

Local & Munl. (1896) Department.

MISCELLANEOUS.

G.O., No. *409 M*

DATED *11th March 1896*

[Despatch Abstract.]

Rules.

Recording G.O., Judicial Department, forwarding copy of the
-----framed under section 35 of the Bombay Boilers Inspectors' Act.

BACK PAPERS.

G.O.	No.	Department.	Date.	G.O.	No.	Department.	Date.

FURTHER PAPERS.

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Miscellaneous.

LOCAL AND MUNICIPAL DEPT.

G.O., DATE 11-3-96
No. 409 m

When given for copying.

[Despatch Abstract.]

Rules

Recording G.O. J.D. forwarding
copy of the ——— framed under
Section 35 of the Bombay Boilers
Inspectors' Act.

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G.O.

ENCLOSURES.

CURRENT No.

STATEMENT WITH DITTO.

ORDER OF GOVERNMENT

STATEMENT WITH DITTO.

PAPERS NOT FILED UP, BEING MEANT FOR DESPATCH
IN ORIGINAL (not paged).

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Examined by

GENERAL DEPARTMENT.

Bombay Castle, 3rd February 1896.

No. 515.—The following rules framed by Government under Section 35 of the Bombay Boiler Inspection Act, 1891—

- (1) for settling under clause (a) thereof the duties and emoluments of Examiners appointed under the said Act,
- (2) for regulating under clause (c) of the said section the conduct of the examinations to be held under Section 19 of the said Act,
- (3) for prescribing, under clause (d) of the Section 35 aforesaid, the qualifications to be required of candidates at the said examinations, the fees to be paid by them, the forms of certificates to be granted to them, and the capacity of boiler of which each such certificate shall qualify the holder to be in charge, and
- (4) under clause (f) of the Section 35 aforesaid generally for giving effect to the provisions of the said Act in every part of the Presidency of Bombay in which that Act is in force, including Aden;

are published for general information. These rules supersede all rules heretofore in force under the said Act with the exception of those published under Government Notifications Nos. 1877 and 1877A,* dated 21st May 1894;—

Rules relating to Certificates and Examinations of Mechanical Engineers.

- I. Preliminary.
- II. Board of Examiners.
- III. Examinations.
- IV. Admission of candidates to the examination for Certificates of Competency—
 - A. General.
 - B. Testimonials.
 - C. Age and training of candidates.
 - D. General rules regarding service.
- V. Subjects of examination for Certificates of Competency.
- VI. Mode of examination.
- VII. Rules for the examination room.
- VIII. Grant of Lower Grade Certificates in certain cases.
- IX. Postponement of grant of Certificates in certain cases.
- X. Surrender of Lower Grade Certificates.
- XI. Certificates of service.
- XII. Form of Certificates.

I.—Preliminary.

1. These rules may be cited as "The Bombay Engineers' Examination Rules, 1895."
2. In these rules unless there be something repugnant in the subject or context—
 - (a) "the Act" means the Bombay Boiler Inspection Act, 1891;
 - (b) "section" means a section of the said Act;
 - (c) "the Collector" (i) means in the City of Bombay the Collector of Bombay, (ii) in Aden includes the First Assistant Resident,

and (iii) means elsewhere the chief local officer in charge of the revenue administration of a district;

- (d) the words defined in Section 3 shall be deemed to have respectively the same meaning as is given to them by the Act;
- (e) words in the singular include the plural, and vice versa.

II.—Board of Examiners.

3. The Collector shall be *ex-officio* President of the Board of Examiners.

4. The Examiners from time to time nominated under Section 20 shall meet at the request of the Collector, whenever necessary, in such place as he may from time to time deem expedient.

5. Each examination shall be conducted by such members of the Board, not less than four in number, as the Collector with a view to their successive service as far as possible in rotation may request to attend for the purpose.

