI, and one-half of the final total marks. They shall be arranged in two classes in order of merit; the first containing those who have obtained at least three-fourths of the total marks.

(*b*) PRACTICAL COURSE.—The practical course will comprise one year of practical study in work-shops, and one year on large engineering works, on which instruction will be afforded similar to that given to the Civil Engineer pupils.

(3) DRAUGHTSMEN'S CLASS.

The course, which extends over two years, will embrace the subjects, and carry the marks enumerated below :—

	Marks.
(1) Practical and Descriptive Geometry.	150
(2) Freehand, perspective, and model drawing	150
(3) Architectural and topographical drawing	240
(4) Machine drawing	200
(5) Estimating	260
Total ..	1,000

Of the total marks, 800 shall be awarded by the Board of Examiners for examination work, and 200 by the College Staff for plans, &c., executed during the course. The Board however shall call for and inspect such drawings, &c., before finally accepting the marks given by the staff.

A term examination will be held at the end of the first year.

Candidates obtaining 66 per cent. in each of the above five subjects and 75 per cent. on the total shall receive *First-class* Certificates: those obtaining 50 and 66 per cent., respectively, *Second-class* Certificates: those obtaining 36 and 50 per cent., respectively, *Third-class* Certificates.

(4) SURVEYORS' CLASS.

The course, which extends over two years, will embrace the subjects and carry the marks enumerated below :—

	Marks.
(1) Surveying with chain, compass, and plane table	275
(2) Levelling	225
(3) Theodolite surveying	200
(4) Topographical drawing ..	300
Total ..	1,000

Of the total marks, 800 shall be awarded by the Board of Examiners for examination work, and 200 by the College Staff for fieldwork and drawings executed during the course. The Board however shall call for and inspect such drawings, notes, &c., before finally accepting the marks given by the staff.

A term examination will be held at the end of the first year.

Candidates obtaining 66 per cent. in each of the above four subjects and 75 per cent. on the total shall receive *First-class* Certificates: those obtaining 50 and 66 per cent., respectively, *Second-class* Certificates: those obtaining 36 and 50 per cent., respectively, *Third-class* Certificates.

Draughtsmen's and Surveyors' classes, except when specially exempted, a certificate of having passed the Middle School examination. For the sixth class selection will be made from the sons of artisans or maistries, or from youths who have already had practical training in some of the building trades.

(4) All candidates must produce satisfactory testimony of good character, physical fitness, age, and freedom from liability to small-pox. Candidates whose certificates are unsatisfactory in any respect will be excluded from the test for admission.

(5) Admission to the Civil and Mechanical Engineer classes shall be decided by open competition in the following branches of mathematics; but, to insure a high standard of general knowledge, to the total marks obtained in mathematics will be added one-half of the marks obtained in the F.A. examination :—

	Marks.
Arithmetic	100
Algebra, including quadratic equations and binomial theorem	75
Geometry, the first four books and the sixth book of Euclid	75
Mensuration	50
Trigonometry, including the solution of plane triangles	100
Total ..	400
F.A. examination ..	300
Grand Total ..	700

Candidates failing to obtain one-third of the combined total marks shall not be admitted. Selection shall be made in order of merit: provided that, if four Europeans and Eurasians and three Muhammadans are not within the first fifteen, the number under each may be made good in order of merit from the other qualified candidates. Before joining the college, the candidates shall inform the Principal whether they intend to be Civil or Mechanical Engineers.

(6) The fee for admission to this examination shall be Rupees 10. The names of the successful candidates shall be published in the *Fort St. George Gazette*.

(7) Admission to the Engineer Subordinate class shall, except in the case of soldier students, be decided by open competition in the following branches of mathematics; but, to ensure the requisite standard of general knowledge, to the total marks obtained in mathematics will be added one-half of the marks gained in the Matriculation examination :—

	Marks.
Arithmetic	125
Algebra	75
Geometry	100
	300
Proportion of marks in the Matriculation examination	225
Total ..	525

(8) Candidates failing to obtain one-third of the total combined marks shall not be admitted. Selection shall be made in order of merit: provided that, if six Europeans and Eurasians and four Muhammadans are not within the first thirty, the number under each may be made good in order of merit from the other qualified candidates. The fee for admission to this examination shall be Rupees 5. The names of the successful candidates shall be published in the *Fort St. George Gazette*.

(9) *Soldier Students.*—Non-commissioned officers and soldiers of Her Majesty's British service desirous of qualifying for employment in the Public Works Department will, to the number of five annually, be admitted to the college on passing an entrance examination in arithmetic and English. After one year's study of arithmetic, algebra, geometry, and vernacular language, they will, provided they pass a satisfactory examination in these subjects, join the subordinate class for the ordinary theoretical and practical courses. Each student will draw a stipend of Rupees 10 per mensem for three and-a-half years, commencing from the date of joining the subordinate class. His pay, rations and clothing will be drawn from his regiment throughout the whole course of study. A fixed proportion between the number of soldiers and civilians to be appointed to the Public Works Department will be established.

(10) Admission to the Draughtsmen's and Surveyors' classes shall be regulated by the order in which the candidates have passed the Middle School or some higher examination, the selection proceeding from those that have passed a higher examination to those who have passed a lower.

ARTICLE V.—COURSES.

The course and subjects of study in the several classes shall be as follows :—

(1) CIVIL AND MECHANICAL ENGINEER CLASSES.

(*a*) THEORETICAL COURSE.—The theoretical course, which extends over three years, will embrace the subjects and carry the marks enumerated below :—

	Marks.
I. *Pure* and applied *Mathematics.*—Algebra, geometry, and arithmetic; mensuration and trigonometry; mechanics; hydro-mechanics; algebraic geometry, and the differential and integral calculus ..	675
II. *Science.*—Chemistry, physics, and geology	325
III. *Engineering.*—Building materials; building and bridge construction; hydraulics, irrigation works and sanitary engineering; road and railway construction; applied mechanics; principles of mechanism; prime movers; the steam-engine.	800
IV. *Surveying.*—Surveying with chain, compass and plane table; levelling; theodolite surveying; topographical drawing	400
V. *Drawing.*—Geometrical drawing; freehand model, and perspective drawing; architectural drawing; machine drawing; estimating; designing; specification ..	500
VI. *Language.*—Tamil or Telugu * ..	200
VII. *Physique.*—Physical fitness; gymnastics, &c.	100
Final Total ..	3,000

*NOTE.—Tamil to be obligatory for natives of Telugu districts, and *vice versâ*. The choice of one of these two languages to be open to all other students.

responsible for the examination and that they should not be left to the staff. These examinations this year are being held by the Board.

ENCLOSURE.

From Captain H. D. LOVE, R.E., Principal, Civil Engineering College, to the Director of Public Instruction, Madras, dated 19th October 1885, No. 589-C.

With reference to your Proceedings, No. 6113, dated 15th September, and No. 6407, dated 29th September 1885, I have the honor to submit the revised draft notification therein called for.

2. Before entering into detailed explanations of the modifications proposed, I wish to observe that, although the original draft notification was sent to me early in the year by the Chief Engineer, Public Works department, for perusal and remarks, I was not aware that it was intended to publish it in exactly the form it had then assumed. This must be my apology for some of the modifications now submitted, especially for the changes made under Article V—"Courses of Study." At the Chief Engineer's request I indicated roughly the portions of each course which I considered might be disposed of finally at the term examinations; but these cannot be definitely settled until the constitution of the new staff has been decided on and time tables and syllabuses drawn up. Other modifications are rendered necessary by the publication, subsequently to the notification, of G.O., Educational, No. 523, dated 1st September 1885; and others again by the fact that the detailed working out of the scheme shows certain minor changes to be desirable.

3. In *Article I* and elsewhere, the designation *College of Engineering* has been substituted for *Civil Engineering College*, as approved in your Proceedings, No. 6159, dated 16th September 1885.

4. *Article IV—Admission.*—In clauses 7 and 8 the rules for admission to the Engineer Subordinate class are detailed, the expression "*mutatis mutandis*" in the published notification being so vague as to be likely to occasion difficulty.

5. *Article V—Courses.*—The portions to be finally disposed at the term examinations have been omitted for the reason given in paragraph 2 *supra*. The subjects have been regrouped, and an additional one, "Physique," introduced as a test of the physical qualifications of candidates. This test is enforced at Rurki, and its desirableness was strongly urged by the Madras College Committee.

6. In Proceedings of Government, No. 523, Educational, dated 1st September 1885, it is laid down that the Board of Examiners shall—

(1) assign all marks for class and field work as well as for examination work;
(2) fix the proportion of the total marks which shall be assigned to class work;
(3) fix the maximum number of marks to be given to each subject.

I deem these provisions undesirable, for reasons given below, and I respectfully request that Government be asked to reconsider them. While agreeing in the principle that the responsibility of passing students should practically rest with the Board, I consider, with regard to (1), that the marks for class work should be awarded by the College staff, because—

(*a*) such practice will conduce to the discipline of the institution by ensuring regular attendance and attention to class work during the long intervals between examinations;

(*b*) the class work, from its nature and amount, could not possibly be valued by the Board of Examiners unless the members of the Board were in frequent attendance at the college. The prominent items of class work will be engineering, architectural, and machine drawings from specifications, from models and from actual measurements; estimates; notes of inspections of engineering works; survey plans plotted from field books; field work. The quantity of work of this nature which will be executed by, say, 150 students in the course of twelve months, will be enormous, and the labor of attempting to value it would, at a moderate estimate, quadruple the examining work of the Board. The marks assigned to class work ought no doubt to bear but a small ratio to those awarded in examination; and I propose one-tenth for the Engineer and Engineer Subordinate classes, and one-fifth for the Draftsmen's and Surveyors' classes, the higher proportion in the latter being due to the work of those classes consisting almost entirely of drawings, estimates, and work in the field.

