$35.00

# Building Contractor's Exam Preparation Guide



By John E. Traister & C. Keeler Chapman

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



**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


Eighth printing 2008

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# 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* 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 hav 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.

### *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 weaknesses 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
(B) Maryland
(C) Virginia
(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.

**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

B) Sliced into six parts with three parts removed

C) Sawed into four parts

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

B) Detail drawing

C) Schedule

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

B) Power-riser diagrams

C) Cross sections of the building

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.*

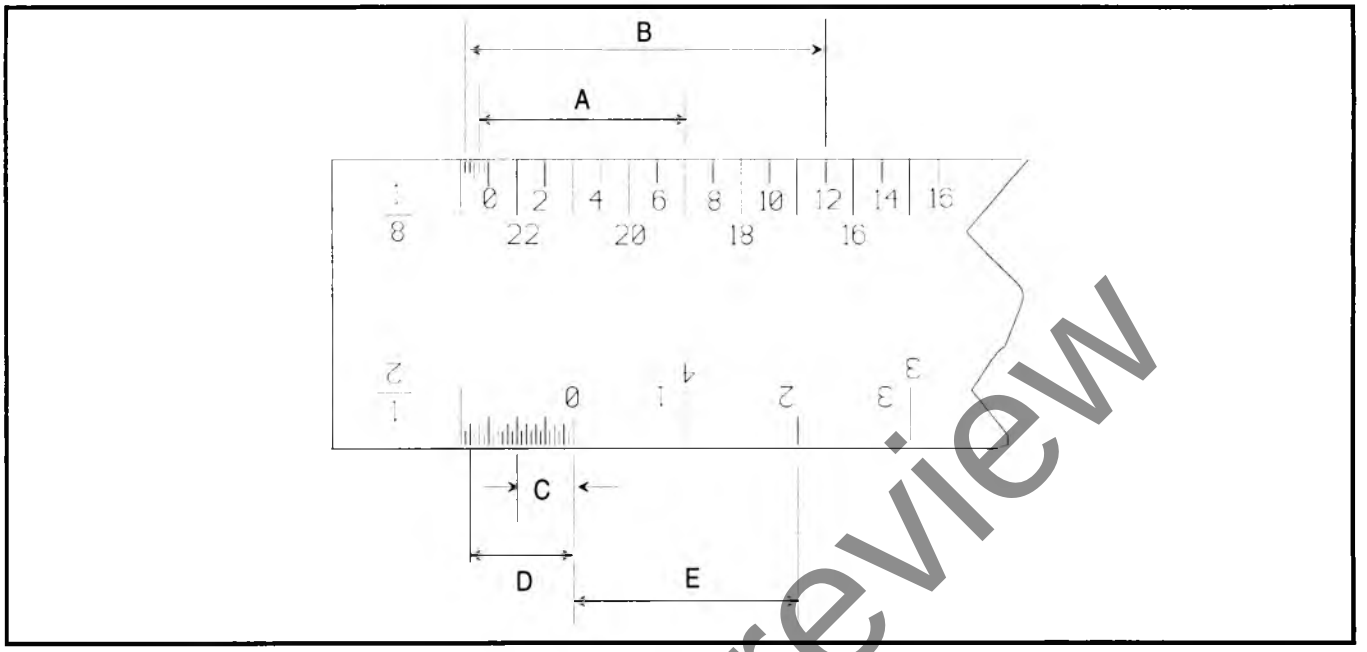



**Figure 1-1: The ⅛-inch architect's scale used to measure building dimensions.**



## 1-4 Using the ⅛-inch architect's scale in Figure 1-1, what is dimension A?

A) 12 feet 8 inches

B) 7 feet 4 inches

C) 12 feet 6 inches

D) 11 feet

***Answer: B***

*Reading the ⅛-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 ⅛-inch architect's scale in Figure 1-1, what is dimension B?

