

How to Pass the Minnesota Contractor Licensing Exam

2nd Edition | Update

Paul Schulte

KAPLAN CONTRACTOR
EDUCATION

This publication is designed to provide accurate and authoritative information in regard to the subject matter covered. It is sold with the understanding that the publisher is not engaged in rendering legal, accounting, or other professional advice. If legal advice or other expert assistance is required, the services of a competent professional should be sought.

President: Dr. Andrew Temte
Chief Learning Officer: Dr. Tim Smaby
Executive Director, Real Estate Education: Melissa Kleeman-Moy

HOW TO PASS THE MINNESOTA CONTRACTOR LICENSING EXAM
SECOND EDITION UPDATE
©2015 Kaplan, Inc.
Published by Kaplan Contractor Education

All rights reserved. The text of this publication, or any part thereof, may not be reproduced in any manner whatsoever without written permission from the publisher.

Printed in the United States of America
First revision, July 2015
ISBN: 978-1-4754-3407-1
PPN: 3200-6657

CONTENTS

Introduction v

UNIT ONE BUSINESS AND LAW 1

ENFORCEMENT/LICENSING 1

MECHANIC'S LIENS 15

WARRANTY 18

MANAGEMENT 21

AUTHORITY FOR ZONING 31

**MN RULES CHAPTER 1300—2015 MINNESOTA BUILDING
CODE—ADMINISTRATION 34**

UNIT TWO TRADE 37

INTRODUCTION 37

**MINNESOTA RULES CHAPTER 1303—2015 MINNESOTA RESIDENTIAL
PROVISIONS TO THE MINNESOTA STATE BUILDING CODE (INCLUDING
RADON) 38**

**MINNESOTA RULES CHAPTER 1322—2015 MINNESOTA RESIDENTIAL ENERGY
CODE 39**

**MINNESOTA RULES CHAPTER 1309—2015 ADOPTION OF INTERNATIONAL
RESIDENTIAL CODE® 40**

**2012 INTERNATIONAL RESIDENTIAL CODE® (IRC®) WITH MINNESOTA 1309
AMENDMENTS 41**

**3
UNIT THREE**

**LEARNING THE TRADE—BEYOND THE 2015 MINNESOTA RESIDENTIAL CODE
BOOK 65**

GENERAL CONSTRUCTION PRACTICES 65

Appendix A: Case Studies 79

Appendix B: Practice Test Questions 81

Appendix C: Glossary of Terms 101

Pre- and Post-Test Answer Sheets 106

INTRODUCTION

ABOUT THIS BOOK

My Test Results

If you want to be efficient with your study time, after taking the pre-and post-tests, complete the following diagnostic tool by entering the number of questions you answered correctly in each section. Then, add up your score and record the percentage of correct answers. The gap between your pre- and post-test scores will illustrate what you have learned and what topic areas you need to study to pass the exam.

My Test Results			
Pre-Test Results:		Post-Test Results:	
My Score	My Percentage	Passing Requirement	My Score
Business and Law: _____	_____	70%	Business and Law: _____
Trade Portion: _____	_____	70%	Trade Portion: _____

Pre-Test Strength and Weakness Profile				Post-Test Strength and Weakness Profile				
BUSINESS/LAW:	WEAK	AVERAGE	STRONG	WORKBOOK REFERENCE PAGES	BUSINESS/LAW:	WEAK	AVERAGE	STRONG
Enforcement/Licensing	0-1	2	3	1-14	Enforcement/Licensing	0-8	9-12	13-15
Mechanic's Liens	0-1	2	3	15-17	Mechanic's Liens	0-2	3-4	5-6
Warranty	0-1	2	3	18-20	Warranty	0-3	4-5	6-7
Management	0-1	2	3	21-30	Management	0-1	2-3	4
Authority for Zoning	0-1	2	3	31-33	Authority for Zoning	0-1	2	3
Administration—Chapter 1300	0-2	3-4	5-6	34-36	Administration—Chapter 1300	0-8	9-12	13-15
TRADE:	WEAK	AVERAGE	STRONG	WORKBOOK REFERENCE PAGES	TRADE:	WEAK	AVERAGE	STRONG
Chapter 1303	0-1	2	3	38	Chapter 1303	0-1	2-3	4
Chapter 1322	0-1	2	3	39-40	Chapter 1322	0-2	3-4	5
Building Planning	0-1	2	3	46-48	Building Planning	0-4	4-6	7-9
Foundations	0-1	2	3	48-50	Foundations	0-3	4-5	6-7
Floors	0-1	2	3	50-53	Floors	0-2	3	4-5
Wall Construction	0-1	2	3	53-55	Wall Construction	0-3	4-5	6-7
Wall Covering	0-1	2	3	56-57	Wall Covering	0-2	3	4-5
Roof-Ceiling Construction	0-1	2	3	57-59	Roof-Ceiling Construction	0-2	3	4-5
Roof Assemblies	0-1	2	3	59-60	Roof Assemblies	0-2	3	4-5
Chimneys and Fireplaces	0-1	2	3	60-61	Chimneys and Fireplaces	0-2	3	4-5
Fire Sprinkler Systems	0-1	2	3	62-63	Fire Sprinkler Systems	0-1	2	3

Unit 1: Business and Law

This unit is designed to help you focus on the resources and information required to successfully answer questions related to business and law.

Minnesota Rule Chapter 1300, which is included in the 2015 Minnesota Residential Code book, guides you through the State of Minnesota's administrative processes. This resource will be available as an "open book" resource when taking the exam.

In addition, we will provide information about key Minnesota Statutes that are not included in the 2015 Minnesota Residential Code book. Examples include warranty, enforcement and licensing, and mechanic's liens. To help you learn this content, we will first cover the material, and then provide you with some true/false questions to confirm your learning. Understanding both business and law and your ability to memorize this material will help you successfully answer questions.

Unit 2: Trade

More than half of the test questions will be focused on the trade, and a very high percentage of these questions will be based on content within the 2015 Minnesota Residential Code book. This book will be available as an "open book" resource when taking the exam. As part of this course, we will teach you the best methods for successfully finding key topics and technical information.

Unit 3: Learning Beyond the International Residential Code® (IRC®) General Construction Practices

This unit provides general information about the trades, material, definitions, and processes commonly used in the construction industry. While there is a slight chance that the Department of Labor and Industry (DLI) will create test questions based on this material, this section is designed to help students with limited industry experience.

Appendix A: Case Studies

In this section, we will use real-world situations to demonstrate the value and use of the IRC®. We will present a situation, and then ask you to research specific information using the IRC® and related code documents. Answers are provided in the course syllabus.

Appendix B: Practice Test Questions

These questions simulate taking the DLI exam. The answers for these questions are provided in the syllabus.

Appendix C: Glossary of Terms

A glossary of common trade terms is located in Appendix C. You can also find the definitions of technical terms in Minnesota Rule Chapters and Chapter 2 in the IRC®. For terms not defined in these documents, you may refer to the Merriam-Webster Collegiate Dictionary.

Pre- and Post-Test Answer Sheets

For live classroom sessions, mark your answer selections for the pre- and post-tests on the blank answer sheets at the back of the workbook. After you have completed the tests, align the answer key found on the last page of the tests under your answer sheet and note the correct answers. Record your results on the My Test Results page.

For online participants, your exam will be provided electronically. Please record your results on the My Test Results page.

The following documents were used to create this workbook:

- Minnesota Statutes:
 - 326B—Construction Codes and Licensing
 - 327A—Housing; Statutory Warranties
 - 333—Assumed Names, Insignia, and Marks
 - 514—Liens; Labor, Material
- 2015 Minnesota Residential Code book
- The Minnesota Department of Labor and Industry website

UNIT

1

Business and Law

ENFORCEMENT/LICENSING

I. CONTRACTS AND AGREEMENTS

A. Assumed name filing information

1. If a contractor will be doing business as (DBA) a different name than the contractor's legal name, the contractor must attach to the license application a Certificate of Assumed Name filed and stamped by the Minnesota Secretary of State.
2. For business entities, if the DBA name is different from the legal name of business entity or if DBA name does not include each partner's full name, a Certificate of Assumed Name must be submitted with the contractor's licensing application.

B. Change of name, address, and qualifying person

1. You must notify the Commissioner of any change in personal name, trade name, address, or business location not later than 15 days after the change.

2. **The company must have a *qualifying person*, who is an individual who fulfills the examination and education requirements for licensure on behalf of the licensee. Guidelines according to Minnesota Statute 326B.805 are the following:**
 - a) Individual proprietorship: must be the proprietor or managing employee
 - b) Partnership: must be a partner or managing employee
 - c) Limited liability company (LLC): must be a chief manager or managing employee
 - d) Corporation: must be a chief executive officer or managing employee
 - e) Under no circumstances can a company's qualifying person be an independent contractor of the company.

3. **A person may be a qualifying person for more than one company if**
 - a) there is 25% common ownership of the companies;
 - b) the individual meets the requirements listed above for each company; or
 - c) the qualifying person is not required to be the individual holding the 25% common ownership.

C. Contractual relationships

A *contract* is a legally enforceable agreement to do (or not to do) a specific thing. The traditional process is a direct relationship between the owner and the contractor who manages the project through subcontractors.

D. The contract

A contract is a means for allocating risk and specifying obligations of parties.

1. **Oral contracts are not valid in the construction industry. Written contracts are required by law (MN Statute 326B 809).**

2. **Parties must read and understand a written contract before they sign. The list of priorities below prevails in the event of conflicting terms:**

- a) Specific over general provision
- b) Handwritten over typed provision
- c) Typed over printed provision
- d) Words over numbers (same is true for checks)
- e) Specifications over drawings

E. Subcontracts

1. **Agreement between prime contractor and subcontractor**
2. **Prime contractor is working for owner; subcontractor is working under the direction of the prime contractor**

F. Essential elements of a written contract (MN Statute 326B.809)

A contract must be in writing and must contain the following:

1. **A detailed summary of the services to be performed**
2. **A description of the specific materials to be used or a list of standard features to be included**
3. **The total contract price or descriptions of the basis on which the price will be calculated**

G. Contract documents

1. **Bidding documents include Invitation to Bid, Instructions to Bidders, Letter of Intent, and Bid Forms.**

2. **Basic owner–contractor agreement includes identity of the parties, description of the work, time for performance, contract price and payment schedule, and lien notice (state law).**
3. **General conditions are usually on forms with standard provisions, including an integration clause that excludes negotiations and representations not specifically made part of the agreement.**
4. **Supplementary or special conditions are used to tailor the agreement.**
5. **Specifications supplement drawings and specify types of materials (mechanical, electrical, etc.) needed for the contract.**
6. **Addenda are additions/deletions to the contract documents.**
7. **Modifications are changes to the contract documents after execution of the basic owner-contractor agreement and include a written change order process that**
 - accommodates changes made during construction,
 - has signed mutual agreement,
 - must contain cost/time/material estimates, and
 - includes when payment for changes is due.

H. Contract record retention

1. **All records pertaining to contracts and the contract itself should be kept for a considerable period of time.**
 - a) **Why should you retain your contract?**
 - 10-year structural warranty
 - Tax issues
 - Employee issues
 - Insurance claim issues
 - Other related issues

I. Out-of-state contracts

1. Use caution when pursuing contracts online. Minnesota construction codes and laws have unique characteristics that may not be included in contracts created in other states. Prior to using a contract, it should be reviewed by a qualified attorney that understands Minnesota's construction industry.

II. INSURANCE REQUIREMENTS

A. Risk and insurance

Risk is uncertainty concerning loss. The basic function of insurance is to reduce exposure or loss due to risk.

B. General liability insurance (MN Statute 326B.86, Effective 2014)

Residential building contractors, remodelers, roofers, and manufactured home installers shall have and maintain commercial general liability insurance, which includes premises and operations insurance and products and completed operations insurance.

1. Insurance shall have limits of at least \$100,000 per occurrence.
2. Insurance shall have at least \$300,000 aggregate limit for bodily injury.
3. Property damage insurance shall include
 - a) limits of at least \$25,000; or
 - b) a policy with a single limit for bodily injury and property damage of \$300,000 per occurrence and \$300,000 aggregate limits.
4. Insurance must be written by an insurer to do business in Minnesota.
5. Each licensee shall maintain on file with the Commissioner a certificate evidencing the insurance.
6. If policy is cancelled, the insurer shall send written notice to the Commissioner at the same time that the cancellation request is received from the insured.

7. Commissioner may increase the minimum amount of insurance required for any licensee or class of licensees if the Commissioner considers it to be in the public interest and necessary to protect the interests of Minnesota consumers.

C. Bond (in addition to general liability insurance as outlined previously)

1. Licensed manufactured home installers and licensed residential roofers must post a biennial surety bond in the name of the licensee with the Commissioner.
2. A licensed residential roofer must post a bond of at least \$15,000.
3. A licensed manufactured home installer must post a bond of at least \$2,500.

III. CONTRACTOR RECOVERY FUND (MN STATUTE 326B.89)

A. Purpose

1. To compensate certain owners or lessees of residential property (located in Minnesota) who have suffered a direct and out-of-pocket loss due to the misconduct of a licensed residential contractor
2. To reimburse the department for all legal and administrative expenses, disbursements, and costs, including staffing costs incurred in administering and defending the fund
3. To pay for educational or research projects in the field of residential contracting to further the purposes of sections 326B.801 to 326B.825
4. To provide information to the public on residential contracting issues

B. Recovery maximums

1. \$75,000 per claimant
2. \$150,000 per licensee

3. Maximum accelerated compensation—\$50,000 per licensee (process includes completion of a list of requirements prior to compensation)
4. Accelerated payments—may also be paid by the fund for claims less than \$10,000

C. Recovery fund process

1. The Commissioner has 120 days to reply to a customer's complaint against the contractor.
2. The contractor has 30 days to request a hearing after being notified of a complaint against the license holder.
3. A hearing must be held within 45 days of the contractor's request.
4. The Commissioner must notify owner or lessee of the time and place of the hearing 15 days before the hearing.
5. The contractor's request may be extended to 60 days with cause.

D. Remedies against licensee if funds are paid out of the fund

1. Disciplinary action will be determined by the Commissioner and may include the following:
 - a) Automatic suspension of license
 - b) A licensee's repayment in full of obligations to the fund shall not nullify or modify the effect of any other disciplinary proceedings brought under the provisions of this chapter
 - c) Additional actions against licensee to be determined by the Commissioner and the judicial system

E. Contractors are required to pay the following (July 2015 data; subject to change):

Gross annual receipts	Recovery fund biannual fee	Total biannual fee for license and fund
Under \$1,000,000	\$320	\$565
\$1,000,000 to \$5,000,000	\$420	\$665
Over \$5,000,000	\$520	\$765

Note: Gross annual receipts means the total amount derived from residential contracting or residential remodeling activities, regardless of where the activities are performed, and must not be reduced by costs of goods sold, expenses, losses, or any other amount.

IV. CONTINUING EDUCATION**A. Continuing education requirement**

1. Fourteen hours must be completed by March 1 at the end of the two-year license period, including at least one hour on energy efficiency.
2. Course work may be completed at any time during the two-year period.
3. If working on homes built before 1978, the contractor must be certified by the Environmental Protection Agency for the Lead Renovation, Repair and Painting Rule; certification involves taking an eight-hour class. Search Kaplan's website for course availability.

Note: Contractor licenses expire on March 31 every other year. The deadline for completing 14 hours of continuing education and renewing your license is March 1 every other year. This is known as the timely renewal deadline. While the license remains effective until March 31, it will expire on that date, unless education is completed and a timely renewal application is submitted by March 1. The Department of Labor and Industry strictly enforces this timely renewal deadline (MN Statute 326B.094).

V. ELIGIBILITY AND LICENSE RENEWAL (MN STATUTE 326B)

Legislation—MN Statute Chapter 326B, Contractor License Law protects public health, safety, and welfare.

The Commissioner is the licensing authority (not the local building inspector).

A. Who must be licensed

1. Any person who, for another and for compensation, engages in the work of a

- a) residential building contractor (one who uses two or more special skills to build or improve one- to four-family residential real estate),
- b) residential remodeler (one who uses two or more special skills to improve existing residential real estate), or
- c) residential roofer (one who engages in the business of working on residential real estate in roof coverings, roof sheathing, roof weatherproofing, and insulation or repair of roof systems, but not construction of new roof systems).

Exception: Specialty contractors who provide only one special skill may be licensed, but are not required to be licensed. (For details, refer to the Contractor Registration Program.)

2. Licenses must be held by a company.

B. Licensing requirements

1. Application requirements (MN Statute 326B and new license application form)

- a) Choose a business structure—individual/sole proprietor, LLC, partnerships, et cetera
- b) Disclosure of business owners, partners, officers, and members
- c) Contact Secretary of State and register business entity and business name
- d) Provide Tax ID and employment insurance
- e) Certification of compliance form—MN workers' compensation law; the business may be required to have workers' compensation insurance, but if not, a Certificate of Compliance is required
- f) Unemployment insurance account number
- g) Background disclosure form—business history for past 10 years, including bankruptcy, felony, gross misdemeanors, misdemeanors, or unsatisfied judgments

- h) Qualifying person must pass exam
- i) Pay licensing fee every other year—includes contribution to recovery fund
- j) Public liability and property insurance

2. Expiration and renewal of license (MN Statute 326B.094)

- a) Licenses expire on March 31 every other year; however, timely renewal is March 1.
- b) Complete continuing education and make timely renewal application by March 1 every other year.
- c) If license expires, contractor has up to two years to renew license; after two years, the contractor will be required to reapply for a new license and take the exam.

Exception: You may be able to put your license on “ice” if you continue your education requirements and maintain your qualifying person status. Contact the DLI for detailed information.

3. Advertising requirements for licensees (MN Statute 326B.87)

- a) License number must be displayed on the following:
 - (1) All building permits and applications
 - (2) Site plans and zoning permits
 - (3) Business cards and all contracts
 - (4) Any advertising, including but not limited to signs, vehicles, business cards, display ads, flyers, brochures, websites and internet ads

4. Penalties for violation of licensing requirements

- a) Misdemeanor if unlicensed when license required—Commissioner can
 - (1) issue cease and desist order to unlicensed,
 - (2) revoke license of license holder, and
 - (3) fine both parties

b) Denial of licensure at initial application or renewal

c) Censure—doesn't affect license

d) License suspension—up to two years

e) Licensure revocation—at least two years

f) Void lien rights

g) Civil penalties up to \$10,000 per violation

5. **Contractor advisory council—advises Commissioner on contractor policy matters**

C. Standards of conduct (MN Statute 326B.805)

1. **Accurate and truthful application**

2. **No fraudulent, deceptive, or dishonest practice**

3. **Use payments received from customers to satisfy the costs of labor, skill, material, or machinery furnished for the improvement**

4. **Display license number on all building permits, applications, business cards, contracts, lien claims, and display advertising**

5. **Notify the Commissioner of any change in personal name, trade name, address, or business location not later than 15 days after the change**

6. **Each licensee or applicant for licensure must notify the Commissioner in writing within 15 days of filing a petition for bankruptcy**

7. **Each licensee or applicant for licensure must notify the Commissioner in writing within 10 days if found guilty of a felony, gross misdemeanor, misdemeanor, or comparable offense related to residential contracting**

D. Updating an existing license (MN Statute 326B and DLI website)

1. If the licensee's qualifying person dies, becomes disabled, retires, or changes position, the licensee must notify the Commissioner in writing within 10 days.
2. A temporary license continues for 120 days from departure of the qualifying person to allow time to obtain a new qualifying person.
3. Failure to secure a new qualifying person results in automatic termination of the license.