With reference to (2) and (3), I submit that the total marks for each subject-head should be fixed by Government. Unless this is done, the views of the Board as to the marks assignable to each subject will be liable to vary as its *personnel* changes; and no uniformity or permanence of system can be expected. The Government have laid down the subjects in which instruction shall be given, and I trust that they will therefore indicate the relative importance of those subjects in the different courses of study. In the revised draft notification I have proposed the number of marks to be awarded in each class to the different subject-heads.

As regards the qualification for a pass, I consider that—

(*a*) for the Engineer classes and Engineer Subordinate class the qualifying subject minimum should stand at one-third for the more important subjects—mathematics, engineering, surveying and drawing; and be reduced to one-fourth for the remaining less valuable subjects; the minimum qualifying total marks being one-half as heretofore;

(*b*) for the Draftsmen's class the qualifying minima are, considering the extension of the course, in my opinion, fixed almost unattainably high. I propose that the subject minimum and total minimum be the same as those fixed for the Surveyors' class.

7. *Article VI—Fees.*—In the Engineer classes the alternative monthly fee may be Rs. 16. In the Engineer Subordinate class no saving accrues to a student by compounding at Rs. 125 for the whole theoretical course. It is proposed, therefore, that the term fee be Rs. 30 and the monthly contribution Rs. 6. These figures may perhaps be somewhat high however, and I name them with diffidence.

In the Draftsmen's and Surveyors' classes, a terminal fee of Rs. 18, in place of Rs. 15, is proposed.

8. *Article VII—Certificates.*—The fees for the examination of independent candidates might be somewhat raised. A diploma as Assistant Engineer must be more valuable to its possessor than the Madras University B.A. degree for example, and a corresponding fee should, I consider, be demanded similarly for the less important certificates.

9. *Article X—Prospects of Students.*—Under "Surveyors" an addendum has been inserted as suggested in Chief Engineer's letter, No. 345 E, dated 9th July 1885, paragraph 3. The addendum is based on Proceedings of Government, Revenue department, No. 4210, dated 12th August 1885.

NOTIFICATION.

The following code of rules relating to the constitution and work of the Madras College of Engineering, the subsequent training of students, and their selection by the Department of Public Works, has been sanctioned by Government and will have effect from 1st January 1886:—

Preamble.—The college, which is affiliated to the Madras University, will afford theoretical and practical instruction in subjects qualifying Europeans and Natives of India for the professions and callings set forth in Article III, in view of fitting them for employment in such capacity by Government, by Local and Municipal Boards, and by other agencies.

Students passing the higher course in Engineering are at the same time prepared for the B.C.E. degree of the Madras University.

ARTICLE I.

The responsibility for the discipline and management of the college is vested in the Principal, under the control of the Director of Public Instruction.

ARTICLE II.

The admission and all final examinations will be conducted by an independent Board of Examiners, consisting of a President and two Members, to be appointed by Government for a term of three years. They shall receive such remuneration as shall from time to time be fixed by Government. When necessary, the Board may, with the sanction of Government, employ assistant examiners. The decision of the Board of Examiners in regard to the qualifications of any student appearing for examination shall be final. The names of all students declared by the Board to have passed a final examination shall be published in the *Fort St. George Gazette*.

ARTICLE III.

The classes to be formed are—

(1) Civil Engineers.
(2) Mechanical Engineers.
(3) Engineer Subordinates.
(4) Draughtsmen.
(5) Surveyors.
(6) Sub-Overseers, Maistries, and Artisans.

ARTICLE IV.—ADMISSION.

(1) The number of students to be admitted annually will, for the present, be limited to 15 in Civil and Mechanical Engineer classes taken together; to 30 in the class for Engineer Subordinates; to 20 in the class for Draughtsmen; to 15 in the class for Surveyors.

N.B.—These numbers will be liable to reduction, which will be notified one month before the entrance examination, until the college accommodation has been improved and enlarged to meet requirements.

The number to be admitted to the other classes will be notified yearly. Admission shall be once a year—(1) For the Engineer classes, on last Monday in January; (2) for the Engineer Subordinate classes, on first Monday in August; (3) for the junior classes, on last Monday in January.

(2) Candidates for admission to the Civil and Mechanical Engineer classes must be between the ages of 17 and 21 years, to the Engineer Subordinate class between the ages of 16 and 20 years, and to the other classes between the ages of 16 and 22 years, on the 31st December preceding the year of admission.

(3) Candidates for admission to the Civil and Mechanical Engineer classes must produce a certificate of having passed the First Examination in Arts of the Madras or other Indian University; to the Engineer Subordinate class, a certificate of having passed the Matriculation examination of the Madras or other Indian University; to the

Vide G.O. No. 1167 W, dated 27-4-91

GOVERNMENT OF MADRAS.

EDUCATIONAL DEPARTMENT.

READ—the following paper :—

From H. B. GRIGG, Esq., M.A., Director of Public Instruction, to the Acting Chief Secretary to Government, dated Madras, 25th November 1885, No. 7776.

I have the honor to request, after reference to the Chief Engineer, the sanction of Government for the enclosed revised draft notification regulating the administration of the Civil Engineering College, in substitution of that sanctioned in G.O., 16th July 1885, No. 443, and its publication, if approved, in three issues of the *Fort St. George Gazette.*

2. I enclose Captain Love's letter showing the desirability of revising the notification and also the draft submitted by him.

3. I think with him that it is desirable to revise the notification in several respects before it comes into full operation, but in the draft submitted for sanction, I have made some important changes in his amended draft

4. I think with him the term "College of Engineering" is more appropriate than "Civil Engineering College."

5. The definite statement of the terms of admission into the minor examinations instead of simply stating that they will be on the same principles as to the Engineer class seems to me desirable.

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7. The Principal gives good reasons for modifying the rules suggested by me regarding marks for class work, but I do not think that even a fixed proportion of marks should be left absolutely at the disposal of the College staff, or that the Board of Examiners should not have an opportunity of inspecting class drawings, field notes, &c. I have therefore provided that, before the marks assigned by the staff are accepted, the Board shall call for and inspect some of the class work.

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9. I approve the amendments proposed in regard to fees, and have also raised the registration fee for the Sub-Overseer class from Re. 1 to Rs. 5.

10. The only other change of importance is the inclusion of the admission examination definitely with the examination to be conducted by the Board. This was my intention from the first, as these examinations are of a public nature, and, like those for admission to the Civil Service or to the great Military Colleges, settle the claim of admission to the department. It is most important that the Board should be

29-1-12

P. W. D.

No. 1385 dy 18th Jany/86.

Communicated to Supdg Engineers in supersession of G. O. No. 1851 dy 11th August 1885.

Sd/ J. S. S.

Supdg Engrs
Chief Engr for Irrigation
C. A. to Govt

Govt. of {1886} Madras.

EDUCATIONAL.

Issued

Recd. Encl.

G.O., 7th January 1886, No. 7.

No 1385 dy 18th Jany/86

JANUARY.

Civil Engineering College.

Approving draft notification regulating the administration of the — and directing its publication in the *Fort St. George Gazette.*

Letter order

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7TH JANUARY 1886, No. 7, EDUCATIONAL.

GOVERNMENT OF MADRAS.

EDUCATIONAL DEPARTMENT.

READ—the following paper :—

From H. B. GRIGG, Esq., M.A., Director of Public Instruction, to the Acting Chief Secretary to Government, dated Madras, 25th November 1885, No. 7776.

I have the honor to request, after reference to the Chief Engineer, the sanction of Government for the enclosed revised draft notification regulating the administration of the Civil Engineering College, in substitution of that sanctioned in G.O., 16th July 1885, No. 443, and its publication, if approved, in three issues of the *Fort St. George Gazette.*

2. I enclose Captain Love's letter showing the desirability of revising the notification and also the draft submitted by him.

3. I think with him that it is desirable to revise the notification in several respects before it comes into full operation, but in the draft submitted for sanction, I have made some important changes in his amended draft

4. I think with him the term "College of Engineering" is more appropriate than "Civil Engineering College."

5. The definite statement of the terms of admission into the minor examinations instead of simply stating that they will be on the same principles as to the Engineer class seems to me desirable.

6. The amendment of the groups and subjects of examination I think also necessary, but the Principal has omitted several important subjects in the several courses, the omission of which I consider inexpedient. Such subjects I have retained.

7. The Principal gives good reasons for modifying the rules suggested by me regarding marks for class work, but I do not think that even a fixed proportion of marks should be left absolutely at the disposal of the College staff, or that the Board of Examiners should not have an opportunity of inspecting class drawings, field notes, &c. I have therefore provided that, before the marks assigned by the staff are accepted, the Board shall call for and inspect some of the class work.

8. Marks may, I think, with advantage, be fixed in the notification for each branch, and Physique included as a branch; but I have raised the proportion of marks assigned to Science in the Engineer course and to Drawing in the Engineer Subordinate class, reducing for this purpose the marks assigned for Physique.