A) 12 feet 10 inches

B) 7 feet 4 inches

C) 12 feet 6 inches

D) 11 feet

***Answer: A***

*Reading the ⅛-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 ½-inch scale?**

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

***Answer: A***

*Each mark on the inch scale represents ½ 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 ½-inch scale?**

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

***Answer: D***

*Each mark on the inch scale represents ½ 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 ½-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 ¼-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.*

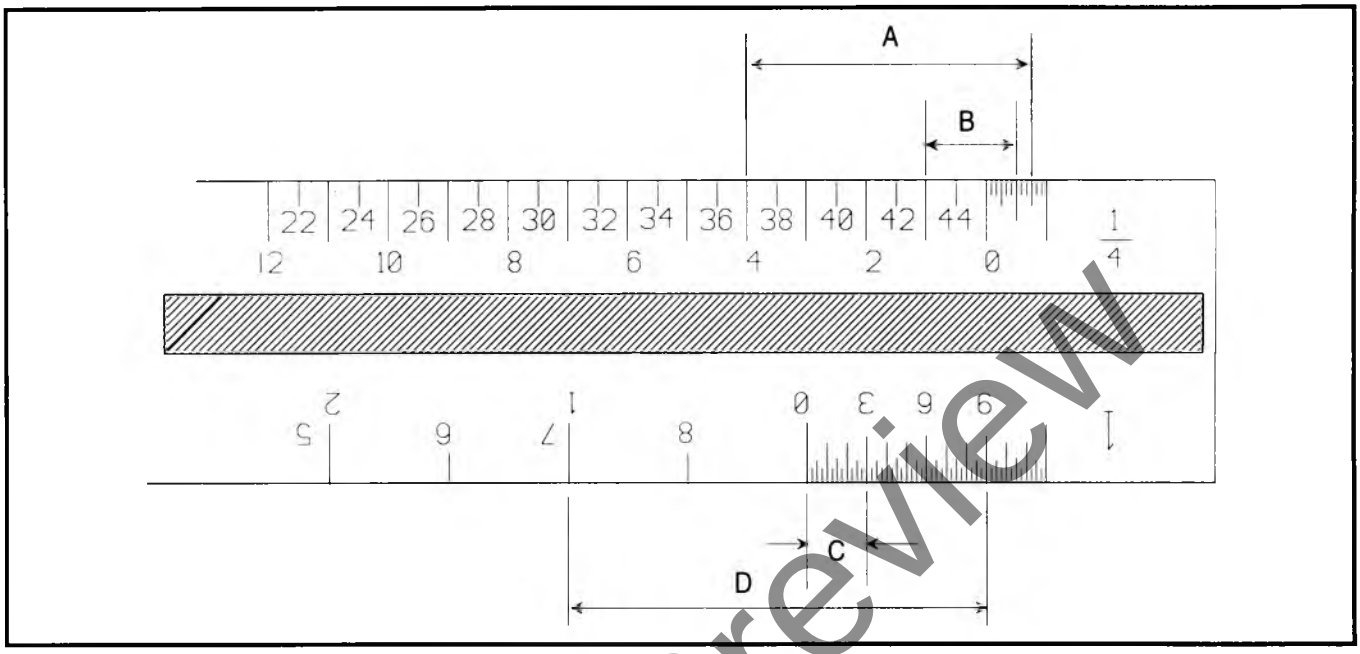



**Figure 1-2: Typical architect's scale.**



### 1-10 What is dimension B on the ¼-inch scale in Figure 1-2?

A) 1 foot 6 inches

B) 4 feet 6 inches

C) 43 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

B) 3 inches

C) 2 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

B) 12 inches

C) 1 foot 9 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

B) A drawing as if the object were viewed from above

C) A drawing of an object as if viewed directly from the front

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

B) In the written specifications

C) Door and window schedule

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.*

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

A) Describe materials and installation methods

B) Show the outline of the architect's floor plan

C) Identify all symbols used to indicate materials and finishes

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

B) Horizontal distances between utility poles

C) Vertical height above or below a given reference point or "bench mark"

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

B) Continuous grade lines that show the height above or below a given reference point

C) Dimensions that are used to locate a building on a given site

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 2½ 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 2½ feet below bench mark or 97.50 feet.*