E. Construction contractor registration with DLI (MN Statute 326B)

1. Effective in 2012, an individual or business entity that provides building construction or improvement services is required to be licensed or register with the DLI.
 - a) Contractors must be registered with the DLI, unless the contractor
 - (1) has a current license, certificate, or registration issued by the DLI;
 - (2) has a current independent contractor exemption certificate;
 - (3) is an employee of a business performing construction services; or
 - (4) holds a current residential building contractor or remodeler certificate of exemption issued by DLI or is excluded from registration requirements under MN Statute 181.723, subd. 4a.
 - b) If doing work that requires a license, contact the DLI and apply for a license.
 - c) If hiring subcontractors, contractors, or workers, the contractor is required to verify their contractor registration.
 - (1) Hiring unregistered contractors or workers is in violation of the law and may be subject to civil penalties.

F. Employee–employer relationship (MN Statute 181.723)

1. Effective January 1, 2009, an individual who performs services for a person that are in the course of the person's trade, business, profession, or occupation is an employee of that person and that person is an employer of the individual.

Exception: An individual is an independent contractor and not an employee if the individual meets *all nine of the following*:

- (1) Maintains a separate business with the individual's own office, equipment, materials, and other facilities
- (2) Holds or has applied for a federal employer identification number or has filed business or self-employment income tax returns with the federal Internal Revenue Service if the individual has performed services in the previous year
- (3) Operates under contract to perform the specific services for the person for specific amounts of money and under which the individual controls the means of performing the services
- (4) Incurs the main expenses related to the services that the individual is performing for the person under the contract
- (5) Is responsible for the satisfactory completion of the services that the individual has contracted to perform for the person and is liable for a failure to complete the services
- (6) Receives compensation from the person for the services performed under the contract on a commission or per-job or competitive bid basis and not on any other basis
- (7) May realize a profit or suffer a loss under the contract to perform services for the person
- (8) Has continuing or recurring business liabilities or obligations
- (9) Depends on the relationship of business receipts to expenditures for the success or failure of the individual's business

G. *CCLD newsletter*—how to stay informed about changes

1. **The DLI Construction Codes and Licensing Division (CCLD) publishes the quarterly newsletter, *CCLD Review*.**
 - a) Created in December 2006
 - b) Merged all existing newsletters into one quarterly publication
 - c) Provides articles of interest to the construction industry and highlights new codes and laws
 - d) Always best to learn about a new law or code by reading, rather than waiting for enforcement, citations, and fines
 - e) **FREE**—simply sign up on the DLI, CCLD website by providing your email address

ENFORCEMENT/LICENSING REVIEW

1. A contractor must first contact the Department of Commerce when filing for an assumed name.
A. True
B. False
2. A contractor must notify the Commissioner of any change in personal name, trade name of business entity, or business location no later than 30 days after the change.
A. True
B. False
3. Within a written contract, words take priority over numbers.
A. True
B. False
4. When building a new home or remodeling, the prime contractor and all subcontractors work under the direction of the property owner.
A. True
B. False
5. Non-licensed independent contractors are required to be registered with the DLI.
A. True
B. False
6. General liability insurance limits should be at least \$100,000 per occurrence and \$300,000 aggregate limit for bodily injury.
A. True
B. False
7. The maximum recovery for the Contractor Recovery Fund is \$300,000 per licensee.
A. True
B. False
8. Timely renewal for a license is every other year on March 31.
A. True
B. False
9. One of the benefits of being a licensed residential remodeler is that a remodeler can also build new homes.
A. True
B. False
10. The Construction Codes and Licensing Division of the DLI publishes a free quarterly newsletter called the *CCLD Review*.
A. True
B. False

MECHANIC'S LIENS

I. MINNESOTA MECHANIC'S LIEN LAW (MN STATUTE 514)

- A. A lien is a claim on the property of another as security against the payment of a just debt.

- B. Whoever performs engineering or land surveying, or contributes labor, skills, materials, or machinery for improvements to real estate, shall have a lien upon the land on which the improvement is located.
 - 1. Lien rights attach when the first item is furnished.

 - 2. Contracts must include notice of lien rights.
 - a) Written contracts must contain lien notice in the contract.

 - b) Lien notice rights must be 10 point and bold type.

 - 3. Contractors must provide the owner's name and address within 10 days of request from any subcontractor or supplier.

 - 4. Subcontractors must give notice within 45 days of starting; owner may pay directly to avoid the lien.

 - 5. Liens expire 120 days after the last item is furnished unless the lien is filed (recorded) and the owner notified.

 - 6. Recording is with the circuit court clerk in the county where the property is located.

 - 7. Action to collect (foreclosure) must commence within one year after the last item is furnished.

 - 8. In general, liens are not affected by any inaccuracies in the particulars of the lien statement.

9. Owner has 15 days after completion of the work to request information from all that submitted a properly filed notice.
10. Lien waivers protect the property owner from paying for the improvements more than once and are provided by all parties that submitted a properly filed notice.

MECHANIC'S LIENS REVIEW

1. Any person or company providing a service for the owner or contractor is eligible to file a lien against the property.
 - A. True
 - B. False
2. Lien rights attach when the first item is furnished.
 - A. True
 - B. False
3. A lien notice is assumed for any work provided on a property.
 - A. True
 - B. False
4. Liens expire 120 days after the last item is furnished, unless the lien is filed and the owner notified.
 - A. True
 - B. False
5. The owner has 15 days after completion of work to request information from all that submitted a properly filed notice.
 - A. True
 - B. False

WARRANTY

I. MINNESOTA STATUTORY HOME WARRANTIES (MN STATUTE 327A)

The following are the specific warranties beginning August 1, 2009, on new construction and remodeling that survive the passage of title.

A. The effective warranty date means the date from and after which the statutory warranties provided in section 327A.02 shall be effective and is the earliest of

1. the date of the initial vendee's first occupancy of the dwelling, or
2. the date on which the initial vendee takes legal or equitable title in the dwelling

In the case of home improvement, the warranty date is the date on which the home improvement work was completed.

B. Contractor liable for all claims made against the work of subcontractors

C. One year free from defects caused by faulty workmanship and defective materials due to noncompliance with building standards

D. Two years free from defects caused by faulty installation of plumbing, electrical, heating, and cooling systems; usually called *the mechanicals* due to noncompliance with building standards

E. Ten years free from major construction defects (actual damage to load-bearing portion of the dwelling or the home improvement) due to noncompliance with building standards

Note: Legal cases have determined that mold can be the beginning of a structural defect.

F. Warranty claims paid after contractor has exhausted all avenues of appeal against the warranty judgment

G. Terms of the warranty to be included within the contract or in an addendum signed by contractor and buyer, commencing August 1, 2009

H. Remedies unaffected by corporate dissolution of a vendor or home improvement contractor that is a corporation or limited liability company

I. Resolving warranty claims

1. Notice and Opportunity to Repair (NOR) Law (enacted 2006)

- a) The NOR law states that prior to legal action the homeowner must allow a contractor the right to inspect and repair warranty-related work.
 - (1) Inspection must be completed within 30 days of receipt of written notice.
 - (2) Prior to completion of this process, homeowner cannot do the work themselves or hire others to complete the work and then charge the original contractor.

2. Early Neutral Evaluation (ENE) Process (effective January 1, 2011)

- a) Its purpose is to resolve warranty disputes between owner and contractor without litigation.
 - (1) Less expensive than litigation
 - (2) Quicker resolution than litigation
- b) It is required to be pursued by owner prior to any litigation.
 - (1) Owner and contractor may bypass the ENE process if both agree to another dispute resolution process.
 - (2) Owner may bypass ENE process if the contractor does not comply with the NOR provisions of the warranty law.
 - (3) The ENE process is administered by the MN Department of Labor and Industry Construction Codes and Licensing Division.

WARRANTY REVIEW

1. The warranty commences when the building permit is filed.
 - A. True
 - B. False
2. Subcontractors are responsible for making repairs to any claim made by the homeowner for up to two years.
 - A. True
 - B. False
3. Mold inside a wall cavity is considered a structural defect and covered under the 10-year warranty.
 - A. True
 - B. False
4. Terms of the warranty are included in Minnesota Law; therefore, the warranty terms are *NOT* required to be in your contract.
 - A. True
 - B. False
5. When there is a warranty claim, you can use the NOR law and the ENE process.
 - A. True
 - B. False

MANAGEMENT

I. PROJECT MANAGEMENT

A. Project management includes the following:

1. Scheduling

The schedule is a tool that should be continually adjusted to reflect actual conditions and used to control the project efficiently.

- a) Critical path method (CPM) organizes the sequence and length of each activity to determine the time required to complete the project by use of a bar chart.
- b) Critical tasks, if delayed, will delay the whole process.
- c) Noncritical tasks are those that require less time than allotted; the extra time is called *slack time* or *float time*.
- d) Resource leveling minimizes peaks and valleys in resource usage for better control of cash flow.

2. Supervision (terminology)

- a) Principal decision makers on a construction project are the owner, the architect, and the contractor.
- b) The contractor is responsible for day-to-day direction of the project, purchasing materials, and construction sequencing and scheduling.
- c) The project site superintendent is responsible for selecting and managing subcontractors on behalf of the contractor.

3. Progress documentation

- a) This includes daily logs, progress reports, shop drawings, and inspections.
- b) Daily log or work journal should be kept on the job site.

4. Coordination/cost control

Job progress monitoring is an ongoing process to monitor cost during construction.

5. Project close-out

The project close-out occurs after the project is complete and accomplishes three things:

- a) Compares the original estimate with actual final costs and profit
- b) Provides labor and material cost information for future cost estimates
- c) Adjusts the estimating, subcontracting, and construction procedures to improve profitability

B. Project planning is the process of analyzing each task to control time and costs to perform that task.

II. FAIR LABOR STANDARDS ACT (FEDERAL AND STATE) (MN STATUTE 177)

A. Minimum wage is a per hour rate as set by federal law. (MN also has a minimum wage rate.)

1. This applies to enterprises with employees who engage in interstate commerce, produce goods for interstate commerce, or handle, sell, or work on goods or materials that have been moved in or produced for interstate commerce.
2. Federal: overtime payment must be at least 1½ times regular rate of pay after 40 hours of work in a workweek.
3. The federal minimum wage rate established on July 24, 2009, is \$7.25 (subject to change in near future).
4. If the state minimum wage is higher than the federal minimum wage, the state wage prevails.

B. Minnesota minimum wage rates are as follows.

Figure 1.1
Employer Fact Sheet

NEW MINIMUM WAGE LAW AS OF AUG. 1, 2014, PROVISION	NEW LAW
Large employer wage (annual gross dollar volume of sales made or business done of \$500,000 or more)	\$8.00/hour on Aug. 1, 2014 \$9.00/hour on Aug. 1, 2015 \$9.50/hour on Aug. 1, 2016
Small employer wage (annual gross dollar volume of sales made or business done of less than \$500,000)	\$6.50/hour on Aug. 1, 2014 \$7.25/hour on Aug. 1, 2015 \$7.75/hour on Aug. 1, 2016
90-day training wage (under 20 years of age)	\$6.50/hour on Aug. 1, 2014 \$7.25/hour on Aug. 1, 2015 \$7.75/hour on Aug. 1, 2016
Youth wage (under 18 years of age)	\$6.50/hour on Aug. 1, 2014* \$7.25/hour on Aug. 1, 2015 \$7.75/hour on Aug. 1, 2016
Federal minimum wage rate	No change on Aug. 1, 2014
Inflation increase	Inflation increase starts Jan. 1, 2018

* Federal minimum wage rate may apply. Visit www.dol.gov/dol/topic/wages/minimumwage.htm for specifics.

C. Additional elements of the law include the following:

1. A workweek is a fixed and regular recurring period of 168 consecutive hours during seven consecutive 24-hour periods.
2. Hours of work is the time during the workweek that the employee is required to be at a prescribed workplace.
3. In Minnesota, overtime payment must be at least 1½ times the regular rate of pay after 48 hours of work in a workweek.
4. Pay rate for national holidays is regular pay, not overtime.

D. Every employer subject to 177.21 to 177.44 must make and keep a record of the

1. name, address, and occupation of each employee;
2. rate of pay and the amount of pay each pay period to each employee;

3. hours worked each day and each workweek by the employee; and
4. employer must retain records for a minimum of three years after the final tax is paid.

Note: Regulations and retention of records may vary. Seek advice from your tax accountant.

E. Commissioner of labor and industry may fine an employer up to \$1,000 for each failure to submit or deliver required records (payroll tax records).

F. Final wages must be paid

1. to a terminated employee within 24 hours of the employee's demand, and
2. on the next scheduled pay day to an employee who voluntarily quit.

G. The equal pay provisions prohibit sex-based wage differentials between men and women

1. employed in the same establishment who perform jobs that require equal skill, effort, and responsibility; and
2. that perform under similar circumstances.

III. CHILD LABOR LAW (MN STATUTE 181A.04)

A. Minimum working age is 14.

1. Exceptions: news carrier, agriculture, actor, and model, but not during school hours

B. 14- and 15-year-olds

1. Cannot work
 - a) more than 40 hours in a workweek,
 - b) no more than 8 hours in a 24-hour period, or
 - c) before 7:00 am or after 9:00 pm.

2. Can work

- a) a maximum of 18 hours in a school week

C. 16- and 17-year-olds

1. Cannot work

- a) later than 11:00 pm on evenings before school days, or
- b) before 5:00 am on school days

The above may be expanded with written permission from a parent or guardian.

2. Can work

- a) more than 40 hours in a workweek

D. Prohibited occupations for minors (under 18 years old)

1. Working around hazardous materials
2. Working with or around power driven vehicles or machinery
3. Working on construction sites

E. An employer violating any provision of the child labor law is subject to fines and may be charged with a misdemeanor.

1. Repeat violations, or if a violation results in a death, may incur additional legal actions that could include a gross misdemeanor.

IV. WORKERS' COMPENSATION INSURANCE (MN STATUTE 176 AND CONSOLIDATED INFORMATION FROM THE DLI-CCLD WEBSITE)

All employers are required by MN Statute, section 176.181, subdivision 2, to either purchase workers' compensation insurance to provide benefits to their employees for work-related injuries, or obtain approval from the Minnesota Department of Commerce permitting self-insurance upon proof of the employer's financial ability to do so.

There is no minimum number of employees an employer must have before insurance is required; therefore, an employer with only one part-time employee generally must provide coverage.

A. Coverage includes the following:

1. Wage replacement for the period of disability
2. Payment for loss or permanent damage to body parts
3. Current and future medical costs
4. Rehabilitation costs to prepare for new job or return to old job

B. Discontinuation of Temporary Total Disability (TTD) Benefits occurs if

1. 104 weeks of TTD benefits have been paid and the worker is not in an approved retraining program;
2. the worker returns to appropriate work;
3. the worker does not cooperate with an approved rehabilitation program;
4. the worker is able to work but refuses gainful work within his physical restrictions;
or
5. the worker is able to work but withdraws from the labor market.

C. Employees may not pay any of the premiums.

D. If a subcontractor fails to comply, the general contractor is liable for

1. workers' compensation insurance (may include past fees), and
2. all liability on site.

V. CONSTRUCTION CONTRACTOR REGISTRATION PROGRAM

A. Objective is correct classification of all construction personnel.

B. Requires non-licensed residential building construction and remodeling contractors to register.

1. It only applies to building contractors, not plumbers, electricians, et cetera.
2. It replaces the Independent Contractor Exemption Certificate (ICEC) as those certificates expire.
3. Basically, all construction personnel are either licensed, registered, or an employee.

C. Registration is free and can be done online. Registration requires the following:

1. The business legal name and any assumed name filed with the Secretary of State
2. Designated business address and physical address
3. Telephone number
4. Email address
5. Minnesota tax ID number, if one is required or has been issued
6. Federal employer ID number, if one is required or has been issued
7. Evidence of the active status of the business filings with the Secretary of State, if one is required or has been issued

8. Whether the applicant has any employees
 9. The names of all other persons with an ownership interest in the entity and the percentage of the interest owned by each person, with exceptions
 10. Information documenting compliance with workers' compensation
 11. Information documenting compliance with unemployment insurance laws
 12. Certification that the person signing the application has reviewed it and has determined the information is true and accurate and determination that the person signing is authorized to sign and file the application
 13. Signed authorization for DLI to verify the information provided
- D. An individual who is registering as an individual or sole proprietor, or who owns 25% or more of a contracting business, must also provide the following:**
1. The individual's full legal name and title at applicant's address
 2. The individual's business address and telephone number
 3. The percentage of the applicant's business owned by the individual
 4. The individual's Social Security number
- E. An individual is an independent contractor only if registered and meets all of the following nine factors:**
1. The individual maintains a separate business with the individual's own office, equipment, materials, and other facilities.
 2. The individual holds or has applied for a Federal Employer ID number or has filed business or self-employment income tax returns with the Internal Revenue Service if the individual has provided services in the previous year.

3. The individual is operating under contract to perform the specific services for the person for specific amounts of money and under which the individual controls the means of performing the services.
 4. The individual is incurring the main expenses related to the services that the individual is performing for the person under the contract.
 5. The individual is responsible for the satisfactory completion of the services that the individual has contracted to perform for the person and is liable for a failure to complete the services.
 6. The individual receives compensation from the person for the services performed under the contract on a commission, per-job, or competitive bid basis and not on any other basis.
 7. The individual may realize a profit or suffer a loss under the contract to perform services for the person.
 8. The individual has continuing or recurring business liabilities or obligations.
 9. The success or failure of the individual's business depends on the relationship of business receipts to expenditures.
- F. Licensed contractors are required to do a look-up to ensure that the contractors they are working with are registered.**
1. The DLI is finding and fining contractors for unregistered activity.

MANAGEMENT REVIEW

1. Project management is the process of analyzing each task to control time and costs.
 - A. True
 - B. False
2. The minimum wage is established by the federal government and can only be changed by the federal government.
 - A. True
 - B. False
3. A workweek is a fixed and regular recurring period of 168 consecutive hours during 7 consecutive 24-hour periods.
 - A. True
 - B. False
4. An employer with one part-time employee is *NOT* required to provide workers' compensation.
 - A. True
 - B. False
5. Workers' compensation insurance includes wage replacement for the period of disability.
 - A. True
 - B. False

AUTHORITY FOR ZONING

I. LOCAL ZONING (MN STATUTE 462)

Enforcement of land use zone requirements, building setback, side and rear yard requirements, site development, and property line requirements are specifically reserved to local municipalities. When creating and enforcing land use zoning, local municipalities must review and consider broad land use programs and issues such as environmental issues, water and wildlife management, state and park/public land, scenic waterways, and so on.