9. I approve the amendments proposed in regard to fees, and have also raised the registration fee for the Sub-Overseer class from Re. 1 to Rs. 5.

10. The only other change of importance is the inclusion of the admission examination definitely with the examination to be conducted by the Board. This was my intention from the first, as these examinations are of a public nature, and, like those for admission to the Civil Service or to the great Military Colleges, settle the claim of admission to the department. It is most important that the Board should be

responsible for the examination and that they should not be left to the staff. These examinations this year are being held by the Board.

ENCLOSURE.

From Captain H. D. LOVE, R.E., Principal, Civil Engineering College, to the Director of Public Instruction, Madras, dated 19th October 1885, No. 589-C.

With reference to your Proceedings, No. 6113, dated 15th September, and No. 6407, dated 29th September 1885, I have the honor to submit the revised draft notification therein called for.

2. Before entering into detailed explanations of the modifications proposed, I wish to observe that, although the original draft notification was sent to me early in the year by the Chief Engineer, Public Works department, for perusal and remarks, I was not aware that it was intended to publish it in exactly the form it had then assumed. This must be my apology for some of the modifications now submitted, especially for the changes made under Article V—"Courses of Study." At the Chief Engineer's request I indicated roughly the portions of each course which I considered might be disposed of finally at the term examinations; but these cannot be definitely settled until the constitution of the new staff has been decided on and time tables and syllabuses drawn up. Other modifications are rendered necessary by the publication, subsequently to the notification, of G.O., Educational, No. 523, dated 1st September 1885; and others again by the fact that the detailed working out of the scheme shows certain minor changes to be desirable.

3. In *Article I* and elsewhere, the designation *College of Engineering* has been substituted for *Civil Engineering College*, as approved in your Proceedings, No. 6159, dated 16th September 1885.

4. *Article IV—Admission.*—In clauses 7 and 8 the rules for admission to the Engineer Subordinate class are detailed, the expression "*mutatis mutandis*" in the published notification being so vague as to be likely to occasion difficulty.

5. *Article V—Courses.*—The portions to be finally disposed at the term examinations have been omitted for the reason given in paragraph 2 *supra*. The subjects have been regrouped, and an additional one, "Physique," introduced as a test of the physical qualifications of candidates. This test is enforced at Rurki, and its desirableness was strongly urged by the Madras College Committee.

6. In Proceedings of Government, No. 523, Educational, dated 1st September 1885, it is laid down that the Board of Examiners shall—

(1) assign all marks for class and field work as well as for examination work;
(2) fix the proportion of the total marks which shall be assigned to class work;
(3) fix the maximum number of marks to be given to each subject.

I deem these provisions undesirable, for reasons given below, and I respectfully request that Government be asked to reconsider them. While agreeing in the principle that the responsibility of passing students should practically rest with the Board, I consider, with regard to (1), that the marks for class work should be awarded by the College staff, because—

(*a*) such practice will conduce to the discipline of the institution by ensuring regular attendance and attention to class work during the long intervals between examinations;

(*b*) the class work, from its nature and amount, could not possibly be valued by the Board of Examiners unless the members of the Board were in frequent attendance at the college. The prominent items of class work will be engineering, architectural, and machine drawings from specifications, from models and from actual measurements; estimates; notes of inspections of engineering works; survey plans plotted from field books; field work. The quantity of work of this nature which will be executed by, say, 150 students in the course of twelve months, will be enormous, and the labor of attempting to value it would, at a moderate estimate, quadruple the examining work of the Board. The marks assigned to class work ought no doubt to bear but a small ratio to those awarded in examination; and I propose one-tenth for the Engineer and Engineer Subordinate classes, and one-fifth for the Draftsmen's and Surveyors' classes, the higher proportion in the latter being due to the work of those classes consisting almost entirely of drawings, estimates, and work in the field.

With reference to (2) and (3), I submit that the total marks for each subject-head should be fixed by Government. Unless this is done, the views of the Board as to the marks assignable to each subject will be liable to vary as its *personnel* changes; and no uniformity or permanence of system can be expected. The Government have laid down the subjects in which instruction shall be given, and I trust that they will therefore indicate the relative importance of those subjects in the different courses of study. In the revised draft notification I have proposed the number of marks to be awarded in each class to the different subject-heads.

As regards the qualification for a pass, I consider that—

(*a*) for the Engineer classes and Engineer Subordinate class the qualifying subject minimum should stand at one-third for the more important subjects—mathematics, engineering, surveying and drawing; and be reduced to one-fourth for the remaining less valuable subjects; the minimum qualifying total marks being one-half as heretofore;

(*b*) for the Draftsmen's class the qualifying minima are, considering the extension of the course, in my opinion, fixed almost unattainably high. I propose that the subject minimum and total minimum be the same as those fixed for the Surveyors' class.

7. *Article VI—Fees.*—In the Engineer classes the alternative monthly fee may be Rs. 16. In the Engineer Subordinate class no saving accrues to a student by compounding at Rs. 125 for the whole theoretical course. It is proposed, therefore, that the term fee be Rs. 30 and the monthly contribution Rs. 6. These figures may perhaps be somewhat high however, and I name them with diffidence.

In the Draftsmen's and Surveyors' classes, a terminal fee of Rs. 18, in place of Rs. 15, is proposed.

8. *Article VII—Certificates.*—The fees for the examination of independent candidates might be somewhat raised. A diploma as Assistant Engineer must be more valuable to its possessor than the Madras University B.A. degree for example, and a corresponding fee should, I consider, be demanded similarly for the less important certificates.

9. *Article X—Prospects of Students.*—Under "Surveyors" an addendum has been inserted as suggested in Chief Engineer's letter, No. 345 E, dated 9th July 1885, paragraph 3. The addendum is based on Proceedings of Government, Revenue department, No. 4210, dated 12th August 1885.

NOTIFICATION.

The following code of rules relating to the constitution and work of the Madras College of Engineering, the subsequent training of students, and their selection by the Department of Public Works, has been sanctioned by Government and will have effect from 1st January 1886:—

Preamble.—The college, which is affiliated to the Madras University, will afford theoretical and practical instruction in subjects qualifying Europeans and Natives of India for the professions and callings set forth in Article III, in view of fitting them for employment in such capacity by Government, by Local and Municipal Boards, and by other agencies.

Students passing the higher course in Engineering are at the same time prepared for the B.C.E. degree of the Madras University.

ARTICLE I.

The responsibility for the discipline and management of the college is vested in the Principal, under the control of the Director of Public Instruction.

ARTICLE II.

The admission and all final examinations will be conducted by an independent Board of Examiners, consisting of a President and two Members, to be appointed by Government for a term of three years. They shall receive such remuneration as shall from time to time be fixed by Government. When necessary, the Board may, with the sanction of Government, employ assistant examiners. The decision of the Board of Examiners in regard to the qualifications of any student appearing for examination shall be final. The names of all students declared by the Board to have passed a final examination shall be published in the *Fort St. George Gazette*.

ARTICLE III.

The classes to be formed are—

(1) Civil Engineers.
(2) Mechanical Engineers.
(3) Engineer Subordinates.
(4) Draughtsmen.
(5) Surveyors.
(6) Sub-Overseers, Maistries, and Artisans.

ARTICLE IV.—ADMISSION.

(1) The number of students to be admitted annually will, for the present, be limited to 15 in Civil and Mechanical Engineer classes taken together; to 30 in the class for Engineer Subordinates; to 20 in the class for Draughtsmen; to 15 in the class for Surveyors.

N.B.—These numbers will be liable to reduction, which will be notified one month before the entrance examination, until the college accommodation has been improved and enlarged to meet requirements.

The number to be admitted to the other classes will be notified yearly. Admission shall be once a year—(1) For the Engineer classes, on last Monday in January; (2) for the Engineer Subordinate classes, on first Monday in August; (3) for the junior classes, on last Monday in January.

(2) Candidates for admission to the Civil and Mechanical Engineer classes must be between the ages of 17 and 21 years, to the Engineer Subordinate class between the ages of 16 and 20 years, and to the other classes between the ages of 16 and 22 years, on the 31st December preceding the year of admission.

(3) Candidates for admission to the Civil and Mechanical Engineer classes must produce a certificate of having passed the First Examination in Arts of the Madras or other Indian University; to the Engineer Subordinate class, a certificate of having passed the Matriculation examination of the Madras or other Indian University; to the

Draughtsmen's and Surveyors' classes, except when specially exempted, a certificate of having passed the Middle School examination. For the sixth class selection will be made from the sons of artisans or maistries. or from youths who have already had practical training in some of the building trades.

(4) All candidates must produce satisfactory testimony of good character, physical fitness, age, and freedom from liability to small-pox. Candidates whose certificates are unsatisfactory in any respect will be excluded from the test for admission.

(5) Admission to the Civil and Mechanical Engineer classes shall be decided by open competition in the following branches of mathematics; but, to insure a high standard of general knowledge, to the total marks obtained in mathematics will be added one-half of the marks obtained in the F.A. examination :—

	Marks.
Arithmetic	100
Algebra, including quadratic equations and binomial theorem	75
Geometry, the first four books and the sixth book of Euclid	75
Mensuration	50
Trigonometry, including the solution of plane triangles	100
Total ..	400
F.A. examination ..	300
Grand Total ..	700

Candidates failing to obtain one-third of the combined total marks shall not be admitted. Selection shall be made in order of merit: provided that, if four Europeans and Eurasians and three Muhammadans are not within the first fifteen, the number under each may be made good in order of merit from the other qualified candidates. Before joining the college, the candidates shall inform the Principal whether they intend to be Civil or Mechanical Engineers.