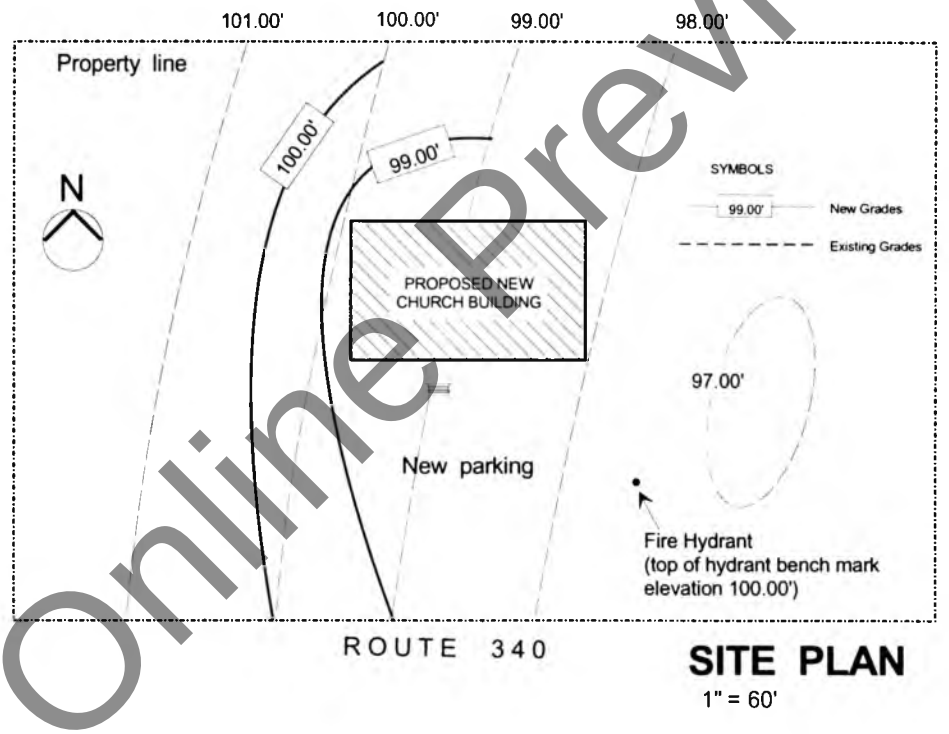



**Figure 1-3: Site plan.**



**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
B) 98.00 feet
C) 97.50 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
B) The floor/ceiling framing above
C) The roof framing
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"
B) $\frac{1}{16}$" = 1'0"
C) 1" = 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
B) Screened porch size is not shown
C) 15 × 15 feet
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