A. Authority for zoning

1. Includes determining the percentage of a lot that may be occupied and the size of yards and other open spaces

B. May also establish standards and procedures

1. Regulate flood and erosion control, access to direct sunlight for solar energy systems, aesthetics, and conformity to a neighborhood

C. Official controls

1. May include provision for purchase of development rights by the governing body in the form of conservation easements in areas where preservation is desirable
2. May also include the transfer of development rights from those areas to areas more appropriate for development

D. Regulations uniform for each class or kind of buildings

1. Regulations in one district may differ from those in other districts.
2. Regulations may include such things as aesthetics and conformity with the neighborhood.

E. Comprehensive municipal plan

1. Represents the planning agency's recommendations for the future development of the community
2. May include residential and commercial development, open space, and other options that align with the goals and values of the municipality

F. Land use plan

1. A compilation of policy statements, goals, standards, maps, and action programs for guiding the future development of private and public property
2. May include proposed densities for development

G. Governing body

1. The city council or similar group of people that oversee zoning for a particular municipality
2. In the case of a town, the town board

AUTHORITY FOR ZONING REVIEW

1. Enforcement of land use zoning requirements is specifically reserved for local municipalities.
 - A. True
 - B. False

2. Authority for zoning includes determining the percentage of a lot or development that can be covered by structures and pavement.
 - A. True
 - B. False

3. A comprehensive municipal plan is used to document historical property development.
 - A. True
 - B. False

MN RULES CHAPTER 1300— 2015 MINNESOTA BUILDING CODE—ADMINISTRATION

Chapter 1300 will be available as an open book resource when taking the exam. Therefore, we are going to shift from providing information that you should be able to recall and memorize to learning how to look up answers to questions.

To accomplish this we will provide you with a brief chapter introduction, then a list of key questions. The process of looking up answers to questions will make you familiar with the chapter content and teach you how to find and answer any possible exam question related to MN Building Code Administration.

I. INTRODUCTION

A. The purpose of Chapter 1300 is to provide administrative processes and provisions for the implementation and enforcement of residential based Minnesota State Building Code rule chapters.

B. Review the numbering system used by Chapter 1300:

1. Each section within Building Code Administration starts with the number “1300”
2. Followed by a decimal point with additional numbers that identify “sections” within the chapter
3. Within each section are “subparts” that outline the technical information within each section
4. In summation, the contents are organized by:

Chapter

Section

Subparts

A

(1)

(a)

C. Do a quick review of each bold section title since this chapter is only 12 pages long. This will help us understand the purpose, scope, and layout of this chapter.

D. Practice learning the contents of this chapter by searching for answers to key questions:

1. In emergency situations, the building permit application must be filed within _____.
2. When filing for a permit, the permit valuation will be determined by the total value of these factors: _____

3. Where must the building permit be placed on the job site and how long does it need to be on the job site?
4. If there are conflicts between codes that specify different materials, methods of construction, or other requirements, how will your local building official respond?
5. When can a building official suspend or revoke a certificate of occupancy?

Additional Self-Study Questions for Minnesota Rules Chapter 1300:

6. What document must be issued prior to families moving into a new structure?
7. Under Minnesota Statutes, a violation of the code is legally classified as a _____.
8. What are the primary duties and responsibilities of the Building Official?
9. If a new code is adopted after a permit has been issued, which code applies?
10. What are the four International Residential Code® occupancy classifications?
11. If you are moving a structure from one location to another location, what codes apply?

12. What time limitations apply to building permits?
13. Where would you find a list of all of the possible required inspections that could apply to a residential structure?
14. Fees for similar plans shall **NOT** exceed _____% of the normal building permit fee.

UNIT

2

Trade

INTRODUCTION

Unit 1 was focused on business and law topics. In Unit 2, we will focus on the trade.

The 2015 Minnesota Residential Code book, which includes key chapters from the 2012 International Residential Code® (IRC®) along with Chapters 1303 and 1322, is available as an open book source for answering trade-based questions.

The multiple-choice questions will be presented with four or more possible answers. Some of the answer options are so similar that your memory of the subject matter may not be enough; therefore, you will need to look up the correct answer.

In summation, the key to answering trade-based questions is to do the following:

- Carefully analyze the intent of each question.
- Determine which key words and phrases are the most important.
- Look up those words or phrases in the appropriate book or document.
- If you are looking in the IRC®, your first choice is to look in the index. Your second choice is to look in the table of contents. (Using the index, which is alphabetized, will in most cases help you find the right answer in less time.)
- If you are in one of the smaller chapters, such as Chimneys and Fireplaces with only nine pages, you may find it easier to search the section and heading titles.
- Read all the answers prior to selecting the best answer. (Sometimes, there may be more than one correct answer. It is important to select the best correct answer.)

- If you are not able to find the correct answer within a reasonable period of time, make a note of the difficult question number and move to the next question. When you have completed the last question on the exam, go back and spend your extra time on difficult questions.
- If you are not able to find an answer, make an educated guess. Do not leave any questions unanswered.

Now let's begin by examining Chapter 1303, which is a Minnesota Administrative Rule focused on key residential components from the Minnesota State Building Code. Generally speaking, the Minnesota State Building Code is primarily focused on commercial construction but includes several key residential code provisions that are not adequately addressed in the IRC®.

MINNESOTA RULES CHAPTER 1303—2015 MINNESOTA RESIDENTIAL PROVISIONS TO THE MINNESOTA STATE BUILDING CODE (INCLUDING RADON)

A list of key topics includes the following:

- Footing depth for frost protection
- Ground snow load
- Simplified wind loads
- Definitions
- Passive and active radon control systems

Since this portion of the test is open book, our learning process will focus on learning how to look up answers to questions within this chapter. Let's begin.

1. What is the primary difference between a passive and an active radon control system?

2. What is the ground snow load in Washington County? _____
3. Radon vent pipe accessibility in an attic space must meet the following parameters:
 - a) Diameter space dimension of _____
 - b) Vertical space dimension of _____
4. A roof vent pipe for a radon control system must extend at least _____ inches above the roof.
5. What is the minimum depth of a footing in St. Louis County?

6. Separate sections of soil-gas membrane used to control radon must be over-lapped by _____ inches.

MINNESOTA RULES CHAPTER 1322— 2015 MINNESOTA RESIDENTIAL ENERGY CODE

A list of key topics includes the following:

- Definitions
- 1322.0010 Adoption of International Energy Conservation Code by Reference
- 1322.0015 Administration and Purpose
- 1322.0100 Administration for Residential Energy
- 1322.0103 Construction Documents
- Chapter 2 Definitions
- Chapter 3 General Requirements
- Chapter 4 Residential Energy Efficiency
- Chapter 5 Referenced Standards

Minnesota has developed and adopted its own energy code. Chapter 11, Energy, in the IRC® has been deleted from MN code and replaced with Chapter 1322. The Minnesota Residential Energy Code, Chapter 1322, is included in the 2015 Minnesota Residential Code book.

Let's begin by answering some important energy-based questions.

1. Minnesota is divided into two climate zones. Please identify the two zones and where you found the list of counties for each zone.

2. What energy code requirements apply when remodeling and adding an addition to an existing structure?

3. What is the fenestration U-factor requirement for southern Minnesota?

4. What are the waterproofing requirements for cast-in-place concrete and masonry block foundation walls?

5. Roof/ceiling assemblies require a _____ inch energy heel.

6. When the wood frame R-value requirement is R-49, what is the equivalent R-value for a steel truss ceiling?

Additional Self-Study Questions for Chapter 1322

7. What is the ceiling insulation R-value requirement for northern and southern Minnesota?
8. If a $\frac{3}{4}$ -inch hot water pipe has a length exceeding _____ feet, it must be insulated to an R-value of _____.
9. An air leakage/blower door test is required for new construction. What is the maximum number of air exchanges allowed per hour at 50 Pascals?
10. What is required to protect exposed foundation insulation?
11. In general terms, where should exterior insulation be applied to basement walls containing conditioned space?
12. All HRV and ERV systems must be balanced so that the air intake is within _____ % of the exhaust output.

MINNESOTA RULES CHAPTER 1309—2015 ADOPTION OF INTERNATIONAL RESIDENTIAL CODE®

Chapter 1309 is a Minnesota Administrative Rule that documents the adoption of key chapters in the IRC® with Minnesota-specific amendments. Chapter 1309 appears to be only 1¼ pages long. However, the 1309 MN specific amendments, which include additions, deletions, and modifications, are inserted throughout Chapters 2 through 10 in the IRC®.

To find MN 1309 amendments in the IRC®, refer to page vii in the 2015 MN Residential Code book for a description of the marginal markings. Then, look for these marginal markings throughout Chapters 2 through 10 in the IRC®.

Now let's take a few minutes to review the contents of Chapter 1309. Key points include the following:

- Subp.1 Official adoption of the 2012 International Residential Code® (IRC®)
- Subp. 2 Mandatory chapters are 2 through 10

- Subp. 3 Replacement chapters
- Scan the balance of Chapter 1309

Since Chapter 1309 amendments are imbedded into the IRC®, we will cover that material when reviewing IRC® content in Chapters 2 through 10.

2012 INTERNATIONAL RESIDENTIAL CODE® (IRC®) WITH MINNESOTA 1309 AMENDMENTS

GUIDE TO READING THE 2012 IRC®

Let's get familiar with the IRC® by first looking at the table of contents and the layout of each chapter. Trade based exam questions and answers were developed using material from Chapters 2 through 10.

Chapter 2—Definitions

Definitions are listed alphabetically, and they can sometimes help you define a question's intent or subject matter. The definitions are very limited, and there is an assumption that if you are in this industry, you already have a good grasp of construction industry-based terminology.

While studying for the exam, if you are having difficulty understanding terms, you may elect to use the Merriam-Webster Collegiate Dictionary or the internet. If you cannot find the word in the dictionary, we suggest using Wikipedia. Simply type "wiki" into your internet browser, select enter, then type the word or phrase into the Wiki browser.

Chapter 3—Building Planning

This chapter provides guidelines for structural integrity, life safety, fire safety, and livability. Codes include light, ventilation, sanitation, minimum room size, and environmental comfort. Provisions include limitations on glazing, stairway specifications, guards, and window and door fall protection and egress. You will also find data for wind, snow, seismic design, and live and dead load requirements.

Chapter 4—Foundation

The information in this chapter provides requirements for design and construction of foundation systems. Foundation systems include the structure and supporting soil. This section includes information related to all primary types of masonry and wood foundations and requirements to minimize the effect of moisture, decay, and pests.

Chapter 5—Floors

Floor design and construction is the focus of this chapter. It outlines design criteria and span tables for joists, girders, and sheathing, related to both wood and steel materials. Also included are prescriptive requirements for attaching decks to the main building frame.

Chapter 6–Wall Construction

This chapter contains provisions related to design and construction of wood, concrete, masonry, structural insulated panels (SIP), and steel-framed walls. (Almost all of the test questions will be based on wood constructions.)

This section also regulates windows and doors with provisions for sill height, testing and labeling, vehicular access doors, wind-borne debris, and anchorage.

Chapter 7–Wall Covering

The focus is on design and construction of interior and exterior wall coverings. Topics include various materials, fastener schedules, and vapor retarders that control moisture in walls. Also included are components and requirements for wind resistance and exterior water-resistive barriers.

Chapter 8–Roof-Ceiling Construction

This chapter regulates the design and construction of roof and ceiling systems for both wood and cold-formed steel framing. Included are material and fastener schedules, span tables, finish requirements, and proper ventilation.

Chapter 9–Roof Assemblies

The focus of this chapter is on design and construction of roof assemblies, which include roof decks, thermal barriers, insulation, vapor retarders, and roof coverings. Also included are requirements for roof drainage, flashing, and recovering or replacing existing roof coverings.

Chapter 10–Chimney and Fireplaces

This chapter contains requirements for the safe construction of masonry and factory-built chimneys, fireplaces, and masonry heaters.

READING THE IRC® WITH CONFIDENCE

In most cases, the quickest way to find what you are looking for in the IRC® is to use the index at the back of the book. The index directs you to the right place in the book by reference, not page numbers. These references can be found in front of every heading. Let's define each component of the following reference number: R1003.20.

R = Reference

10 = Chapter

03 = Section

.20 = 20th heading

Note: .2 = 2nd heading

A reference number may refer to text, a figure, or a table. If there is more than one figure or table on the same subject, you will see (1), or (2), and so on, after the reference number located at the top of the table or figure. An example is provided later.

Note: Electronic versions with search capabilities are available through the DLI; however, electronic versions are not available for the test. Therefore, we will use a hard copy of the IRC® to prepare you for the exam.

Let's begin learning how to read the IRC® by looking in the index for a *chimney cricket*. Even if you don't know the definition of a chimney cricket, you

can find related information. The primary word is *chimney*, the secondary word is *cricket*. Listed in the index under *chimney* is a sub-category of *cricket*. This takes us to R1003.20. Begin looking through the book by starting in Chapter 10: Chimneys and Fireplaces, searching for section 03 Masonry Chimneys, and then searching for the 20th heading, chimney crickets.

Now, let's read the text in R1003.20. We still may not know what a cricket is, but the text is referring us to Table R1003.20 and Figure R1003.20. Based on the table information, we can calculate the height of a cricket and the figure helps us visualize a cricket and its application.

Tables contain large amounts of information typically in a matrix format.

Figures are pictures or diagrams providing a visual perspective of the subject matter.

Finding the right subject material will get easier as you practice using reference numbers. Remember, the index uses only reference numbers. If you want to reference page numbers, you can begin your search with the table of contents. Please note that the table of contents has fewer headings, and it will probably take you longer to find your answer.

Make sure you observe precisely what reference you are seeking after you have found your subject in the index. Searching for a paragraph when the index directed you to a drawing that may be several pages away can be confusing and, more importantly in a test, time consuming.

PUTTING WHAT YOU LEARNED TO THE TEST

Reading a table can be a little challenging. It is not difficult to read a table; it is just a case of knowing how! This is best illustrated by finding the answers to the following questions without assistance.

Practice Question #1

Using the following parameters, what is our maximum floor joist span?

- Lumber species: Hem-fir
- Lumber grade: #3
- Dead load: 20 psf
- Deflection: L/360
- Joist spacing: 19.2 inches
- Joist dimension: 2 by 12
- Live load: 30 psf

No cheating! Try to get your own answer before reading the following.

First, we need to find the right location for a table by using the index. The words *floor*, *joist*, and *span* are all potential primary and secondary words to help us locate what we need:

- *Floors* directs us to R502, which is the section on wood floor framing. This is not a very direct method of finding what we need. However, by reading forward, you would come to R502.3, allowable joist spans. This paragraph shows that there are two potential tables. Finding the tables and using the parameters in our question would lead us to choose the correct table.

- *Joist* can be found in the index, R502.6 and R606.14.1, but this is not the place to go because both locations provide information on bearing. You would learn a lot about joists, but nothing about joist spans.
- *Spans* shows information for both steel and wood. Unless specifically stated, the questions are focused on wood framing, not steel. R802.5 leads us to rafter spans.

R502.3 leads us to precisely the right spot, first to text describing spans and then to tables for floor joist spans for common lumber species.

We have several potential tables in the IRC®. Selecting the right one is a case of comparing all of the parameters in our question with the information found on the table.

The correct table is on R502.3.1(1). How do we know? You start by reading the table from the top down and from left to right. It is very important that you confirm all of the parameters before you answer the question.

Let's take a few minutes and locate each parameter.

There is information inside and outside the borders. Information outside the borders at the top is the general information about the subject. The bottom, bracketed line of this information shows what may be different to other pages. The bracketed information is what we use to get to the precise table.

Information outside the borders at the bottom is a footnote that more precisely describes general information within the borders. Be careful of the footnotes. Very tiny numbers or letters that may appear anywhere outside the top border and throughout the bordered information are used to refer you to the footnotes. There is an excellent example of a tiny footnote outside the brackets on the third line above the table. It is the letter "a." See if you can find it, then read the footnote.

When we move inside the borders for information, we always start in the top left corner. In this case, the heading is Joist Spacing (inches).

Our parameters tell us that we have a joist spacing of 19.2 inches. Look down the table and you will find that the third table box on the second page of the table is 19.2. The final answer is going to be somewhere in the third box zone.

The next heading says Species and Grade. We have both of these parameters in the third box zone. Find Hem-fir #3, and you are on the right line.

The next heading is Dead Load. You will see there are two possibilities. Our parameters tell us we want the one on the right, which is 20 psf.

Under Dead Load = 20 psf, we have four choices. The parameters tell us we want a 2 by 12. That is the far right column within the borders of the table. Now, look down that column until you intersect with Hem-fir #3 in the 19.2 box, and the question is answered. We can span a maximum of 12 feet 4 inches.

When might this information be important in the real world? If you are remodeling with limited joist space, you can shift the grade or species and extend the length of the span. Also, blueprints and specifications are often created in other states. If a blueprint was created in Atlanta, Georgia, the specifications would not reflect snow loading and other Minnesota-specific requirements. You may elect to hire a licensed design professional for assistance, or you can make some adjustments on your own.

Practice Question #2

What type of nail should you use to install a $\frac{1}{16}$ -inch, 4 by 8 sheet of OSB on a roof?

Tip: Because there are multiple ways to use nails in construction, you are looking for a table, which is often referred to as a *schedule*.

One of the primary key search words in the question is *nail*. However *nail* is not in the index. Another word for nail could be *fastener*. Why? Because you could fasten OSB with screws, staples, or nails. Fastening leads us to R602.3(1).

Time out! Chapter 6 is for wall construction. We are looking to fasten OSB to a roof. Let's look at table R602.3(1) Fastener Schedule for Structural Members and read Description of Building Materials. When searching for fasteners, some information for roofs will be located in the wall construction chapter.

The correct answer is 8d common nail every 6 inches on edges and every 12 inches on intermediate supports.

Notes:

- Notice the letter g next to 12 inches on intermediate supports. Follow this down to the footnote and review.
- Table R804.3 Roof Framing Fastening Schedule lists the type and quantity of screws for fastening OSB to steel rafters. Make sure you read the question carefully before answering.

IN SUMMARY

By now you should be able to read any table in the IRC®. The steps include the following:

- Take your time.
- Start at the top and verify all items in the heading.
- Read the table starting at the top and move from left to right.
- Make special note of any small letters that reference footnotes below the table.
- If you get confused, look for a figure that may help you understand the general content of the question.
- If you are not finding the answer, go back to the index and look up another primary or secondary word from the question.
- If you run into a “brick wall,” try going to the table of contents and search for the most likely chapter and section.