(6) The fee for admission to this examination shall be Rupees 10. The names of the successful candidates shall be published in the *Fort St. George Gazette*.

(7) Admission to the Engineer Subordinate class shall, except in the case of soldier students, be decided by open competition in the following branches of mathematics; but, to ensure the requisite standard of general knowledge, to the total marks obtained in mathematics will be added one-half of the marks gained in the Matriculation examination :—

	Marks.
Arithmetic	125
Algebra	75
Geometry	100
	300
Proportion of marks in the Matriculation examination	225
Total ..	525

(8) Candidates failing to obtain one-third of the total combined marks shall not be admitted. Selection shall be made in order of merit: provided that, if six Europeans and Eurasians and four Muhammadans are not within the first thirty, the number under each may be made good in order of merit from the other qualified candidates. The fee for admission to this examination shall be Rupees 5. The names of the successful candidates shall be published in the *Fort St. George Gazette*.

(9) *Soldier Students.*—Non-commissioned officers and soldiers of Her Majesty's British service desirous of qualifying for employment in the Public Works Department will, to the number of five annually, be admitted to the college on passing an entrance examination in arithmetic and English. After one year's study of arithmetic, algebra, geometry, and vernacular language, they will, provided they pass a satisfactory examination in these subjects, join the subordinate class for the ordinary theoretical and practical courses. Each student will draw a stipend of Rupees 10 per mensem for three and-a-half years, commencing from the date of joining the subordinate class. His pay, rations and clothing will be drawn from his regiment throughout the whole course of study. A fixed proportion between the number of soldiers and civilians to be appointed to the Public Works Department will be established.

(10) Admission to the Draughtsmen's and Surveyors' classes shall be regulated by the order in which the candidates have passed the Middle School or some higher examination, the selection proceeding from those that have passed a higher examination to those who have passed a lower.

ARTICLE V.—COURSES.

The course and subjects of study in the several classes shall be as follows :—

(1) CIVIL AND MECHANICAL ENGINEER CLASSES.

(*a*) THEORETICAL COURSE.—The theoretical course, which extends over three years, will embrace the subjects and carry the marks enumerated below :—

	Marks.
I. *Pure* and applied *Mathematics.*—Algebra, geometry, and arithmetic; mensuration and trigonometry; mechanics; hydro-mechanics; algebraic geometry, and the differential and integral calculus ..	675
II. *Science.*—Chemistry, physics, and geology	325
III. *Engineering.*—Building materials; building and bridge construction; hydraulics, irrigation works and sanitary engineering; road and railway construction; applied mechanics; principles of mechanism; prime movers; the steam-engine.	800
IV. *Surveying.*—Surveying with chain, compass and plane table; levelling; theodolite surveying; topographical drawing	400
V. *Drawing.*—Geometrical drawing; freehand model, and perspective drawing; architectural drawing; machine drawing; estimating; designing; specification ..	500
VI. *Language.*—Tamil or Telugu * ..	200
VII. *Physique.*—Physical fitness; gymnastics, &c.	100
Final Total ..	3,000

* NOTE.—Tamil to be obligatory for natives of Telugu districts, and *vice versâ*. The choice of one of these two languages to be open to all other students.

Of the total marks, 2,700 shall be awarded by the Board of Examiners for examination work; and 300 by the College Staff for drawings, notes, fieldwork, &c., executed during the course. The Board, however, shall call for and inspect such drawings, notes, &c., before finally accepting the marks given by the staff.

Term examinations will be held at the end of the first and second years of study, at which portions of the above subjects will be finally disposed of by the Board of Examiners. The marks awardable at these examinations are included in the final total.

Candidates must obtain one-third of the total marks in each of the subject heads I, III, IV, and V, one-fourth in each of the subject heads II, VI, and VII, and one-half of the final total marks. They shall be arranged in two classes in order of merit; the first, or honor class, containing those who have obtained not less than three-fourths of the total marks.

(*b*) PRACTICAL COURSE. *Civil Engineers.*—After completing the theoretical course, the pupils of the Civil Engineer class will spend one year in the Public Works Workshop, going through the carpenters' shop, the smithy, the foundry, and the fitting shop. They will then be placed for one year under the Public Works Department, and will be stationed at places where large works are in progress. They will be regularly instructed in the practical details of brick-making, bricklaying, quarrying, blasting, masonry, building of all sorts, the management of labor, accounts, &c.

Mechanical Engineers.—The course will comprise two years of practical study at the chief workshops of the presidency.

(2) ENGINEER SUBORDINATE CLASS.

(*a*) THEORETICAL COURSE.—The theoretical course, which extends over two and-a-half years, will embrace the subjects and carry the marks enumerated below :—

	Marks.
I. *Mathematics.*—Arithmetic, algebra and geometry; plane trigonometry and mensuration; elementary statics..	370
II. *Engineering.*—Building materials; strength of materials; building and bridge construction; earthwork and roads; hydraulics and irrigation works; elementary applied mechanics; mechanism and the steam-engine; designing and estimating	600
III. *Surveying.*—Surveying with chain, compass and plane table; levelling; theodolite surveying; topographical drawing	350
IV. *Drawing.*—Geometrical drawing; freehand drawing; mechanical drawing; estimating	400
V. *Language.*—Tamil or Telugu * ..	180
VI. *Physique.*—Physical fitness; gymnastics, &c.	100
Final Total ..	2,000

Of the total marks, 1,800 shall be awarded by the Board of Examiners for examination work, and 200 by the College Staff for drawings, notes, fieldwork, &c., executed during the course. The Board however shall call for and inspect such drawings, notes, &c., before finally accepting the marks given by the staff.

* NOTE.—Tamil to be obligatory for natives of Telugu districts, and *vice versâ*. The choice of one of these two languages to be open to all other students.

Term examinations will be held at the end of the first and third half-years of study, at which portions of the above subjects will be finally disposed of by the Board of Examiners. The marks awardable at these examinations are included in the final total.

Candidates must obtain one-third of the total marks in each of the subject heads I, II, III, and IV, one-fourth in each of the subject heads V and VI, and one-half of the final total marks. They shall be arranged in two classes in order of merit; the first containing those who have obtained at least three-fourths of the total marks.

(*b*) PRACTICAL COURSE.—The practical course will comprise one year of practical study in workshops, and one year on large engineering works, on which instruction will be afforded similar to that given to the Civil Engineer pupils.

(3) DRAUGHTSMEN'S CLASS.

The course, which extends over two years, will embrace the subjects, and carry the marks enumerated below :—

	Marks.
(1) Practical and Descriptive Geometry.	150
(2) Freehand, perspective, and model drawing	150
(3) Architectural and topographical drawing	240
(4) Machine drawing	200
(5) Estimating	260
Total ..	1,000

Of the total marks, 800 shall be awarded by the Board of Examiners for examination work, and 200 by the College Staff for plans, &c., executed during the course. The Board however shall call for and inspect such drawings, &c., before finally accepting the marks given by the staff.

A term examination will be held at the end of the first year.

Candidates obtaining 66 per cent. in each of the above five subjects and 75 per cent. on the total shall receive *First-class* Certificates: those obtaining 50 and 66 per cent., respectively, *Second-class* Certificates: those obtaining 36 and 50 per cent., respectively, *Third-class* Certificates.

(4) SURVEYORS' CLASS.

The course, which extends over two years, will embrace the subjects and carry the marks enumerated below :—

	Marks.
(1) Surveying with chain, compass, and plane table	275
(2) Levelling	225
(3) Theodolite surveying	200
(4) Topographical drawing ..	300
Total ..	1,000

Of the total marks, 800 shall be awarded by the Board of Examiners for examination work, and 200 by the College Staff for fieldwork and drawings executed during the course. The Board however shall call for and inspect such drawings, notes, &c., before finally accepting the marks given by the staff.

A term examination will be held at the end of the first year.

Candidates obtaining 66 per cent. in each of the above four subjects and 75 per cent. on the total shall receive *First-class* Certificates: those obtaining 50 and 66 per cent., respectively, *Second-class* Certificates: those obtaining 36 and 50 per cent., respectively, *Third-class* Certificates.

(5) SUB-OVERSEERS, &c.

The courses of study shall be—

Arithmetic.
Elementary Geometry.
Mensuration.
Scales.
Plan-drawing.
Elements of Engineering.

No examinations will be held, but a certificate of attendance shall be given by the Principal after a minimum period of one year's regular study. The instruction shall be given in the Tamil and Telugu languages, and the class shall be an evening one.

ARTICLE VI.—FEES.

(*a*) *Civil and Mechanical Engineer Class.*—The fee is fixed at Rupees 85 for each term of six months, payable in advance; or, if candidates so desire, they will be permitted to pay instead a monthly contribution of Rupees 16, but in either case a deposit of Rupees 100 will be demanded at the outset.

A student may compound for the whole theoretical course by the payment of a fee of Rupees 400 in advance. No fee will be demanded for the practical course.

