

Building Contractor's Exam Preparation Guide

By John E. Traister & C. Keeler Chapman

Online Preview



Craftsman Book Company
6058 Corte del Cedro/ P.O. Box 6500 / Carlsbad, CA 92018

Acknowledgments

We are indebted to several individuals and organizations who helped in the preparation of this book. One group is the electrical examining boards throughout the United States. A list of these organizations appears in Appendix I.

Especially helpful in the production of this book was:

Ruby Updike, typist and organizer

Looking for other construction reference manuals?

Craftsman has the books to fill your needs. **Call toll-free 1-800-829-8123** or write to Craftsman Book Company, P.O. Box 6500, Carlsbad, CA 92018 for a **FREE CATALOG** of over 100 books, including how-to manuals, annual cost books, and estimating software.

Visit our Web site: <http://www.craftsman-book.com>

Library of Congress Cataloging-in-Publication Data

Traister, John E.
Building contractor's exam preparation guide / by John E. Traister
& C. Keeler Chapman
p. c.m.
Includes index.
ISBN 1-57218-030-7
1. Building--Examinations, questions, etc. 2. Building-
Examinations--Study guides. I. Chapman, C. Keeler. II. Title.
TH166.T73 1996
690'.076--dc20 96-22868
CIP

Contents

Introduction	5
Chapter 1 Print Reading	13
Chapter 2 Building Calculations	35
Chapter 3 Law and Business Management	59
Chapter 4 Site Work, Demolition and Construction	93
Chapter 5 Foundations, Formwork, and Retaining Walls	107
Chapter 6 Interior Finishes	123
Chapter 7 Exterior Finishes	137
Chapter 8 Roofs and Roof Structures	151
Chapter 9 Structural Loads	163
Chapter 10 Concrete and Masonry	175
Chapter 11 Steel Construction	185
Chapter 12 Fire Protection Systems	195
Chapter 13 Related Trades	205
Chapter 14 Types of Construction	215
Chapter 15 Special Construction	231
Chapter 16 Special Equipment	241
Chapter 17 Safety Codes	249
Chapter 18 Final Examination	257
Appendix I State Contractor's Examination Offices	305
Appendix II Answers to Final Examinations	309
Index	311

Online Preview

Introduction

The primary reason that states, counties, and cities license building contractors is to protect public health, safety, and welfare. State laws accomplish these goals by preventing unqualified people from practicing a given profession or occupation. To become licensed, potential building contractors must meet minimum standards of experience and sometimes education. Licensing is also a formal and legal way of defining a trade or profession and assuring that those who meet the predetermined standards necessary for licensing can provide the public with competent and knowledgeable services and/or work. Licensing bodies serve society in a positive way and provide the following benefits:

- Screening applicants to ensure that they possess those minimum qualifications necessary for safe practice.
- Providing a mechanism for investigating charges of incompetence or faulty installations.
- Setting standards of practice and codes of conduct. These standards give the public a basis for determining acceptable quality in workmanship, service, and conduct.

A governmental agency which will first investigate charges of a contractor licensee's incompetence or failure to perform work and then will take the appropriate disciplinary action, helps to protect the profession from incompetent, unethical, or dishonest practitioners. It also serves notice on others that the regulatory agency will not tolerate practitioners whose activities may not be in the public interest.

Licensing in the United States

Standards for licensure are set forth by law or regulations. State, county, or city professional and occupational boards have the responsibility for filling in specific details through the rule-making process. Such boards have responsibility for determining the content of the licensing examination and for interpreting certain other requirements. Furthermore, these same boards are responsible for determining who is qualified to be licensed.

In most areas, applicants apply to the appropriate agency by filing a form supplied by the board, paying the appropriate fee, being approved, and taking a written examination.

Most first-time applicants for a building contractor's license have been working in the building construction industry for a long time, accumulating much on-the-job experience. Yet many of them do poorly on a written examinations because the thought of taking exams worries them, or they do not know how to prepare for such exams.

This book shows how to properly take examinations, how to build the confidence you deserve, and how to keep exam anxiety from getting in the way of your knowledge.

What better way to prepare for your building contractor's examination than to study sample questions from actual state, county, and city examinations — in the privacy of your own home?

Building Contractor's Exam Preparation Guide will also help you:

- Familiarize yourself with state, county, and city testing procedures.
- Eliminate any pre-exam anxiety.
- Better understand the subjects appearing on contractor's examinations.

Building Contractor's Exam Preparation Guide

Building Contractor's Exam Preparation Guide covers all the topics that will appear on any contractor's examination. Once you have reviewed the basic subject matter (using the hundreds of sample questions in this book), you can take the full-length practice examination that is included at the end of this book. This practice exam covers the same subject areas and types of questions that appear on actual contractor's examinations throughout the United States.

State Building Construction Requirements

States frequently change their requirements for licensing. We recommend that you call your state's licensing office or check their Web site to make sure these requirements haven't changed. See page 305 for a listing of state contractor's licensing offices.

Alabama

Any person, firm or corporation engaged in contracting building projects in Alabama costing over \$10,000 shall be required to be licensed. A license is also required for any type of swimming pool construction or repair costing more than \$5,000.

Alaska

General contractors may not submit bids or do work until they are registered by the Alaska Department of Commerce and Economic Development. Bids from subcontractors may not be used unless that subcontractor is also registered.

Alaska has not adopted any state-wide building codes. However, most localities have adopted the Uniform Building Code (UBC), as published by the International Conference of Building Officials (ICBO).

Arizona

Any person, firm or corporation must submit evidence of qualifications to engage in contracting in Arizona, and shall be licensed as described in the Arizona State Contracting Licensing Laws and Regulations.

Arkansas

Any construction work in excess of \$20,000 is regulated at the state level. Residential construction work, however, may be regulated at the local level.

California

Licensing is required for all building construction involving projects of \$500 or more. First time applicants are subject to a business law examination and a trade examination. Exam results are good for 5 years.

Colorado

Most building construction work, other than electrical and plumbing, is regulated in varying degrees by cities or counties.

Connecticut

To safeguard life, health and property, no person is allowed to engage in or offer to practice as a general contractor or major subcontractor in the state unless such person has secured a license as provided by the Connecticut General Statutes and the Regulations of Connecticut State Agencies Statute.

Building codes used in Connecticut include: BOCA National Building Code, BOCA Supplement, State of Connecticut Code Supplement, and OSHA Standards for the Construction Industry.

Delaware

A license is required for any type of building construction in Delaware. Contractor licenses are issued for a one-year period, expiring on December 31st. The average processing time for a first-time applicant is approximately 6 weeks.

District of Columbia

Licenses are required only for home improvement contractors in the District of Columbia. Other contractors may be required to demonstrate their ability to handle a project before contracts are awarded.

Florida

Building construction in the state of Florida, depending upon the circumstances, is regulated by either the local/municipal level or by certification at the state level.

Georgia

Only specialty building construction trades are handled at the state level in Georgia. Some municipalities and counties, however, may require building contractors to be licensed.

Hawaii

Every aspect of building construction is regulated at the state level in Hawaii. At the present time, no written examination is required for building contractors; only a performance bond for each project.

Idaho

Building construction is not regulated at the state level; only electrical construction work is regulated. However, local cities and counties may require licensing.

Illinois

Except for public works, building construction is not regulated at the state level. Some cities and counties, however, do have licensing requirements.

Indiana

State licensing requirements exist for plumbing contractors only. Some cities and counties, however, may require licensing for building construction.

Iowa

All building construction may require state registration. All work performed for the state or a state agency definitely requires registration.

Kansas

Licensing for building construction is not handled on the state level in Kansas. Many cities and counties, however, have licensing requirements and a bond is required for all contracts. In lieu of local examinations, code exams given by the International Congress of Building Officials and Block & Associates are recognized by the local licensing authorities. The examinations recognized are the ICBO's General Contractor exam (4 hours, open book) and Block's Kansas UBC exam (6 hours, open book).

Kentucky

Licensing for building construction is not handled on the state level in Kentucky. Many cities and counties, however, have licensing requirements.

Louisiana

Licensing is required for all building construction exceeding \$50,000 in cost. Building contractors must pass a written examination dealing with the specific trade as well as business law.

Maine

Licensing for building construction is not handled on the state level in Maine. Many cities and counties, however, have licensing requirements.

Maryland

Home improvement contractors are licensed at the state level. Other construction work requires registration by the state.

Massachusetts

Building construction up to 35,000 cu. ft. requires a licensed contractor supervisor. Many cities and counties in Massachusetts have their own examinations and prequalification requirements.

Michigan

Residential building construction requires licensing at the state level. All other building contractors are regulated at a local city or county level.

Minnesota

Residential building and remodeling contractors are licensed at the state level. All other building contractors are regulated at a local city or county level.

Mississippi

Any person contracting or undertaking projects as a prime contractor, subcontractor or sub-subcontractor in the state of Mississippi must have a Certificate of Responsibility or a Residential Builder's License, depending upon the size and type of project.

The Southern Building Code Congress International (SBCCI) is the standard building code in Mississippi. The state also uses OSHA Standards for the Construction Industry.

Missouri

Construction is not regulated at the state level in Missouri. Some municipalities and counties, however, may require building contractors to be licensed.

Montana

All construction work over \$500 requires registration, but licensing of contractors is not held at the state level. Some municipalities and counties, however, may require building contractors to be licensed.

Nebraska

Contracts exceeding \$2,500 by out-of-state contractors are regulated at the state level in Nebraska. Some municipalities and counties, however, may require building contractors to be licensed.

Nevada

All building construction in the state of Nevada is regulated at the state level. A license is not required when a contractor performs work for the federal government on federal land.

New Hampshire

General building construction is not regulated at the state level. Many cities and counties, however, have licensing requirements.

New Jersey

New residential building construction, maintenance, and repair is regulated at the state level. Many cities and counties have licensing requirements for other building construction projects.

New Mexico

All building construction is regulated at the state level in New Mexico.

New York

Building construction is not handled on the state level in New York. Many cities and counties, however, have licensing requirements.

North Carolina

All building construction is regulated at the state level in North Carolina. Applicants for a general contractor's license must pass trade and law examinations before a license will be issued.

North Dakota

All construction work exceeding \$2,000 per project is handled at the state level in North Dakota. Some cities and counties may also have licensing requirements.

Ohio

Licensing for building contractors is not handled on the state level in Ohio. Some municipalities and

counties, however, may require building contractors to be licensed.

Oklahoma

Building construction is not regulated at the state level in Oklahoma. Many cities and counties have licensing requirements for building construction projects.

Oregon

All building construction costing over \$500 is regulated at the state level in Oregon. One responsible individual per new contracting business must complete 16 hours of business and law classes before an application can be made. General contractors are further required to post a bond to bid on construction work.

Pennsylvania

Building construction is not handled on the state level in Pennsylvania. Many cities and counties have licensing requirements for building construction projects.

Rhode Island

Residential building construction of 4 dwelling units or less is regulated at the state level through registration. Many cities and counties have licensing requirements for other building construction projects.

South Carolina

General building construction projects costing over \$30,000 are regulated at the state level in South Carolina. Residential general work over \$5,000, and residential specialty work over \$200, also requires a state license.

South Dakota

General building construction projects, and licensing thereof, are not handled at the state level. Many cities and counties have licensing requirements for building construction projects.

Tennessee

Any person, firm or corporation engaged in contracting in Tennessee shall be required to submit evidence of qualifications to engage in contracting, and shall be licensed as described in the State of Tennessee Contractors' License Law.

The Southern Building Code Congress International (SBCCI) is the standard building code in Tennessee. The state also uses OSHA Standards for the Construction Industry.

Texas

Building construction is not handled on the state level in Texas. Many cities and counties have licensing requirements for building construction projects.

Utah

All building construction work costing over \$500 is regulated at the state level in Utah. The size of each construction project is limited, based on the financial statement of each individual contractor.

Vermont

Building construction is not handled on the state level in Vermont. Many cities and counties have licensing requirements for building construction projects.

Virginia

Building construction work in excess of \$1,000 is regulated at the state level. Applicants for a building or general contractor's license must pass an open book examination on regulations and statutes of the Contractor's Board and business management practices.