Reminder: If you come across a word that you have never heard, search for the word in the Chapter 2 Definitions or a dictionary. If you don't find the word, search for a figure (picture) that will help you understand the word. To find a figure, you may be able to use the index, or you may have to review the figures in the appropriate chapter.

Now, let's turn our attention to Chapters 2 through 10 in the IRC®.

IRC® CHAPTER 2: DEFINITIONS

I. R201.4 TERMS NOT DEFINED (REVIEW CONTENT IN THE IRC®)

II. DEFINITIONS

A. Definitions are listed in alphabetical order. You may elect to refer to these definitions at any time. Scan through the definitions and review items of interest and items with MN-specific marginal markings.

IRC® CHAPTER 3: BUILDING PLANNING

I. SECTIONS

- R301 Design Criteria
- R302 Fire-Resistant Construction
- R303 Light, Ventilation, and Heating
- R304 Minimum Room Areas
- R305 Ceiling Height
- R306 Sanitation
- R307 Toilet, Bath, and Shower Spaces
- R308 Glazing
- R309 Garages and Carports
- R310 Emergency Escape and Rescue Openings
- R311 Means of Egress
- R312 Guards and Window Fall Protection
- R313 Automatic Fire Sprinkler Systems
- R314 Smoke Alarms
- R315 Carbon Monoxide Alarms
- R316 Foam Plastic
- R317 Protection of Wood and Wood-Based Products Against Decay
- R318 Protection Against Subterranean Termites
- R319 Site Address

II. INTRODUCTION

- A. This chapter provides guidelines for a minimum level of structural integrity, life safety, and livability for inhabitants of dwelling units regulated by this code.**
- B. You will become familiar with the contents in this chapter by answering a series of questions. Since this is a long chapter, we will review 10 random questions in class. If you want to learn more about this chapter, you can complete the rest of the questions in the privacy of your home.**

Note: Answers to all questions are in the Syllabus.

1. All habitable rooms shall have an aggregate glazing area of *NOT* less than ___ % of the floor area.
2. What is the maximum riser height?
3. What is the minimum square feet net clear opening of an egress window?
4. In new buildings, habitable space, hallways, bathrooms, toilet rooms, laundry rooms, and portions of basements containing these spaces shall have a ceiling height of *NOT* less than ___ feet.
5. When is glazing adjacent to a door considered a hazardous location?
6. What is the minimum number of egress doors required for a single-family residence?
7. What is the required height for guards?
8. How much clearance between wood and concrete is required on the tops, sides, and ends of wood girders entering exterior masonry or concrete walls?
9. What are the location requirements for smoke alarms?
10. What is the maximum floor to clear opening measurement for an egress window?

Additional Self-Study Questions for Chapter 3 Building Planning

11. In what locations shall fireblocking be provided in wood-frame construction?
12. Fireblocking shall consist of what materials?
13. The minimum openable area to the outdoors for ventilation shall be ____% of the floor area being ventilated.
14. Bathrooms, water closet compartments, and other similar rooms shall be provided with aggregate glazing area in windows of *NOT* less than ____ square feet, one-half of which must be openable.
15. What are the exceptions for 7-foot ceiling heights in new building habitable spaces?
16. Multi-pane assemblies of glazing, with panes not exceeding 1 square foot in an exposed area, shall have at least _____ pane in the assembly identified in accordance with section R308.1.
17. When is a 4-inch curb required on a skylight?
18. What types of glazing material can be used for skylights and sloped glazing?
19. What is the minimum opening width of an egress window?
20. What is the minimum width of a stairway?
21. What is the minimum headroom for all parts of a stairway in new construction?

IRC® CHAPTER 4: FOUNDATIONS

I. SECTIONS

- R401 General
- R402 Materials
- R403 Footings
- R404 Foundation and Retaining Walls

- R405 Foundation Drainage
- R406 Foundation Waterproofing and Dampproofing
- R407 Columns
- R408 Under-Floor Space

II. INTRODUCTION

- A. This chapter is all about design and construction of foundations. This includes block, poured, and wood basements.**
- B. You will become familiar with the contents in this chapter by answering a series of questions. The end result is that you will be able to look up and find the answer to any question presented by the Department of Labor and Industry.**
1. The grade/surface drainage around a foundation should fall ____ inches in ____ feet.
 2. What type of fasteners should be used below grade when constructing a wood foundation?
 3. Concrete in basement walls, foundation walls, exterior walls, and other vertical concrete work exposed to moderate to severe weather potential and subject to freezing shall contain air-entrainment **NOT** less than ____% or more than ____%.
 4. In relation to the Unified Soil Classification System, what does SC describe and what are the drainage characteristics?
 5. Concrete and masonry foundation walls shall extend above the finished grade adjacent to the foundation at all points a minimum of ____ inches where masonry veneer is used and a minimum of ____ inches elsewhere.

Additional Self-Study Questions for Chapter 4 Foundations

6. In lieu of a complete geotechnical evaluation, what is the presumptive load-bearing value for sand, silty sand, clayey sand, silty gravel, and clayey gravel?
7. What is the minimum specified compressive strength of concrete for footings?

8. What type of fasteners should be used above grade to attach plywood and all lumber-to-lumber fasteners except those used in knee-wall construction?
9. The minimum width (inches) of concrete precast or masonry footings for a two-story residential structure with a load-bearing value of soil of 2,000 psf using 8-inch solid or fully grouted masonry should be _____ inches.
10. When should backfill be placed against a masonry foundation?
11. What are the minimum dimensions for openings to all under-floor spaces?

IRC® CHAPTER 5: FLOORS

I. SECTIONS

- R501 General
- R502 Wood Floor Framing
- R503 Floor Sheathing
- R504 Pressure Preservatively Treated-Wood Floors (On Ground)
- R505 Steel Floor Framing
- R506 Concrete Floors (On Ground)
- R507 Decks

II. INTRODUCTION

- A. **This chapter on floors includes information about wood, steel, and concrete floors. In addition, you will find code information related to building decks and floors in attic spaces used to house mechanical fixtures and equipment.**
- B. **If you do not understand a word or phrase, it may be helpful to examine the figures within the chapter. As the saying goes, “a picture is worth a thousand words.”**
- C. **As a reminder, when looking for answers using tables, start by reading at the top, then read from left to right all column and row headings. Some tables provide similar information, and if you miss one specification, you may be viewing the wrong table and your answer will be wrong.**

1. As an example, let's begin by looking at Figure R502.2 Floor Construction

- a) Note the terms and location of the items:
- Trimmer joists
 - Header—double if more than 4-inch span
 - Use hanger if header spans more than 6 inches
 - 2-inch clearance near fireplace
 - Joists—refers you to tables
 - Girders—refers you to tables
 - Band, rim, or header joist—three terms used for the same component
 - Bridging between joists
 - Sill plate
 - Lap joists 3-inch minimum or splice—see section 502.6.1

2. Let's look at Figure R502.8 Cutting, Notching, and Drilling

- a) This figure illustrates if and where joists can be drilled, cut, or notched.

3. Figure R505.3.1(6) Cantilevered Floor to Exterior Load-Bearing Wall Connection

- a) This figure illustrates steel floor construction and provides a visual aid toward understanding steel floor materials and terms.
- b) Almost all questions on the exam are focused on wood construction; however, the DLI may add questions related to steel wall and steel floor construction. Simply use the techniques taught in this class to answer the questions. Carefully read the question and search for key words. Use the index to find the sections that relate to those words. Carefully read those sections to answer the primary intent of the question.

D. At this point, I am sure you can now see the value of carefully examining figures to help visualize important information that can help you answer a question. Let's continue by answering some questions.

1. Can you or your subcontractors notch, cut, or drill through structural-engineered wood products?
2. What is the maximum cantilever span for a floor joist based on the following specifications?

- a) Joist size and spacing: 2 inches by 10 inches, 16 inches on center

- b) Supporting light frame exterior bearing wall and roof only
 - c) Ratio of backspan to cantilever span at least 3:1
 - d) Floor live load ≤ 40 psf
 - e) Roof live load ≤ 20 psf
 - f) Ground snow load of 50 psf (research data for Twin Cities location)
 - g) Roof width is 24 feet
3. When is a header joist and trimmer joist required to be doubled?
4. What size header should be used based on various conditions and how many jack studs are required on each end to support the header?
- a) Exterior bearing wall
 - b) Hem-fir
 - c) Ground snow load of 50 psf
 - d) Building width 28 feet
 - e) Supporting roof and ceiling
 - f) Span of 6 feet 1 inch
5. What is the minimum thickness of a concrete slab on grade floor?

Additional Self-Study Questions for Chapter 5 Floors

6. Joist framing into the side of a wood girder is acceptable if it is supported by what item(s)?
7. Why do you brace trusses?

8. When installing a deck ledger board, what tables and figures would you use to determine the type and quantity of fasteners?
9. Base material under a below grade concrete floor, if required, shall consist of what material?

IRC® CHAPTER 6: WALL CONSTRUCTION

I. SECTIONS

- R601 General
- R602 Wood Wall Framing
- R603 Steel Wall Framing
- R604 Wood Structural Panels
- R605 Particle Board
- R606 General Masonry Construction
- R607 Unit Masonry
- R608 Multiple-Wythe Masonry
- R609 Grouted Masonry
- R610 Glass Unit Masonry
- R611 Exterior Concrete Wall Construction
- R612 Exterior Windows and Doors
- R613 Structural Insulated Panel Wall Construction

II. INTRODUCTION

- A. **This chapter is large and covers lots of information. One of the objectives of this course is for you to learn how to find specific information within a short period of time. A great starting point for understanding what's in a chapter is to quickly review figures and tables.**
- B. **Let's begin by taking a quick tour of this chapter.**

1. Section R602 Wood Wall Framing

- a) Table R602.3(1) Fastener Schedule for Structural Members
 - A quick scan of the data tells us that this is a key location to find answers related to type, frequency, and location of fasteners.

- b) Table R602.3(5) Size, Height, and Spacing of Wood Studs
 - The title quickly tells the story.
- c) Figures R602.3(1) Typical Wall, Floor, and Roof Framing and R602.3(2) Framing Details
 - Provide visual aids for terms that you may not understand. Also included are visual specifications related to cutting, notching, and anchorage.
- d) Table R602.7.1 Spans for Minimum No.2 Grade Single Header
 - A common question on the exam and in the real world involves determining header size for windows and doors.
- e) Figure R602.10.1.1 Braced Wall Lines and Table R602.10.1.3 Braced Wall Line Spacing
 - Illustrates specifications for braced wall lines and spacing
- f) Multiple tables related to wall bracing, types, length, and methods

Note: The IRC® covers construction throughout the United States and in some international areas, so you will see information about seismic and environmental construction practices that do not commonly apply to construction in Minnesota.

2. R611 Exterior Concrete Wall Construction

3. R612 Exterior Windows and Doors

- General information about performance, testing and labeling, installation, and fastening

4. R613 Structural Insulated Panel (SIP) Wall Construction

C. Now that we have completed a quick tour of the chapter, let's spend some time finding specific answers to questions in Chapter 6 Wall Construction.

1. What type and quantity of nails would you use to fasten a top plate when it laps at corners and intersections?
2. What is the primary difference between platform framing and balloon framing?
3. Studs in exterior or bearing walls can be cut or notched to a depth not exceeding _____% of its width.
4. When assembling a girder/beam with two 2-inch by 10-inch material, what type of nail is required and what are the location requirements?

5. When using steel framing materials, what is the maximum tolerance for in-line framing of load-bearing vertical and horizontal framing members?

Additional Self-Study Questions for Chapter 6 Wall Construction

6. What is the acceptable type and spacing of fasteners when installing $\frac{7}{16}$ -inch wall sheathing to studs 16 inches on center that is used to resist wind pressures with a "D" wind exposure category?
7. When is a double top plate *NOT* required?
8. When installing 1-inch by 4-inch let-in-bracing with studs located 16 inches o.c., what is the type, quantity, and location of fasteners?
9. What is the required thickness of bed and head joints in masonry walls?
10. How should windows and doors be installed?
11. What is the maximum single 2-inch by 12-inch header span for the following criteria?
 - a) Supporting roof and ceiling
 - b) Ground snow load of 50 psf
 - c) Species: Hem-Fir
 - d) No.2 grade material
 - e) Building width 28 feet
12. When can a multiple-wythe cavity exceed 4 inches?

IRC® CHAPTER 7: WALL COVERING

I. SECTIONS

- R701 General
- R702 Interior Covering
- R703 Exterior Covering

II. INTRODUCTION

A. This chapter on wall covering is only 16 pages long; however, it contains some very important information for the test. This chapter also provides information that will keep you out of trouble with building inspectors. Using the correct material, fasteners, and installation is critical to building a properly sealed structure; doing this will also reduce your chance of paying for costly warranty repairs.

B. Let's learn about this chapter by finding specific answers to questions about interior and exterior wall coverings.

1. How many coats of plaster are required when applied to the interior of the structure over metal lath?
2. What type of screw should you use when fastening gypsum board to cold-formed steel framing?
3. A Class I or II vapor retarder is required on the _____ side of framed exterior walls.
4. What type and spacing of fasteners are required when installing fiber cement panel siding directly to studs?
5. Describe the location and function of weepholes when used with brick veneer.

Additional Self-Study Questions for Chapter 7 Wall Covering

6. What type of fastener and spacing of fasteners is required when installing perpendicular, $\frac{5}{8}$ -inch Type X gypsum board to a garage ceiling below a habitable room with 24 inches o.c. joist spacing?

7. How do you treat the joints when installing fiber cement panel siding?
8. What are your installation options when installing shakes and shingles to interior walls?
9. In general terms, how should you install vinyl siding?

IRC® CHAPTER 8: ROOF-CEILING CONSTRUCTION

I. SECTIONS

- R801 General
- R802 Wood Roof Framing
- R803 Roof Sheathing
- R804 Steel Roof Framing
- R805 Ceiling Finishes
- R806 Roof Ventilation
- R807 Attic Access

II. INTRODUCTION

- A. Roof and ceiling construction is critical to the performance and water tightness of a home when storms, high winds, and snow loads become severe. A failure can impact your financial success if a warranty claim is made due to faulty construction practices or materials.**
- B. As a reminder, answering a multiple-choice question is similar to answering a true/false question. In a multiple-choice question, you are provided four or more answer options, and based on the wording of the question, you need to select which statement is true or false.**
- C. Regardless of the type of question, your ability to find the answer in the IRC® is critical to passing the exam.**
- D. Continue learning by looking up answers to roofing-ceiling questions.**
 1. What is the maximum rafter span for the following specifications?
 - a) Ground snow load of 50 psf

- b) Dead load 20 psf
 - c) 2-inch by 12-inch spruce-pine-fir #2
 - d) 24 inches o.c.
 - e) Deflection L/Δ 240
2. If you are building a log home, how do you determine acceptable lengths and widths of material?
 3. What is the minimum amount of rafter bearing for braced rafter construction?
 4. What is the minimum net free ventilation area for a roof assembly with an enclosed attic?
 5. What type and quantity of nails are required when attaching a ceiling joist to a rafter under the following specifications?
 - a) Ground snow load 50 psf
 - b) Pitch 5:12
 - c) Spacing 16 inches o.c.
 - d) Roof span 20 feet

Additional Self-Study Questions for Chapter 8 Roof-Ceiling Construction

6. What are the requirements for roof drainage systems?
7. What is the maximum ceiling joist span when using the following specifications?
 - a) Uninhabitable attic without storage
 - b) Live load 10 psf

- c) Deflection $L/\Delta = 240$
 - d) 2 inches by 6 inches
 - e) 16 inches o.c.
 - f) Dead load 5 psf
 - g) Southern pine #1 grade
8. Use the same specifications as in the above question, but substitute southern pine with spruce-pine-fir #3.
9. What are the specification limits when notching cantilevered portions of rafters?

IRC® CHAPTER 9: ROOF ASSEMBLIES

I. SECTIONS

- R901 General
- R902 Roof Classification
- R903 Weather Protection
- R904 Materials
- R905 Requirements for Roof Coverings
- R906 Roof Insulation
- R907 Reroofing

II. INTRODUCTION

- A. You may have noticed that we do not have any pictures in the trade portion of this workbook. When taking the exam, you will be using the IRC®, and you will not have access to this workbook. Therefore, it is to your benefit to learn how to leverage the figures in the IRC®.**
- B. Explore this chapter by answering the following questions.**
1. Where should roof flashing be installed?

2. What are the roof slope requirements when using asphalt shingles?
3. How many fasteners are required per shingle?
4. What are the requirements for installing an ice barrier/underlayment on the lower edges of the roof?
5. When replacing an asphalt shingled roof with new shingles, what do you need to remove and what can remain in place?

Additional Self-Study Questions for Chapter 9 Roof Assemblies

6. When and where should roof drains be installed?
7. When flashing a roof to sidewall, what is the minimum height and width of the flashing?
8. When installing wood shingles, what are the spacing and lap requirements?
9. What is the minimum slope requirement for metal roof panels?
10. What type and quantity of fasteners are required when installing wood shingles to a roof?

IRC® CHAPTER 10: CHIMNEYS AND FIREPLACES

I. SECTIONS

- R1001 Masonry Fireplaces
- R1002 Masonry Heaters
- R1003 Masonry Chimneys
- R1004 Factory-Built Fireplaces
- R1005 Factory-Built Chimneys
- R1006 Exterior Air Supply

II. INTRODUCTION

- A. Fireplaces, both masonry and factory-built, add a lot of charm to a home. They also provide a primary and back-up heat source.**
- B. You will become familiar with the contents in this chapter by answering a series of questions. The end result is that you should be able to look up and find the answer to any question.**
1. What are the footing requirements for a masonry fireplace?
 2. What is the net cross-sectional area of a 13-inch by 13-inch square or rectangular flue?
 3. How much clearance is required between a masonry chimney and combustible materials?
 4. When using firebricks, what is the maximum joint thickness?
 5. What is the minimum dimension of side hearth extensions for a fireplace opening 6 square feet or larger?

Additional Self-Study Questions for Chapter 10 Chimneys and Fireplaces

6. When installing a lintel over a fireplace opening, how much bearing is required on each end?
7. Where should you **NOT** install the external air intake for a masonry or factory-built fireplace?
8. When building a masonry fireplace, what are the thickness dimensions for the smoke chamber walls?
9. What is the proper method for installing a factory-built chimney?
10. What are the minimum size requirements for a masonry firebox?

IRC® SECTION P2904: DWELLING UNIT FIRE SPRINKLER SYSTEMS

I. NUMBERING SYSTEM

This section is 11 pages long and has a unique numbering system. The eight sections are as follows:

- P2904.1 General
- P2904.2 Sprinklers
- P2904.3 Sprinkler Piping System
- P2904.4 Determining System Design Flow
- P2904.5 Water Supply
- P2904.6 Pipe Sizing
- P2904.7 Instructions and Signs
- P2904.8 Inspections

II. INTRODUCTION

A. Fire sprinkler system requirements became effective on January 24, 2015.

1. **Basic code issues will be addressed; however, this code is expected to evolve over time.**
 - a) When introduced, this code was applicable for residential structures greater than or equal to 4,500 square feet of floor area. Code officials have publicly stated that at some time in the future, all new residential structures, regardless of floor area, will require fire sprinkler systems.
2. **New refined definition of floor area**
 - a) “The calculated square footage of the floor within the inside perimeter of the exterior walls of the building under consideration without deduction for hallways, stairways, closets, the thickness of interior walls, columns, or other features” (Note: This calculation includes basement floor area, but does not include the attached garage floor area.)