(*b*) *Engineer Subordinate Class.*—The fee is fixed at Rupees 30 for each term of six months, payable in advance; or by a monthly contribution of Rupees 6, with a deposit of Rupees 50 at the outset; or Rupees 125 for the whole theoretical course payable in advance. No fee will be demanded for the practical course.

(*c*) *Draughtsmen's and Surveyors' Classes.*—A term fee of Rupees 18 to be paid in advance, or a monthly contribution of Rupees 4.

(*d*) *Sub-Overseer and Maistry Class.*—No fee shall be required except a registration fee of five rupees.

NOTE.—Fees will, under no circumstances, be returned after a student has been admitted to the institution.

ARTICLE VII.—CERTIFICATES.

(*a*) The Board of Examiners shall issue, under their signatures, a certificate to each candidate setting forth the class of study in which he has qualified; but, in the case of students of the Engineer and Engineer Subordinate classes, the final certificate, in the nature of a diploma, shall be issued under the signatures of the Principal of the College and of the Director of Public Instruction, in proof that the student concerned has satisfactorily completed the prescribed practical course.

(*b*) A candidate who has failed to obtain a certificate from the Board at the final examination may appear before the Board for examination at any subsequent year, provided he is certified to have put in the necessary attendance at the college and pays a fee as follows:—

	RS.	A.	P.
Civil and Mechanical Engineers.	30	0	0
Engineer Subordinates ..	20	0	0
Other classes	10	0	0

(*c*) The names of the candidates so passing shall be published in the *Fort St. George Gazette* in a separate list, and they shall simply be declared to have satisfied the Board of Examiners.

ARTICLE VIII.—SCHOLARSHIPS, &c.

The following scholarships and prizes are allowed for students during their college course:—

(1) *Engineer Classes.*—One scholarship of Rupees 30 per mensem will be awarded annually to the candidate who passes first in the admission examination. The scholarships are re-awardable annually on the results of each term examination.

A gold medal of the value of Rupees 120 will be awarded to the student who passes first in the final examination.

Prizes consisting of instruments or books will be given for special proficiency in particular subjects.

(2) *Engineer Subordinate Class.*—Two scholarships, each of Rupees 10 per mensem, will be awarded annually to the two candidates who pass highest on the list at the admission examination. The scholarships are re-awardable after each term examination.

A gold medal of the value of Rupees 60 will be awarded to the student who passes first in the final examination.

Prizes consisting of instruments or books will be given for special proficiency in particular subjects.

(3) *Draughtsmen's Class.*—Two scholarships, each of Rupees 8 per mensem, tenable during the second year of study, will be granted to the students who stand highest on the list at the term examination at the end of the first year.

A silver medal of the value of Rupees 10 will be given to the student who passes first in the final examination.

(4) *Surveyors' Class.*—Two scholarships, each of Rupees 8 per mensem, tenable during the second year of study, will be granted to the students who stand highest on the list at the term examination at the end of the first year.

A silver medal of the value of Rupees 10 will be given to the student who passes first in the final examination.

NOTE.—Scholarships may be reduced or forfeited for misbehaviour or other cause.

ARTICLE IX.—PRACTICAL COURSES.

All allowances during the practical course will be debitable to the Department of Public Works.

(1) *Civil and Mechanical Engineers.*—During the final year of practical training on works, subsistence allowances of Rupees 50 per mensem for Europeans and Eurasians and Rupees 25 per mensem for natives will be granted. Such allowances will, however, be contingent on the good conduct and satisfactory progress of the student under instruction; and on proof of misconduct or idleness the allowances may be cut down or withdrawn altogether by the officers in charge of the works.

(2) *Engineer Subordinates.*—As in the case of the Civil and Mechanical Engineer pupils, no fee will be exacted during the workshop year; and during the year of practical study on works stipends will be granted of Rupees 30 per mensem for Europeans and Eurasians and Rupees 20 per mensem for natives, subject to the conditions of good conduct, regular attendance, &c.

Soldier students will, during the workshop course, draw pay, rations, and clothing from their regiments, and the stipends prescribed for the theoretical course. During their year of practical training on works, they will cease to draw those allowances, and will be brought on to the Public Works Department scale of establishment as apprentice overseers, drawing the pay and allowances laid down in the Public Works regulations.

ARTICLE X.—PROSPECTS OF STUDENTS.

(1) *Civil and Mechanical Engineers.*—One appointment annually as Assistant Engineer, third grade, in the Public Works Department, will for the present be conferred on the student highest on the list at the final examination who has also obtained the degree of B.C.E. To those next on the list appointments as Supervisors, second grade, will be offered, in order of merit. The number of appointments to be so awarded will be in proportion to the requirements of the service, and will be fixed by the Chief Engineer. The number so determined on will be announced annually, at least six months before the final college examination. It is to be understood, however, that all vacancies in the Supervisor grade will not be filled by selection from the most distinguished of the passed students of this class, as a portion of such vacancies must be reserved for the best qualified subordinates of the Overseer grade.

(2) *Engineer Subordinates.*—Vacancies in the Overseer grades of the Public Works Establishment will be filled by passed men in the order of merit. Prior to each entrance examination, notice will be given of the number of such appointments likely to become available for competition by the then entering batch of candidates.

(3) *Draughtsmen.*—Certificated students of this class will be appointed to the Public Works Department as Draughtsmen and Estimators as vacancies occur. The course of instruction having been extended and the standard for certificate having been raised, passed students under these rules will be entitled to the improved salaries for the different classes of Draughtsmen which will be notified hereafter.

(4) *Surveyors.*—There are no permanent appointments available in the Public Works Establishment for Surveyors only; but, when the services of temporary men are required for special surveys not undertaken by the Public Works subordinate staff, the officers in charge are instructed to select for such employment none but passed Surveyors of the College of Engineering.

Qualified men may be appointed Probationary Deputy Surveyors, Madras Survey, on Rupees 50 with the prospect of rising eventually to the rank of Sub-Assistant Superintendent on Rupees 250.

NOTE.—It is the duty of the Principal to render all reasonable assistance to passed students who may not be appointed to the Public Works Department in seeking employment under Local and Municipal Boards and other agencies. With this view, lists of qualified men, with remarks as to their attainments, conduct, &c., will be circulated annually to Local Fund Boards and Municipalities, with recommendations that they may be employed in suitable posts when opportunities offer.

ARTICLE XI.—GENERAL.

(1) Students in the Civil and Mechanical Engineer classes are expected to appear for the B.C.E. degree examination; but they are discouraged from appearing until they have completed the three years' theoretical course.

(2) All students must provide themselves with the text-books in use and with the necessary apparatus, instruments (except surveying instruments), &c. They will, with the exception of military students, be non-resident. Strict observance of the standing rules of the institution as regards attendance, discipline, &c., will be expected from all.

(3) Students during their practical course shall not be under the supervision of the Principal of the College, but officers under whom they are serving will be required in the Public Works Department to furnish to the principal half-yearly reports of their progress in such form as may from time to time be prescribed by Government.

No. 2050.

Forwarded to the Chief Engineer for remarks.

(Signed) W. WILSON,
Acting Chief Secretary.

3rd December 1885.

No. 2162-C.

Returned, with remark that the proposed amendments seem advisable, and that there is no objection thereto in the Public Works department.

CHEPAK, (Signed) J. SHAW-STEWART, Col., R.E.,
15th December 1885. *Chief Engineer and Secy. to Govt., P.W.D.*

ORDER—dated 7th January 1886, No. 7, Educational.

The draft notification is approved and will be published in the *Fort St. George Gazette.*

(True Extract.)

W. WILSON,
Acting Chief Secretary.

To the Director of Public Instruction.
,, Revenue department.
,, Public Works department.
,, Military department.
,, Financial (Local Fund) department.

Exd. P. L. Pereira.

6-2-04
25-1-12

No. 138 W dy 18th Jany/86.

Communicated to
Supty Engineers in
supersession of G. O.
No. 1851 W dy 11th August 1885.
Sd/ J. S. S.

Supty Engrs
Chief Engr for Irrigation
C. A. & Elec. D.

P. W. D.

Govt. of {1886} Madras.

EDUCATIONAL.

Issued

Recd. *Encl.*

G.O., 7th January 1886, No. 7.

No 138 W dy 18th Jany/86

JANUARY.

Civil Engineering College.

Approving draft notification regulating the administration of the — and directing its publication in the *Fort St. George Gazette*.

Letter order

C.N. 323/86

Govt. of {1886} Madras.

EDUCATIONAL.

Issued

Recd. *Encl.*

G.O., 7th January 1886, No. 7.

B No. 138 dy 18/1/86

JANUARY.

Civil Engineering College.

Approving draft notification regulating the administration of the — and directing its publication in the *Fort St. George Gazette*.

6-2-04

25.1.12

No 138 W a/ 18th Jany/86.

Communicated to Supdg Engineers in supersession of G.O. No. 1851 W a/ 11th August 1885.

Sd/ J.S.S.

P. W. D.

Govt. of {1886} Madras.

EDUCATIONAL.

Issued

Recd. *Encl.*

G.O., 7th January 1886, No. 7.

No 138 W a/ 18th Jany/86

JANUARY.

Supdg Engrs
Chief Engr for Irrigation
C. A. thro' Govt

Civil Engineering College.

Approving draft notification regulating the administration of the — and directing its publication in the *Fort St. George Gazette*.