Washington

Construction work of all kinds is regulated at the state level in Washington. However, building contractors are not required to take any examination at the present.

Building Contractor's Exam Preparation Guide

West Virginia

All construction work costing over \$1,000 (including materials and labor) is regulated at the state level. Applicants for a building contractor's license must pass an open book examination on business and law, and a trade specific test, with a minimum score of 70%. Furthermore, before undertaking a construction project, the contractor must show proof of Worker's Compensation and Employment Security coverage.

Wisconsin

Building construction is not regulated at the state level in Wisconsin. Many cities and counties, however, have licensing requirements for building construction projects.

Wyoming

Building construction is not regulated at the state level in Wyoming. Many cities and counties, however, have licensing requirements for building construction projects.

How to Prepare for the Contractor's Exam

This book is a guide to preparing for building contractor's examinations throughout the United States. It is not, however, a substitute for studying the recommended references. It will not teach you all about the building construction industry; you need some prior knowledge and experience first. But this book will give you a complete knowledge of the type of questions asked in any contractor's exam. It will also give you a "feel" for the examination and provide some of the confidence you need to pass.

The emphasis is on multiple-choice questions because that's the style that nearly all tests utilize. Questions are grouped into chapters, each chapter covering a single subject. This will help you discover your strengths and weaknesses. Then when you take the final exam in the back of this book, you can analyze the questions you miss. You will probably notice you are weaker in some subjects than others. When you learn where your weak-

nesses are, you will know what areas need further study.

The preparatory questions in the front part of this book have the answer after each question. When reading a question, cover the answer with a card or a ruler of an appropriate size. Read the question carefully. Mark your answer on a separate sheet of paper before moving the card or ruler that covers the correct answer. Then slide the card or ruler away and check to see if your answer is correct. If it isn't, read the responses under the answer to find out why it is wrong.

How to Study

Set aside a definite time to study, following a schedule that meets your needs. Studying a couple of hours two or three nights each week is better than studying all day on, say, Saturdays. The average mind can only concentrate for approximately 4 hours without taking a break. There is no point in studying if you don't retain much of the information. Study alone most of the time, but spend a few hours reviewing with another person before exam day. If you have a buddy that is also going to take the building contractor's exam, work together. You can help each other dig out the facts and concepts you will need to pass the exam.

Try to study in a quiet, well-lighted room that is respected as your study space by family members and friends. If it's hard to find a spot like that in your home, go to the local library where others are reading and studying.

Before you begin to study, spend a few minutes getting into the right frame of mind. That's important. You don't have to be a genius to pass the builder's exam, but good motivation will nearly always guarantee your success. No one can provide that motivation but *you*. Getting your contractor's license is a goal you set for yourself; it's your key to the future and a satisfying career in the building construction industry.

The Examination

Questions on state and local city and county examinations are usually compiled by members of the Contractor's Examination Board or by a private company that provides examination services.

Although the exact content will vary from state to state, and from one examination to another, all will contain questions relative to the building construction industry. Most of these questions are covered in this preparation guide.

The format of the actual examination, the time allowed, and the reference material which the applicant may be allowed to take into the examination room vary with each locality. The following is typical of the examination given in many areas:

Subject	Percentage of Total Exam
Carpentry	20%
Concrete	14%
Masonry	14%
Structural Steel and Rebar	12%
Roofing	10%
Associated Trades	10%
Excavation and Site Work	7%
Drywall	5%
Insulation	4%
Safety	4%

In many localities, a business and law examination is also required of all contractors; this business and law examination is in addition to the trade examination. Again, the content of the business and law exam will vary from state to state, but the following is typical:

Subject	Percentage of Total Exam
Project Management	20%
Contract Management	20%
Licensing Law and Rules	10%
Financial Management	10%
Safety Requirements	10%
Employment Laws	8%
Payroll Taxes	6%
Risk Management	6%
Mechanics' Lien Law	6%
Business Organization	4%

The Answer Sheet

Most answer sheets used today are designed for computer grading. Each question on the exam is numbered. Usually there will be 4 or 5 possible responses for each question. You will be required to mark the best answer on the answer sheet. The following is a sample of a multiple-choice question:

1) Richmond is the capitol city of what state?

- (A) Texas (C) Virginia
(B) Maryland (D) Alabama

You should mark answer C for question 1 on the answer sheet.

Answer sheets will vary slightly for each examining agency, so be sure to follow any instructions on that sheet. Putting the right answer on the wrong section will almost certainly cause you to fail.

The Night Before

Give your mind a rest! If you have not prepared correctly for the exam by this time, then you can't cram it all into your brain in one night. So take it easy. If the place of the examination is more than an hour's drive from your home, you might want to stay at a motel in the city where the examination is being held. Getting up at, say, 4 a.m. and driving a couple of hours in heavy traffic will not help you to pass the exam. On the other hand, a drive to the location the afternoon before the exam, a good dinner, and a relaxing evening watching TV will help your possibilities of passing. Just don't stay up too late.

There are, however, exceptions to this rule. Some people find it difficult to sleep comfortably the first night at a strange location. If this is the case with you, you would be better off getting a good night's sleep at home and driving to the location the next morning.

Just be sure to have all of your reference material with you, and get a good night's sleep before the day of the exam. If you have prepared yourself correctly, you will pass with flying colors!

Examination Day

On the day of your examination, listen carefully to any oral instructions given and read the printed directions. Failing to follow instructions will probably disqualify you.

You will seldom find any trick questions, but many will require careful reading. Certain words like *shall*, *should*, *always*, and *never* can make a big difference in your answer.

Sometimes several of the answers may seem possible, but only one will be correct. If you are not sure of the answer, use the process of elimination.

There are several ways to take an exam, but the following is the method I used to pass the Virginia State Electrical Contractor's Exam a few years ago. This method should apply equally well to building contractor's examinations.

When the exam booklets were passed out for my exam and we were given permission to open them, I spent the first 2 or 3 minutes going over the entire exam booklet, noting the total number of questions. This knowledge allowed me to pace myself. I noted a total of 100 questions on the morning exam, which allowed me less than 3 minutes to spend on each one.

I then started with question number 1 and continued in sequence through the test booklet. When a tough question was encountered or I found one that I was not sure of, I merely skipped it and went on to one that I definitely knew. This way, I went through the entire test booklet one time and answered about 50% of the questions in a little over an hour. I was quite sure that I had answered all of these questions correctly. However, 70% is usually the minimum passing grade, and at this point, I had only 50% of the questions answered. However, I still had about 3 hours to spend on the tougher questions.

I started back at the beginning of the exam and went down the list of questions until I found one that was left, and answered it. This process continued until I had answered all the questions to the best of my ability. I spent the remaining time reviewing all answers, making changes as necessary.

After lunch, the "afternoon" portion of the exam was handed out, and I used the same procedure as before. I found out a few days later that I had scored 94% on the examination. This method is merely a suggestion; if another way suits you better, by all means use it.

Chapter 1

Print Reading

A standard set of building construction documents consists of working drawings and written specifications. The drawings are usually divided into the following categories:

- A plot plan showing the location of the building on the property, streets, sidewalks, outside electrical wiring, plumbing pipes, and similar facilities. The plot plan is drawn to scale with the exception of some symbols, which must be enlarged to be readable.
- Floor plans showing the walls and partitions for each floor level.
- Elevations of all exterior faces of the building.
- A number of cross sections to indicate clearly the various floor levels and details of the footings, foundation, walls, floors, ceilings, and roof construction.
- Schedules, notes, and large-scale details as may be required.

For projects of any consequence, architects usually commission consulting engineers to prepare structural, electrical, plumbing, and heating, ventilating and air-conditioning (HVAC) drawings. A brief description of each follows:

Structural drawings are most often prepared by structural engineers on the basis of proper allowances for all vertical loads and lateral stresses. Such drawings are included with the architectural drawings for all long-span, wood-truss construction and all reinforced concrete and structural steel construction.

Electrical drawings for a building project generally cover the complete electrical design for lighting, power, alarm and communication systems, special electrical systems, and related electrical equipment. These drawings sometimes include a plot plan or site plan showing the location of the building on the property and the interconnecting electrical systems; floor plans showing the location of all outlets, lighting fixtures, panelboards, and other components and equipment; power-riser diagrams; a symbol list or legend; schematic diagrams; and large-scale details where necessary.

Mechanical drawings cover the installation of the plumbing, heating, ventilating, and air-conditioning systems within a building and on the premises. They cover the complete design and layout of these systems and show floor-plan layouts, cross sections of the building, and necessary detailed drawings. Control wiring for various heating and air-conditioning controls may also be included on the mechanical drawings.

To be able to “read” all types of building construction drawings, you must become familiar with

the meanings of the symbols, lines, and abbreviations used on the drawings and learn how to interpret the message conveyed by the drawings.

Specifications

Specifications go hand in hand with the working drawings by giving a written description of the work and the duties required by the owner, architect, and engineer. Together with the working drawings, the written specifications form the basis of the contract requirements for the construction of the building.

Chapter Objectives

The questions in this chapter are designed to review working drawings and written specifications to give you an idea of the type of questions that might appear on builder's and general contractor's exams.

In reviewing these questions, please be aware that drawing symbols may vary on different drawings, but in actual practice there is usually a symbol list or legend giving the exact meaning of each. It is recommended that you review several books on the subject, as well as actual working drawings, if you find that print reading is one of your weak areas.

Online Preview

1-1 A “section” or “cross section” of an object or a building is what could be seen if the object were:

- A) Sliced into two parts with one part removed C) Sawed into four parts
B) Sliced into six parts with three parts removed D) Left solid

Answer: A

A section of an object is what could be seen if the object were cut or sliced into two parts at the point where the section is taken; then the portion between the viewer and the cutting plane is removed to reveal the interior details of the object.

1-2 A supplemental drawing used with conventional working drawings that gives a complete and more exact description of the item’s use is called:

- A) Title block C) Schedule
B) Detail drawing D) Riser diagram

Answer: B

A detail drawing is a drawing of a single item or a portion of a building or system; it gives all the necessary details, and a complete description of its use, to show workers exactly what is required for the installation.

1-3 A site plan is a plan view (as if viewed from an airplane) that shows:

- A) Each floor level of the building C) Cross sections of the building
B) Power-riser diagrams D) Property boundaries and buildings

Answer: D

A site plan shows the property boundaries and the building(s) drawn to scale and in its (their) proper location on the lot. Such plans will also include sidewalks, drives, streets, and similar details. Utilities, such as water lines, sanitary sewer lines, telephone lines, and electrical power lines, also appear on site plans.

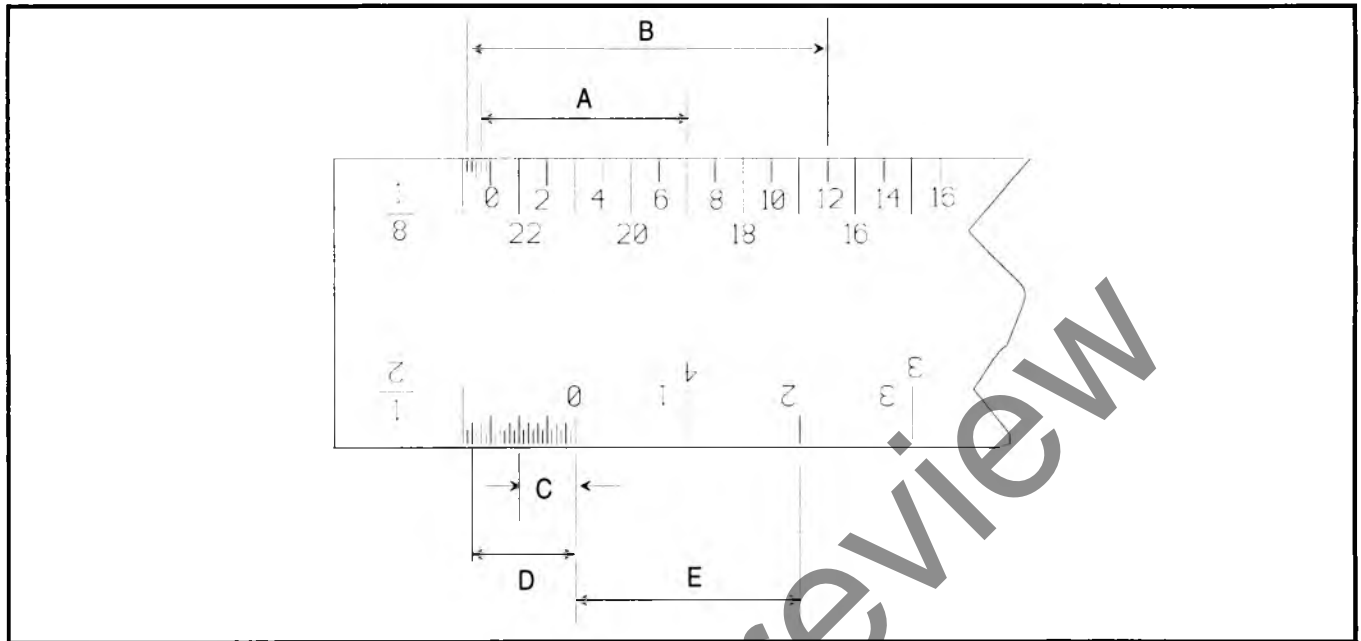


Figure 1-1: The $\frac{1}{8}$ -inch architect's scale used to measure building dimensions.