6. Each Examiner shall be entitled to receive a fee of 50 rupees for each meeting of the Board, at which any duty prescribed by the Act is performed and which he attends from the beginning to the end.

7. The Examiners shall endorse on the printed application of each candidate the result of his examination for a certificate of competency, and return to the Collector the application so endorsed.

III.—Examinations.

8. (i) Examinations shall ordinarily be held in the City of Bombay for the Presidency proper, and for Sind in the City of Karachi, once every two months on the second Wednesday of the month. (ii) At Aden examinations shall be held once every two months on the second Wednesday of the month and shall be for third class certificates only.

9. Every examination shall be attended by one or more clerks from the Collector's office, who shall do such clerical work as may be necessary and shall act as interpreter when required to do so by the Board of Examiners.

10. The examinations will be of three kinds, one for each of the three classes of certificates of competency which the Board is hereinafter empowered to grant.

IV.—Admission of Candidates to the Examinations for Certificates of Competency.

A.—General.

11. Candidates at examinations for certificates of competency will pay fees at the following rates:—

	Rs.
For a 1st class certificate	20
Do. 2nd do.	15
Do. 3rd do.	10

Unsuccessful candidates will not be entitled to a return of any portion of the fees paid by them; but, if applied for, the fee paid by any applicant who is not admitted to examination will be returned to him in full:

Provided that in the event of a candidate being unavoidably absent from any examination for which he has paid fees, it shall be in the discretion of the Collector to allow him to appear at any examination held within six months of the first without a second payment of fees.

12. Every applicant for examination must make an application in the form of Appendix A. He shall duly fill in all the parts of the said form which are to be filled in by a candidate, and sign the same in the presence of the Collector, an Assistant Collector or a Magistrate, who shall append his signature in token of attestation. The applicant shall then lodge his application at the office of the Collector not later than fifteen days before the date fixed for the examination, together with—

- (a) all testimonials of good character, sobriety, experience and ability, together with copies of the same;
 - (b) any other papers required by these rules or the printed form of application; and
 - (c) a receipt from a Government treasury for the amount of the fee prescribed in Rule 11 for the examination at which he wishes to appear;
 - (d) a letter declaring in what language he desires to be examined;
 - (e) all previous certificates issued to the applicant under the Act.
13. Candidates for certificates of competency who are natives of India must prove to the satisfaction of the Examiners that they can read their vernacular sufficiently well to perform the duties required of them.

B.—Testimonials.

14. No applicant will be admitted to examination whose testimonials as to sobriety, experience and ability do not relate to a period of at least 12 months immediately preceding the date of application to be examined, and are not in the opinion of the Board trustworthy and satisfactory.

15. The testimonial for any period during which the candidate acted as a chief engineer must be signed by the manager, owner or secretary by or under whom the candidate was employed, and, for such period as he acted as a second or lower grade engineer, must be signed by the chief engineer, to whom the candidate was subordinate; but if for any sufficient reason the chief engineer's signature is not obtainable, it may be signed by the manager, owner or secretary, but the testimonial must declare that the facts stated therein are either in accordance with the reports of the chief engineer, or, if no such reports are available, are within the personal knowledge of the person signing the same.

16. Testimonials relating to service beyond the limits of British India must be countersigned either by the Consul, or by some other recognised

official authority of the country in which the service was performed; or, in the case of a Native State, by the Political Agent:

or must be authenticated by the testimony of some credible person on the spot having personal knowledge of the facts required to be established.

17. If the Board has reason to doubt the truth of any fact stated in any application or testimonial, it may make through the Collector such inquiries as it shall think fit.

18. The applications and copies of the testimonials referred to in Rule 12 shall be filed in the office of the Steam Boiler Department, and the original testimonials shall, at the close of each examination, be returned to the candidates who presented them, if they apply for the same, and copies of them shall be obtainable free of cost on application to the Collector.

C.—Age and Training of Candidates.