Letter order

GOVERNMENT OF MADRAS.

EDUCATIONAL DEPARTMENT.

READ—the following paper :—

From H. B. GRIGG, Esq., M.A., Director of Public Instruction, to the Acting Chief Secretary to Government, dated Madras, 25th November 1885, No. 7776.

I have the honor to request, after reference to the Chief Engineer, the sanction of Government for the enclosed revised draft notification regulating the administration of the Civil Engineering College, in substitution of that sanctioned in G.O., 16th July 1885, No. 443, and its publication, if approved, in three issues of the *Fort St. George Gazette*.

2. I enclose Captain Love's letter showing the desirability of revising the notification and also the draft submitted by him.

3. I think with him that it is desirable to revise the notification in several respects before it comes into full operation, but in the draft submitted for sanction, I have made some important changes in his amended draft.

4. I think with him the term "College of Engineering" is more appropriate than "Civil Engineering College."

5. The definite statement of the terms of admission into the minor examinations instead of simply stating that they will be on the same principles as to the Engineer class seems to me desirable.

6. The amendment of the groups and subjects of examination I think also necessary, but the Principal has omitted several important subjects in the several courses, the omission of which I consider inexpedient. Such subjects I have retained.

7. The Principal gives good reasons for modifying the rules suggested by me regarding marks for class work, but I do not think that even a fixed proportion of marks should be left absolutely at the disposal of the College staff, or that the Board of Examiners should not have an opportunity of inspecting class drawings, field notes, &c. I have therefore provided that, before the marks assigned by the staff are accepted, the Board shall call for and inspect some of the class work.

8. Marks may, I think, with advantage, be fixed in the notification for each branch, and Physique included as a branch; but I have raised the proportion of marks assigned to Science in the Engineer course and to Drawing in the Engineer Subordinate class, reducing for this purpose the marks assigned for Physique.

9. I approve the amendments proposed in regard to fees, and have also raised the registration fee for the Sub-Overseer class from Re. 1 to Rs. 5.

10. The only other change of importance is the inclusion of the admission examination definitely with the examination to be conducted by the Board. This was my intention from the first, as these examinations are of a public nature, and, like those for admission to the Civil Service or to the great Military Colleges, settle the claim of admission to the department. It is most important that the Board should be

responsible for the examination and that they should not be left to the staff. These examinations this year are being held by the Board.

ENCLOSURE.

From Captain H. D. LOVE, R.E., Principal, Civil Engineering College, to the Director of Public Instruction, Madras, dated 19th October 1885, No. 589-C.

With reference to your Proceedings, No. 6113, dated 15th September, and No. 6407, dated 29th September 1885, I have the honor to submit the revised draft notification therein called for.

2. Before entering into detailed explanations of the modifications proposed, I wish to observe that, although the original draft notification was sent to me early in the year by the Chief Engineer, Public Works department, for perusal and remarks, I was not aware that it was intended to publish it in exactly the form it had then assumed. This must be my apology for some of the modifications now submitted, especially for the changes made under Article V—"Courses of Study." At the Chief Engineer's request I indicated roughly the portions of each course which I considered might be disposed of finally at the term examinations; but these cannot be definitely settled until the constitution of the new staff has been decided on and time tables and syllabuses drawn up. Other modifications are rendered necessary by the publication, subsequently to the notification, of G.O., Educational, No. 523, dated 1st September 1885; and others again by the fact that the detailed working out of the scheme shows certain minor changes to be desirable.

3. In *Article I* and elsewhere, the designation *College of Engineering* has been substituted for *Civil Engineering College*, as approved in your Proceedings, No. 6159, dated 10th September 1885.

4. *Article IV—Admission.*—In clauses 7 and 8 the rules for admission to the Engineer Subordinate class are detailed, the expression "*mutatis mutandis*" in the published notification being so vague as to be likely to occasion difficulty.

5. *Article V—Courses.*—The portions to be finally disposed at the term examinations have been omitted for the reason given in paragraph 2 *supra*. The subjects have been regrouped, and an additional one, "Physique," introduced as a test of the physical qualifications of candidates. This test is enforced at Rurki, and its desirableness was strongly urged by the Madras College Committee.

6. In Proceedings of Government, No. 523, Educational, dated 1st September 1885, it is laid down that the Board of Examiners shall—

(1) assign all marks for class and field work as well as for examination work;
(2) fix the proportion of the total marks which shall be assigned to class work;
(3) fix the maximum number of marks to be given to each subject.

I deem these provisions undesirable, for reasons given below, and I respectfully request that Government be asked to reconsider them. While agreeing in the principle that the responsibility of passing students should practically rest with the Board, I consider, with regard to (1), that the marks for class work should be awarded by the College staff, because—

(*a*) such practice will conduce to the discipline of the institution by ensuring regular attendance and attention to class work during the long intervals between examinations;

(*b*) the class work, from its nature and amount, could not possibly be valued by the Board of Examiners unless the members of the Board were in frequent attendance at the college. The prominent items of class work will be engineering, architectural, and machine drawings from specifications, from models and from actual measurements; estimates; notes of inspections of engineering works; survey plans plotted from field books; field work. The quantity of work of this nature which will be executed by, say, 150 students in the course of twelve months, will be enormous, and the labor of attempting to value it would, at a moderate estimate, quadruple the examining work of the Board. The marks assigned to class work ought no doubt to bear but a small ratio to those awarded in examination; and I propose one-tenth for the Engineer and Engineer Subordinate classes, and one-fifth for the Draftsmen's and Surveyors' classes, the higher proportion in the latter being due to the work of those classes consisting almost entirely of drawings, estimates, and work in the field.

With reference to (2) and (3), I submit that the total marks for each subject-head should be fixed by Government. Unless this is done, the views of the Board as to the marks assignable to each subject will be liable to vary as its *personnel* changes; and no uniformity or permanence of system can be expected. The Government have laid down the subjects in which instruction shall be given, and I trust that they will therefore indicate the relative importance of those subjects in the different courses of study. In the revised draft notification I have proposed the number of marks to be awarded in each class to the different subject-heads.

As regards the qualification for a pass, I consider that—

(*a*) for the Engineer classes and Engineer Subordinate class the qualifying subject minimum should stand at one-third for the more important subjects—mathematics, engineering, surveying and drawing; and be reduced to one-fourth for the remaining less valuable subjects; the minimum qualifying total marks being one-half as heretofore;

(*b*) for the Draftsmen's class the qualifying minima are, considering the extension of the course, in my opinion, fixed almost unattainably high. I propose that the subject minimum and total minimum be the same as those fixed for the Surveyors' class.

7. *Article VI—Fees.*—In the Engineer classes the alternative monthly fee may be Rs. 16. In the Engineer Subordinate class no saving accrues to a student by compounding at Rs. 125 for the whole theoretical course. It is proposed, therefore, that the term fee be Rs. 30 and the monthly contribution. Rs. 6. These figures may perhaps be somewhat high however, and I name them with diffidence.

In the Draftsmen's and Surveyors' classes, a terminal fee of Rs. 18, in place of Rs. 15, is proposed.

8. *Article VII—Certificates.*—The fees for the examination of independent candidates might be somewhat raised. A diploma as Assistant Engineer must be more valuable to its possessor than the Madras University B.A. degree for example, and a corresponding fee should, I consider, be demanded similarly for the less important certificates.

9. *Article X—Prospects of Students.*—Under "Surveyors" an addendum has been inserted as suggested in Chief Engineer's letter, No. 345 E, dated 9th July 1885, paragraph 3. The addendum is based on Proceedings of Government, Revenue department, No. 4210, dated 12th August 1885.

NOTIFICATION.

The following code of rules relating to the constitution and work of the Madras College of Engineering, the subsequent training of students, and their selection by the Department of Public Works, has been sanctioned by Government and will have effect from 1st January 1886:—

Preamble.—The college, which is affiliated to the Madras University, will afford theoretical and practical instruction in subjects qualifying Europeans and Natives of India for the professions and callings set forth in Article III, in view of fitting them for employment in such capacity by Government, by Local and Municipal Boards, and by other agencies.

Students passing the higher course in Engineering are at the same time prepared for the B.C.E degree of the Madras University.

ARTICLE I.

The responsibility for the discipline and management of the college is vested in the Principal, under the control of the Director of Public Instruction.

ARTICLE II.

The admission and all final examinations will be conducted by an independent Board of Examiners, consisting of a President and two Members, to be appointed by Government for a term of three years. They shall receive such remuneration as shall from time to time be fixed by Government. When necessary, the Board may, with the sanction of Government, employ assistant examiners. The decision of the Board of Examiners in regard to the qualifications of any student appearing for examination shall be final. The names of all students declared by the Board to have passed a final examination shall be published in the *Fort St. George Gazette*.

ARTICLE III.

The classes to be formed are—

(1) Civil Engineers.
(2) Mechanical Engineers.
(3) Engineer Subordinates.
(4) Draughtsmen.
(5) Surveyors.
(6) Sub-Overseers, Maistries, and Artisans.

ARTICLE IV.—ADMISSION.

(1) The number of students to be admitted annually will, for the present, be limited to 15 in Civil and Mechanical Engineer classes taken together; to 30 in the class for Engineer Subordinates; to 20 in the class for Draughtsmen; to 15 in the class for Surveyors.