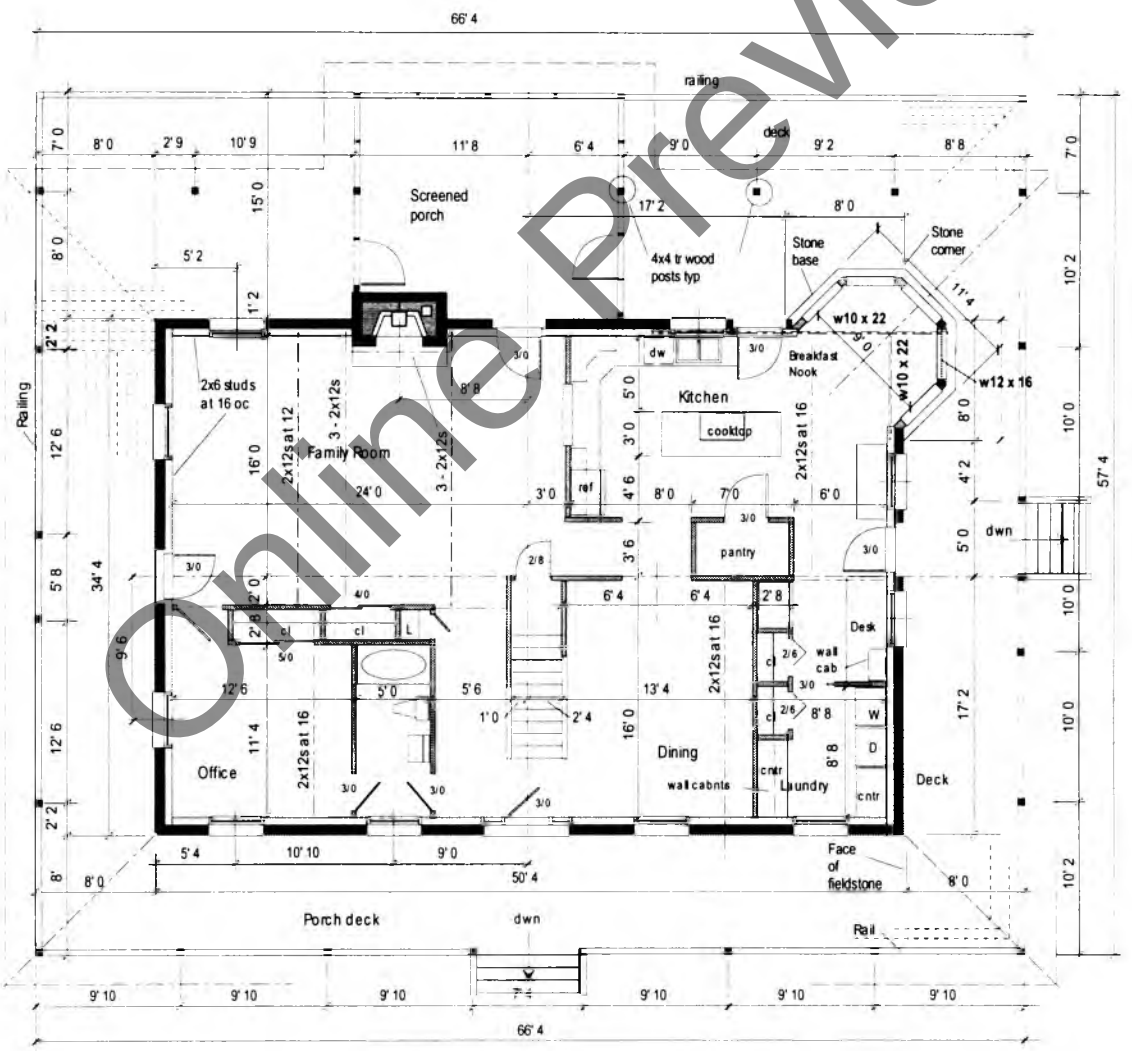
C) 20 degrees

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.**

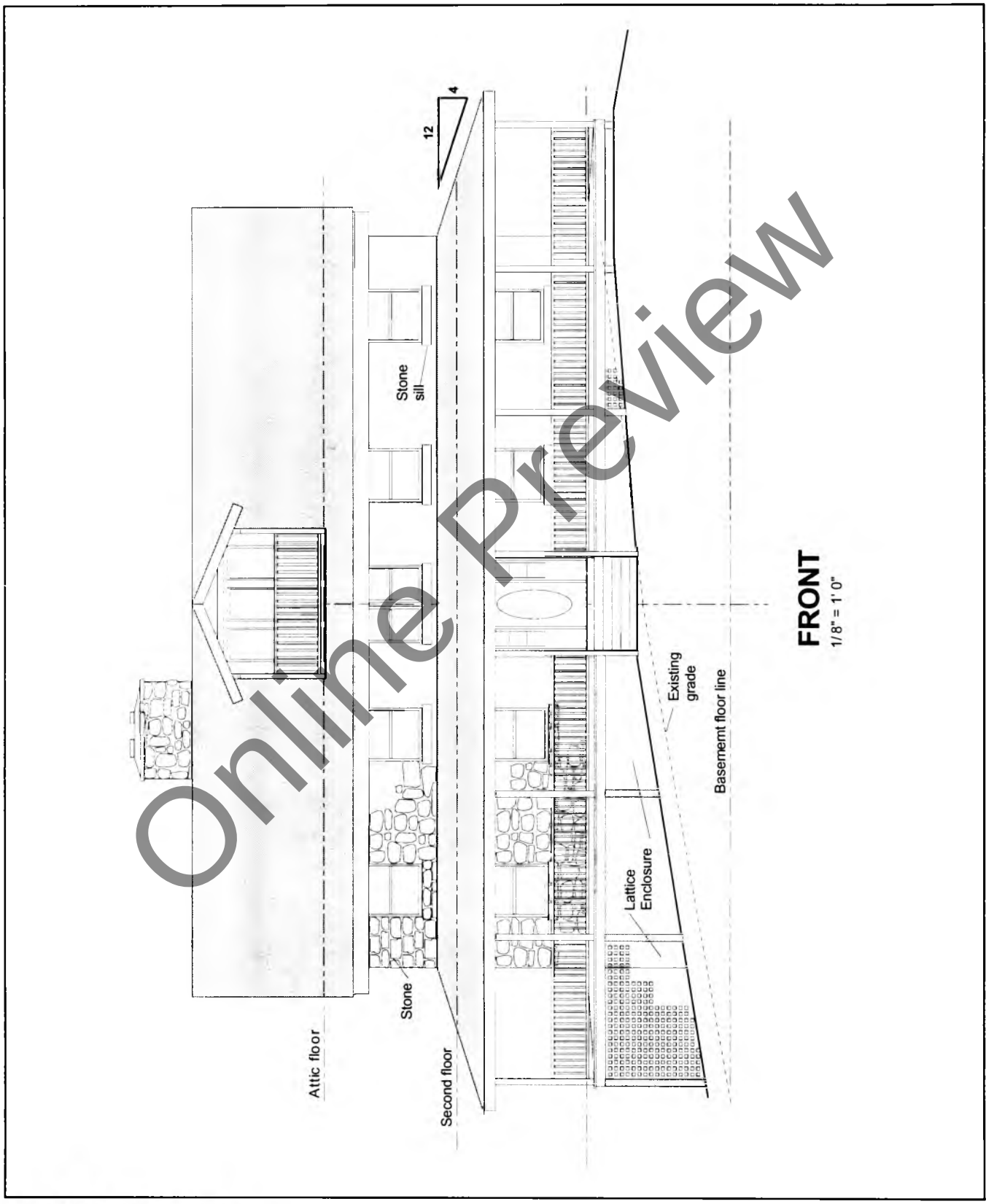





**Figure 1-5: Front elevation.**

**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).*

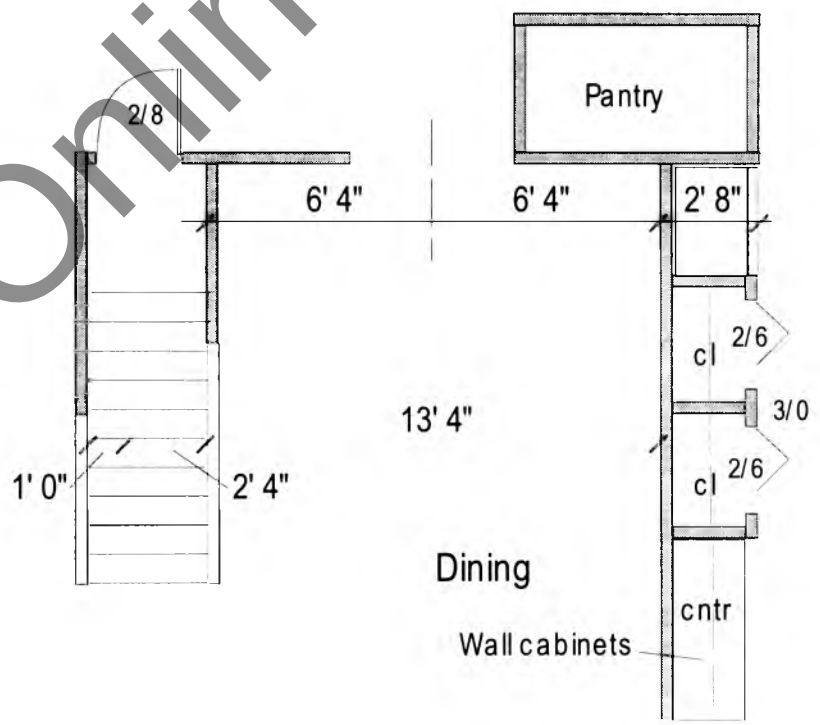



**Figure 1-6: Enlarged drawing of the dining area in Figure 1-4.**

**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

B) The south elevation

C) The southeast 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

B) 5 (not including screen doors)

C) 4 (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

B) Window schedule

C) Door schedule

D) Wall sections

***Answer: B***

*The window schedule.*

**1-30 The scale of a detail drawing drawn ¼ full size is:**

A) ¼" = 1'0"

B) ¾" = 1'0"

C) ½" = 1'0"

D) 3" = 1'0"