B. Let's learn this chapter by answering a few questions.

1. What is the minimum pipe size for the supply source to any sprinkler?

2. What items are verified during the final inspection of a fire sprinkler system?
3. What are the required locations for sprinklers?
4. What data is used to determine the required flow rate for each sprinkler?
5. What is the required capacity for the water supply?

IRC® CHAPTER 44: REFERENCED STANDARDS

This chapter contains a list of referenced standards for the industry. For example, AAMA is the American Architectural Manufacturers Association. If you want to look up additional information related to a code specification, you can use this chapter to find addresses, contact information, and titles for standards.

We will not be reviewing or preparing any test or practice questions on this content. If you get a test question about reference standards, please use this chapter as an open-book resource.

IRC® APPENDIX K: SOUND TRANSMISSION

This chapter is a half-page long, and we will not be preparing any test or practice questions on this content. If you get a question about sound transmission, please use this chapter as an open-book resource.



UNIT

3

Learning The Trade—Beyond the 2015 Minnesota Residential Code Book

GENERAL CONSTRUCTION PRACTICES

I. INTRODUCTION

- A. This section provides general information about the trades, material, definitions, and processes commonly used in the construction industry. While there will only be a few questions based on this material, this section may help students with limited industry experience understand trade terms and processes.**

Note: There will not be any review questions after these sections.

II. PLANS AND SPECIFICATIONS

A. Basic blueprint information

1. Drawings and scale

- a) Working drawings are also called *plans*, *construction drawings*, or *architectural plans* and can be done by hand or computer-aided drafting and design (CADD).
- b) Copies of original plans are called *prints* or *blueprints*.
- c) A *sketch* is a rough hand drawing that shows ideas.
- d) A *rendering* is a drawing that includes details in shading or color as an elevation view or isometric projection.
- e) The two common measuring systems employed for drawings are the metric system based on units of 10 and the English or imperial system based on inches, feet, yards, and miles.
- f) *Scale* is a term that specifies the size of a reduced size drawing.
 - (1) The most common scale is $\frac{1}{4}$ inch (forty-eighth or 1:48) in which every $\frac{1}{4}$ inch represents 1 foot (12 inches) on the real structure.
 - (2) Careful—a quarter (1:4) means every 3 inches represents 1 foot (12 inches).
- g) The elements of a drawing are *lines*, *dimensions*, *symbols*, *views*, and *notes*.

2. Dimensions

- a) Dimensions written on the plans are numbers that tell the size of something.
- b) An architect's scaling rule can be used to find the size when dimensions are not shown.

3. Symbols

- a) Symbols are diagrams representing items and are used to show location, size, and appearance of such things as bathroom fittings, including tubs, vanities, stools, kitchen cabinets, and furniture.
- b) Symbols are also used to show electrical components and types of doors and windows.

4. Views

- a) Views are specific elements of a drawing that give visual information.

- b) There are four typical views:
 - (1) Plan view: the view looking down from above showing horizontal dimensions
 - (2) Elevation view: the view looking directly at something in front of you showing location and dimensions of such things as windows and doors
 - (3) Section: a part or location on a drawing that has been separated for greater clarity
 - (4) Detail: a part on a drawing showing greater detail, such as kitchen cabinets drawn in elevation showing the location of drawers and shelves and such things as knobs and door swings

B. Surveys

1. Measurements and markings

- a) Site plan shows the size and location of new construction and existing structures on the site and distances from lot lines and, if demolition, the construction to be demolished and location and size of existing structures that are to remain.
- b) *Setback* is the minimum distance from any point on the structure to the nearest lot line.
- c) When grading is completed, the level of the ground is known as *finish grade*.

C. Estimating

1. Estimating is the process of anticipating and accounting for all costs involved in a building project. In this section, we will use plans to perform estimates.

- a) Schedules and checklists are lists that can be used in estimating; a typical example is a construction-order checklist that starts with site work and ends with rework after the walk-through.
- b) Specifications are written notes, sometimes in list form that give instructions about materials and quality.
- c) Detailed survey (lump sum) method consists of doing a quantity survey (takeoff) based on the drawings and specifications and listing all materials and labor needed for a project and assigning a specific price to each item or function.

- d) Unit price estimate consists of doing a quantity survey (takeoff) and assigning costs to each unit of construction, keeping all units of construction separate.
- e) Pre-design estimate is based on an average cost per square foot in the local area used to ascertain if a design meets a client's budget.

III. GLAZING AND EGRESS

A. Types of Glass

1. **There are many different types of glass; however, most residential applications utilize three types of glass:**

a) Annealed glass

- (1) This is found in most windows.
- (2) If broken, the glass will break into large and small pieces with very sharp edges that could easily injure a person.

b) Tempered glass

- (1) It is designed to withstand impact and is found in almost all doors and used in windows adjacent to walking areas, bath areas, and other locations where there is a high probability of impact.
- (2) If broken, the glass will break into small nickel to quarter size pieces; smaller pieces of broken glass are less likely to cause severe injury.

c) Laminated glass

- (1) It consists of a plastic film adhered between two pieces of glass.
- (2) If broken, the film will typically hold the glass within the opening.
- (3) This type of glass is used in skylights and coastal locations where there is severe weather and hurricanes; it is also found in the front windshields of automobiles.

B. Overhead Glazing

1. Skylights and venting roof windows are used regularly in residential construction.

- a) Usually factory assembled containing one panel of glazing material that allows for natural day-lighting and in some cases ventilation
- b) Very important to follow the manufacturer's installation instructions when installing these units

C. Egress

1. All buildings shall be provided with a means of egress.

- a) The means of egress shall provide a continuous and unobstructed path of vertical and horizontal egress travel from all portions of the dwelling to the exterior of the dwelling at the required egress door without requiring travel through a garage.

IV. CONCRETE

A. Strength of Concrete

1. How concrete is made

- a) Portland cement
- b) Fine aggregate (sand)
- c) Coarse aggregate (gravel)
- d) Water—too much weakens

2. Admixtures alter concrete properties

- a) Calcium chloride accelerates setting and increases strength.

- b) Air-entraining agents create bubbles of air to improve durability and workability and to resist freezing.
- c) To maintain the same workability with air-entrained concrete less mixing water is required.
- d) Retarders are used to slow down setting.
- e) Water produced in admixture may decrease the ultimate compressive strength.

3. Placing concrete

- a) Place near the required point.
- b) Overworking causes segregation and spalling (breaking away of chips from the hardened surface).
- c) Vibrating helps to consolidate.
- d) Dampening the forms (or subgrade) helps concrete retain water content.
- e) Duplex nails are used in masonry formwork for ease of removal.

B. Curing

1. Finishing concrete

- a) *Screeding* is the leveling off with a hand-operated screed.
- b) Control or contraction joints are used to prevent cracking.
- c) *Floating* is smoothing with a wood float or bullfloat to fill the hollows and compact the concrete after screeding.
- d) Steel troweling with a magnesium trowel or a power trowel (circular pattern) gives a dense, smooth finish.
- e) Brooming may be added for looks and to prevent slipping.

- f) *Bleeding* is movement of water to the surface.
- g) *Efflorescence* is white, salty powder that forms on the finished surface.
- h) Curing starts when finishing is complete.
- i) *Set* is cured concrete—concrete cures in 28 days (technically, concrete never completely cures).
- j) Concrete must be maintained above 50 degrees in order to properly cure.

2. Estimating volume

- a) Concrete is measured in cubic yards (27 cubic feet)

$$\frac{L' \times T' \times W'}{27}$$

- b) Convert inches to feet: $3\frac{1}{2}$ inches = $3.5 \div 12 = .29$ feet

(1) Example: 150 lineal feet of $3\frac{1}{2}$ inches \times 7 feet concrete equals how many cubic yards?

■ $150 \times .29 \times 7 = 304.5 \div 27 = 11.28$ cubic yards of concrete

C. Masonry

1. Mortar

- a) Standard mortar is a mixture of lime and Portland cement, fine aggregate (sand), and water.
- b) Mortar should be used within $2\frac{1}{2}$ hours after original mixing.
- c) Mortar gains compressive strength by adding more cement.

2. Grout

- a) It is a mixture of lime, masonry cement, Portland cement and mortar cement, fine aggregate (sand), and water.

- b) Grout should be used within 1½ hours after original mixing.
- c) Grout shall have a minimum compressive strength of 2,000 psi.

3. Masonry joints

- a) Bed joint—the mortar joint that is horizontal at the time the masonry units are placed
 - (1) Bed joint thickness in the starting course is ¼ inch minimum to ¾ inch maximum.
 - (2) Subsequent head and bed joints are ⅜ inch thick.
- b) Head joint—the mortar joint having a vertical transverse plane
- c) Control joint—used to control cracking resulting from unusual stress

V. ASSOCIATED TRADES

A. General

1. Plumbing, electrical, and HVAC are often referred to as the mechanicals.
2. The general contractor is responsible for coordinating the mechanical trades.

B. Electrical

1. All power comes into a building through the service entrance wires.
2. Most new houses are supplied with 200-ampere service.
3. The general contractor supplies the electrician with a schematic drawing from which the house may be wired.
4. The groups of wires leaving the service panel are called circuits.
5. A general-purpose circuit is wired with No.14 copper wire and is connected to a 15-ampere circuit breaker.

6. An appliance circuit is with No. 12 copper wire and is connected to a 20-ampere circuit breaker.
7. Electrical wires are called conductors.
8. Wiring is usually done in two stages called the rough in and finish stages.
9. The rough in is done after the exterior of the house has been completed but before the insulation is installed.
10. The finish stage includes all switches, receptacles, and fixtures both inside and outside the house.

C. Plumbing

1. Plumbers arrive after the framing stage to install drains and piping.
2. This initial stage of plumbing is often called roughing in.
3. The last stage of plumbing is generally called finish plumbing.
4. A plumbing fixture is any device that receives or drains water.
5. Bathtubs, sinks, and stools are all fixtures.
6. A plumbing system brings fresh water into the dwelling and removes solid and liquid wastes.
7. The two portions of the system are supply side and waste side.
8. The waste side is also called the drain, waste, and vent system.
9. A service main brings the water to the house.
10. Waste pipes are sloped to drain through gravity.

11. Traps are located beneath all fixtures to prevent the escape of sewer gas.
12. Special framing may be needed around tubs and waste pipes. The contractor coordinates the framer and plumber to prevent unwanted issues.
13. Copper is popular for supply piping and plastic for waste piping.

D. Heating, ventilation, and air conditioning

1. Forced air systems consist of a furnace, ducts, and registers.
2. The system is popular because it permits rapid response to temperature changes.
3. Air conditioning may be added to the duct system.
4. Hydronic heating consists of a boiler, pipes, and convectors (radiators).
5. Radiant heating consists of pipes or cables in walls and floors that do not require ducts or forced air.
6. Radiant heat warms materials and then radiates the heat into the room.
7. Radiant heaters can be electric or hydronic.
8. Heat recovery ventilators are used to exchange stale outgoing air for fresh incoming air while transferring heat to the incoming air.
9. Heat recovery ventilators are often called air-to-air exchangers.

VI. JOB SITE SAFETY

A. Asbestos

1. Only certified asbestos workers may be employed for asbestos remediation.

2. There are three options for an asbestos worker certification application:

- a) Work experience of at least 1,000 hours in the general commercial construction trades
- b) Completion of a vocational training program in a construction-related discipline of not less than 18 months
- c) Two years full-time attendance, or the part-time equivalent, in an apprenticeship program for general commercial construction trades

3. For questions about asbestos, contact the Asbestos Program at asbestos@health.state.mn.us or 651-201-4620.

4. Diseases caused by asbestos include the following:

- a) Asbestosis is the accumulation of fibers in the lungs.
- b) Cancer may result from prolonged exposure to asbestos.
- c) Mesothelioma is a cancer of the chest and stomach membranes that occurs almost exclusively among asbestos workers.

5. An employer must keep records of all asbestos measurements for 30 years.

6. Failure to follow EPA National Emission Standards for asbestos will subject violators to severe penalties.

- a) Daily federal penalties of up to \$25,000 per day
- b) Criminal penalties of up to \$50,000 per day and up to two years imprisonment

B. Lead-based paint

1. On April 10, 2010, the Environmental Protection Agency (EPA) enacted the Renovation, Repair, and Painting (RRP) Rule. The rule is designed to protect occupants and workers from exposure to lead-based paint.

2. **The EPA requires RRP certification for firms working, for compensation, on pre-1978 homes. The certification course includes**
 - a) why lead-based paint is a problem,
 - b) what EPA and HUD regulations require of certified firms and certified renovators,
 - c) how to determine if lead-based paint affects work,
 - d) how to begin work,
 - e) how to set up the work area to contain dust,
 - f) how to work in a safe manner,
 - g) how to clean the work area and verify cleanliness,
 - h) how to dispose of waste safely, and
 - i) how to document your work.
3. **In Minnesota, state law SF3128 requires municipalities to verify RRP certification for residential contractors, remodelers, roofers, and manufactured home installers when they are requesting a permit.**
 - a) Municipalities may charge up to \$5.00 for the verification.
 - b) The DLI has a link on its website to verify contractor certification.

C. Minnesota Occupational Safety and Health Administration (MNOSHA)

1. **MNOSHA's primary objective is to assure safe and healthful working conditions for Minnesota workers.**
 - a) Accomplished through education, communication, onsite inspections, citations for non-compliance, interpreting standards, and helping employers understand how to comply with the standards

- b) MNOSHA uses data from the Federal Bureau of Labor and Statistics related to frequency, severity of injury, fatalities, and workers' compensation claims when developing an emphasis program.
- (1) Emphasis programs are designed to lower injury and illness within key industries.
 - (2) Effective June 16, 2011, each employee engaged in residential construction activities 6 feet or more above lower levels shall be protected by a guardrail system, safety net system, or personal fall-arrest system [CFR 1926.501 (b) (13)].
- c) It provides a free newsletter, *Safety Lines*, available at www.dli.mn.gov/OSHA/SafetyLines.asp.



APPENDIX A

Case Studies

Now you have an opportunity to evaluate your knowledge and skills by reviewing four case studies. These case studies illustrate real world situations where you need to look up and verify code information prior to getting a permit or ordering materials. The answers to these case studies are located in the Syllabus.

Case Study #1:

You have a contract to build a 14-foot by 20-foot patio deck using pressure-treated wood in Minneapolis. The ledger board will be 20 feet in length. No plans were provided by the customer, so you need to develop a drawing and provide the following specifications:

1. Depth of footings: _____ feet _____ inches deep
2. Meet a live load of _____ psf and a dead load of _____ psf
3. Size of floor joists: _____
4. Height of railing: not less than _____ inches
5. Size, quantity, and spacing of fasteners for the ledger board: _____

Case Study #2:

You are remodeling a home and the owners want to expand the window and door areas on the back of the house. The rear wall of the single-story structure that is 28 feet wide needs to be modified to accommodate the following:

- Window: rough opening 4 feet wide by 5 feet 6 inches high
 - Door: rough opening 6 feet 1 inch wide by 6 feet 8 inches high
 - Framed with 2-inch by 4-inch walls
1. What is the minimum header size for the window?
 2. What is the minimum header size for the door?

Case Study #3:

You are remodeling a home and the customer wants to use wood shingles on a 6:12 pitched roof.

1. What type and quantity of fastener(s) should you use for the wood shingles?
2. What type of valley flashing should you use, and what are the specifications?
3. What is the exposure dimension when installing grade #2, 18-inch wood shingles?

Case Study #4:

You are building a new home in the Twin Cities and you need to determine the R-values and U-factors for the following:

1. Walls: R-value of _____
2. Ceiling: R-value of _____
3. Crawl space walls: R-value of _____
4. Basement wall: R-value of _____
5. Windows: U-factor of _____

APPENDIX B

Practice Test Questions

The following is a series of practice test questions that you can use to simulate taking the DLI exam. To enhance the learning experience, the questions are categorized by key topics. Simply review the question, select the best answer and verify the answer by using the Syllabus.

Note: We provide the questions by topic to help you learn key subject matter; however, the DLI exam questions are not segmented by topic.

UNIT 1: BUSINESS AND LAW

ENFORCEMENT / LICENSING

1. How many days is a contractor's temporary license valid after the contractor's qualifier leaves?
 - A. 30 days
 - B. 90 days
 - C. 120 days
 - D. 180 days
2. Which of the following is *TRUE* of a contractor who operates without a valid license?
 - A. The contractor may file a lien at any time without providing a pre-lien notice.
 - B. Any contractor's lien is automatically valid and they may obtain a judgment.
 - C. The contractor holds a valid "hold" on the mortgage for a period of 90 days.
 - D. The contractor has no legal right to claim a lien.
3. What are the continuing education requirements for holders of a Minnesota contractor's license?
 - A. None, as long as the licensed contractor is actively working in the field
 - B. 15 hours every 3 years
 - C. 7 hours every 2 years
 - D. 14 hours every 2 years with at least 1 hour of energy
4. Which of the following documents does the contractor use to determine the quantities of materials needed for the contract?
 - A. Drawings
 - B. Warranty statement
 - C. General conditions
 - D. Addenda
5. An owner decides to change the location of several interior walls in a building now under construction. What part of the existing contract addresses this issue?
 - A. An addendum
 - B. An allowance
 - C. A change order
 - D. A submittal
6. An owner has agreed to make periodic payments to the contractor during the construction period. These payments are known as
 - A. bond performance.
 - B. retainage.
 - C. progress payments.
 - D. allowances.
7. Which of the following are essential elements to a contract?
 - A. Offer, acceptance, and consideration
 - B. Proposals for materials and labor
 - C. Permits and subcontracts
 - D. Initial payment for job and placement of materials order
8. General liability insurance covers which of the following?
 - A. Premise and operations
 - B. Products
 - C. Completed operations
 - D. All of these
9. A contractor or any person performing contracting work in Minnesota must be licensed prior to obtaining a permit for the work. Which of the following agencies issues the license?
 - A. The Minnesota Department of State
 - B. The Minnesota Department of Public Service
 - C. The Minnesota Department of Labor and Industry
 - D. The Minnesota Department of Commerce
10. The Commissioner may impose civil penalties up to how much per violation?
 - A. \$10,000
 - B. \$5,000
 - C. \$3,000
 - D. \$1,000
11. Contractor license law does *NOT* require contractors to display their license numbers on
 - A. flyers.
 - B. building permits.
 - C. contracts.
 - D. purchase orders.