19. A candidate for a third class certificate of competency will not be admitted to examination, unless he (a) is qualified within the meaning of the rules next following as a candidate for a second class engineer's certificate of competency, or unless he (b) proves to the satisfaction of the Board that previous to his application he has been three years employed as a fireman on engines and boilers, or (c) produces from the Principal of the College of Science at Poona, or from the Principal of the Victoria Jubilee Technical Institute at Bombay, a certificate stating that he has completed a three years' course in the workshops of that College or Institute and during that period has been constantly instructed in the management of engines and boilers.

20. A candidate for a second class engineer's certificate of competency must be 21 years of age. No candidate for a certificate of this class will be admitted to the examination, unless he (1) proves to the satisfaction of the Board that, previous to his application,—

- (a) he has served an apprenticeship for not less than three years to an engineer, and that during that time he has been employed on the making or repairing of engines; or
- (b) he has been employed for not less than three years as a journey-man mechanic in some factory or workshop on the making or repairing of engines; or
- (c) he has for not less than two years fulfilled the requirements either of clause (a) or of clause (b) as to service or employment, and has, for not less than one year in addition thereto, served as engineer in charge or assistant engineer in some mill or factory with boilers under steam; or unless he (2) produces from the Principal of the College of Science at Poona or under the signature of the Director of Public Instruction, as the full Technological Certificate of the Victoria Jubilee Technical Institute at Bombay, a certificate stating that he has completed in the workshops of such College or Institute a three years' course, and during that period has been constantly instructed in the management of boilers and engines.

21. A candidate for a first class engineer's certificate of competency must be 22 years of age. No candidate for a certificate of this class will be admitted to the examination unless he proves to the satisfaction of the Board that, previous to his application,—

- (1) he has received such training as is required by Rule 20 in the case of a candidate for a second class engineer's certificate of competency; and also proves that—
- (2) either
 - (a) he possesses or is entitled to a first class engineer's certificate of service; or,
 - if he neither possesses nor is entitled to a first class certificate of service,
 - (b) that he has served—

- (i) for at least one year with boilers under steam as engineer with a second class engineer's certificate of competency, or
- (ii) for at least two years with boilers under steam as engineer with a second class engineer's certificate of service, or
- (iii) for at least one year with boilers under steam as second engineer with a second class engineer's certificate of service, and, in addition, for at least six months as chief engineer with boilers under steam which are by law required to be in the charge of an engineer holding a certificate:

Provided that if an applicant who is able to satisfy the Collector as to the character of his services, has in consequence of service abroad been unable to obtain a second class certificate of competency or of service, he may be allowed, if the Collector see fit, to be examined for a first class certificate of competency or of service although he has not obtained a certificate of the lower grade.

22. Any person qualified under the rules hereinbefore contained to appear for examination as a candidate for a certificate of any class other than the third class, may be permitted to appear for examination as a candidate for a certificate of any class inferior to that for which he is so qualified to appear as a candidate.

D.—General Rules regarding Service.

23. Every candidate who qualifies for admission to the examination by engine-room service, must show by his testimonials that he has been regularly employed in the engine-room as a fireman or as an engineer of a certain grade.

24. Service with boilers not continuously under steam shall count as service of half the same length with boilers continuously under steam, unless the candidate proves that more than half of such service was actually under steam; and the candidate must show by his testimonials whether the boilers with which he has worked were or were not continuously under steam.

25. Service as an engineer means service in those capacities only which afford opportunities of obtaining practical experience as an engineer on engines, boilers and their appurtenances; it does not include service as a fireman, stoker, donkeyman, greaser, winchman, labourer, or engineer's steward.

26. Service performed in places where the Act is not in force may be accepted as qualifying service subject to the same rules as those which apply to service performed in places where the Act is in force.

V.—Subjects of Examination for Certificates of Competency.

