

**CITY OF LOS ANGELES
DEPARTMENT OF BUILDING AND SAFETY
LICENSE SECTION
221 N. Figueroa Street, #700
(213) 482-0099
www.ladbs.org**

**EXAMINATION INFORMATION
STEAM ENGINEERS AND BOILER OPERATORS**

GENERAL: A valid Boiler Operator License or Steam Engineer License is required by the City of Los Angeles for a person to operate, within city limits, one or more high pressure steam boilers rated above 5 horsepower (high pressure steam is steam in excess of 15 PSI {PSI - pounds per square inch}) - L.A.M.C. Sec. 97.0201.

TYPE OF LICENSES:

1. **BOILER OPERATOR:** This license allows for the operation of high pressure steam boilers rated from over 5 HP to 35 HP (HP = horsepower).
2. **STEAM ENGINEER - 500 HP:** This license allows for the operation of one or more high pressure steam boilers rated up to 500 HP. If multiple boilers are connected for joint operation or piped to a common steam header, the total HP rating from all the connected boilers cannot exceed 500 HP.
3. **STEAM ENGINEER - UNLIMITED HP:** This license allows for the operation of one or more high pressure steam boilers of any size or horsepower rating.
4. **TURBINE ENDORSEMENT*:** Allows the operation of one or more steam turbines of any size. This applies only to the holders of the Unlimited HP license.

**TURBINE ENDORSEMENT is a notation printed on the Steam Engineer Unlimited Certification when the Turbine exam is passed. One must already have the Steam Engineer Unlimited license in order to qualify for the endorsement examination or one can apply for the Unlimited and Turbine examinations to be taken at the same time, in which case, the Steam Engineer Unlimited exam must be passed first in order to activate the Turbine Endorsement.*

EXAMINATION REQUIREMENTS

A. EXPERIENCE:

1. **BOILER OPERATOR:** at least 6 months as an operator of boilers over 5HP but not exceeding 35 HP carrying over 15 pounds per square inch of steam.
2. **STEAM ENGINEER (500 HP):** at least one year full time as a boiler operator (35 HP) or, in lieu thereof, two years experience as a water tender, fireman or assistant engineer working with steam boilers.
3. **STEAM ENGINEER (UNLIMITED HP):** at least one year full time as an engineer or, in lieu thereof, three years experience as a water tender, fireman or assistant engineer working with steam boilers.
4. **STEAM ENGINEER (TURBINE ENDORSEMENT):** at least one year experience as an operator or in lieu thereof, three years experience as an oiler, wiper, water tender, auxiliary operator or assistant to the person in charge of a steam turbine.

B. FEES: APPLICATION / FILING: \$54.50 ANNUAL RENEWAL: \$27.50

There is no additional fee for the “TURBINE ENDORSEMENT” examination when taken in conjunction with the Unlimited Steam Engineer examination. If taken individually, a separate application and filing fee will be required.

C. **ONE CURRENT PASSPORT SIZE COLOR PHOTO (FULL-FACE, 2 X 2"). PLEASE ATTACH TO THE APPLICATION.**

D. **APPLICATION AND OTHER REQUIRED INFORMATION:**

Complete and sign the "Trade License Application".

A signed, written verification of experience from your previous or current employer on their company letterhead shall be submitted with your application.

A completed *WORK HISTORY SHEET* must accompany all application forms. ***Include only work experience related to boiler operation.*** However, courses taken from seminars or technical schools relevant to boiler operation may also be included in the application form or work history sheet for partial work experience credit. Work telephone number(s) and name(s) of supervisor(s) must be provided.

The City reserves the right to verify any claims of employment or work history related to boiler operating experience.

Note: You must specify the type(s) of license that you are applying for on the application form at "Examination Title".

E. **ABOUT THE EXAMINATION:**

All examination topics consist of two parts. The **first part** is a closed-book written examination with multiple choice questions pertaining to the safe operation of high pressure steam boilers and steam-driven equipment. The **second part**, an oral interview, is given only when a passing grade is obtained from the first part and is used to determine the applicant's practical knowledge and safe operation of steam boilers and steam-related accessories. Except for foreign language translation dictionaries, no books or reference materials of any kind are permitted to be used during the examination. Other than the restroom breaks, no one is allowed to leave the room or building until he/she has completed the examination(s) and returned the whole exam packages to the Examiner. The Examiners are not obligated to review test results with an unsuccessful applicant. In general, the steam boiler exam may contain questions in the following categories:

- | | |
|-----------------------------------------------|------------------------------------------|
| 1. Boiler Operation & Maintenance | 5. Water Treatment |
| 2. Boiler Safety & Control Devices | 6. Safety or Relief Valves |
| 3. Combustion Principles | 7. Physics & Chemistry |
| 4. Pumps and Compressors | 8. Superheaters & Economizers |

PASSING SCORE: 70% minimum. Applicants who attain at least 35 correct answers (from 50 questions) in the written Steam Engineer exam or 18 correct answers (from 25 questions) in either the Boiler Operator or Turbine Endorsement written exam will be eligible for the oral interview. Both the written and oral exams must be passed in order to get a boiler operator or steam engineer license or the turbine endorsement. Cheating during the written exams will result in automatic failure of the applicant and may affect the acceptability of the applicant to take other City examinations.

SCHEDULING: All applicants will be notified of the examination date by mail. If unable to take the examination, the applicant will automatically be rescheduled. **Applications expire 6 months from cashier's validation date.** If examinations are not taken within that time, a new application must be filed and new fees paid. The previous fees shall not be refundable.

EXAMINATION LOCATION: Applicants will be notified of examination date and location by mail.

START TIME: 4:00 PM

LENGTH OF EXAM: 1 - 1 ½ HOURS

- F. **RE-EXAMINATION:** Applicants who fail to pass the first examination are entitled to a second examination. Rescheduling for the second examination is automatic. **It takes approximately four to six weeks**, and requires no additional fee. Applicants will be notified of the appointment date by mail. Applicants who fail to pass the second examination are required to **wait 30-days** before they may file another application. A new application along with the filing fee is required.
- G. **IDENTIFICATION:** **A valid government-issued photo I.D. with a signature (such as driver's license, military I.D., or passport) will be required when applicants appear for the examination.** Failure to provide the proper identification may prevent the applicant from taking the scheduled examination until such time that the required identification is provided.

The City of Los Angeles does not approve, certify, rate or endorse any of the information provided below. The information given on where to obtain books and reference materials, which bookstores to obtain them from and which schools or individuals to go to, are merely suggestions and intended to give applicants an initial basis to studying or reviewing for the exam. It is the applicant's primary responsibility, and are strongly encouraged, to pursue additional means that will help enhance their chances of passing the examination.

SUGGESTED BOOKS FOR REFERENCE MATERIAL
(Additional books may be obtained if necessary)

BOILER OPERATOR'S GUIDE
Harry M. Spring

HIGH PRESSURE BOILERS
Steingress & Frost

RECOMMENDED CARE OF POWER BOILERS
A.S.M.E. * Code Section VII

STEAM PLANT OPERATION
Woodruff & Lammers

POWER BOILERS
A.S.M.E. Code Section I

CALIFORNIA CODE OF REGULATIONS
Title 8. Divisions 1 and 2
Boiler & Unified Pressure Vessel Safety Orders
State of California - D.O.S.H.

SUGGESTED BOOKSTORES

BUILDING NEWS BOOKS
990 Park Center Dr, Suite E
Vista, CA 92081
(310) 474-7771
www.bnibooks.com

BUILDER'S BOOK, INC.
8001 Canoga Avenue
Canoga Park, CA 91304
(818) 887-7828 / (800) 273-7375
www.buildersbook.com

SUGGESTED TRAINING SCHOOLS OR FACILITIES

LOCAL 501 OPERATING ENGINEERS L.A. TRADE TECHNICAL COLLEGE
(For Members Only)
(213) 385-2889
400 W. Washington Blvd
Los Angeles, CA 90015
(213) 744-9058

PARKER SCHOOLS FOR INDUSTRY #322
13681 Newport Ave., Suite 8
Tustin, CA 92780
(800) 752-1093

THE FOLLOWING ARE SAMPLE QUESTIONS WHICH ARE RELEVANT TO THE EXAMINATION FOR A LICENSE TO OPERATE A BOILER CARRYING OVER 15 POUNDS PER SQUARE INCH (PSI) OF STEAM PRESSURE. THIS IS ONLY A STUDY GUIDE.