***Answer: D***

*3" = 1'0" because ¼ of 12 (inches) is 3 (inches).*

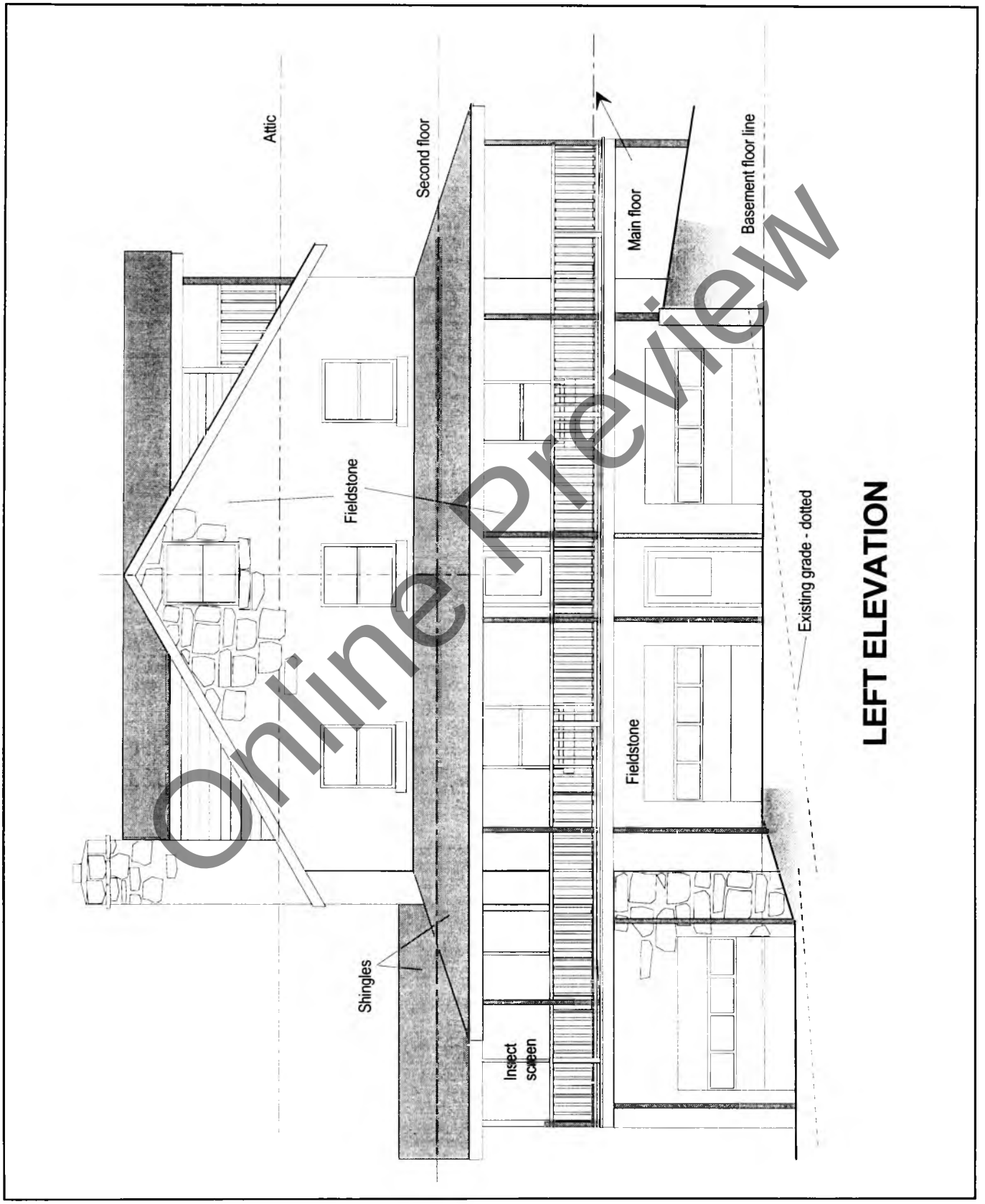





**Figure 1-7: Left elevation of the house in Figure 1-5.**

**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 $^{3}/_{8}$" = 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 $^{3}/_{8}$ inch converts to 0.375 inch (3 ÷ 8 = 0.375). Therefore, 3 inches ÷ 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.*