1-4 Using the $\frac{1}{8}$ -inch architect's scale in Figure 1-1, what is dimension A?

- | | |
|---------------------|---------------------|
| A) 12 feet 8 inches | C) 12 feet 6 inches |
| B) 7 feet 4 inches | D) 11 feet |

Answer: B

Reading the $\frac{1}{8}$ -inch scale from left to right, the inch scale shows a dimension of 4 inches. Continue from the zero mark on the foot scale to the right to 7; thus, the reading is 7 feet 4 inches.

1-5 Using the $\frac{1}{8}$ -inch architect's scale in Figure 1-1, what is dimension B?

- | | |
|----------------------|---------------------|
| A) 12 feet 10 inches | C) 12 feet 6 inches |
| B) 7 feet 4 inches | D) 11 feet |

Answer: A

Reading the $\frac{1}{8}$ -inch scale from left to right, the inch scale shows a dimension of 10 inches. Continue from the zero mark on the foot scale to the right to 12; thus, the reading is 12 feet 10 inches.

1-6 Look at the architect's scale in Figure 1-1. What is dimension C on the $\frac{1}{2}$ -inch scale?

- A) 6 inches
B) 8 inches
C) 10 inches
D) 14 inches

Answer: A

Each mark on the inch scale represents $\frac{1}{2}$ inch. Since 12 marks are covered, this is 6 inches.

1-7 Look at the architect's scale in Figure 1-1. What is dimension D on the $\frac{1}{2}$ -inch scale?

- A) 6 inches
B) 8 inches
C) 10 inches
D) 11 inches

Answer: D

Each mark on the inch scale represents $\frac{1}{2}$ inch. Since 22 marks are covered, this is 11 inches.

1-8 Look at the architect's scale in Figure 1-1. What is dimension E on the $\frac{1}{2}$ -inch scale?

- A) 1 foot
B) 2 feet
C) 3 feet
D) 4 feet

Answer: B

Each mark on the foot scale represents 1 foot. Since 2 marks are covered, this represents 2 feet.

1-9 What is dimension A on the $\frac{1}{4}$ -inch scale in Figure 1-2 on the next page?

- A) 4 feet 9 inches
B) 1 foot 9 inches
C) 1 foot 6 inches
D) 37 feet 0 inches

Answer: A

Each mark on the inch scale represents 1 inch; each mark on the foot scale represents 2 feet. Consequently, the measurement of A is 4 feet 9 inches.

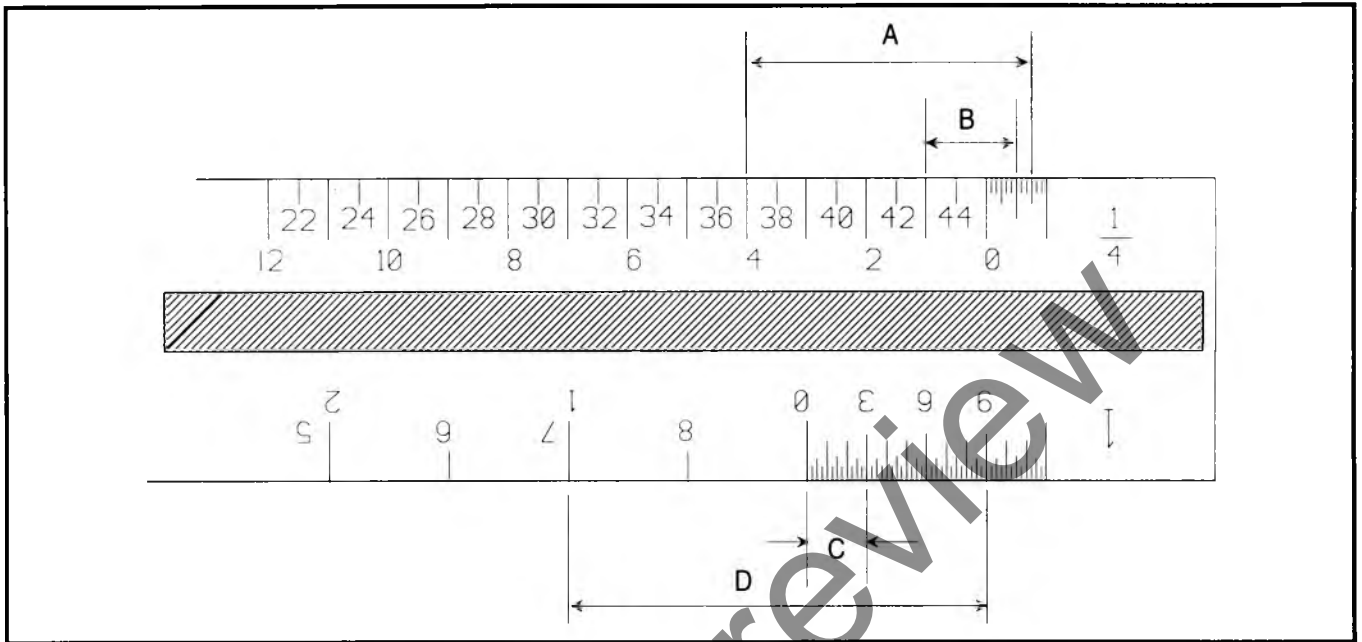


Figure 1-2: Typical architect's scale.

1-10 What is dimension B on the $\frac{1}{4}$ -inch scale in Figure 1-2?

- | | |
|--------------------|---------------------|
| A) 1 foot 6 inches | C) 43 feet 6 inches |
| B) 4 feet 6 inches | D) 6 feet 4 inches |

Answer: A

This scale is read from right to left; each mark in the inch section of the scale represents 1 inch. Therefore, 6 inches are shown in the inch section and 1 foot is shown in the foot section. Thus, 1 foot 6 inches is correct.

1-11 What is dimension C on the 1-inch scale in Figure 1-2?

- | | |
|-------------|-------------|
| A) 6 inches | C) 2 inches |
| B) 3 inches | D) 1 inch |

Answer: B

Each of the longer marks on the inch scale represents 1 inch. Since there are 3 long marks, the measurement is 3 inches.

1-12 What is dimension D on the 1-inch scale in Figure 1-2?

- A) 1 foot 6 inches C) 1 foot 9 inches
B) 12 inches D) 12 feet

Answer: C

This inch section of the 1-inch scale is read from left to right; each long mark represents 1 inch. The reading is 9 inches. The foot scale is read from right to left, indicating 1 foot. Therefore, the measurement is 1 foot 9 inches.

1-13 Which of the following best describes a sectional drawing?

- A) A cutaway view of a building or object C) A drawing of an object as if viewed directly from the front
B) A drawing as if the object were viewed from above D) A drawing of an object as if viewed from one side

Answer: A

A section is as if an object were sliced in two portions with one portion removed to reveal the interior area of the object. For example, a vertical slice through a building drawing will reveal the interior structure.

1-14 At which of the following drawing locations is the drawing scale most likely to be shown?

- A) In the symbol list C) Door and window schedule
B) In the written specifications D) Title block

Answer: D

The drawing scale is usually indicated in the drawing title block, but scale markings may also be encountered under other supplemental views found on the drawing sheet. A scale marking under a particular view on a drawing sheet supersedes the scale indicated in the title block for that particular view only.

Building Contractor's Exam Preparation Guide

1-15 A legend or symbol list is shown on building construction working drawings to:

- | | |
|---|---|
| A) Describe materials and installation methods | C) Identify all symbols used to indicate materials and finishes |
| B) Show the outline of the architect's floor plan | D) Enable the electric service size to be calculated |

Answer: C

Drawing symbols vary, so a legend or symbol list usually appears on drawings to show the meaning of each symbol. Where a symbol is used to identify a single component, sometimes a note is used adjacent to the symbol to describe it.

1-16 Elevations shown on a site plan refer to:

- | | |
|---|---|
| A) The side view of the building | C) Vertical height above or below a given reference point or "bench mark" |
| B) Horizontal distances between utility poles | D) The dimensions of the parking lots |

Answer: C

Site elevations are vertical heights above or below a given reference point. The reference point is called a bench mark. Sometimes the bench mark reference is sea level.

1-17 Site contours are:

- | | |
|---|--|
| A) Locations of buried utility lines | C) Dimensions that are used to locate a building on a given site |
| B) Continuous grade lines that show the height above or below a given reference point | D) Dimensions that define site boundaries |

Answer: B

Site contours are represented by continuous lines sometimes called "grades." They are not dimension lines, but are used to calculate vertical dimensions similarly to site elevations.

1-18 If the fire hydrant in Figure 1-3 protrudes above the ground $2\frac{1}{2}$ feet, what is the elevation at the base of the hydrant?

- A) 102.50 feet
 B) 0.00 feet
 C) 97.50 feet
 D) Cannot be determined

Answer: C

The top of the hydrant is bench mark elevation 100.00 feet. The base of the hydrant is $2\frac{1}{2}$ feet below bench mark or 97.50 feet.

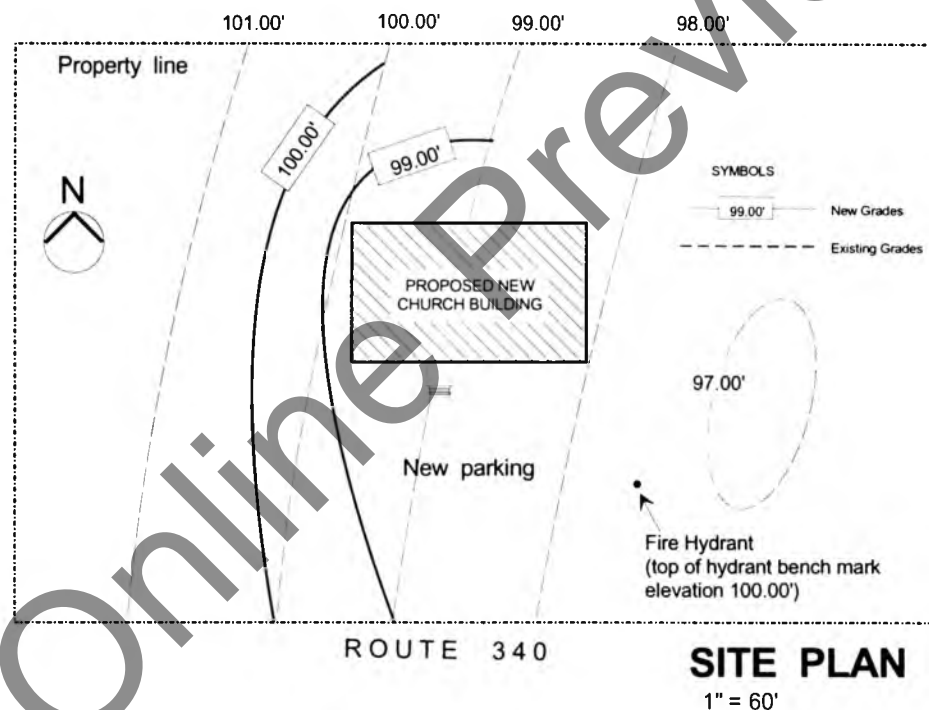


Figure 1-3: Site plan.