27. To be entitled to a third class certificate of competency a candidate must satisfy the Examiners that—

- (a) he fully understands the working and management of boilers, the use of the best means of firing for the prevention of smoke, and the separate use of gauge glass-cocks, blow-off cocks, scum-cocks and other appliances;
- (b) he is able to some extent to explain the actual working of engines, and the separate uses of feed-pumps, slide-valves, pistons and other appliances;
- (c) he is able to show how he would act in case of the break-down of any portion of the machinery, &c.

28. To be entitled to a second class certificate of competency a candidate—

- (a) must give a description of boilers, and the methods of staying them, together with the use and management of the different valves, cocks, pipes and connections;
- (b) must understand how to correct defects from accident, decay and other causes, and know the means of repairing such defects;
- (c) must understand the use of the barometer, thermometer and salinometer, and the principles on which they are constructed;
- (d) must know the causes, effects and usual remedies for incrustation and corrosion;
- (e) must state how a temporary or permanent repair could be effected in case of derangement of a part of the machinery, or of total break-down;
- (f) must write a legible hand, and understand the first five rules of arithmetic, and decimals, and their application to questions about consumption of stores, full capacities of tanks, the duty of pumps, and the direct strains in engines and boilers;

(g) must pass a creditable examination as to the various constructions of engines in general use and as to the details of the different working parts, external and internal, and the use of each part;

(h) must possess a creditable knowledge of the prominent facts relating to combustion, heat and steam.

29. To be entitled to a first class certificate of competency a candidate must be able to—

- (a) make an intelligible hand-sketch or a working drawing of some one or more of the principal parts of a steam-engine; and to mark in, without a copy, all the necessary dimensions in figures, so that the sketch or drawing could be worked from;*

* See Appendix C.

- (b) take off and calculate indicator diagrams;
 (c) calculate safety-valve pressures, and the strength of the boiler shell, stays and riveting;
 (d) state the general proportions borne by the principal parts of the machinery to each other, and calculate the direct stress, the torsional stress and the bending stress, in round bars, and the direct stress and the bending stress in rectangular bars with given loads;
 (e) explain the method of testing and altering the setting of the slide-valves, and sketch about what difference any alteration in the slide-valve will make in the indicator diagram, and also explain the method of testing the fairness of shafts, and of adjusting them;
 (f) explain surface condensation, super-heating, and the working of steam expansively;
 (g) work calculations including the mensuration of superficies and solids and the extraction of the square root, and the application of these rules to questions relating to the power, duty and economy of engines and boilers, and to the stresses in rods, shafts and levers of the engine.

VI.—Mode of Examination.

30. Every examination shall be of such a nature as to test the practical knowledge of the candidates and to ascertain their competency to manage boilers and prime-movers.
31. The examination for third class certificates will be conducted *vis à vis*, and in the City of Bombay will be held in Her Majesty's Indian Marine Dockyard, and elsewhere, if possible, in a foundry where the candidate's knowledge can be practically tested in the use of the steam, vacuum and water-gauges.
32. (1) Each first and second class candidate will in the first place be called upon to give written answers within a prescribed time to ten of the "Elementary Questions" issued by Government and referred to in Appendix D. If the candidate's answers are not satisfactory, his examination will cease, and he shall be declared to have failed.
- (2) If his answers to the ten questions are satisfactory, the candidate will be called upon—
- (a) if a first class candidate—
- (i) to answer, within a prescribed time, a paper of ten questions in arithmetic as specified in clause (g) of Rule 29;
- (ii) to make, within a prescribed time, a rough drawing of some part of a boiler or engine;
- (iii) to answer *vis à vis* questions on the subjects specified in clauses (b) to (f), both inclusive, of Rule 29, and on the papers which may have been set to him;
- (b) if a second class candidate—
- (i) to answer, within a prescribed time, a paper of ten questions in arithmetic as specified in clause (f) of Rule 28;
- (ii) to answer *vis à vis* questions on the subjects specified in clauses (a) to (g),