N.B.—These numbers will be liable to reduction, which will be notified one month before the entrance examination, until the college accommodation has been improved and enlarged to meet requirements.

The number to be admitted to the other classes will be notified yearly. Admission shall be once a year—(1) For the Engineer classes, on last Monday in January; (2) for the Engineer Subordinate classes, on first Monday in August; (3) for the junior classes, on last Monday in January.

(2) Candidates for admission to the Civil and Mechanical Engineer classes must be between the ages of 17 and 21 years, to the Engineer Subordinate class between the ages of 16 and 20 years, and to the other classes between the ages of 16 and 22 years, on the 31st December preceding the year of admission.

(3) Candidates for admission to the Civil and Mechanical Engineer classes must produce a certificate of having passed the First Examination in Arts of the Madras or other Indian University; to the Engineer Subordinate class, a certificate of having passed the Matriculation examination of the Madras or other Indian University; to the

Draughtsmen's and Surveyors' classes, except when specially exempted, a certificate of having passed the Middle School examination. For the sixth class selection will be made from the sons of artisans or maistries. or from youths who have already had practical training in some of the building trades.

(4) All candidates must produce satisfactory testimony of good character, physical fitness, age, and freedom from liability to small-pox. Candidates whose certificates are unsatisfactory in any respect will be excluded from the test for admission.

(5) Admission to the Civil and Mechanical Engineer classes shall be decided by open competition in the following branches of mathematics; but, to insure a high standard of general knowledge, to the total marks obtained in mathematics will be added one-half of the marks obtained in the F.A. examination:—

	Marks.
Arithmetic	100
Algebra, including quadratic equations and binomial theorem	75
Geometry, the first four books and the sixth book of Euclid	75
Mensuration	50
Trigonometry, including the solution of plane triangles	100
Total ..	400
F.A. examination ..	300
Grand Total ..	700

Candidates failing to obtain one-third of the combined total marks shall not be admitted. Selection shall be made in order of merit: provided that, if four Europeans and Eurasians and three Muhammadans are not within the first fifteen, the number under each may be made good in order of merit from the other qualified candidates. Before joining the college, the candidates shall inform the Principal whether they intend to be Civil or Mechanical Engineers.

(6) The fee for admission to this examination shall be Rupees 10. The names of the successful candidates shall be published in the *Fort St. George Gazette*.

(7) Admission to the Engineer Subordinate class shall, except in the case of soldier students, be decided by open competition in the following branches of mathematics; but, to ensure the requisite standard of general knowledge, to the total marks obtained in mathematics will be added one-half of the marks gained in the Matriculation examination:—

	Marks.
Arithmetic	125
Algebra	75
Geometry	100
	300
Proportion of marks in the Matriculation examination	225
Total ..	525

(8) Candidates failing to obtain one-third of the total combined marks shall not be admitted. Selection shall be made in order of merit: provided that, if six Europeans and Eurasians and four Muhammadans are not within the first thirty, the number under each may be made good in order of merit from the other qualified candidates. The fee for admission to this examination shall be Rupees 5. The names of the successful candidates shall be published in the *Fort St. George Gazette*.

(9) *Soldier Students.*—Non-commissioned officers and soldiers of Her Majesty's British service desirous of qualifying for employment in the Public Works Department will, to the number of five annually, be admitted to the college on passing an entrance examination in arithmetic and English. After one year's study of arithmetic, algebra, geometry, and vernacular language, they will, provided they pass a satisfactory examination in these subjects, join the subordinate class for the ordinary theoretical and practical courses. Each student will draw a stipend of Rupees 10 per mensem for three and-a-half years, commencing from the date of joining the subordinate class. His pay, rations and clothing will be drawn from his regiment throughout the whole course of study. A fixed proportion between the number of soldiers and civilians to be appointed to the Public Works Department will be established.

(10) Admission to the Draughtsmen's and Surveyors' classes shall be regulated by the order in which the candidates have passed the Middle School or some higher examination, the selection proceeding from those that have passed a higher examination to those who have passed a lower.

Article V.—Courses.

The course and subjects of study in the several classes shall be as follows:—

(1) Civil and Mechanical Engineer Classes.

(*a*) Theoretical Course.—The theoretical course, which extends over three years, will embrace the subjects and carry the marks enumerated below:—

	Marks.
I. *Pure* and applied *Mathematics.*—Algebra, geometry, and arithmetic; mensuration and trigonometry; mechanics; hydro-mechanics; algebraic geometry, and the differential and integral calculus ..	675
II. *Science.*—Chemistry, physics, and geology	325
III. *Engineering.*—Building materials; building and bridge construction; hydraulics, irrigation works and sanitary engineering; road and railway construction; applied mechanics; principles of mechanism; prime movers; the steam-engine.	800
IV. *Surveying.*—Surveying with chain, compass and plane table; levelling; theodolite surveying; topographical drawing	400
V. *Drawing.*—Geometrical drawing; freehand model, and perspective drawing; architectural drawing; machine drawing; estimating; designing; specification ..	500
VI. *Language.*—Tamil or Telugu * ..	200
VII. *Physique.*—Physical fitness; gymnastics, &c.	100
Final Total ..	3,000

* Note.—Tamil to be obligatory for natives of Telugu districts, and *vice versâ*. The choice of one of these two languages to be open to all other students.

Of the total marks, 2,700 shall be awarded by the Board of Examiners for examination work; and 300 by the College Staff for drawings, notes, fieldwork, &c., executed during the course. The Board, however, shall call for and inspect such drawings, notes, &c., before finally accepting the marks given by the staff.

Term examinations will be held at the end of the first and second years of study, at which portions of the above subjects will be finally disposed of by the Board of Examiners. The marks awardable at these examinations are included in the final total.

Candidates must obtain one-third of the total marks in each of the subject heads I, III, IV, and V, one-fourth in each of the subject heads II, VI, and VII, and one-half of the final total marks. They shall be arranged in two classes in order of merit; the first, or honor class, containing those who have obtained not less than three-fourths of the total marks.

(*b*) Practical Course. *Civil Engineers.*—After completing the theoretical course, the pupils of the Civil Engineer class will spend one year in the Public Works Workshop, going through the carpenters' shop, the smithy, the foundry, and the fitting shop. They will then be placed for one year under the Public Works Department, and will be stationed at places where large works are in progress. They will be regularly instructed in the practical details of brick-making, bricklaying, quarrying, blasting, masonry, building of all sorts, the management of labor, accounts, &c.

Mechanical Engineers.—The course will comprise two years of practical study at the chief workshops of the presidency.

(2) Engineer Subordinate Class.

(*a*) Theoretical Course.—The theoretical course, which extends over two and-a-half years, will embrace the subjects and carry the marks enumerated below:—

	Marks.
I. *Mathematics.*—Arithmetic, algebra and geometry; plane trigonometry and mensuration; elementary statics..	370
II. *Engineering.*—Building materials; strength of materials; building and bridge construction; earthwork and roads; hydraulics and irrigation works; elementary applied mechanics; mechanism and the steam-engine; designing and estimating	600
III. *Surveying.*—Surveying with chain, compass and plane table; levelling; theodolite surveying; topographical drawing	350
IV. *Drawing.*—Geometrical drawing; freehand drawing; mechanical drawing; estimating	400
V. *Language.*—Tamil or Telugu * ..	180
VI. *Physique.*—Physical fitness; gymnastics, &c.	100
Final Total ..	2,000

Of the total marks, 1,800 shall be awarded by the Board of Examiners for examination work, and 200 by the College Staff for drawings, notes, fieldwork, &c., executed during the course. The Board however shall call for and inspect such drawings, notes, &c., before finally accepting the marks given by the staff.

* Note.—Tamil to be obligatory for natives of Telugu districts, and *vice versâ*. The choice of one of these two languages to be open to all other students.

Term examinations will be held at the end of the first and third half-years of study, at which portions of the above subjects will be finally disposed of by the Board of Examiners. The marks awardable at these examinations are included in the final total.

Candidates must obtain one-third of the total marks in each of the subject heads I, II, III, and IV, one-fourth in each of the subject heads V and VI, and one-half of the final total marks. They shall be arranged in two classes in order of merit; the first containing those who have obtained at least three-fourths of the total marks.

(*b*) Practical Course.—The practical course will comprise one year of practical study in workshops, and one year on large engineering works, on which instruction will be afforded similar to that given to the Civil Engineer pupils.

(3) Draughtsmen's Class.

The course, which extends over two years, will embrace the subjects, and carry the marks enumerated below:—

	Marks.
(1) Practical and Descriptive Geometry.	150
(2) Freehand, perspective, and model drawing	150
(3) Architectural and topographical drawing	240
(4) Machine drawing	200
(5) Estimating	260
Total ..	1,000

Of the total marks, 800 shall be awarded by the Board of Examiners for examination work, and 200 by the College Staff for plans, &c., executed during the course. The Board however shall call for and inspect such drawings, &c., before finally accepting the marks given by the staff.

A term examination will be held at the end of the first year.

Candidates obtaining 66 per cent. in each of the above five subjects and 75 per cent. on the total shall receive *First-class* Certificates: those obtaining 50 and 66 per cent., respectively, *Second-class* Certificates: those obtaining 36 and 50 per cent., respectively, *Third-class* Certificates.

(4) Surveyors' Class.