1-19 Proposed finished grade lines (contours) are:

- A) Grades at the site before construction
 B) Site grades at the completion of construction
 C) Grade marks given by the building inspector on how well the contractor has done his job
 D) Imaginary lines used only for bidding

Answer: B

Finished grade lines indicate how the land is to be reshaped and regraded at the end of all construction activities.

1-20 What is the proposed finished grade elevation at the northwest corner of the proposed building in Figure 1-3?

- | | |
|---------------|----------------------------|
| A) 99.00 feet | C) 97.50 feet |
| B) 98.00 feet | D) 1 foot below floor line |

Answer: A

Existing contour 99.00 feet intersects the proposed building at about midpoint. This contour is shown to be moved to the NW corner and extends to the SE corner.

1-21 Does the structural joist framing shown on a floor plan normally indicate the floor framing of that level or the floor/ceiling framing above?

- | | |
|--|--|
| A) The floor framing of the plan level shown | C) The roof framing |
| B) The floor/ceiling framing above | D) Floor framing is shown only in a building section |

Answer: B

Normally, framing shown on a plan is the framing of the floor/ceiling above. If structural framing is shown on the main or ground floor plan, then the framing shown is for the second floor (above).

1-22 To what scale is the floor plan of the residence in Figure 1-4 drawn?

- | | |
|-----------------------------|----------------------------|
| A) $\frac{1}{8}'' = 1'0''$ | C) $1'' = 1'0''$ |
| B) $\frac{1}{16}'' = 1'0''$ | D) $\frac{1}{4}'' = 1'0''$ |

Answer: A

The floor plan is drawn to a scale of $\frac{1}{8}'' = 1'0''$ as indicated by note on the drawing.

1-23 Which best describes the size of the screened porch in Figure 1-4?

- | | |
|-------------------------------------|-----------------|
| A) 9 × 9 feet | C) 15 × 15 feet |
| B) Screened porch size is not shown | D) 18 × 15 feet |

Answer: D

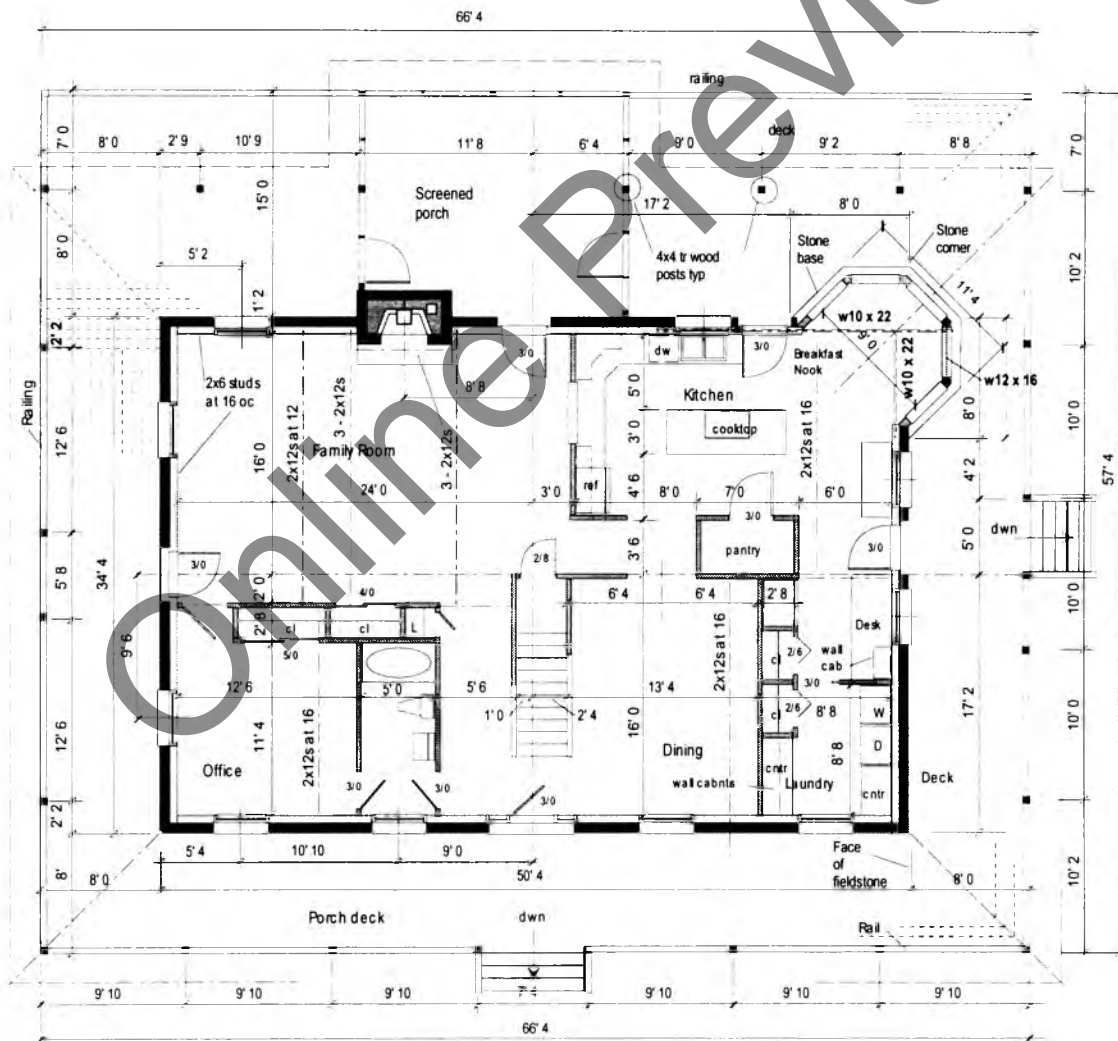
The width of the porch is 11 feet 8 inches + 6 feet 4 inches or 18 feet. The length is shown as 15 feet.

1-24 What is the slope of the front porch roof shown in Figure 1-5 on the next page?

- A) 4:12
- B) 12:4
- C) 20 degrees
- D) 2 inches per foot

Answer: A

A 4 in 12 slope (4:12) indicates that for every 12 horizontal dimension units, the roof pitch elevates 4 vertical dimension units.



MAIN FLOOR PLAN
1/8" = 1' 0"

Figure 1-4: Main floor plan.

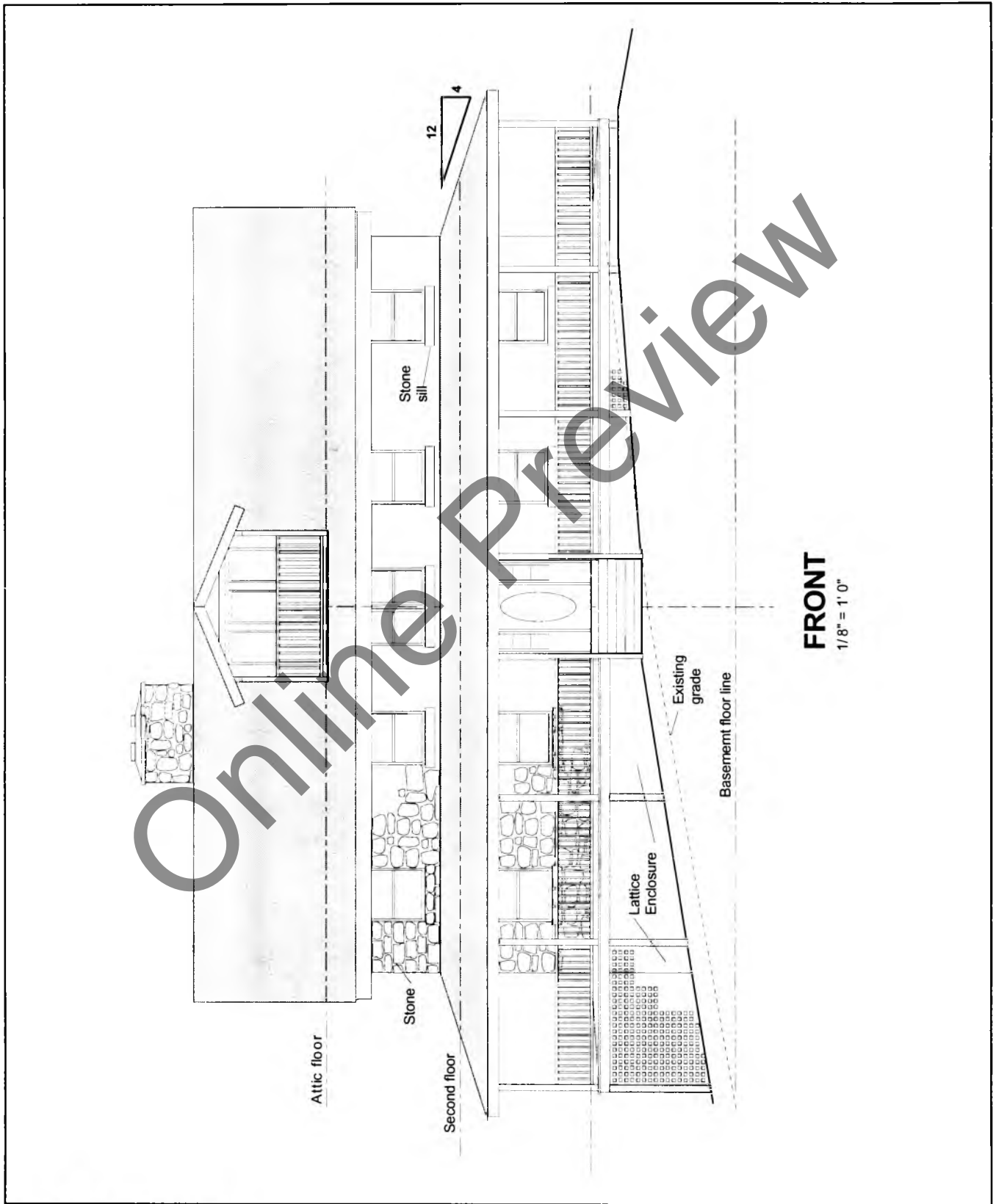


Figure 1-5: Front elevation.

1-25 The front elevation shown in Figure 1-5 faces east. It can be renamed:

- A) The west elevation
- B) The south elevation
- C) The east elevation
- D) The building front facade

Answer: C

The east elevation. The viewer is looking westward, but the front of the building faces east, therefore the front is the east elevation.

1-26 What is the clear inside width of the stairs (located adjacent to the dining room) in Figure 1-6?

- A) 2 feet 4 inches
- B) 5 feet 6 inches
- C) 3 feet 4 inches
- D) The dimension is not shown

Answer: C

The dimension shown on the drawing is $2'4" + 1'0" = 3'4"$ (3 feet 4 inches).

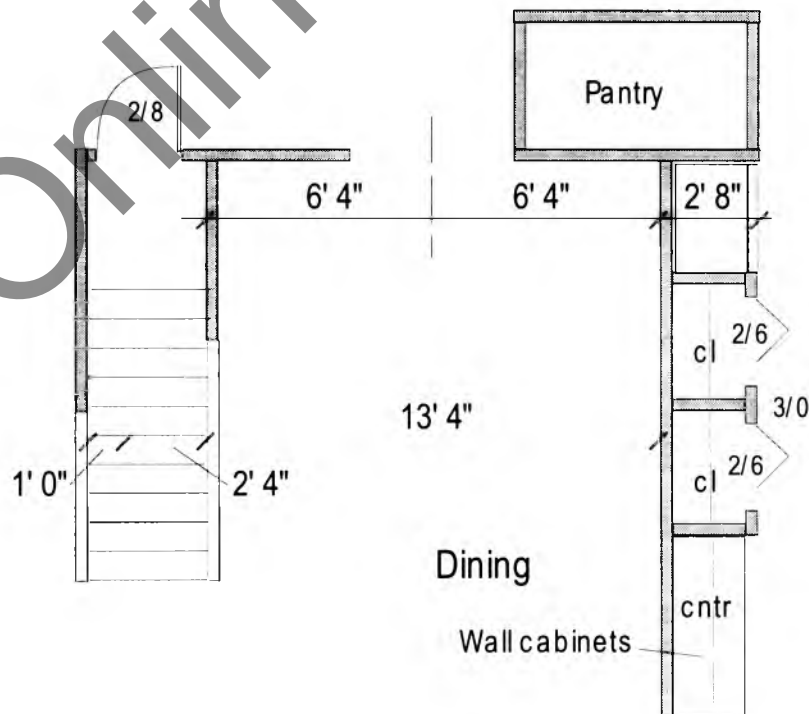


Figure 1-6: Enlarged drawing of the dining area in Figure 1-4.