- both inclusive, of Rule 28 and on the papers which may have been set to him;
- (3) Answers to written questions must be worked out in the presence of at least one of the Examiners.
- (4) Each candidate's answers to written questions must be given up on the expiry of the time prescribed, whether his answers are then complete or not.
- (5) If, at the expiry of the time prescribed—
- (a) the answers given by the candidate satisfy the Examiners of his capability to take charge, in the case of—
- (i) a first class candidate, of boilers, whatever their nominal horse-power, and in the case of
- (ii) a second class candidate, of boilers of ninety nominal horse-power,
- (b) the candidate has failed to work out the whole of the questions set to him, but the result of the *vis à vis* examination, taken in connection with the answers to such of the questions as he has worked out, satisfies the Examiners that the candidate is competent to take charge, in the case of—
- (i) a first class candidate, of boilers, whatever their nominal horse-power and in the case of
- (ii) a second class candidate, of boilers of ninety nominal horse-power.

he shall be declared to have passed, otherwise the candidate shall be declared to have failed.

33. When a candidate for a first or second class certificate fails either in the elementary questions or in the subsequent portion of the examination, the Board of Examiners shall fix a period after the expiry of which he may again appear for examination, and shall inform him thereof; and the candidate shall not be at liberty to appear again for examination at any place at which an examination is held under the Act until after the expiry of the period so fixed.

VII.—Rules for the Examination Room.

34. Candidates will be allowed, in the time allotted, to cancel any part of their work, and, when required, additional paper will be supplied by the Examiner, but they will not be allowed to work out the problems on a slate or on waste paper. The additional sheets must be attached to and form part of the examination papers to be given in by the candidate.
35. The examination in rough working drawing which candidates for first class certificates have to pass under Rule 29 (a), may at the candidate's option be applied either to hand-sketches clearly dimensioned and complete in the necessary *views* and *sections* or to drawings to a scale. Candidates will have to bring with them any drawing instruments they may require.
36. A candidate discovered (a) to have taken into the examination room any book, paper, document or memoranda of any description, or (b) copying from or affording, giving or receiving any assistance or any information to or from, or com-

municating in any way with another, during the time of examination, shall be regarded as having failed in his examination, and will be turned back for four months, in the same manner as if he had failed in the practical part of the examination; and no part of the fees he may have paid for examination will be returned to him.

37. If a candidate leaves the room before answering any question which has been given to him, he cannot afterwards be permitted to answer it, but the Examiner may substitute other data, or another question.

VIII.—Grant of Lower Grade Certificates in certain cases.

38. If a candidate allowed under the proviso to Rule 21, to be examined for a first class certificate though he has not obtained a certificate for a lower grade, or if a candidate already in possession of a certificate of service, fail to pass the examination for the higher grade, but pass the examination for the lower grade, he may receive a certificate for the grade passed, but no part of the fee paid by him will be returned.

39. A candidate who has been permitted to be examined for a first class certificate of competency under the proviso to Rule 21 without first obtaining a second class certificate of competency or a first class certificate of service, and who fails in his examination in practical knowledge, shall not be re-examined for a certificate of the higher grade until he has served 12 months as second engineer with a second class engineer's certificate of competency as required by the rules.

40. If the candidate fails in the examination for the lower as well as for the higher grade of certificate, he may be re-examined for a second class certificate only, subject to the provisions of Rule 33.

IX.—Postponement of Grant of Certificate in certain cases.

41. (1) If, after a candidate has passed his examination, it is discovered that his services are insufficient to entitle him to a certificate of the grade for which he has passed, such certificate will not be granted to him; but if the Collector is satisfied that the error in the calculation of his services did not occur through any fault or wilful misrepresentation on the candidate's part, the Collector may direct the certificate to be issued, or may allow the candidate to appear for re-examination without payment of further fee, when he has performed the deficient service.