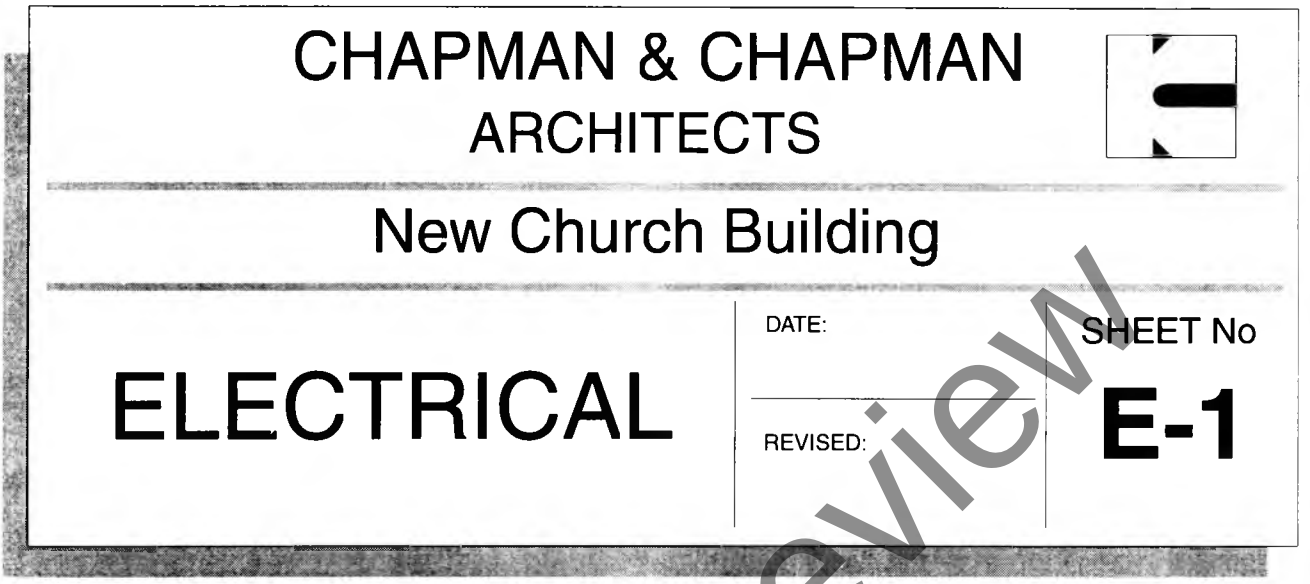



**Figure 1-8: A typical title block for architectural drawings.**



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

A) HVAC

B) Electrical

C) Plumbing

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

B) Yes

C) This would relieve the plumbing contractor of all liability for his work

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

B) No

C) The stone mason needs only to see the floor plans to understand his or her portion of the work

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

B) It is assumed that stonework is required from grade up to roof eaves

C) No

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

B) Yes

C) Cannot be determined

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.*

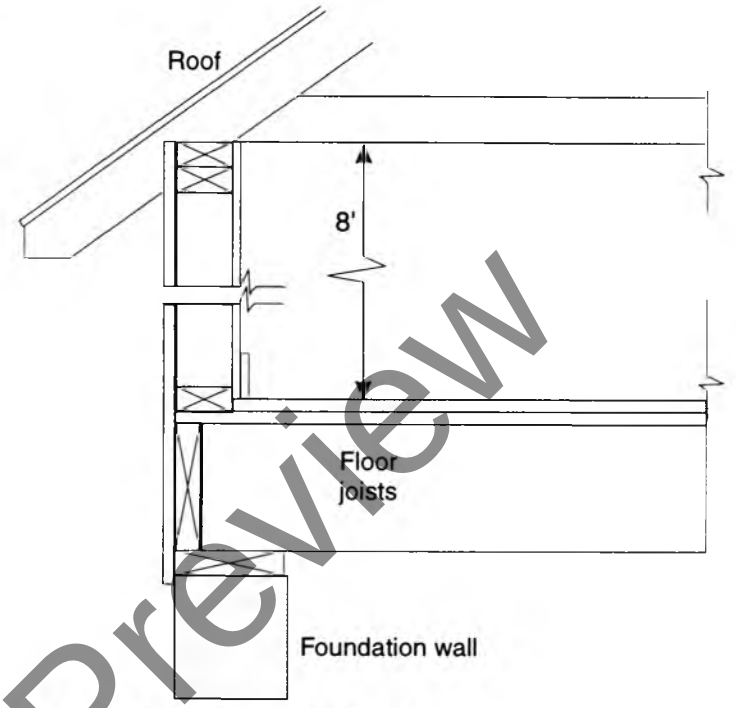



**Figure 1-9: Wall section of a building.**

**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.*

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