1-27 Figure 1-7 shows another view of the house in Figure 1-5. Figure 1-7 could also be called:

- | | |
|------------------------|----------------------------|
| A) The north elevation | C) The southeast elevation |
| B) The south elevation | D) The west elevation |

Answer: B

One can tell that this elevation is the left side of the house primarily because of the location of the chimney. This side of the house faces south because the front of the house faces east.

1-28 How many exterior doors are shown on the main floor plan in Figure 1-4 on page 23?

- | | |
|-----------------------------------|-----------------------------------|
| A) 3 doors | C) 4 (not including screen doors) |
| B) 5 (not including screen doors) | D) 8 |

Answer: B

The floor plan shows 5 exterior doors.

1-29 Window sizes are normally given in which of the following tables?

- | | |
|--------------------|------------------|
| A) Finish schedule | C) Door schedule |
| B) Window schedule | D) Wall sections |

Answer: B

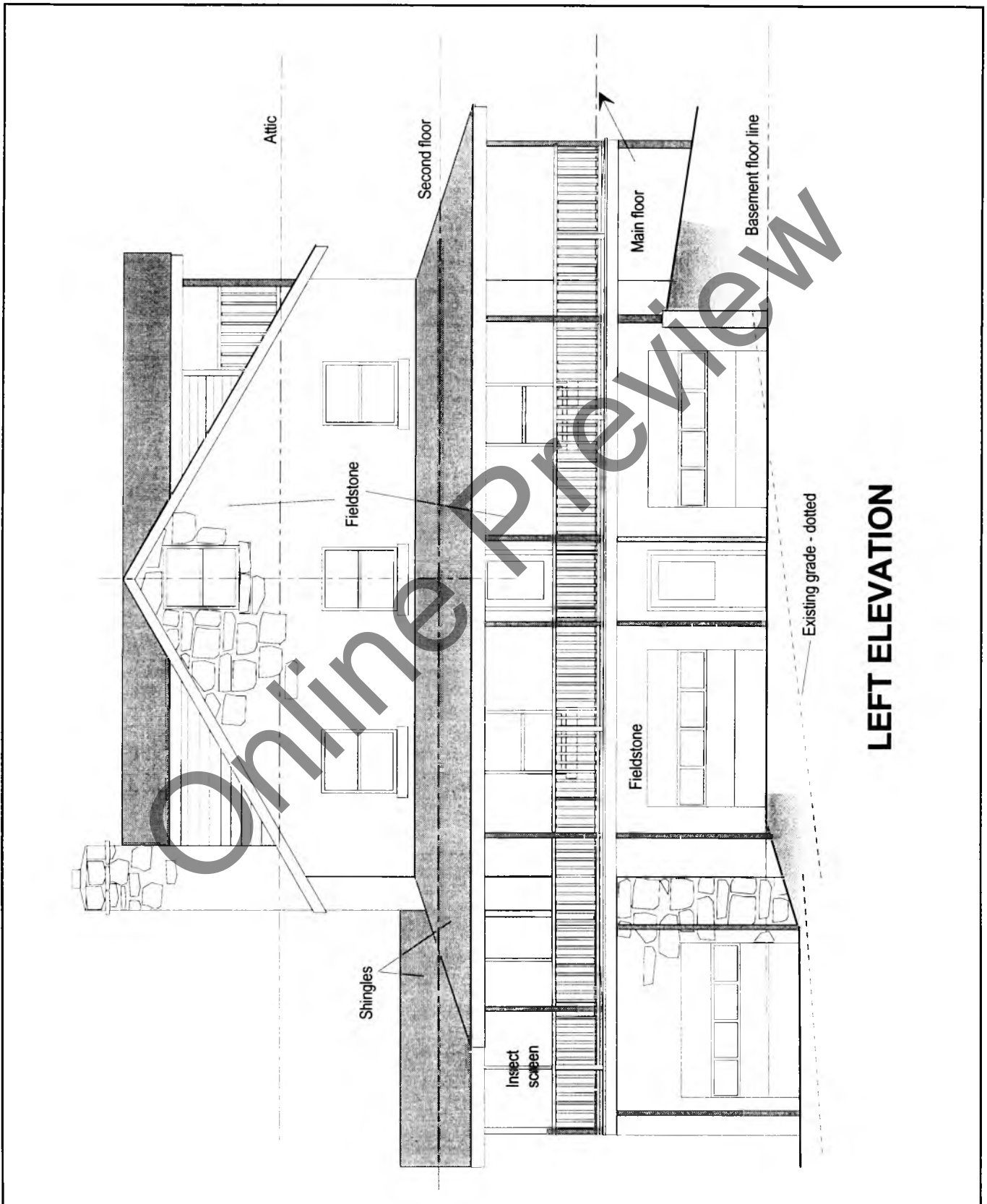
The window schedule.

1-30 The scale of a detail drawing drawn $\frac{1}{4}$ full size is:

- | | |
|----------------------------|----------------------------|
| A) $\frac{1}{4}'' = 1'0''$ | C) $\frac{1}{2}'' = 1'0''$ |
| B) $\frac{3}{4}'' = 1'0''$ | D) $3'' = 1'0''$ |

Answer: D

$3'' = 1'0''$ because $\frac{1}{4}$ of 12 (inches) is 3 (inches).



LEFT ELEVATION

Figure 1-7: Left elevation of the house in Figure 1-5.

1-31 If a dimension is not shown, the contractor should:

- A) Scale the drawings
- B) Calculate sizes by the dimensions given
- C) Redesign the drawing
- D) Ask the building inspector

Answer: B

It is not a good idea to depend on scaling the drawings if an exact dimension is needed. By adding or subtracting the dimensions given, an exact dimension can usually be determined.

1-32 Match lines shown on a drawing:

- A) Show alignment position of separate drawings
- B) Are dimension lines
- C) Show alignment of 1st and 2nd floors
- D) Are utility lines

Answer: A

Match lines are used to align separate drawings that are too large to be shown as one drawing.

1-33 A symbol list is:

- A) A list of imaginary lines
- B) Always shown to scale
- C) A listing of different window types
- D) A description of drawing symbols

Answer: D

A symbol list illustrates each one of the symbol representations used on the drawings.

1-34 A building perspective (three-dimensional view of a building):

- A) Can be scaled for pricing estimation
- B) Cannot be scaled
- C) Can be substituted for the building elevations
- D) Can be measured for quantity take-offs

Answer: B

Perspectives, if included in a set of drawings, are not drawn to scale and should not be used as substitutions for building elevations or any other scaled drawing.

1-35 A sidewalk drawing scale is shown as $\frac{3}{8}'' = 1'0''$. The walk is represented, on paper, by a line 3 inches long. What is the actual length of the constructed sidewalk?

- A) 5 feet
B) 24 feet
C) 8 feet
D) 5 feet 6 inches

Answer: C

The fraction $\frac{3}{8}$ inch converts to 0.375 inch ($3 \div 8 = 0.375$). Therefore, 3 inches \div 0.375 inch = 8 feet.

1-36 What is the best reason for not drawings trees and shrubs on building elevations?

- A) They distract from the technical construction information
B) They are too hard to draw
C) They could not be scaled
D) They would interfere with window placement

Answer: A

Building elevations on a working set of drawings should stick to describing finish materials and other materials needed for construction.

1-37 A good reason for electrical circuit lines to be drawn curved rather than straight is:

- A) This is how conduit is installed in buildings
B) To enable the drafters to route the lines around partitions
C) So as not to confuse the circuit lines with building lines
D) Curved lines are easier to draw on CAD systems than straight lines

Answer: C

When circuit lines are drawn straight, they are sometimes confused with the building lines. Thus, Answer C is one good reason for drawing curved circuit lines.

1-38 If the blueprints show a brick exterior finish, why can't the contractor pick the cheapest brick he or she can find for bidding the project?

- A) This is exactly what the contractor should do
- B) The written specifications may demand a specific brick or give a cost allowance
- C) This would be a contract violation
- D) If the blueprints do not show the cheapest brick then that brick is not allowed

Answer: B

The point to be remembered here is that the blueprints and written specifications work hand in hand. The contractor must review each very thoroughly before making decisions concerning the project.

1-39 Which is potentially a clearer detail drawing to understand, one drawn at a scale of $\frac{1}{16}'' = 1'0''$ or one drawn at a scale of $\frac{3}{8}'' = 1'0''$?

- A) Both scales are generally inappropriate
- B) $\frac{1}{16}'' = 1'0''$ because it is smaller and allows more to be drawn on the sheet
- C) There is very little difference between the two scales
- D) $\frac{3}{8}'' = 1'0''$

Answer: D

A scale of $\frac{3}{8}'' = 1'0''$ is potentially better because its component parts are larger and easier to see.

1-40 Where are room ceiling heights normally noted?

- A) In the finish schedule
- B) In the schedule of values
- C) In the specifications
- D) On the architectural plans

Answer: A

The finish schedule lists ceiling finishes. This is also the traditional place to find the ceiling heights of each room.

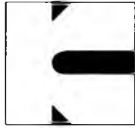
CHAPMAN & CHAPMAN ARCHITECTS		
New Church Building		
ELECTRICAL	DATE:	SHEET No
	REVISED:	E-1

Figure 1-8: A typical title block for architectural drawings.

1-41 From the title block in Figure 1-8, what does this drawing sheet entail; that is, which of the trades?

- | | |
|---------------|------------------------|
| A) HVAC | C) Plumbing |
| B) Electrical | D) Interior decorating |

Answer: B

The main sheet title is "Electrical."

1-42 There may not be any building dimensions on the plumbing floor plans. Would this be considered an oversight on the part of the architect?

- | | |
|--------|--|
| A) No | C) This would relieve the plumbing contractor of all liability for his work |
| B) Yes | D) The building inspector should have caught any dimensioning mistake during plans' review |

Answer: A

The floor plans are dimensioned on the architectural plan drawings. Special dimensions for the plumber should be on the plumbing plans, but these would normally be of limited scope.

1-43 Figure 1-5 on page 24 shows an exterior house finish of stone. Individual stones are shown. Must the stone mason conform to the individual stone pattern shown?

- | | |
|--------|---|
| A) Yes | C) The stone mason needs only to see the floor plans to understand his or her portion of the work |
| B) No | D) Yes, if a pattern is not indicated in the written specifications |

Answer: B

Only a typical random pattern is represented on the drawing in Figure 1-5. The specifications should clarify this somewhat and give a typical range of sizes for the stone and a stone pattern, but individual stones do not have to be shaped and spaced to match the elevations.

1-44 Again refer to Figure 1-5. Is it possible to tell what the house wall finish requirements are below the porch?

- | | |
|---|--------|
| A) The wall finish is shown as lattice | C) No |
| B) It is assumed that stonework is required from grade up to roof eaves | D) Yes |

Answer: C

It is not possible to know the wall finish requirements below the porch by looking at this elevation. The wall sections would be the best source for this information.

1-45 Does the subfloor sheathing shown in Figure 1-9 extend under the stud wall?

- | | |
|--------|--|
| A) No | C) Cannot be determined |
| B) Yes | D) Subflooring never extends under walls |

Answer: B

Subflooring is shown under the wall. This is a standard framing detail.

1-46 In Figure 1-9, what are the characteristics of the ceiling insulation?