12. Which of the following is *NOT* required as part of an application for a Minnesota contractor license?
 - A. Group health insurance certificate
 - B. Minnesota workers' compensation insurance certificate
 - C. Liability insurance certificate
 - D. Unemployment insurance account number
13. What must a contractor and customer do before signing a construction contract?
 - A. Obtain bids from subcontractors and suppliers
 - B. Prepare critical path and Gantt charts for the project
 - C. Arrange financing for the job with the bank or other lender
 - D. Read and understand the contract
14. What is the *MOST* important element of a construction contract?
 - A. Signed mutual agreement between parties to the contract
 - B. Proper language and terms
 - C. High level description of the construction project
 - D. Approval by the building inspector and planning commission
15. The contractor's offer to the owner (i.e., the contractor's bid) should include which of the following?
 - A. All required building permits and zoning approval
 - B. The contract amount to be paid and the payment schedule
 - C. A list of special equipment needed to perform the work requested
 - D. The names and addresses of the subcontractors
16. Which of the following documents describes the types of materials needed for a contract?
 - A. Modifications
 - B. Specifications
 - C. General conditions
 - D. Addenda
17. What is the purpose of an integration clause in a contract?
 - A. To explain the price
 - B. To enforce equal opportunity for employees and subcontractors of all racial backgrounds
 - C. To set hiring quotas for minority employees and subcontractors for the project
 - D. To state specifically which documents are attached and part of the contract
18. What is the basic purpose of a written contract between the owner and the contractor?
 - A. It guarantees that the agreement is enforceable.
 - B. It specifies the rights and obligations of each party.
 - C. It establishes a unilateral agreement on the part of the owner and subcontractors.
 - D. It serves the same purpose as a mortgage.
19. When is payment due to the homeowner who has won a Recovery Fund judgment against a contractor?
 - A. When all judgment appeals have been exhausted
 - B. After the builder has been sued
 - C. When all arbitration avenues have been exhausted
 - D. After the homeowner gives up
20. Within the guidelines of the Contractor Recovery Fund, what is the maximum recovery per claimant?
 - A. \$15,000
 - B. \$50,000
 - C. \$75,000
 - D. \$100,000
21. What action may the Commissioner take if someone is fraudulently using another builder's license number?
 - A. The builder can be issued a Stop Work Order.
 - B. The builder can be issued a Cease and Desist Order, the license holder may have the license revoked, and both parties may be fined.
 - C. The builder can issue a Cease and Desist Order.
 - D. The builder can be issued a ticket and charged with a misdemeanor.

22. If a contractor is planning on doing business as a different name other than the legal name, what must the contractor attach to the license application?
- Certificate of Business Name
 - Doing Business As Certification
 - Certificate of Assumed Name
 - Certificate of Name Change
23. If a contractor changes his name, the contractor must notify the Commissioner of the change no later than
- 15 days after the change.
 - 30 days after the change.
 - 15 days before the change.
 - 30 days before the change.
24. When may an individual be a qualifying person for two corporations?
- When both corporations have the same ownership
 - When at least 25% of each corporation has common ownership and the individual is a managing employee
 - When at least 50% of each corporation has common ownership
 - Never; a person cannot be a qualifying person for two corporations
25. What must parties to a written contract do before they sign the contract?
- Parties must read and understand the contract.
 - Parties must file an Intent to Sign a Contract form with the state.
 - Parties must consult an attorney.
 - Parties must consent to arbitration.
26. The purpose of a written change order is to
- accommodate changes made during construction.
 - accommodate changes made before the contract is signed.
 - inform suppliers about the new materials needed.
 - inform the subcontractor of changes.
27. Which of the following insurance items are required by contractor license law? Choose all that apply.
- \$100,000 per occurrence
 - Each licensee shall maintain on file with the Commissioner a certificate evidencing the insurance
 - Up to \$2,000,000 rider for foundation work
 - Up to \$1,000,000 rider for roof work
 - \$300,000 aggregate limit for bodily injury
 - All of these
- Note: The DLI may expand the type of questions to include this format.*
28. The contractor recovery fund is administered by the
- building official.
 - Department of Funding.
 - Commissioner.
 - Department of Labor and Industry.
29. If a homeowner receives a payment out of the Recovery Fund, remedies against the licensee include automatic
- suspension of license.
 - revocation of license.
 - misdemeanor charge.
 - gross misdemeanor charge.
30. Contractors are required to pay
- a one-time continuing education fund fee.
 - an annual continuing education fund fee.
 - a one-time recovery fund fee.
 - a biannual recovery fund fee.
31. Every other year, continuing education credits must include at least one hour of
- lead abatement training.
 - energy efficiency training.
 - radon training.
 - new technologies training.
32. Contractor licenses expire on March 31 of every year; what is the deadline for completing continuing education credits and timely renewal of a license?
- March 31
 - March 15
 - March 1
 - April 30

33. Who is the licensing authority?
- Building official
 - Secretary of State
 - Building inspector
 - Commissioner
34. The Commissioner has the authority to
- issue a building permit.
 - do a building inspection.
 - impose civil penalties up to \$10,000 per violation.
 - tear down a poorly constructed building.
35. Who is *NOT* required to be licensed?
- Employees working for a licensee
 - Those with gross annual receipts of \$150,000 or less
 - Specialty contractors who provide more than one skill
 - Roofer
36. If a qualifying person leaves a company, how long is the temporary license valid?
- 30 days
 - 60 days
 - 90 days
 - 120 days
37. Written notice must be given to the Commissioner if there is any change in business location, personal name, or address, *NOT* later than how many days after the change?
- 5 days
 - 10 days
 - 15 days
 - 20 days
2. Contractors are required to notify the owners of their lien rights
- only when requested by owner.
 - within 45 days.
 - within 120 days.
 - in the contract.
3. Who has the right to file a lien under the Minnesota mechanic's lien law?
- Anyone who provides a pre-lien notice and furnishes labor or materials to improve another's property
 - Anyone who has contracted services
 - A property owner who is not satisfied with a completed project
 - A lawyer that provided contracts
4. Where must subcontractors file a claim against a property owner?
- With the circuit court clerk in the county where the property is located
 - With the Minnesota Department of Commerce
 - With the Minnesota Contractor Recovery Fund
 - With the circuit court clerk where the contractor's office is located
5. Unless a lien statement is properly filed and recorded, mechanic's liens cease how long after the last item is furnished?
- 45 days
 - 120 days
 - 90 days
 - 1 year
6. Lien rights attach
- when the first item is furnished.
 - at completion of the contract.
 - 10 days after work commences.
 - 10 days after completion of the project.
7. When a subcontractor requests an owner's name and address, the contractor must provide that information
- within 30 days of request.
 - within 48 hours of request.
 - within 10 days of request.
 - immediately.

MECHANIC'S LIENS

- A lien waiver releases the owner from
 - the right to claim a lien.
 - paying twice for services or materials.
 - needing to file a notice of commencement.
 - paying for contractor extras.

8. To collect on a mechanic's lien, action must be commenced within how long after the date of the last item recorded in the lien statement?
 - A. 45 days
 - B. 120 days
 - C. 6 months
 - D. 1 year

5. Which of the following is *TRUE* of the warranty on a new home for the second homeowner?
 - A. No warranty
 - B. All statutory warranties are transferable to the new owner
 - C. All statutory warranties cease after one year
 - D. All statutory warranties continue on plus one additional year

WARRANTY

1. In new construction, when does the homeowner's warranty start?
 - A. After the building official issues the Certificate of Occupancy and owner takes possession
 - B. Immediately upon the homeowner's occupancy
 - C. Immediately upon listing the property for sale
 - D. Immediately after the Commissioner issues the Work Completed Certificate
2. Poor flashing causes a roof leak six months after occupancy. Who is liable for the repair?
 - A. The homeowner
 - B. The city
 - C. The contractor
 - D. The building inspector
3. Poor installation of the plumbing pipes causes a leak one and half years after occupancy. Who is liable for the repair?
 - A. The homeowner
 - B. The city
 - C. The contractor
 - D. The building inspector
4. Residential building contractors must warrant that the dwelling will be free of defects from faulty installation of plumbing, electrical, and heating and cooling systems for a period of
 - A. 1 year.
 - B. 2 years.
 - C. 7 years.
 - D. 10 years.

6. A homeowner files a claim for a severely cracked garage floor that one of your subcontractors installed six months ago. Who is liable for the claim?
 - A. The homeowner
 - B. The contractor
 - C. The subcontractor
 - D. The building inspector
7. If there is no agreement between a homeowner and contractor in relation to a warranty claim, what process is required prior to legal action?
 - A. Arbitration law
 - B. Statutory Claims Enactment Law
 - C. Notice and Opportunity to Repair Law
 - D. Small claims court, if less than \$5,000

MANAGEMENT

1. Who may establish standards and procedures to regulate erosion control?
 - A. Local municipalities
 - B. The building official
 - C. The Department of Building Safety
 - D. The Commissioner
2. Which of the following is *NOT* a code issue?
 - A. Foundation slope
 - B. Depth of footings
 - C. Insulation requirements
 - D. A purple house
3. The Fair Labor Standards Act defines a workweek as which of the following?
 - A. A fixed and regular recurring period of 168 consecutive hours
 - B. Any 40-hour period falling between any seven consecutive days
 - C. A fixed and regular period of 30 working hours
 - D. Any 5 consecutive work days

4. The general contractor is liable for
 - A. only the contractor's employees.
 - B. only the subcontractor's employees.
 - C. all liability on site.
 - D. no liability on site.
5. What is the purpose of the critical path method of project analysis?
 - A. To determine the most important activity in the project
 - B. To determine the most expensive activity in the project
 - C. To determine the time required to complete the project
 - D. To present a graphical representation of the project
6. Why are project planning and scheduling important?
 - A. They are required under Minnesota law.
 - B. They are effective tools for controlling costs.
 - C. They are included in many contracts.
 - D. They are recommended by experienced managers.
7. According to the Fair Labor Standards Act, a 14-year-old can work a maximum of
 - A. 10 hours in a school week.
 - B. 12 hours in a school week.
 - C. 15 hours in a school week.
 - D. 18 hours in a school week.

AUTHORITY FOR ZONING

1. Enforcement of land use zone requirements is the responsibility of
 - A. the federal government.
 - B. the state government.
 - C. local municipalities.
 - D. a private company.
2. Who may establish standards and procedures to regulate erosion control?
 - A. Local municipalities
 - B. The building official
 - C. The Department of Building Safety
 - D. The Commissioner

ADMINISTRATION

1. A permit may be issued for construction of part of a building before construction documents for the whole building are submitted. This is called a
 - A. provisional permit.
 - B. partial permit.
 - C. temporary permit.
 - D. one-time permit.
2. When applying for a permit, you must pay a fee to
 - A. the building official.
 - B. the State of Minnesota.
 - C. the DLI.
 - D. the municipality.
3. If a contractor begins work on a building before a permit is issued,
 - A. the permit will be automatically denied.
 - B. a Cease and Desist Order may be issued.
 - C. a Stop Work Order may be issued.
 - D. the contractor's license will be suspended.
4. A building cannot be inhabited until the building official has issued a
 - A. Certificate of Safety.
 - B. Certificate of Occupancy.
 - C. Permit End Certificate.
 - D. Certificate of Completion.
5. Who has final interpretive authority for all codes adopted as part of the code except for plumbing and electrical?
 - A. The state building official
 - B. The Commissioner
 - C. The building inspector
 - D. The state architect
6. How long does a permit last if no action is taken?
 - A. 30 days
 - B. 60 days
 - C. 90 days
 - D. 180 days
7. Where do you apply for a building permit?
 - A. The Department of Commerce
 - B. The Department of Labor and Industry
 - C. The Department of Public Safety
 - D. The Department of Building Safety

8. Who decides which inspections are required when a permit is issued?
- A. The Commissioner
 - B. The building official
 - C. The chief inspector
 - D. The Department of Labor and Industry
9. What action can the building official take if work is *NOT* proceeding to code?
- A. Issue a Stop Work Order
 - B. Arrest the contractor
 - C. Suspend the contractor's license
 - D. Revoke the permit
10. Tool sheds are exempt from requiring a building permit, provided the floor area does *NOT* exceed
- A. 80 square feet.
 - B. 140 square feet.
 - C. 170 square feet.
 - D. 200 square feet.
11. To apply for a permit, a contractor must submit a permit application furnished by the
- A. Department of Labor and Industry.
 - B. Department of Commerce.
 - C. Department of Architecture.
 - D. Department of Building Safety.
12. When a contractor receives a provisional permit so excavation may begin, this permit
- A. does not guarantee that the structure may be completed.
 - B. guarantees that the structure may be completed.
 - C. is subject to the Commissioner's approval.
 - D. does not require a fee.
13. When performing work for which the code is applicable, who must comply with the code?
- A. The contractor
 - B. The workers
 - C. Every person who performs work
 - D. The homeowner
- Note: With some questions, multiple answers may be correct; however, the DLI is looking for the best answer.*
14. The building official can
- A. revoke licenses.
 - B. issue licenses.
 - C. enforce the code.
 - D. make policies and procedures that waive requirements provided for in the code.
15. The document that shows the size and location of the structure, septic field, well, and property boundaries is
- A. a submittal document.
 - B. a site plan.
 - C. a permit application.
 - D. an approval document.

UNIT 2: TRADE

CHAPTER 1303

- What is the minimum footing depth for the Twin Cities?
 - 5 feet
 - 3 feet, 6 inches
 - 3 feet, 8 inches
 - 5 feet, 6 inches
- What is the ground snow load for Washington County?
 - 60 pounds
 - 50 pounds
 - 40 pounds
 - 30 pounds
- What is the primary difference between an active and passive radon system?
 - An active system is installed below grade.
 - A passive system is used for one-story structures.
 - An active system is used for one- to three-story structures.
 - An active system incorporates a fan, whereas a passive system does not use a fan.
- What is the minimum height above roof dimension for a single radon vent pipe?
 - 8 inches
 - 10 inches
 - 12 inches
 - 16 inches
- What is the default fenestration U-factor rating for metal frame, with thermal break, double-pane skylights?
 - 1
 - 1.25
 - 1.10
 - 2
- What is the fenestration U-factor requirement for a skylight in the southern Minnesota climate zone?
 - 0.42
 - 0.4
 - 0.32
 - 0.55
- What is the minimum R-value requirement for ceilings in the northern Minnesota climate zone?
 - 30
 - 49
 - 38
 - 44
- The energy heel on a roof truss must be at *LEAST*
 - 3½ inches.
 - 4½ inches.
 - 5½ inches.
 - 6 inches.
- What is the minimum insulation requirement for above grade mass wall in Duluth?
 - R-19/21
 - R-19
 - R-15/20
 - R-21

CHAPTER 1322 ENERGY

- How does the building inspector evaluate the quantity of attic insulation?
 - Makes calculations based on the supplier invoice
 - Completes a visual inspection
 - Reads the attic insulation card and completes a visual inspection
 - Evaluates the insulation contractor bid
- Where must you install the vapor retarder?
 - Warm side of the gypsum board
 - Warm in winter side
 - Cold in winter side of the insulation
 - Outside of the sheathing and under the siding

8. Which of the following fenestration exemption statements is *NOT* true?
 - A. Up to 15 square feet of glazed fenestration per dwelling unit shall be permitted to be exempt for U-factor requirements.
 - B. Single-pane glass is acceptable in four-season rooms when glazing has a southern exposure.
 - C. An area-weighted average of fenestration products shall be permitted to satisfy the U-factor requirements.
 - D. One opaque door assembly is exempted from the U-factor requirements.
9. Fresh air leaks into a house through cracks around windows, doors, and framing. This process is called
 - A. infiltration.
 - B. heat exchange.
 - C. exhaust.
 - D. air conditioning.
10. When installing insulation between floor joists in a crawl space, the vapor retarder
 - A. should be installed above the insulation.
 - B. should be installed below the insulation.
 - C. should be installed on both sides of the insulation.
 - D. should not be installed.
11. What is the minimum insulation required in ceilings with no attic when this area is less than 20% of the insulated ceiling?
 - A. R-24
 - B. R-28
 - C. R-30
 - D. R-38
12. What is the minimum percentage requirement for continuous ventilation?
 - A. 50%, but not less than 40 cfm
 - B. 40%, but not less than 50 cfm
 - C. 25%, but not less than 40 cfm
 - D. 35%, but not less than 25 cfm
13. Which of the following types of material and thickness is required to retard the flow of soil gases—radon—into a building?
 - A. 3½ inches of concrete
 - B. 6-mil polyethylene
 - C. 4-mil polyethylene
 - D. 3-mil cross-laminated polyethylene

BUILDING PLANNING

1. When using multiple interconnected smoke alarms, how do they respond to smoke?
 - A. The action of one activates the others
 - B. With a battery back up
 - C. By hard wiring
 - D. They should not be interconnected
2. How far can the top of the exterior landing be below a threshold if the door swings away from the landing?
 - A. 7¾ inches
 - B. 8½ inches
 - C. 6½ inches
 - D. 10 inches

Note: This question is confusing. Tip: Visualize what the question is attempting to ask.
3. What are the minimum, net clear dimensions of a window well used for an emergency escape?
 - A. 12 square feet
 - B. 11 square feet
 - C. 10 square feet
 - D. 9 square feet
4. When can a bedroom be accessed directly from the garage?
 - A. Only when the garage has a lock
 - B. With more than a 1½-inch threshold
 - C. Only in houses built before 1980
 - D. Never
5. When is an artificial light source *NOT* required at the top or bottom stair landing?
 - A. When lit over each stairway section
 - B. Only when there is a skylight above
 - C. When there are only four stairs
 - D. An artificial light source is always required
6. What is the minimum glazing area of a habitable room?
 - A. 4% of the room floor area
 - B. 6% of the room floor area
 - C. 8% of the room floor area
 - D. 10% of the room floor area

7. What is the minimum clear opening height of an emergency escape window?
 - A. 12 inches
 - B. 24 inches
 - C. 36 inches
 - D. 48 inches
8. When must a skylight be mounted on a curb extending 4 inches above the plane of the roof?
 - A. When the slope of the roof is less than 1 in 12
 - B. When the slope of the roof is less than 2 in 12
 - C. When the slope of the roof is less than 3 in 12
 - D. When the slope of the roof is less than 4 in 12
9. What thickness of type X gypsum is required on a garage ceiling below a living space?
 - A. $\frac{3}{4}$ -inch gypsum
 - B. Two layers of $\frac{1}{2}$ -inch gypsum
 - C. $\frac{1}{2}$ -inch gypsum applied on the residence side
 - D. $\frac{5}{8}$ -inch gypsum
10. The minimum size for access to an attic space is
 - A. 24 inches by 36 inches.
 - B. 18 inches by 36 inches.
 - C. 16 inches by 18 inches.
 - D. 22 inches by 30 inches.
11. How do we protect the underside of a stairway?
 - A. By enclosing with a minimum of $\frac{1}{4}$ -inch gypsum
 - B. By enclosing with a minimum of $\frac{3}{8}$ -inch gypsum
 - C. By enclosing with a minimum of $\frac{1}{2}$ -inch gypsum
 - D. By enclosing with a minimum of $\frac{5}{8}$ -inch gypsum
12. By how much may the greatest riser height exceed the minimum?
 - A. $\frac{1}{8}$ inch
 - B. $\frac{1}{4}$ inch
 - C. $\frac{5}{8}$ inch
 - D. $\frac{1}{2}$ inch
13. What is the required minimum vertical headroom clearance for stairways in new construction?
 - A. 6 feet
 - B. 6 feet 8 inches
 - C. 6 feet 10 inches
 - D. 7 feet

FOUNDATIONS

1. What is the minimum requirement for drainage slopes that move water away from a foundation?
 - A. 5 inches within the first 10 feet
 - B. 6 inches within the first 10 feet
 - C. 7 inches within the first 10 feet
 - D. 12 inches within the first 10 feet
2. A new two-story house has basement dimensions of 52 feet by 28 feet, with a 20-foot by 22-foot attached garage. The basement walls will be poured concrete and are 6 inches thick and 8 feet high. How much concrete will be required to pour the basement walls? Round up to the next cubic yard.
 - A. 12 cubic yards
 - B. 24 cubic yards
 - C. 36 cubic yards
 - D. 72 cubic yards
3. How many cubic yards of concrete will be used in pouring a slab with the following dimensions: 72 feet 3 inches \times 88 feet 6 inches \times 6 inches deep?
 - A. Less than 116 cubic yards
 - B. 112.1 to 113 cubic yards
 - C. 118.1 to 119 cubic yards
 - D. More than 125 cubic yards
4. When finishing concrete, the movement of water to the top surface is
 - A. efflorescence.
 - B. bonding.
 - C. laitance.
 - D. bleeding.
5. Troweling of newly placed concrete is performed directly after which step?
 - A. Screeding
 - B. Derbying
 - C. Floating
 - D. Brooming
6. The recommended placement of reinforcement for footings is in the
 - A. lower 25% of the footing.
 - B. middle of the footing.
 - C. upper 25% of the footing.
 - D. perimeter of the footing.