- (2) If, in such a case, the applicant's services are sufficient to entitle him to receive a certificate of a lower grade, provided as aforesaid he has not wilfully misrepresented the amount of his services, a certificate of such lower grade may be granted to him, and the difference between the fee paid by him for the superior certificate and the fee payable for the inferior certificate may be refunded.

- (3) In such a case, when the applicant has by further service made up the time in which he was found to be short, he may be required, before

he can receive the higher certificate, to be re-examined in all the subjects.

X.—Surrender of Lower Grade Certificates.

42. No certificate of the first or second class shall be granted to the holder of a certificate of a lower grade unless and until the holder has surrendered to the Collector the certificate of the lower grade.

43. Every certificate of competency granted under Section 22 to a person in possession of a certificate entitling him thereto under the said section shall be in the form in this behalf provided in Appendix B, and shall be endorsed on the certificate of competency by virtue of which such person is so entitled as aforesaid.

XI.—Certificates of Service.

44. In order (1) to ascertain that a candidate for a certificate under Section 23 of the Act is possessed of competent skill for the charge and management of a boiler, and (2) to determine what class of certificate he is qualified to hold, the Board of Examiners shall subject him to such practical examination as they in each case think fit.

45. Applicants for certificates of service will be charged fees at the following rates:—

	Rs.
First	10
Second	5
Third	3

XII.—Form of Certificates.

46. Certificates of competency and of service shall be in the forms given in Appendix B, respectively, or to the like effect.

47. Applications under Section 22 for certificates of competency corresponding to foreign certificates in the possession of the applicants, shall be in the form of Appendix A. Each applicant shall duly fill in the form, and, together with copies of the original foreign certificates in his possession, shall lodge the form with the Collector at least ten days before any meeting of the Board of Examiners.

48. Holders of certificates of the first class will be deemed to be capable, as first class engineers, of having charge of boilers of any horse-power.

Holders of certificates of the second class will be deemed to be capable, as second class engineers, of having charge of boilers not exceeding ninety horse-power nominal.

Holders of certificates of the third class will be deemed to be capable, as third class engineers, of having charge of boilers not exceeding thirty horse-power nominal.

49. Applications for duplicates under Section 26 shall be lodged with the Collector, together with a sworn declaration describing the lost certificate and other documents relied upon by the applicant.

50. Duplicates of all certificates granted under the Act shall be recorded in the Steam Boiler Office.

Form of Certificate of Competency.

Certificate of Competency of the Class granted under the Bombay Boiler Inspection Act, 1891.

No. of 189

A.B., aged about , at present residing at , having satisfied the Board of Examiners appointed under the Bombay Boiler Inspection Act, 1891, of his competency to have charge of a boiler of any horse-power (or not exceeding 90 or 30 horse-power nominal, as the case may be), is granted under Section 21 (or 22, as the case may be), of the said Act this Certificate of Competency of the First (or Second or Third, as the case may be) Class.

The of 189

(Signed)

Board of Examiners.

Duplicate of this Certificate has been recorded in the Steam Boiler office this day of 189

(Signed)

Collector of

Form of Certificate of Service.

Certificate of Service of the Class granted under the Bombay Boiler Inspection Act, 1891.

No. of 189

A.B., aged about , at present residing at , having satisfied the Board of Examiners appointed under the Bombay Boiler Inspection Act, 1891, at that he has served for a period of not less than three years prior to the 18th January 1892 (the date on which the said Act came into force) as Engineer in actual charge and management of a boiler, and that he is possessed of competent skill for the charge of a boiler of any horse-power (or not exceeding 90 or 30 horse-power nominal, as the case may be), is granted under Section 23 of the said Act this certificate of service of the First (or Second or Third, as the case may be) Class.

The of 189

(Signed)

Board of Examiners.

Duplicate of this Certificate has been recorded in the Steam Boiler Inspection office.

Collector.

Form of Certificate to be granted under Section 22 of the Act.