- A) It has an R-factor of 30
- B) No specifications are shown
- C) This insulation is to be blown in
- D) The insulation has an R-factor of 20

Answer: B

Ceiling insulation is not shown in this drawing. The characteristics of the ceiling insulation must therefore be found on other drawings, or else described in the written specifications for the project.

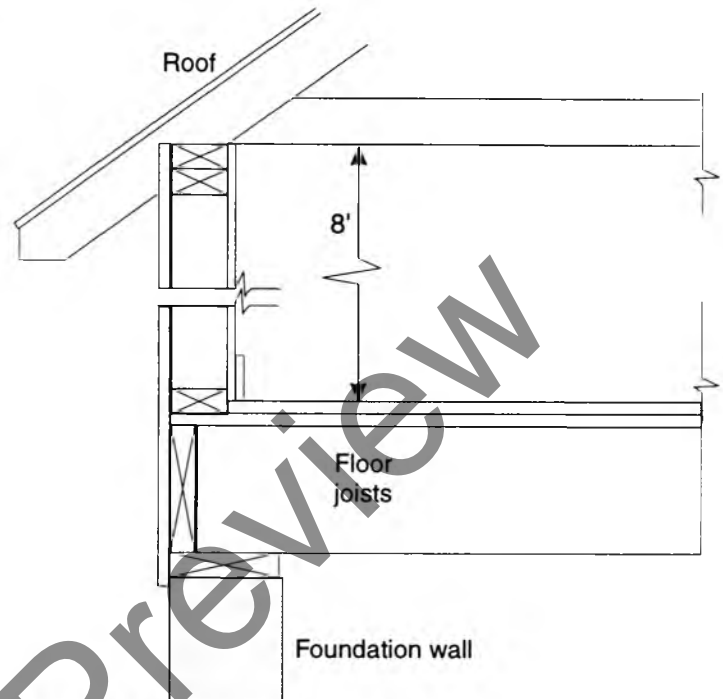


Figure 1-9: Wall section of a building.

1-47 The floor joists in Figure 1-9:

- A) Are to be spaced at 16 inches on centers
- B) Are to be 2- x 10-inch joists
- C) Are to be floor trusses
- D) Are to bear on a foundation wall plate

Answer: D

In this standard wall section, the floor joists are to bear on a foundation wall plate.

1-48 The floor-to-ceiling height in Figure 1-9:

- A) Is incorrectly shown
- B) Would be clearer if shown only on the floor plan
- C) Cannot be measured by scale
- D) Cannot be determined

Answer: C

The ceiling height is clearly marked as 8 feet but the section has a horizontal cut line which makes it impossible to scale the vertical floor to ceiling height.

1-49 Which of the following best describes a detail drawing?

- A) A cross-sectional view
B) A drawing clarifying a specific item or area
C) An enlarged cross-sectional drawing
D) An enlarged floor-plan view

Answer: B

A detail clarifies information. It explains any item or specific area of the project that may otherwise be left to chance.

1-50 If a fire-separation wall is shown on a building's floor plan, which of the following applies to any openings in the wall?

- A) They should be left completely open
B) They will need to have fire doors, dampers, or shutters
C) They are not allowed
D) They must have smoke detectors

Answer: B

A wall that is used to prevent the spread of smoke or fire must have opening closures. The exact type depends on the building type and the local fire marshall or building inspector.

Index

A			
A-frame construction	217-218	Arizona	
Accelerators, concrete	183	licensing requirements	6
Accident reports	250-251	State Contractor's Licensing Office	305
Accidents, insuring against	73-74	Arkansas	
Addendum, contracts	68	licensing requirements	6
Adding fractions	35-36	State Contractor's Licensing Office	305
Adhered masonry veneer	144-145	Asbestos hazards	77-78
Adjoining property damage	101, 103	Asphalt-saturated felt, application	141
Admission letters, exam	274	Asphalt shingle roofing	152
Admixtures, cement	182-183	installation	156
Affidavit, Contractor's License Application, sample	263-264	Assembly use groups	195-196
Air-entraining cement	182	Automatic fire shutters, escalator	246
Air-inflated structures	231	Automatic sprinkler systems	
AISC steel designations	188-189	hoistway	244
Alabama		walkway	239
licensing requirements	6	Automotive lifts	242, 247
State Contractor's Licensing Office	305	Awnings	231
Alaska		B	
licensing requirements	6	Backfill	
State Contractor's Licensing Office	305	against footings	115
Alloys, steel	185	against wood foundations	119
Aluminum siding	146	Balance Sheet, sample	267
American Association of State Highway and Transportation Officials (AASHTO)	94	Ballasted thermoset roof systems	154-155
American Institute of Steel Construction (AISC)	187	Balloon framing	218, 222
American Society for Testing and Materials (ASTM)	94	Base cap	135
Americans with Disabilities Act	60, 79-80	Base flood elevation	237
Angles, calculating degree of	49	Base molding	134-136
Answer sheet		Base plates, steel column	190
Contractor's final exam	292	Basement slabs, moisture barriers	115
how to use	11	Basic math	35-38
Law and Business Organization		Beam deflection	171
final exam	280	Beam loads	172-173
sample, typical test	277	calculating	42-43
Answers to Final Exam	209	Beam weights, steel	188-189
Antennas	231-232	Beams	
Application, contractor's license	257-260	bending stresses	173-174
Application requirements	5-10	reinforced concrete	171
Architect, responsibilities of	72	Bearing factors, calculating	40, 47
Architect's scale, using	16-19	Bedrock	
Area, calculating		footings on	112
gable	44	foundations on	110
roof	43, 53	Bending stresses	
wall	55	beams	173-174
		metal column	227
		Bevel siding	147
		Bid bonds	75
		Bidding awards	70
		Bidding documents	67-70
		Bids, construction	67
		Birdsmouth cut	160
		Block	
		flooring	126
		masonry	208
		walls, bracing	224
		Block & Associates	7
		Blueprints	30
		Board-and-batten siding	149-150
		Board-foot measure	44
		Board sheathing	138
		BOCA	6
		Bolt-hole dimensions	194
		Bonding masonry	181
		Bonds	75-76
		Bookkeeping	83-84
		Boring test, soil	109, 111
		Bracing	
		block walls	224
		floor	192, 230
		prefabricated wood structures	227
		wall	192
		Braking systems, vehicle	250
		Brick	
		courses, calculating	44
		joint types	178-179
		moisture content	177
		mortar application	177-179
		wall dimensions, calculating	47
		Brick veneer	218-219
		finishes	142
		foundation load	223
		Bricklayers	208
		Bridging	192, 230
		Builder's Guide to Accounting	60
		Building calculations, review	35-57
		Building Contractor's Exam	
		admission letters	274
		answer sheet, using	276-277
		answering the questions	276
		content of questions	11
		disqualification	275
		how to apply for	5-6
		how to take	12, 275-278
		identification requirements	274
		Law and Business Management	59-60
		preparing for	10-12
		qualifications	257
		registration	257, 274
		regulations	274-275
		rescheduling	274
		sample exams	281, 293
		sample questions	276-278

Building Contractor's Exam Preparation Guide

state requirements	6-10	Closed roof signs	235	steel	185-194
typical subjects covered	275	Coaters, industrial	212	Types 1 & 2	220
typical test schedule	274	Code of Federal Regulations, Title 29,		Contract awards	70
what to bring	291	Part 1926 (OSHA)	60	Contract surety bond	75
Building Contractor's Sample		Colorado		Contractor's Audited/Reviewed Financial	
Final Exam	293-304	licensing requirements	6	Statement/Balance Sheet, sample	268-273
answer sheet	292	State Contractor's Licensing Office	305	Contractor's Exam	
answers	309	Column spacing, calculating	54	See Building Contractor's Exam	
instructions	279	Column stresses, transferring	190	Contractor's Examination Board	10
Law and Business answer sheet	280	Combustible piping materials	220	Contractor's license	257
Law and Business Exam	281-291	Commercial construction	205-206	Contractor's License Application,	
Building documents	13	Common rafters	160	sample	258-260
Building perspective	28	Compaction tests	94	Contractor's Licensing Offices	305-308
Building site, selecting	93	Competitive bid contracts	65, 67	Contractor's Reference Manual	59
Building standpipe water systems	99	Completion dates	69	Contractor's Statement of Experience,	
Building trades	205-214	Composite panel sheathing	138	sample	261-262
Building, types of	215-230	Concrete	175-184	Contractor liability insurance	78
Building/construction loads	170	accelerators	183	Contracts	
Buildings, walkways connecting	236	additives	176	business	64
Built-up roofing	151	beams, reinforced	225-226	construction	65-70
Business and Law Exam,		calculating volume	41, 44-45, 54	cost-plus-fee	66-67
types of questions	11	composition	175	lump-sum	66
Business		compression strength, footings	114	Control devices, installation	210
failures, causes of	82	damaging substances	226	Control joints, masonry	224
financial statements	267	floor slabs	226	Conveying equipment	242
keeping records, importance of	83-84	footings, reinforcing	114	Coped joints	134
management skills	59-91	forms	108	Copper-bearing steel	186
organizing	61-63	formwork	207	Corporations	63, 86
Business law	59-91	placing	175	Corrosion protection, steel	185
Business Management Exam,		plasticizers	183	Cost control	72
items covered	59-60	retarders	183	Cost-plus-fee contracts	66-67
Business use groups	196-197	slump test	182	Crack control, masonry	224
Butt joints	134	workability of	182-183	Cross sections	15
C		Concrete block		D	
Calcium chloride, in cement	176, 183	course height, calculating	225	Damage to adjoining property	101, 103
Calculating dimensions,		foundations	218	Dampers, fireplace	184
steel fabrications	192-194	walls	219	Dampproofing	117
Calculations, building	35-57	Concrete workers/finishers	207	Danger signs, job site	256
Calculators, using in exam	38	Confined and enclosed spaces,		Dead loads	163, 166
California		working in	252	Deflection in floors	171
licensing requirements	6	Connecticut		Deflection, calculating	46
State Contractor's Licensing Office	305	licensing requirements	6	Degree of angle, calculating	49
California Mission tile	161-162	State Contractor's Licensing Office	305	Delaware	
Canopies	231	Construction		licensing requirements	6
Cantilvered floor systems	191	contracts	65-70	State Contractor's Licensing Office	305
Cap tile	161-162	documents	67-70	Demolition	93-106
Carbon grade steel	185	drawings, load criteria	165	fire hazards	99
Carpenters	207	estimating	66	maintaining party walls	106
Cast iron	186	methods	215-230	site requirements	100
Cement, air-entraining	182	schedules	13	site utilities	100
Ceramic veneer	145	trades	205-214	standpipe systems	105
Certificate of Responsibility	8	workers	205	toxic dust hazards	105
Change orders	87	Construction fires, protection against	98-99	Demolition workers	213
Channel, steel	189	Construction industry, organization of	214	Department of Transportation	
Child labor laws	79	Construction lumber	171	regulations	95
Chimney		Construction, types of	205-206	Design loads	165, 168
smoke chamber	181	elevator	242	Detail drawings	15, 25-26, 34
throat	181	flood resistant	231	framing	32-33
Chromium steel	186	heavy	206	Dimensions, on drawings	25, 28
Circuit lines, drawing	29	precast concrete	227	Disabled exam candidates	274
		prefabricated	219		
		special	231-240		