7. What process would be used on concrete to produce a nonslip surface?
 - A. Troweling
 - B. Screeding
 - C. Brooming
 - D. Floating
8. Concrete is being placed in an area with recurrent freezing and thawing. Which admixture should be used?
 - A. Decelerator
 - B. Air entrainment
 - C. Accelerator
 - D. Mixture
9. The tool used to produce a rounded edge on a slab to prevent chipping is a
 - A. screed.
 - B. edger.
 - C. broom.
 - D. trowel.
10. Modular (standard-size) blocks are usually about $7\frac{5}{8}$ inches high by $15\frac{5}{8}$ inches long in order to allow for
 - A. 1 inch of mortar.
 - B. $1\frac{1}{2}$ inch of mortar.
 - C. $\frac{1}{2}$ inch of mortar.
 - D. $\frac{3}{8}$ inch of mortar.
11. Concrete footings for a one-floor house must be a minimum of how thick and wide?
 - A. 6 inches by 6 inches
 - B. 6 inches by 12 inches
 - C. 12 inches by 12 inches
 - D. 12 inches by 15 inches
12. Where is metal reinforcement positioned in a concrete basement floor?
 - A. 1 inch below the top surface
 - B. $1\frac{1}{2}$ inches below the top surface
 - C. $1\frac{1}{2}$ inches above the lower surface
 - D. 1 inch above the lower surface
13. What is the minimum compressive strength of concrete for footings?
 - A. 2,500 psi
 - B. 5,000 psi
 - C. 3,000 psi
 - D. 3,500 psi
14. Which of the following is allowed on rebar?
 - A. Light rust
 - B. Grease
 - C. Mud
 - D. Oil
15. What is the maximum mortar thickness of the initial bed joint when installing brick on a concrete slab?
 - A. $\frac{1}{4}$ inch
 - B. $\frac{5}{8}$ inch
 - C. $\frac{3}{4}$ inch
 - D. 1 inch
16. What is the minimum diameter anchor bolt that may be used without a noncorrosive coating?
 - A. $\frac{1}{8}$ inch
 - B. $\frac{1}{4}$ inch
 - C. $\frac{3}{8}$ inch
 - D. $\frac{1}{2}$ inch
17. What is the range of air entrainment required in concrete that is subject to thawing and freezing?
 - A. 4% to 6%
 - B. 5% to 7%
 - C. 6% to 8%
 - D. 7% to 9%
18. What is the minimum bearing for a wood beam resting in a poured concrete wall notch?
 - A. 1 inch
 - B. 2 inches
 - C. 3 inches
 - D. 4 inches
19. How do you increase the compressive strength of mortar containing lime and Portland cement?
 - A. Add cement
 - B. Add water
 - C. Add mortar
 - D. Add lime
20. What is the minimum to maximum air gap when installing brick veneer?
 - A. 1 inch to 2.5 inches
 - B. 1 inch to 4.5 inches
 - C. 1 inch to 6.5 inches
 - D. 1 inch to 8.5 inches

21. When installing the sill plate to the foundation, what is the maximum distance between ½-inch bolts?
- 2 feet
 - 3 feet
 - 4 feet
 - 6 feet
22. What is the minimum footing depth in St. Louis County, Minnesota?
- 3 feet
 - 3 feet 6 inches
 - 4 feet 6 inches
 - 5 feet
5. What is the minimum thickness of a concrete floor?
- 2.75 inches to 3 inches
 - 3 inches
 - 3.25 inches
 - 3.5 inches
6. Base material under a below grade concrete floor, if required, shall consist of
- a 6-inch base mixture of sand and gravel.
 - clay soil, if there is adequate drainage.
 - a 4-inch base of sand, gravel, crushed stone, or crushed slag smaller than 2 inches in diameter.
 - a 9-inch base of gravel.

FLOORS

- What table would you use to calculate the span for a joist that also spans cantilevers?
 - R502.3.3(2)
 - R502.3.1(1)
 - R502.3.3(1)
 - R502.5(1)
- What is the *BEST* rule to follow when notching trusses?
 - Notches cannot exceed ⅓ of the member
 - Notches cannot exceed ¼ of the member
 - Notch only as specified in the engineer drawings and specifications
 - Notches are allowed on vertical members only and up to ½ inch
- Joist framing into a girder is acceptable if supported by
 - at least a 1-inch by 1-inch nominal ledger strip.
 - at least one nail.
 - lag bolts fastened to the joist and through the girder.
 - an approved framing anchor or not less than a 2-inch by 2-inch nominal ledger strip.
- When is it required to double a header joist and trimmer joist?
 - When span exceeds 3 feet
 - When span exceeds 3 feet 6 inches
 - When span exceeds 4 feet
 - When span exceeds 4 feet 6 inches
- When using steel floor framing, what is the maximum tolerance between the centerline of the horizontal framing member and the centerline of the vertical framing member?
 - ⅛ inch
 - ¼ inch
 - ½ inch
 - ¾ inch
 - 1 inch
 - 1.5 inches
- When attaching a wood ledger board to a structure, the IRC® provides fastener information for which of the following fasteners?
 - #8 galvanized screws when spaced as per Table R602.3(1)
 - Galvanized 16d nails if spaced per Table R602.3(1)
 - Hot dipped galvanized or stainless steel ½-inch lag screws or through bolts with washers
 - Through ⅜-inch carriage bolts
- A stairway with 16 risers has a total of 9 feet 2 inches between finished floors. What is the rise per unit?
 - 6 inches
 - 6⅞ inches
 - 7 inches
 - 7½ inches

10. House plans call for a built-up wood girder supporting the floor joists. What is the minimum bearing allowance where the girder is supported in the foundation walls?
 - A. 2 inches
 - B. 3 inches
 - C. 6 inches
 - D. 8 inches
11. What is the lowest member of the frame structure that rests on the foundation?
 - A. Flange
 - B. Joist
 - C. Sill
 - D. Stud
12. When installing tongue and groove plywood combination subfloor underlayment, what is done differently with the second row of panels as compared to the first row?
 - A. A half-sheet is used to begin the row in order to stagger the joints.
 - B. It is laid with the face grain opposite the first row.
 - C. Nothing; they are laid identically.
 - D. Smaller and fewer nails are used for attaching them to the joists due to the tongue and groove construction.
13. What is the maximum diameter hole that may be drilled in a 2-inch by 12-inch joist?
 - A. 1 inch
 - B. 2½ inches
 - C. 3 inches
 - D. 3¾ inches
2. When doubling top plates, what is the required distance for staggering joints?
 - A. 24 inches
 - B. 36 inches
 - C. 48 inches
 - D. 60 inches
3. What is the minimum nailing requirement for toenailing a stud to the sole plate?
 - A. 2-8d
 - B. 3-8d
 - C. 4-8d
 - D. 4-16d
4. What is the actual dressed size of a 2-inch by 4-inch stud?
 - A. 1 inch by 3 inches
 - B. 1¼ inch by 3¼ inches
 - C. 1¼ inch by 3½ inches
 - D. 1½ inch by 3½ inches
5. If you have a finished floor to ceiling height of 8 feet and a double plate at the top and single plate at the bottom, how long do you cut the studs?
 - A. 96 inches
 - B. 94½ inches
 - C. 93 inches
 - D. 92⅝ inches
6. What is the header size over a 2-foot, 8-inch door?
 - A. 32 inches
 - B. 34½ inches
 - C. 37 inches
 - D. 37½ inches
7. You have ½-inch by 4-foot by 8-foot sheets of plywood. How many sheets will be needed to cover an area 52 feet by 74 feet?
 - A. 120
 - B. 121
 - C. 122
 - D. 123
8. What is the actual dressed size of a 2 by 8?
 - A. 1½ by 7¼
 - B. 1½ by 7½
 - C. 1¾ by 7½
 - D. 1¾ by 7¾

WALL CONSTRUCTION

1. A contractor is attaching 1-inch by 4-inch let-in bracing. What is the minimum number and size face nail to be attached to each stud and plate?
 - A. 1-8d
 - B. 2-8d
 - C. 2-16d
 - D. 3-16d

9. In which type of framing construction do the studs extend from the foundation to the roof?
 - A. Truss
 - B. Balloon
 - C. Platform
 - D. Plank and beam
10. The upright member found under the handrail and attached to the tread is a
 - A. baluster.
 - B. balustrade.
 - C. stringer.
 - D. newel.
11. What is the minimum end bearing of a joist on wood or metal?
 - A. ½ inch
 - B. 1 inch
 - C. 1½ inches
 - D. 2 inches
12. How many of what sized nails are used to attach diagonal, let in, wood bracing to a stud?
 - A. Two, 8d face nails
 - B. Four, 8d face nails
 - C. Two, 10d face nails
 - D. Four, 10d face nails
13. What is the minimum number of stud spaces that let in bracing must cross when wall construction uses studs 2 feet on center?
 - A. One
 - B. Two
 - C. Three
 - D. Four
2. Untreated siding shall be no closer than
 - A. 6 inches to the ground.
 - B. 5 inches to the ground.
 - C. 4 inches to the ground.
 - D. 3 inches to the ground.
3. A contractor is installing wood-board siding to the exterior of a house. The fasteners must penetrate the studs a minimum of
 - A. ½ inch.
 - B. 1 inch.
 - C. 1½ inches.
 - D. 2 inches.
4. A contractor is installing 6-inch wood siding to the exterior of a house. The siding must overlap a minimum of
 - A. 3 inches.
 - B. 2 inches.
 - C. 1½ inches.
 - D. 1 inch.
5. When laying out exterior siding, the vertical distance to be covered is determined by measuring from the underside of the soffit to a minimum of how far below the bottom sill plate?
 - A. ½ inch
 - B. 1 inch
 - C. 1½ inches
 - D. 2 inches
6. Where should nails be placed in exterior bevel siding?
 - A. ½ inch from top edge
 - B. As near to the center as possible
 - C. 1 inch from the top edge
 - D. 1 inch from the lower edge

WALL COVERING

1. Which one of the following is *NOT* a component of an exterior wall?
 - A. Insulation
 - B. Siding
 - C. Studs
 - D. Warpage
7. What is the minimum dimension you should extend siding below the sill plate?
 - A. 1 inch
 - B. 1½ inches
 - C. 2 inches
 - D. 2½ inches
8. When installing aluminum siding to stud wall framing, how should you drive the nails that hold the siding to the wall sheathing?
 - A. Snug
 - B. Tight
 - C. ¼ inch
 - D. ½ inch

9. What is the recommended spacing at corner joints when installing steel siding?
 - A. $\frac{1}{2}$ inch
 - B. $\frac{1}{4}$ inch
 - C. $\frac{1}{8}$ inch
 - D. Flush
10. Which of the following is the proper way to install steel siding?
 - A. Screw to $\frac{1}{4}$ inch from framing members
 - B. Nail to $\frac{1}{4}$ inch from framing members
 - C. Nail tight to framing members
 - D. Nail snug to framing members
11. How far apart do you install under boards for board and batten siding?
 - A. $\frac{1}{2}$ inch
 - B. $\frac{1}{4}$ inch
 - C. $\frac{1}{8}$ inch
 - D. No gap
12. When installing aluminum siding, you should install all joints around windows and doors, channels, and corner posts
 - A. snug.
 - B. tight.
 - C. with $\frac{1}{4}$ -inch space.
 - D. with recessed nailing.
13. What is the minimum number of inches wood siding must extend below the sill plate?
 - A. $\frac{1}{2}$ inch
 - B. 1 inch
 - C. $1\frac{1}{2}$ inches
 - D. 2 inches
14. What is the maximum weather exposure for a 16-inch single course wood wall shingle?
 - A. 7 inches
 - B. $7\frac{1}{2}$ inches
 - C. 8 inches
 - D. $8\frac{1}{2}$ inches
15. What nail spacing is used for fasteners when hanging vinyl siding?
 - A. 16 inches on center or as specified by the manufacturer
 - B. 19.2 inches on center
 - C. 24 inches on center
 - D. Same as stud spacing
16. What is the minimum specification for weather resistant sheathing paper used as a wall covering?
 - A. A minimum of two layers of #15 asphalt felt complying with ASTM D 226
 - B. A minimum of one layer of #14 asphalt felt complying with ASTM D 226
 - C. A minimum of two layer of #14 asphalt felt complying with ASTM D 226
 - D. A minimum of one layer of #15 asphalt felt complying with ASTM D 226
17. What is the minimum airspace separation of brick from sheathing in an exterior application?
 - A. $\frac{1}{2}$ inch
 - B. 1 inch
 - C. $1\frac{1}{2}$ inches
 - D. 2 inches
18. The lowest edge of untreated siding shall be a minimum of how high above grade?
 - A. 1 inch
 - B. 4 inches
 - C. 6 inches
 - D. 8 inches
19. Who is responsible for inspecting your drywall?
 - A. Contractor
 - B. Subcontractor
 - C. Homeowner
 - D. Building inspector
20. How many coats are required when installing gypsum over metal lath or wire mesh?
 - A. 1
 - B. 2
 - C. 3
 - D. 4
21. Gypsum wallboard shall be installed so that all edges and ends of wallboard shall occur on the framing members except those edges and ends that are perpendicular to the framing members. Fasteners shall be spaced *NOT* less than how far from edges and ends of gypsum wallboard?
 - A. $\frac{1}{4}$ inch
 - B. $\frac{3}{8}$ inch
 - C. $\frac{3}{4}$ inch
 - D. 1 inch

22. What is the sequence of attaching gypsum wall-board at the ceiling intersection?
- Bottom up
 - Side to side
 - Ceiling first, then walls
 - Long wall first, then ceiling
23. What type of screw is used to fasten gypsum wall board to a metal stud?
- S-screw
 - W-screw
 - SW-screw
 - T-screw
24. Perpendicular application of sheetrock is preferred where fire code permits because it
- is easier to do.
 - reduces cost.
 - saves time.
 - reduces linear feet of joints to be taped.

ROOF AND CEILING CONSTRUCTION

- What is the minimum gauge of galvanized valley flashing?
 - 24 gauge
 - 26 gauge
 - 28 gauge
 - 30 gauge
- How much do ceiling joists overlap when meeting over a girder or partition?
 - 2 inches
 - 2½ inches
 - 3 inches
 - 3½ inches
- Where does the birdsmouth cut on a rafter rest?
 - On the sole plate
 - On the girder
 - On the header
 - On the rafter plate, often referred to as the top plate
- If the first row of roof sheathing is started with a full sheet of plywood, how should the second row start?
 - With a quarter sheet
 - With a half sheet to stagger joints
 - With a three-quarter sheet
 - With a full sheet
- What is the required spacing between panels when installing roof sheathing?
 - Butt tight, no gap
 - ⅛ inch
 - ¼ inch
 - ½ inch
- What roof truss design is *MOST* likely specified for a new home with a 32 feet by 36 feet great room having a cathedral ceiling?
 - Gusset truss
 - King-post truss
 - Scissors truss
 - W-type truss
- What is the name of the rafter that provides support between other rafters?
 - Common
 - Gable
 - Valley
 - Hip
- Where should roof sheathing be stored on the roof prior to installation?
 - Over a load-bearing wall
 - At the ridge
 - In the top 25% of the roof
 - In the top 50% of the roof

ROOF ASSEMBLIES

- What is the minimum gauge of galvanized valley flashing?
 - 24 gauge
 - 26 gauge
 - 28 gauge
 - 30 gauge

2. At the juncture of the roof surface and a vertical surface (wall), the flashing shall *NOT* be less than
 - A. 24 gauge.
 - B. 26 gauge.
 - C. 26-gauge galvanized metal.
 - D. 30 gauge.