1. What are the precautions to be observed when starting any boiler that has been closed down overnight? Are there any special precautions required before starting a gas burning boiler?
2. How do you bring a newly-started boiler on line?
3. How do you determine whether the feedwater check valve for the boiler is not closing?
4. What causes foaming in the boiler? How do you know when a boiler is foaming? How do you stop foaming in a boiler?
5. What is boiler priming? What causes priming? How can priming in a boiler damage an engine or pump?
6. What would you do if the pressure gauge on the boiler registered 150 PSI and you knew the safety valve was set to open at 100 PSI?
7. How do you test a safety valve to see if it operates at the proper set pressure? What is the difference between a safety valve and a relief valve? How often do you test these valves? How is a leaking safety valve repaired?
8. How do you change the pressure setting of a safety valve if it popped at a pressure less than the steam pressure you desired? Would you install a shut-off valve between the boiler and its safety valve?
9. What causes heavy black smoke from the firebox of an oil-burning boiler?
10. What does heavy yellow smoke from the firebox of an oil-burning boiler indicate?
11. Name some of the causes of an excessive amount of accumulated soot in the firebox and tubes of an oil burning boiler.
12. How often should a boiler be blown down? If the boiler water is treated, is it necessary to blow down the boiler everyday? Why? What is the purpose of treating the boiler water? What is TDS?
13. What would you do if you could not see the water level in the boiler gauge glass while the boiler is in operation? What would you do if the water level in the gauge glass shifted up and down?
14. If the boiler feedwater pump is operating and the water level in the boiler is not rising, what is the best thing to do? Can you increase the speed of the feedwater pump for more water volume?
15. What is boiler water pH? What pH reading is considered acidic and alkaline? Give an example.
16. What is a superheater? What is the purpose of superheating the steam? Does a superheater require a safety valve? Are there any precautions to be taken when bringing a superheater on line?
17. What causes boiler tubes and other boiler heating surfaces to overheat or fail?
18. How do you prevent corrosion or pitting? What effect has oxygen or carbon dioxide on metals?
19. How long can an operating steam boiler be left unattended?
20. If a boiler was very low on water and showed signs of overheating, should you fill it with water to cool it down?

**CITY OF LOS ANGELES
DEPARTMENT OF BUILDING & SAFETY
BOILER LICENSE APPLICATION - WORK HISTORY SHEET**

NAME: _____

Please type or print with a pen, all the information that you provide concerning your work history with boiler(s) and/or turbine(s) only and **beginning with your recent work experience**. This sheet must be attached to your application form.

(1) Have you had a previous City of Los Angeles boiler license? Yes _____ No _____

(2) Please indicate below with a check mark (✓) which classification and the license you are applying for.

35 HP _____ 500HP _____ Unlimited HP _____ W/Turbine End. _____ Expiration Date _____

Company _____ Supervisor _____		
Address _____		
City _____	State _____	Zip Code _____ Work Phone () _____
Date of Work Experience: From _____ To _____ (Years _____ Months _____)		
Your Title and description of duties related to boiler and/or turbine operation only: _____		

List the boiler(s) and/or turbine(s) that you have worked with at this job:		
Manufacturer _____	_____	_____
Boiler Type _____	_____	_____
Used As _____	_____	_____
HP & PSI _____	_____	_____
Were the boilers connected to a common steam header? Yes _____ No _____		

Company _____ Supervisor _____		
Address _____		
City _____	State _____	Zip Code _____ Work Phone () _____
Date of Work Experience: From _____ To _____ (Years _____ Months _____)		
Your Title and description of duties related to boiler and/or turbine operation only: _____		

List the boiler(s) and/or turbine(s) that you have worked with at this job:		
Manufacturer _____	_____	_____
Boiler Type _____	_____	_____
Used As _____	_____	_____
HP & PSI _____	_____	_____
Were the boilers connected to a common steam header? Yes _____ No _____		

(Please use the next page if you need to add or list more qualifying information)

Company _____ Supervisor _____
Address _____
City _____ State _____ Zip Code _____ Work Phone () _____

Date of Work Experience: From _____ To _____ (Years _____ Months _____)
Your Title and description of duties related to boiler and/or turbine operation only: _____

List the boiler(s) and/or turbine(s) that you have worked with at this job:

Manufacturer	_____	_____	_____
Boiler Type	_____	_____	_____
Used As	_____	_____	_____
HP & PSI	_____	_____	_____

Were the boilers connected to a common steam header? Yes _____ No _____

Company _____ Supervisor _____
Address _____
City _____ State _____ Zip Code _____ Work Phone () _____

Date of Work Experience: From _____ To _____ (Years _____ Months _____)
Your Title and description of duties related to boiler and/or turbine operation only: _____

List the boiler(s) and/or turbine(s) that you have worked with at this job:

Manufacturer	_____	_____	_____
Boiler Type	_____	_____	_____
Used As	_____	_____	_____
HP & PSI	_____	_____	_____

Were the boilers connected to a common steam header? Yes _____ No _____