- Dish antennas 232
- Display signs 234-235
- Disqualification, exam 275
- District of Columbia
licensing requirements 6
State Contractor's Licensing Office 305
- Dividing fractions 37-38
- Documents, construction 67-70
- Domestic corporations 63
- Douglas fir, framing with 171
- Drain tiles 117, 121-122
- Drainage sump 121-122
- Drainage systems 117, 121-122
- Drawings
circuit lines 29
detail 15, 25-26, 32-34
dimensions on 25, 28
electrical 13
elevations 13, 20-21, 24-27, 29
HVAC 13
legend on 20
mechanical 13
project 68
scale of 16-19, 29, 30
sectional 19
shop 192-194
structural 13
symbols on 20, 28
title block 19
working 13-14
- Drip caps 149
- Drop siding 148
- Drywall 123
installation 124, 131-133
joint tape application 128
- Ductwork 212
- Ductwork systems, installing 210
- Dumbwaiters 241
- E**
- Ear/hearing protection 250
- Earthquakes 163
- Education use groups 196
- Electrical drawings 13
- Elevating equipment 242
- Elevations 13, 20-21, 24-27, 29
- Elevator constructors 213
- Elevators 241-248
construction process 242
hoistways, requirements for 244-245
loads 167
operating 243
- Emergency signs, elevator 245
- Emergency treatment, injury 252
- Employee deductions 88
withholding tax 85
- Employee W-2 forms, filing 87
- Employee W-4 forms 88
- Employer logs, Federal OSHA 250
- Employer's Tax Guide, Circular E 60
- Employment eligibility laws 80
- Engineer, soils 110-111
- Equal opportunity laws 79-80
- Equipment
excavation 93
safety 250
special 241-248
- Escalators 242, 243
noncombustible building materials 246
- Estimating, project 66
- Estimator, responsibilities of 69
- Exam: See Building Contractor's Exam
- Exam candidates, disabled 274
- Excavation
calculating volume of 39
operations 93
- Existing structures, adjoining 101, 103
- Explosives, using 93, 95, 213
- Exponential powers 38
- Exterior finishes 137-150
- Exterior window glaze 143
- Eye protection 250
- F**
- Fabrications, steel 192-194
- Facilities, temporary 96
- Factory use groups 196-197
- Fair Labor Standards Act 79-80
- Fastener requirements, shingle 156
- Fatalities, work related 249-250
- Federal Emergency Management Agency
(FEMA) 237
- Federal forms, filing dates 87-88
- Federal Income Tax
calculating withholding 88-90
- Federal Occupational Safety and Health Act
(OSHA) 249
- Federal Unemployment Tax 85
- Fiberboard sheathing 138
- Filing license applications 5
- Final examination: See Building Contractor's
Sample Final Exam
- Financial management skills 82
- Financial statements 84, 267
- Finish schedules 30
- Finishes
exterior 137-150
interior 123-136
- Fire extinguishers 204
site requirements 95, 98
- Fire hazards 99
- Fire protection programs, employer 253
- Fire protection ratings
automatic fire shutters, escalator 246
hoistway doors 245
- Fire protection systems 195-204
elevator 244
inspections 201
installation 211
limited area sprinklers 203
pedestrian walkway 239-240
portable extinguishers 204
requirements 199, 202
- standpipes 199, 203-204
water sprinklers 202
- Fire-protecting steel 185
- Fire-rated gypsum board 123
- Fire-resistance ratings
roof coverings 155
walkways 236, 240
- Fire resistance, timber framing 220
- Fire-separation walls, floor plans 34
- Fireplace
dampers 184
hearths 184
liners 181
smoke chambers 181
- Fires, controlling on job site 98-99
- First aid, availability 250
- Flange, I beam 187
- Flashing
gable 150
roof 161-162
- Flat roofs 151, 153
- Flood-hazard maps 237
- Flood hazards 170
- Flood Insurance Rate Map 237
- Flood-resistant construction 231, 237
- Floor base, minimum thickness 117
- Floor joists, bracing 230
- Floor plans 13
bank building 209
framing shown 22
plumbing 31
reading 22-23, 26, 34
- Floor slabs, concrete 226
- Floor systems
cantilevered 191
light-gage metal 191-192
- Flooring
deflection 171
- Florida
licensing requirements 7
State Contractor's Licensing Office 305
- Footings
backfill 115
frost line depth 111-112
reinforcing 114, 228
requirements 107-108
unit pressure on soil 112
- Foreign corporations 63
- Form 1096, filing 88
- Form 1099, due date 87
- Forms, constructing 108
- Forms, sample
Affidavit, Contractor's License
Application 263-264
Balance Sheet 267
Contractor's Audited/Reviewed Financial
Statement/Balance Sheet 268-273
Contractor's License Application 258-260
Contractor's Statement of Experience
..... 261-262
Power of Attorney 265
Reference 266

Building Contractor's Exam Preparation Guide

Formwork	107-122	Handy Reference Guide to the Fair Labor Standards Act	60	Institutional use groups	197
Foundation soils analysis	94	Hard hats	255	Instructions, final examination	279
Foundations	107-122	Hardboard exterior finishes	144	Instrumentation workers	210
drainage system	117	Hawaii		Insulating fiberboard sheathing	138
high-rise buildings	110	licensing requirements	7	Insurance	73-74, 78
in hazard zones	238	State Contractor's Licensing Office	306	Interior finishes	123-136
masonry veneer on	115	Hazard zones, construction in	237-238	International Congress of Building Officials (ICBO)	6
residential	116, 118, 120	Hazards		Iowa	
settlement	110	fire/demolition	99	licensing requirements	7
structural loads on	223	intermittent	101	State Contractor's Licensing Office	306
types	108	Head protection	250, 255	Ironworkers	207
vibration effects	113	Hearths, fireplace	184	IRS audits	84
wall height	119	Heat detectors	244	IRS Circular E	88-90
waterproofing walls	117	Heavy machinery operators	211	J	
wood	113	Helmets, protective	255	Jackrafter	159-160
Fractions		High-hazard use groups	197	Job-site	
adding	35-36	High-rise buildings, foundations	110	fire-protection programs	253
dividing	37-38	High water tables, requirements for	117	safety	73
multiplying	36-38	Highway construction tests	94	storage	72
reviewing use of	35	Highway/street construction	206	temporary facilities	96
subtracting	36	Hip rafters	160	Joint tape, application	128
Framework, steel	215	Hip roof framing	159	Joint thicknesses, brick	180
Framing details	32-33	calculating dimensions	50-52	Joint types, brick mortar	178-179
Framing, floor plan	22	Hoisting equipment	242, 247	Joints, cutting	134-136
Framing lumber	171	Hoistway doors, fire protection ratings	245	Joist deflection, calculating	46
Framing members, roof	159-160	Hoistway vents, locating	246	Joist loads	172-173
Framing, platform	228-229	Hoistways, sprinkler systems in	244	calculating	46
Freight elevators	241, 243	Hollow core block walls	224	K	
Freight lifts	242	Horizontal application, drywall	132	Kansas	
Frost line factor, footings	111-112	Hose connections, standpipe	104, 203-204	licensing requirements	7
G		How to study for exam	10	State Contractor's Licensing Office	306
Gable area, calculating	44	How to take exam	275-278	Kentucky	
Gable roofs	152	answering questions	276	licensing requirements	7
Gable siding	149-150	using answer sheet	276	State Contractor's Licensing Office	306
General contractors	205	HVAC contractors	210	L	
responsibilities of	70	HVAC drawings	13	Land, physical characteristics	93
General partnerships	62	Hydraulic elevators	241, 247	Landscaping loads	168
General requirements, specifications	67	I		Lateral bracing, roof trusses	223
Georgia		I beams	187	Lateral loads	166-167
licensing requirements	7	Idaho		Law and Business Examination	
State Contractor's Licensing Office	306	licensing requirements	7	answer sheet	280
Glaziers	211	State Contractor's Licensing Office	306	sample test	281-291
Glazing	143	Identification required, exam	274	subjects covered	59-60
Grade elevations	22	Illinois		Law, business	59-91
Grade lines	21	licensing requirements	7	Laws, labor	79-80
Guam		State Contractor's Licensing Office	306	Legend on drawings	20
State Contractor's Licensing Office	306	Impact loads	163	Leveling plates	190
Guard fences	96	Income statements	84	Liability insurance, contractor	78
Guardrails, platform	251	Income taxes, filing procedures	86	Licensing, need for	5
Guards, tool	250, 253-254	Indiana		Lien bonds	75
Gutters	146	licensing requirements	7	Liens	90-91
Gypsum board	138	State Contractor's Licensing Office	306	Lifts	241-242
installation requirements	131-133	Indoor assembly, occupancy use groups	195	Light-gage metal floor/wall systems	191-192
thickness and spacing	124, 131	Industrial coaters	212	Lighting systems, vehicle	250, 255
types available	123	Industrial construction	205-206	Limited area sprinkler systems	203
H		Industrial use groups	196-197	Limited partnerships	62
Hand elevators	241, 247	Industrialized buildings	219, 221	Lintels, in masonry design	180
Handrails		Injuries, work	249-250	Live loads	163, 167
concentrated force on	169	minor	251		
stair	130	Inspections, fire protection systems	201		

- Load-bearing capacity, soil111
- Load distribution, column222
- Loading stresses, on concrete190
- Loads
- calculating42-43, 46
 - construction170
 - designing for168
 - elevator167
 - information on drawings165
 - point172-173
 - scaffold support251-252
 - structural163-174
 - tower structures233
 - uniform172
- Lobbies, smoke detector requirements243
- Losses, protection against73-74
- Louisiana
- licensing requirements7
 - State Contractor's Licensing Office306
- Low-hazard factory/industrial use groups197
- Lumber
- framing171
 - standard dimensions223
- Lump-sum contracts66
- M**
- Machinery, site installation211
- Maine
- licensing requirements7
 - State Contractor's Licensing Office306
- Management skills82
- business59-91
- Manlifts, testing243
- Mansard roof158
- Manual of Steel Construction188
- Manually operated hoists247
- Manufacturing use groups196-197
- Maryland
- licensing requirements7
 - State Contractor's Licensing Office306
- Masonry175-184
- bonding181
 - control joints224
 - head joint thickness180
 - structures215
 - weepholes180
- Masonry construction218
- Masonry contractors208
- Masonry veneer
- adhered144-145
 - installing139
 - on foundation walls115
- Massachusetts
- licensing requirements7
 - State Contractor's Licensing Office306
- Match lines28
- Material hoists242
- Materials
- at job site72
 - noncombustible220
- Math review35-38
- Mechanical drawings13
- Medical services, availability of250
- Medicare Tax85
- Membrane structures231
- auxiliary inflation systems236
- Metal columns, bending stress227
- Metal deck installation213
- Metal floor/wall systems191-192
- Metal frame buildings, reinforced footings228
- Metal ties, masonry139
- Metal veneer finishes140
- Michigan
- licensing requirements8
 - State Contractor's Licensing Office306
- Millwrights211
- Minimum wage laws79
- Minnesota
- licensing requirements8
 - State Contractor's Licensing Office306
- Miscellaneous use groups198
- Mississippi
- licensing requirements8
 - State Contractor's Licensing Office307
- Missouri
- licensing requirements8
 - State Contractor's Licensing Office307
- Mitered joints134, 136
- Mobile homes, in hazard zones238
- Moderate-hazard factory/industrial use groups196-197
- Moisture barriers, slab floors115
- Moisture, effect on wood114
- Molding134-136
- Montana
- licensing requirements8
 - State Contractor's Licensing Office307
- Mortar application, brick177-179
- Mortar joints
- brick178-179
 - masonry218
- Mortar, water content179
- Motor vehicles, safety requirements250
- Moving walks242-243
- Multi-family use groups198
- Multi-station smoke detectors199-200
- Multi-story buildings, safeguards232
- Multiplying fractions36-38
- N**
- Nailing drywall132
- Nails
- drywall132-133
 - exterior finish144
 - wood siding148
- National Fire Protection Association (NFPA)99
- Natural disasters, insuring against73-74
- Nebraska
- licensing requirements8
 - State Contractor's Licensing Office307
- Negotiated contracts65
- Net worth, statement of267
- Nevada
- licensing requirements8
 - State Contractor's Licensing Office307
- New Hampshire
- licensing requirements8
 - State Contractor's Licensing Office307
- New Jersey
- licensing requirements8
 - State Contractor's Licensing Office307
- New Mexico
- licensing requirements8
 - State Contractor's Licensing Office307
- New York
- licensing requirements8
 - State Contractor's Licensing Office307
- Nickel steel186
- Non-ballasted thermoset roof systems154
- Noncombustible materials220
- North Carolina
- licensing requirements8
 - State Contractor's Licensing Office307
- North Dakota
- licensing requirements8
 - State Contractor's Licensing Office307
- O**
- Occupancy use groups195-198
- Occupational diseases249-250
- Octagonal roof dimensions, calculating48-50
- Ohio
- licensing requirements8
 - State Contractor's Licensing Office307
- Oklahoma
- licensing requirements9
 - State Contractor's Licensing Office307
- Open signs234
- Oregon
- licensing requirements9
 - State Contractor's Licensing Office307
- Organizational structure, construction214
- Oriented Strand Board (OSB)137
- Ornamental iron186
- OSHA
- safety standards76-77
 - Standards for the Construction Industry
 - state/federal6, 8-9
 - state/federal249-250
- Outdoor assembly, occupancy use groups196
- Overlap, sheathing paper141
- Overtime Compensation Under the Fair Labor Standards Act60
- Overtime pay80-81
- Owners' right to changes70
- Oxidation, steel185
- P**
- Pan tile161-162
- Paneling pattern148
- Paneling, types123
- Parapet wall, unreinforced masonry179