Whereas Mr. at present residing at has produced before us a Certificate of the class issued to him by the , in accordance with the provisions of the Bombay Boiler Act of 1891, Section 22, hereby authorize him to be in charge of boilers of horse-power on the production of this Certificate.

APPENDIX C.

Examination in Rough Working Drawing for a First-Class Engineer's Certificate of Competency.

1. The regulations in regard to the qualifications of a candidate for a First Class Engineer's Certificate of Competency specify that—
"He must be able to make rough working drawings of the different parts of the engines and boilers ;

"He must be able to state the general proportions borne by the principal parts of the machinery to each other."

2. In accordance with these clauses a candidate for a first-class certificate is required to make a rough working drawing of the parts specified on the other side of this leaf. A mechanic who has been some years in charge of engines and boilers ought by this time to have familiarly in his mind the general construction of at least one set of engines and boilers, say that set he was last with. Fine drawing is not expected, and in the proportions of the parts a wide margin will be allowed ; absurd dimensions will be failure in practical knowledge.

3. The drawing must, however, be practically a working drawing, giving a sufficient number of views to show the parts fully—sections, plans, or elevations, just as the candidate would require to be supplied to him if he had to make the parts to the design of another person.

4. A clear hand sketch showing the construction completely, and fully dimensioned will be accepted if the candidate prefers this alternative.

5. A portion only of the parts specified may be accepted in place of the whole, if that portion is sufficient to show that the candidate has a good practical idea of the construction of the parts, and a fair notion of their general proportions or dimensions.

6. Candidates are hereby cautioned not to put on paper what they have not fully considered, and deliberately intend to be understood, as their statement of what they know about the construction of any part required.

7. The statements given in by a candidate may be in themselves, apparently, of little importance, but, as sample material from which the state of the candidate's knowledge of engines and boilers is to be inferred, every detail which is glaringly inconsistent with a sound knowledge of the use of the part, or in which an essential consideration has evidently been overlooked, is an important element in the description which the candidate is giving of his own qualifications.

8. The candidate is advised not to begin more than he can clearly finish in the time allowed. An important object in this part of the examination is to ascertain whether the candidate can be trusted to mark all necessary dimensions upon a sketch or a drawing. The test of this is, practically, the making of the part from the sketch without having to supply additional dimensions, and without measuring the drawing. To prove this ability the candidate must fully dimension the parts shown in his sketch or drawing notwithstanding that the parts may be correctly drawn to scale. A drawing is fully dimensioned when no part of it is left to the option of the party who is to work to the drawing.

9. To prevent misunderstanding, however, when the candidate has been led into showing more of the details than he has time fully to finish, he should name, in the statement on the other side, the particular parts which he has fully dimensioned.

10. All dimensions should have lines and darts to indicate distinctly the points between which the dimensions are given.

Instructions to Engineer Examiners.

Examiners will require all candidates to fill up a form of which a copy is attached, and they will forward the same to the Collector along with the report of the examination.

For the present the questions for both classes of engineers will be taken from the same book of "Elementary Questions"; and candidates for first class certificates are expected to show their superiority by giving answers more complete than those of the other candidates.

The arithmetical questions for engineers and the *vidæ voce* examinations for all candidates will be continued as heretofore, and failure in the elementary questions will be treated as failure in arithmetic.

The numbers of the questions for each examination are not to be communicated to the candidate until his examination commences.

New editions with alterations will be issued from time to time.

For the questions to be answered see the Book of Elementary Questions. The questions need not be written, only the answers to them.

Form of Preliminary Questions to be answered by the First Class and Second Class Candidates.