The course, which extends over two years, will embrace the subjects and carry the marks enumerated below:—

	Marks.
(1) Surveying with chain, compass, and plane table	275
(2) Levelling	225
(3) Theodolite surveying	200
(4) Topographical drawing ..	300
Total ..	1,000

Of the total marks, 800 shall be awarded by the Board of Examiners for examination work, and 200 by the College Staff for fieldwork and drawings executed during the course. The Board however shall call for and inspect such drawings, notes, &c., before finally accepting the marks given by the staff.

A term examination will be held at the end of the first year.

Candidates obtaining 66 per cent. in each of the above four subjects and 75 per cent. on the total shall receive *First-class* Certificates: those obtaining 50 and 66 per cent., respectively, *Second-class* Certificates: those obtaining 36 and 50 per cent., respectively, *Third-class* Certificates.

(5) SUB-OVERSEERS, &C.

The courses of study shall be—

Arithmetic.
Elementary Geometry.
Mensuration.
Scales.
Plan-drawing.
Elements of Engineering.

No examinations will be held, but a certificate of attendance shall be given by the Principal after a minimum period of one year's regular study. The instruction shall be given in the Tamil and Telugu languages, and the class shall be an evening one.

ARTICLE VI.—FEES.

(*a*) *Civil and Mechanical Engineer Class.*—The fee is fixed at Rupees 85 for each term of six months, payable in advance; or, if candidates so desire, they will be permitted to pay instead a monthly contribution of Rupees 16, but in either case a deposit of Rupees 100 will be demanded at the outset.

A student may compound for the whole theoretical course by the payment of a fee of Rupees 400 in advance. No fee will be demanded for the practical course.

(*b*) *Engineer Subordinate Class.*—The fee is fixed at Rupees 30 for each term of six months, payable in advance; or by a monthly contribution of Rupees 6, with a deposit of Rupees 50 at the outset; or Rupees 125 for the whole theoretical course payable in advance. No fee will be demanded for the practical course.

(*c*) *Draughtsmen's and Surveyors' Classes.*—A term fee of Rupees 18 to be paid in advance, or a monthly contribution of Rupees 4.

(*d*) *Sub-Overseer and Maistry Class.*—No fee shall be required except a registration fee of five rupees.

NOTE.—Fees will, under no circumstances, be returned after a student has been admitted to the institution.

ARTICLE VII.—CERTIFICATES.

(*a*) The Board of Examiners shall issue, under their signatures, a certificate to each candidate setting forth the class of study in which he has qualified; but, in the case of students of the Engineer and Engineer Subordinate classes, the final certificate, in the nature of a diploma, shall be issued under the signatures of the Principal of the College and of the Director of Public Instruction, in proof that the student concerned has satisfactorily completed the prescribed practical course.

(*b*) A candidate who has failed to obtain a certificate from the Board at the final examination may appear before the Board for examination at any subsequent year, provided he is certified to have put in the necessary attendance at the college and pays a fee as follows:—

	RS.	A.	P.
Civil and Mechanical Engineers.	30	0	0
Engineer Subordinates ..	20	0	0
Other classes	10	0	0

(*c*) The names of the candidates so passing shall be published in the *Fort St. George Gazette* in a separate list, and they shall simply be declared to have satisfied the Board of Examiners.

ARTICLE VIII.—SCHOLARSHIPS, &C.

The following scholarships and prizes are allowed for students during their college course:—

(1) *Engineer Classes.*—One scholarship of Rupees 30 per mensem will be awarded annually to the candidate who passes first in the admission examination. The scholarships are re-awardable annually on the results of each term examination.

A gold medal of the value of Rupees 120 will be awarded to the student who passes first in the final examination.

Prizes consisting of instruments or books will be given for special proficiency in particular subjects.

(2) *Engineer Subordinate Class.*—Two scholarships, each of Rupees 10 per mensem, will be awarded annually to the two candidates who pass highest on the list at the admission examination. The scholarships are re-awardable after each term examination.

A gold medal of the value of Rupees 60 will be awarded to the student who passes first in the final examination.

Prizes consisting of instruments or books will be given for special proficiency in particular subjects.

(3) *Draughtsmen's Class.*—Two scholarships, each of Rupees 8 per mensem, tenable during the second year of study, will be granted to the students who stand highest on the list at the term examination at the end of the first year.

A silver medal of the value of Rupees 10 will be given to the student who passes first in the final examination.

(4) *Surveyors' Class.*—Two scholarships, each of Rupees 8 per mensem, tenable during the second year of study, will be granted to the students who stand highest on the list at the term examination at the end of the first year.

A silver medal of the value of Rupees 10 will be given to the student who passes first in the final examination.

NOTE.—Scholarships may be reduced or forfeited for misbehaviour or other cause.

ARTICLE IX.—PRACTICAL COURSES.

All allowances during the practical course will be debitable to the Department of Public Works.

(1) *Civil and Mechanical Engineers.*—During the final year of practical training on works, subsistence allowances of Rupees 50 per mensem for Europeans and Eurasians and Rupees 25 per mensem for natives will be granted. Such allowances will, however, be contingent on the good conduct and satisfactory progress of the student under instruction; and on proof of misconduct or idleness the allowances may be cut down or withdrawn altogether by the officers in charge of the works.

(2) *Engineer Subordinates.*—As in the case of the Civil and Mechanical Engineer pupils, no fee will be exacted during the workshop year; and during the year of practical study on works stipends will be granted of Rupees 30 per mensem for Europeans and Eurasians and Rupees 20 per mensem for natives, subject to the conditions of good conduct, regular attendance, &c.

Soldier students will, during the workshop course, draw pay, rations, and clothing from their regiments, and the stipends prescribed for the theoretical course. During their year of practical training on works, they will cease to draw those allowances, and will be brought on to the Public Works Department scale of establishment as apprentice overseers, drawing the pay and allowances laid down in the Public Works regulations.

ARTICLE X.—PROSPECTS OF STUDENTS.

(1) *Civil and Mechanical Engineers.*—One appointment annually as Assistant Engineer, third grade, in the Public Works Department, will for the present be conferred on the student highest on the list at the final examination who has also obtained the degree of B.C.E. To those next on the list appointments as Supervisors, second grade, will be offered, in order of merit. The number of appointments to be so awarded will be in proportion to the requirements of the service, and will be fixed by the Chief Engineer. The number so determined on will be announced annually, at least six months before the final college examination. It is to be understood, however, that all vacancies in the Supervisor grade will not be filled by selection from the most distinguished of the passed students of this class, as a portion of such vacancies must be reserved for the best qualified subordinates of the Overseer grade.

(2) *Engineer Subordinates.*—Vacancies in the Overseer grades of the Public Works Establishment will be filled by passed men in the order of merit. Prior to each entrance examination, notice will be given of the number of such appointments likely to become available for competition by the then entering batch of candidates.

(3) *Draughtsmen.*—Certificated students of this class will be appointed to the Public Works Department as Draughtsmen and Estimators as vacancies occur. The course of instruction having been extended and the standard for certificate having been raised, passed students under these rules will be entitled to the improved salaries for the different classes of Draughtsmen which will be notified hereafter.

(4) *Surveyors.*—There are no permanent appointments available in the Public Works Establishment for Surveyors only; but, when the services of temporary men are required for special surveys not undertaken by the Public Works subordinate staff, the officers in charge are instructed to select for such employment none but passed Surveyors of the College of Engineering.

Qualified men may be appointed Probationary Deputy Surveyors, Madras Survey, on Rupees 50 with the prospect of rising eventually to the rank of Sub-Assistant Superintendent on Rupees 250.

NOTE.—It is the duty of the Principal to render all reasonable assistance to passed students who may not be appointed to the Public Works Department in seeking employment under Local and Municipal Boards and other agencies. With this view, lists of qualified men, with remarks as to their attainments, conduct, &c., will be circulated annually to Local Fund Boards and Municipalities, with recommendations that they may be employed in suitable posts when opportunities offer.

ARTICLE XI.—GENERAL.

(1) Students in the Civil and Mechanical Engineer classes are expected to appear for the B.C.E. degree examination; but they are discouraged from appearing until they have completed the three years' theoretical course.

(2) All students must provide themselves with the text-books in use and with the necessary apparatus, instruments (except surveying instruments), &c. They will, with the exception of military students, be non-resident. Strict observance of the standing rules of the institution as regards attendance, discipline, &c., will be expected from all.

(3) Students during their practical course shall not be under the supervision of the Principal of the College, but officers under whom they are serving will be required in the Public Works Department to furnish to the principal half-yearly reports of their progress in such form as may from time to time be prescribed by Government.

No. 2050.

Forwarded to the Chief Engineer for remarks.

(Signed) W. WILSON,
Acting Chief Secretary.

3rd December 1885.

No. 2162-C.

Returned, with remark that the proposed amendments seem advisable, and that there is no objection thereto in the Public Works department.

CHEPAK, (Signed) J. SHAW-STEWART, Col., R.E.,
15th December 1885. *Chief Engineer and Secy. to Govt., P.W.D.*

ORDER—dated 7th January 1886, No. 7, Educational.

The draft notification is approved and will be published in the *Fort St. George Gazette.*

(True Extract.)

W. WILSON,
Acting Chief Secretary.

To the Director of Public Instruction.
" Revenue department.
" Public Works department.
" Military department.
" Financial (Local Fund) department.

Exd. P. L. Pereira.