Building Contractor's Exam Preparation Guide

Particleboard sheathing	137-138	Projecting signs	234	Roof	
Partnerships, business	62, 86	Property history	93	calculating area of	43, 53
Party walls, demolition	106	Proportions, in calculations	38	construction, wood	217
Passenger conveyances	247	Protective equipment	250, 255	design	151
elevators	241, 243-247	Protective shields, vehicle	250	flashing	140
Payment bonds	75-76	Public property use requirements	96	framing	159-160
Pedestrian safety	101-102	Public safety requirements	96-98	installations	213
Pedestrian walkways	231, 236, 239-240	toxic dust hazards	105	structures	151-162
Pennsylvania		Q		trusses, prefab	223
licensing requirements	9	Qualifications, exam	257	types of	152
State Contractor's Licensing Office	307	R		Roof coverings, classifications and ratings	
Percent, solving problems using	37	Radio towers	231, 233	155
Performance bonds	76	Rafter length, calculating	46, 52	Roof loading, effect on footing	228
Performance dates	69	Rafters		Roof ponding, designing for	153
Perimeter, calculating	50	hip	160	Roof ridge, calculating length	52
Perimeter fences	96	valley	159	Roof signs, closed	235
Personnel hoists	242	Ratios, calculating	38	Roof slope	
Pipefitters	211	Rebar		calculating	40, 158
Piping materials, combustible	220	calculating laps required	42	minimum	154
Pitch, roof	151	installation	207	Roofers	213
Placing concrete	175	Reconstituted wood panels	137	Roofs	151-162
Plank construction	217	Records, keeping	83-84	Roots of numbers	38
Plank flooring	125	Reference form, sample	266	Run	
Planning, project	71	References for Law and Business Exam	60	calculating	42
Plasterers	208	Registering for exam	274	roof	151
Plasticizers, concrete	183	Regulations, exam	274-275	stair	129
Plate glass installations	211	Reinforced concrete		S	
Platform framing	218, 228-229	beams	171, 225-226	Safe bearing factors	40, 47
Platform guardrail requirements	251	construction	221	Safeguards	
Plot plan	13	structures	215	for adjoining property	101, 103
Plumbing floor plans	31	Reinforcing, form work	108	for window openings	232
Plywood sheathing	137	Reinforcing steel		site	96-98
Pneumatic tools, safety clips	254	concrete footings	114	using explosives	95
Point loads	172-173	footings	228	Safety barriers, job site	96
Pole construction	217	Related trades	205-214	Safety belts, vehicle	255
Polyethylene moisture barriers	115	Religious structures, occupancy use groups		Safety clips, pneumatic tools	254
Ponding, roof	153	196	Safety codes	249
Portable fire extinguishers	204	Reporting accidents	250-251	Safety equipment requirements	250
Post and beam construction	217	Requirements for license	5-10	Safety requirements, walkway exits	
Power disconnects, elevator	244	Rescheduling exam	274	239-240
Power elevators	241, 247	Residential Builder's License	8	Safety standards	76-78
Power of Attorney, sample	265	Residential construction	205	job site	73
Power-operated hoists	247	building foundations	116, 118, 120	Safety training	250
Power tools, safety guards	250, 253	Residential occupancy use groups		Salts, effect on concrete	226
Powers of numbers	38	198, 201	Sample exam questions	276-278, 293-304
Precast construction	227	Retaining walls	121-122	Sanitation requirements, job	250
concrete deck installation	213	site requirements	99	Scaffolding	
Prefabricated metal construction	227	Retarders, concrete	183	loads	251-252
Prefabricated roof trusses	223	Reverse signal alarms, vehicle	250	safety requirements	77, 250
Prefabricated structures	216, 219	Rhode Island		Scale, drawing	16-19, 29, 30
Prefabricated wood panels	227	licensing requirements	9	Schedules, construction	13
Pressure, unit soil	40, 45	State Contractor's Licensing Office	307	Scheduling, project	71
Pressure-treated wood foundations	108	Ridge board	159	Schematic diagrams	13
Print reading	13-14	Rigid foam plastic sheathing	138	Screws, drywall	132
Procedures, exam	274	Rise, roof	151	Sectional drawings	19
Profit and loss statements	84	Risers		Seismic design requirements	170
Project		calculating	42	Seismic loads	163-166
changes in	68	stair	128-130	Settlement, foundation	110, 113
drawings	68	Risk, insuring against	73-74	Sheathing paper, for veneers	146
planning	71	Rolled roofing	152	Sheathing, types	137
scheduling	71			Sheet metal workers	210, 212
Project superintendent, responsibilities	72, 73				

- Shingle roofing152
Shock waves163
Shop drawings, reading192-194
Shower wall heights127
Sidewalk elevators241, 248
Sidewalk sheds96-98
Siding
 calculating material56-57
 junctions149
 installation142
Signs231, 234
 danger256
 emergency245
Site contours20-21
Site plan15, 21-22
Site retaining walls99, 103
Site work93-106
 local requirements95
6th course bonding181
Slab floors, moisture barriers115
Slate shingles161
Sleepers, installation on concrete126-127
Sleeping quarters, requirements253
Slope, roof151, 154
Slump test182
Smoke chamber, chimney181
Smoke detectors199-200, 243
Smoke vents204
Snow loads163-164, 168-169
Snow, unit weight169
Social Security Tax85
Soil conditions93
Soil, load-bearing capacity107, 111
Soil load-bearing tests109-111
Soil samples, requirements109, 114
Soil sulfates, effect on concrete226
Soils analysis94
Sole proprietorship61, 86, 267
Sound-deadening gypsum board123
South Carolina
 licensing requirements9
 State Contractor's Licensing Office308
South Dakota
 licensing requirements9
 State Contractor's Licensing Office308
Southern Building Code Congress
 International (SBCCI)8, 9
Special construction231-240
Special equipment241-248
Specialty trades205-206
Specifications14, 30
 contract67
 steel shapes187
 wall finishes32
Sprinkler systems
 elevator244
 limited area203
Square root, solving for38
Stainless steel186
Stair requirements, during construction105
Stair width, minimums130
Stairs, calculating run/rise42, 128-129
Stairway, headroom required129
Standpipe systems199, 203-204
 demolition requirements105
 hose connections104
 requirements for99, 103
State Contractor's Licensing Offices305-308
State Corporation Commission63
State Income Tax85
State licensing requirements5-10
State safety/health requirements249
Steel
 beams187
 column base plates190
 column plates221
 construction185-194
 design188
 framework221
 framing185
 properties of185
 siding142
 stiffeners190-191
 types of186
Steel-frame structures216
Steel members
 weights189
 welding212
Stiffeners, steel190-191
Stone veneer146
Storage use groups198
Structural collapse, demolition102
Structural drawings13
Structural loads163-174
 on towers233
Structural steel
 beams, stiffeners for190
 construction221
 framework215
 shapes185
 shapes, specifications for187-188
 shop drawings192-194
Structures
 masonry215
 membrane231
 temporary231
Stud arrangements, corner228
Studs, calculating number required41
Study, how to10
Subcontractor work, responsibility for70
Subcontractors205
Subjects covered, exam275
Subtracting fractions36
Sulfates, effect on concrete226
Survey requirements93
Symbol list on drawings20, 28
T
Taking the exam275-278
Tax filing86
Taxes, withholding85
Television towers231, 233
Temperature, effect on concrete175-176
Temporary job-site facilities96
Temporary sleeping quarters253
Temporary structures231
 stairs105
Tennessee
 licensing requirements9
 State Contractor's Licensing Office308
Terra cotta veneer145
Testing standards94
Tests, soil109-111
Texas
 licensing requirements9
 State Contractor's Licensing Office308
Thermostats, installing210
Throat, fireplace181
Tidal hazard zones237
Timber construction217
 framing220
Title block, drawings19, 31
Title search93
Toe boards, platforms251
Tongue-and-groove flooring125
Tools
 safety guards250, 253-254
 unsafe254
Towers, radio/television231, 233
Toxic dust hazards105
Trade workers207-214
Trades, construction205-214
Trusses, roof151
Types 1 & 2 construction220
U
Underlayment requirements, roofing157
Uniform Building Code6
Uniform loads172
Unit bearing pressure, calculating46
Unit pressure, footings on soil112
Unit snow weight169
Unit soil pressure107
 calculating40, 45
Use groups195, 201
 A, indoor/outdoor assembly195-196
 B, business occupancies196
 E, education occupancies196
 F, factory and industrial occupancies
 196-197
 H, high-hazard occupancies197
 I, institutional occupancies197
 M, mercantile occupancies197
 R, residential occupancies198
 S, storage occupancies198
 U, utility and misc. occupancies198
Use requirements, public property96
Utah
 licensing requirements9
 State Contractor's Licensing Office308
Utilities, demolition site100
Utility use groups198
V
Vacant lots, safeguards100

Building Contractor's Exam Preparation Guide

Valley rafters	159-160	Walkways, pedestrian	231, 236, 239-240	Window schedules	26
Vehicle safety requirements	250, 255	Wall signs	235	Wisconsin	
Veneers		Wall systems, light-gage metal	191-192	licensing requirements	10
adhered masonry	144-145	Wall weight per linear foot, calculating	46	State Contractor's Licensing Office	308
brick	218-219	Walls		Wood	
ceramic	145	calculating area	55	flooring	125-126
exterior	142-146	calculating dimensions	47	paneling	123
stone	146	finish specifications	32	sheathing	138
terra cotta	145	finishes, attaching	127	siding	142
Vents		fireplace	181	trim, joining	134-136
elevator hoistway	246	sheathing types	137	trusses	151
smoke	204	Warning signs, job site	256	Wood foundation systems	108, 113
Vermont		Washington		effects of moisture	114
licensing requirements	9	licensing requirements	9	backfill	119
State Contractor's Licensing Office	308	State Contractor's Licensing Office	308	Wood-frame construction	215-217
Vertical application, drywall	133	Watchman, need for	101	Wood shingles	
Vertical rise, roof	154	Water-resistant gypsum board	123	roofing	152
calculating	50-51	Water-sprinkler systems	202	minimum roof pitch	158
Vibration	163	Water supply systems, in hazard zones	238	siding finishes	143
effect on foundations	113	Waterproofing	117	Work changes, construction	70
Virginia		Weather-resistant sheathing paper	141	Work-related injuries	249-250
licensing requirements	9	Web, I beam	187	Workers, construction	205
State Contractor's Licensing Office	308	Web stiffeners, steel	190-191	concrete	207
Volume		Weepholes, in masonry walls	180	Working conditions, safe	77
calculating concrete pour	41, 44-45, 54	Weight per linear foot, calculating	46	Working drawings	13-14
calculating in excavation	39	Welders	212	problems with	72
W		West Virginia		Wrecking machine operators	213
W-2 forms	87	licensing requirements	10	Wrought iron	186
W-3 forms, filing	87	State Contractor's Licensing Office	308	Wyoming	
W-4 forms	88	Wide flange beam	187	licensing requirements	10
Waferboard sheathing	137	Wind loads	163-166	State Contractor's Licensing Office	308
Wage laws	79-81	uplift, effect on towers	233	XYZ	
Walkway exits, safety requirements	239-240	Window cleaning safeguards	232	Zoning laws, sign	234
		Window glaze, exterior	143		

Online Preview

This page left intentionally blank