City	Class for which examined
Date	Candidate's Name

- Where and how long did you serve in works at the making or at the repairing of engines, and in what capacities?
- How long have you served as fireman or driver?
- How long have you served in the engine-room and in what capacities?
- With what descriptions of Engines have you served,—jet condensing, surface condensing, or non-condensing engines, compounds, triples, inverted cylinders, or horizontal engines? What size were the engines?
- With what descriptions of boilers have you served,—Lancashire, marine, multitubular, sectional or locomotive boilers?
- What engine defects have come under your notice, what caused these defects, and how were they remedied? Give the names of the factory for verification.
- What boiler defects have come under your notice, what caused these defects, and how were they remedied? Give the names of the factory for verification.

By order of His Excellency the Right Honourable the Governor in Council,

J. DE C. ATKINS,
Secretary to Government.

11. Beware of writing cross dimensions upon centre lines or upon longitudinal dimension lines. This is not an order but a recommendation.

12. The candidate is not expected to design anything: he has merely to sketch or draw something with which he is expected to be already familiar.

13. Pencil in nothing after 3 o'clock: all the dimensions, the figures, and the darts must be inked in; employ the remaining time in examining the drawing and in inking in any figures which may have been before overlooked, and in checking the dimensions.

14. Make sure that you will have sufficient room on the sheet to show all the necessary views. You can have another sheet of paper if necessary. All the paper used must be forwarded with the drawing.

15. Fill in and sign the following statement:—
SUBJECT FOR EXAMINATION IN ROUGH WORKING DRAWING.

(Read the foregoing General Instructions.)

A common slide valve with its spindle. Show also an outline section of the parts at the cylinder face. Show the provision for connecting the slide valve to the spindle.

The candidate is requested to fill up the following and to attach this paper to his drawing:—

STATEMENT BY THE CANDIDATE.

The accompanying drawing, made by me this day, without referring to any document, and without the assistance of any person, is intended by me to be sufficient for the new construction of the parts above described, to fit the places of similar parts which are to be removed. The construction is similar to what I have been with in the _____ Factory, Mill, or Workshops, but the dimensions may be different.

The diameter of the cylinder is _____
The stroke of the piston is _____
The stroke of the valve is _____
The cover at top end on steam side is _____
The cover at bottom end on steam side is _____
The lead at top is intended to be _____
The lead at bottom is intended to be _____
The inside cover is + _____ or _____
The thickness of the face of valve is _____
The thickness of the body of valve is _____
The greatest opening for steam will be _____
That gives an area equal to one _____
The opening for exhaust when the crank is on the top centre is _____

That gives an area equal to _____ th of piston.

The length of the connecting rod is _____
The valve will cut off steam on the down stroke at _____
The valve will cut off steam on the up stroke at _____
The candidate may omit this part if he chooses.

The parts fully dimensioned, in ink, are _____

Dated at _____

this _____ day of _____ 189

Applicant.

PROCEEDINGS OF THE MADRAS GOVERNMENT.

Judicial Department.
Local & Municipal Dept.
CURRENT No. 729 M

Read the following paper:-

From the Government of Bombay, No. 516 dated 3rd February 1896, forwarding copy of the rules framed under section 35 of the Bombay Boilers Inspectors' Act.

Order N. No. 335 dated 25th February 1896.

A copy of the Rules will be forwarded to the Public Works Department with reference to para. 7 of G.O. 174, Judicial, dated 25th January 1895.

(True extract)

W. R. R. R.

Ag. Under Secretary,
For Chief Secretary.

To

The Public Works Department, with copy of rules.

" Local and Municipal Department, with rules for information.

Local & Municipal Dept.
[a/b] CURRENT No. 729 M

Govt. of 1896 Madras.

To

The Local and Municipal Dept.

Proceedings, dated 25th February 1896,
Q. No. 235

Subject.

Forwarding copy of the rules framed under Section 35 of the Bombay Boilers Inspectors' Act.

N. No. 409 dated 11-3-96

Recorded.

V. R.
7/3/96

W. R. R. R.
10.3.96

1615 h 9-10-95
1105 h 13-7-95
833 h 15-5-95
270 h 4-2-95

1/3 a 7/3