3. A contractor is building a standard 40-foot by 24-foot two-story house with a gable roof having a 2 foot overhang at each end. The roof measures 14 feet from the ridge to the eaves. How many squares of shingles are required for this roof? Round to the nearest whole quantity.
 - A. 6 squares
 - B. 7 squares
 - C. 12 squares
 - D. 14 squares

4. When applying wood shingles at less than a 12/12 slope, the roof valley flashing shall extend a minimum of how many inches each way from the center line?
 - A. 10 inches
 - B. 18 inches
 - C. 14 inches
 - D. 12 inches

5. When nailing asphalt hip and ridge shingles, what are the required nailing positions when using the standard 5-inch exposure?
 - A. 5½ inches from front and ½ inch from edge
 - B. 5½ inches from front and 1 inch from edge
 - C. 6 inches from front and ½ inch from edge
 - D. 6 inches from front and 1 inch from edge

6. Which one of the following types of roofing can be used to make closed valleys?
 - A. Clay tile
 - B. Asphalt shingles
 - C. Wood shakes
 - D. Wood shingles

7. How many fasteners are required for installing 36-inch asphalt shingles?
 - A. 5
 - B. 4
 - C. 3
 - D. 2

8. What is the required spacing when applying wood shingles?
 - A. None
 - B. ¼ inch
 - C. ½ inch
 - D. 1 inch

9. Plumbing roof vents must extend a minimum of how far above the roof?
 - A. 4 inches
 - B. 6 inches
 - C. 8 inches
 - D. 12 inches

10. You have a total roof area on each side of a gable roof of 44 feet by 18 feet. The shingles chosen have three bundles per square. How many bundles of shingles are needed to cover this roof, *NOT* including waste?
 - A. 15
 - B. 16
 - C. 47
 - D. 48

11. What is the minimum air space permitted at the location of the vent between the insulation and the roof sheathing?
 - A. ½ inch
 - B. 1 inch
 - C. 1½ inches
 - D. 2 inches

12. Ventilators must be provided with corrosion resistant wire mesh; what is the maximum size opening?
 - A. ⅛ inch
 - B. ¼ inch
 - C. ⅜ inch
 - D. ½ inch

13. What is the roof snow load in the Twin Cities?
 - A. 40 psf
 - B. 35 psf
 - C. 50 psf
 - D. 60 psf

14. What is the ground snow load in the Twin Cities?
 - A. 35 psf
 - B. 40 psf
 - C. 50 psf
 - D. 60 psf

15. What is the ground snow load in Duluth?
- 35 psf
 - 40 psf
 - 50 psf
 - 60 psf

6. What is the required bearing length for a lintel over a masonry fireplace, supporting a masonry finish?
- 3 inches
 - 4 inches
 - 1½ inches
 - 6 inches

CHIMNEYS AND FIREPLACES

- If you have a fireplace opening that is 2½ feet high and 3½ feet wide, how far out in front of the fireplace shall the hearth extend?
 - 20 inches
 - 16 inches
 - 8 inches
 - 6 inches
- According to the IRC®, how far should a masonry chimney extend above any portion of the building that is within 10 horizontal feet of the chimney?
 - 1 foot
 - 2 feet
 - 3 feet
 - 4 feet
- What is the maximum thickness for the joints in firebrick?
 - ⅜ inch
 - ¼ inch
 - ½ inch
 - ⅛ inch
- Chimney requirements state that the chimney must extend at least 2 feet above any portion of the building within how many feet of the chimney?
 - 2 feet
 - 5 feet
 - 8 feet
 - 10 feet
- A masonry fireplace with an opening of 6 square feet or more shall require minimum hearth extensions of _____ inches to each side of the opening and a minimum of _____ inches to the front of the opening.
 - 8; 16
 - 12; 20
 - 16; 24
 - 8; 24

DWELLING UNIT FIRE SPRINKLER SYSTEMS

- What is the range of distance from a heat source for an intermediate temperature sprinkler near a kitchen range top?
 - 24 to 36 inches
 - 18 to 36 inches
 - 12 to 36 inches
 - 9 to 18 inches
- Select four of the following items that are used to determine the flow rate for each sprinkler.
 - The area of coverage
 - The manufacturer's published data
 - The temperature rating
 - Seasonal temperature variances
 - The ceiling configuration
 - The type of wall covering
- What is the required sprinkler water supply capacity for a one-story structure with less than 2,000 square feet?
 - 20 minutes
 - 14 minutes
 - 10 minutes
 - 7 minutes
- What is the minimum pipe size for any sprinkler?
 - 1 inch
 - ¾ inch
 - Standard PEX piping is acceptable
 - ½ inch



APPENDIX C

Glossary of Terms

air-entraining agents Chemical additives that improve the workability and freeze-thaw durability of mortar as it ages.

airway A space between roof insulation and roof boards for movement of air.

anchor bolts Bolts embedded in concrete used to hold structural members in place.

apron The inside trim of a window placed against a wall immediately beneath the stool.

attic ventilation Screened openings provided to ventilate attic spaces. Located in the soffit area as inlet vents and in the gable end or along the ridge as outlet vents. Can be powered by a fan to aid exhaust speed. Helps eliminate moisture and heat build-up.

balloon framing A type of building construction with upright studs that extend from the foundation sill to the rafter plate. Its use is decreasing in favor of platform framing and other construction styles.

basement The part of a house that is partly or wholly in the ground.

batt A type of flexible insulation (often fiberglass) cut to length during manufacture.

batten A narrow strip of wood placed across a surface to cover joints.

batter board A temporary framework used to assist in locating corners when laying out a foundation.

bay Any window space projecting outward from the walls of a building.

bay window A series of windows angled to form a recess in a room and projecting outward from the wall. A bow window is similar to a bay window, being curved rather than angled.

beam A principal structural member used between posts, columns, or walls.

bench mark A mark on a permanent object fixed to the ground from which land measurements and elevations are taken.

birdsmouth A notch cut on the underside of a rafter to fit it to the top plate. Not a full notch if rafter ends flush with top plate instead of overhanging.

blanket A form of flexible insulation manufactured in long rolls.

board foot The equivalent of a board 1 foot square and 1 inch thick.

bond beam Horizontal masonry members bonded with reinforced concrete to form a continuous unit or beam. Designed to withstand lateral pressures from wind and earthquake.

BTU The abbreviation of British thermal units. It is a measure of heat and heat loss.

built-up roof A roofing composed of several layers of rag felt or jute saturated with coal tar, pitch, or asphalt. The top is finished with crushed slag or gravel. Generally used on flat or low-pitched roofs.

butt Type of door hinge. One leaf is fitted into space routed into the door frame jamb and the other into the edge of the door.

cantilever An above ground projection of a building, deck, or other structure past the principle supporting structure. Typical in modern houses.

casement window A window sash that opens on hinges at the side.

casing The trimming around a door or window, either inside or outside, or the finished lumber around a post or beam.

chair rail An interior molding applied along the wall of a room to prevent the chair from marring the wall.

clapboard A narrow board, usually thicker at one edge than the other, used horizontally to form a weatherproof wall surface.

collar beam A tie beam connecting rafters considerably above the wall plate. It is also called a rafter tie.

combination doors, windows Additional door or window that provides winter insulation and summer protection by using removable glass and screen inserts.

condensation Drops of water that accumulate on an inside surface (usually a window or door) when warm, moisture laden air cools to a point where it can no longer hold the moisture.

conduction The transfer of heat from one material to another through duct contact.

corner braces Diagonal braces let into studs to reinforce corners of frame structures.

cornice Overhang of a pitched roof at the eaveline, usually consisting of a fascia board, soffit, and appropriate molding.

cove molding Molding with a concave profile used primarily where two members meet at a right angle.

cricket or saddle A small roof section of single or double slope placed at the junction of larger surfaces that meet at an angle, typically above a chimney.

cripple jack Also cripple rafter. A rafter that intersects neither the plate nor the ridge and is terminated at each end by hip and valley rafters.

cupola A spire-like structure that rises above the main roof. Can be used for ventilation.

curtain wall A wall of glass, usually non-load-bearing, that encloses a section of a house.

dentil molding A series of small rectangular blocks that project like teeth from under the eaves.

dimension lumber Lumber 2 to 5 inches thick and up to 12 inches wide.

door jamb The surrounding frame of a door consisting of two vertical members called side jambs and a horizontal member called a head jamb.

dormer A projection from a pitched roof with either a shed, gable, or hip roof and usually including a window.

double hung window A sash made up of two panels, one sliding over the other vertically.

downspout A pipe, usually metal or vinyl, for carrying rain water from roof gutters.

drip edge A metal or vinyl edge projecting over the edge of a surface (usually a roof); for throwing off water.

drop bracket Supporting member or decorative element below a projecting floor on a two-story house.

drywall Sheet materials used for wall covering that do not need to be mixed with water before application. See gypsum wallboard.

eave The margin, or lower part of a roof, that projects over the exterior wall. Also called the overhang.

elevation The height of an object above grade level. Also means a type of drawing that shows the front, rear, and sides of a building.

expansion joint A bituminous fiber strip used to separate blocks or units of concrete to prevent cracking due to dimensional change caused by shrinkage and variation in temperature.

exposed structure Any structural element such as a rafter, beam, or truss that is left uncovered to become a visual element as well as a structural element.

fascia A flat board, or face, sometimes used alone, though usually in combination with moldings; located at the outer face of a cornice.

fenestration The design and arrangement of windows in a house.

fire stop A block or stop used in wall of building between studs to prevent the spread of fire and smoke through air space.

fixed glass A section of glass that does not operate for ventilation. Many modern and contemporary houses use fixed glass to orient living spaces to outside views.

flashing Sheet metal, galvanized or aluminum, used in roof and wall construction to protect a building from water seepage.

footing The spreading course or courses at the base or bottom of a foundation wall, pier, or column.

foundation The supporting portion of a structure below the first-floor construction, or grade, including the footings.

framing The timber structure of a building that gives it shape and strength, including interior and exterior walls, floor, roof, and ceilings.

frieze board A common molding installed on the vertical wall to accept aluminum soffit panels.

furring Narrow strips of wood spaced to form a nailing base for another surface. Furring is used to level, to form an air space between the two surfaces, and to give a thicker appearance to the base surface.

gable The portion of a wall contained between the slopes of a double-sloped roof or that portion contained between the slope of a single-sloped roof and a line projected horizontally through the lowest elevation of the roof construction.

gable end Any end wall that has a gable.

gambrel roof A roof slope formed as if the top of a gable (triangular) roof were cut off and replaced with a less steeply sloped cap. This cap still has a peaked ridge in the center.

girder A large or principal beam used to support concentrated loads at particular points along its length.

ground fault interrupter An electrical safety device that can be installed either in an electrical circuit or at an outlet. It is able to detect a short circuit and shut off power automatically. Used as a protection against electrical shock.

gusset A flat wood, plywood, or metal member used to provide a connection at the intersection of wood members; commonly used at wood truss joints. Fastened by nails, screws, bolts, or adhesive.

gutter A shallow channel of metal or vinyl set below and along the eaves of a house to catch and carry rainwater away from the roof.

gypsum wallboard Wall covering panels consisting of a gypsum core with facing and backing of paper.

header Horizontal structural member that supports the load over an opening, such as a window or door. Also called a lintel.

headroom The clear space between floor line and ceiling, as in a stairway.

hip The external angle formed by the meeting of two sloping sides of a roof.

hip roof Roof formed where two intersecting planes abut at the same slope and form a triangle at that slope.

I-beam A steel beam with a cross section that resembles the letter I.

insulation Any material high in resistance to heat transmission that, when placed in the walls, ceiling, or floors of a structure, reduces the rate of heat flow.

interior trim General term for all the molding, casing, baseboard, and other trim items applied within the building by finish carpenters.

jack rafter A short rafter that spans the distance from the wall plate to a hip rafter or from a hip or valley rafter to a ridge board.

joist One of a series of parallel framing members used to support floor and ceiling loads and supported in turn by larger beams, girders, or bearing walls.

lath A building material of wood, metal, gypsum, or insulating board, fastened to the frame of the building to act as a plaster base.

let in Refers to any kind of notch in a stud, joist, block, or other piece that holds another piece. Somewhat like log cabin construction. The item that is supported in the notch is said to be let in.

lookout A short wood bracket or cantilever that supports the overhang portion of a roof or similar structure; visually concealed from view.

louver An opening with a series of horizontal slats arranged to permit ventilation but exclude rain, sunlight, or vision.

mansard roof A roof having two slopes on all sides, with the lower slope steeper than the upper one.

masonry Stone, brick, hollow tile, concrete block, or tile, and sometimes poured concrete and gypsum block, or other similar materials, or a combination of these, bonded together with mortar to form a wall, pier, buttress, et cetera.

modular Any fixed size construction component that regulates the proportion of a building.

molding A relatively narrow strip of wood, usually shaped to a curved profile throughout its length. Used to accent and emphasize the ornamentation of a structure and to conceal surface or angle joints.

mullion A vertical post or other upright that divides windows or doors.

muntin bars The intersecting pieces that divide window panes into squares, rectangles, or diamonds.

on center A method of indicating the spacing of framing members by stating the measurement from the center of one member to the center of the succeeding one.

outrigger The extension of a rafter beyond the wall line, usually a smaller rafter nailed to a larger one, forming a cornice or roof overhang.

particle board A formed panel consisting of particles of wood flakes, shavings, slivers, et cetera, bonded together with a synthetic resin or other added binder.

parting stop A small wood piece (usually ½-inch by ¾-inch diameter) used in the jambs of double hung window frames to separate upper and lower sashes.

partition A wall that subdivides space within any story of a building.

penny Term used to indicate nail length; abbreviated by the letter d. Applies to common, box, casing, and finishing nails.

pilaster A corner trim built to resemble a column and applied directly to the house surface.

pitch The inclined slope of a roof or the ratio of the total rise to the total width of a house—that is, a rise of 8 feet and a width of 24 feet is a one-third pitch roof. Roof slope is expressed in inches of rise per 12 inches of run.

plan The layout of a house, room by room, as seen from above. It shows how all of the rooms relate to each other.

plaster A mixture of lime, cement, and sand, used to cover outside and inside wall surfaces.

plate A horizontal structural member placed on a wall or supported on posts, studs, or corbels to carry the trusses of a roof or to carry the rafters directly. Also a sole or base member of a partition or other frame.

platform framing A system of framing a building where the floor joists of each story rest on the top plates of the story below (or on the foundation wall for the first story) and the bearing walls and partitions rest on the subfloor of each story.

polyethylene A plastic material manufactured in thin sheets for use as a vapor barrier.

post and beam A reference to the construction technique in which vertical posts support horizontal beams. These elements are often left exposed in contemporary houses.

rafter One of a series of structural members of a roof designed to support roof loads.

rafter, hip A rafter that forms the intersection of an external roof angle.

rafter, valley A rafter that forms the intersection of an internal roof angle valley. Rafters are usually doubled 2-inch thick members.

rail Horizontal framing members of a panel door, sash, or cabinet frame.

ridge The horizontal line at the junction of the top edges of two sloping roof surfaces.

ridge board The board placed on edge at the ridge of the roof, to which the upper ends of rafters are fastened.

riser The vertical stair member between two consecutive stair treads.

roll roofing Roofing material composed of asphalt-saturated fiber, supplied in 36-inch wide rolls, with 108 square feet of material.

roofing The materials applied to the structural parts of a roof to make it waterproof.

roof ridge The horizontal line at the junction of the top edges of two roof surfaces where an external angle greater than 180 degrees is formed.

roof sheathing Boards of sheet material, usually plywood or chipboard, fastened to the roof rafters on which shingles or other roof coverings are laid.

R-value A number that specifies the efficiency of an insulating material like fiberglass batting, foam, or other similar material.

sash A frame consisting of one or more panes of glass.

saturated felt Felt impregnated with tar or asphalt.

scale A term that specifies the size of a reduced size drawing. For example, a plan is drawn to ¼-inch scale if every ¼ inch represents 1 foot on the real structure.

screed A tool used in concrete work to level and smooth a horizontal surface. Consists of a 3- to 5-foot wood or metal strip attached to a pole.

shake A thick, hand split shingle.

sheathing The structural covering, usually wood boards or plywood that are attached to the exterior studs or rafters of a structure. Undersheathing: structural fiberboard or foam insulation board used exclusively in exterior wall applications.

siding The finish covering of the outside wall of a frame building.

sill The member forming the lowest side of the opening.

site plan A view from above a building site. The plan shows distances from a structure to property lines. Sometimes called a plot plan.

siting The way in which a house is oriented on its site.

soffit The underside of the members of a building, such as staircases, cornices, beams, and arches. Relatively minor in size as compared with ceilings. Also called drop ceiling or furred-down ceiling.

sole plate The lowest horizontal strip on wall and partition framing. The sole plate for a partition is supported by a wood subfloor, concrete slab, or other closed surface.

span The distance between structural supports such as walls, columns, piers, beams, girders, and trusses.

square A unit of measure—100 square feet—usually applied to roofing material.

stepped footing A footing that changes grade levels at intervals to accommodate a sloping site.

stile An upright framing member in a panel door, sash, or cabinet frame.

stool A flat molding usually grooved on the underside that fits over the inside edge of a windowsill.

stormdoor, window An additional door or window usually placed on the outside of an existing one as additional protection against weather.

stucco An exterior finishing material similar to cement or plaster. It is often used on modern houses.

stud One of a series of vertical wood or metal structural members in walls and partitions. Plural—studs or studding.

subfloor Boards or panels laid directly on floor joists over which a finished floor will be laid.

threshold Strip of wood or metal with beveled edges used over the finished floor and sill of exterior doors.

tie beam Also collar beam. A beam so situated that it ties the principal rafters of a roof together and prevents them from thrusting the plate out of line.

toeboard A board fastened horizontally slightly above planking to keep tools and materials from falling on workers below. Can be used on scaffolds or at an access hole. Board must be at least 4 inches wide. Not needed for scaffolds under 10 feet.

tread The horizontal part of a step on which the foot is placed.

trim The finish materials in a building, such as moldings applied around openings (window trim and door trim) or at the floor and ceiling of rooms (baseboard, cornice, and picture molding).

truss A structural unit consisting of such members as beams, bars, and ties; usually arranged to form triangles. Provides rigid support over wide spans with a minimum amount of material.

valley The internal angle formed by the junction of two sloping sides of a roof.

vapor retarder A watertight material used to prevent the passage of moisture or water vapor into or through structural elements (floors, walls, and ceilings).

vaulted ceiling The covering of an area that rises together with a sloping roof above the single story line.

veneered wall A frame building wall with a masonry facing (for example, single brick). A veneered wall is non-load-bearing.

ventilation The process of supplying and removing air by natural or mechanical means. Such air may or may not have been conditioned.

vertical space Any space where the volume flows upward for two or more levels.

volume The cubic footage contained in a house.

wallboard Wood pulp, gypsum, or other materials made into large rigid sheets that may be fastened to the frame of a building to provide a surface finish.

weather The process of change in color or texture brought about by continued exposure to the elements. Siding materials on contemporary and transitional houses are often left untreated, allowing them to weather for a natural look.

window unit Consists of a combination of the frame, window, weather stripping, and sash activation device. May also include screens and/or storm sash. All parts are assembled as a complete operating unit.

Note: Additional word definitions can be found in the MN Rule Chapters and Chapter 2 in the IRC®.



PRE-TEST (ENTER ANSWERS AND SCORE EXAM)

NAME: _____

DATE: _____

PART 1: BUSINESS/LAW

Enforcement/ Licensing	Mechanic's Liens	Warranty	Management	Authority for Zoning	Administration—Chapter 1300	
1.	4.	7.	10.	13.	16.	19.
2.	5.	8.	11.	14.	17.	20.
3.	6.	9.	12.	15.	18.	21.
# Correct	# Correct	# Correct	# Correct	# Correct	# Correct	# Correct
_____	_____	_____	_____	_____	_____	_____

Percent Correct _____

Total Correct _____

PART 2: TRADE

Chapter 1303	Chapter 1322	Building Planning	Founda- tions	Floors	Wall Con- struction	Wall Covering	Roof-Ceiling Construction	Roof Assemblies	Chimneys and Fireplaces	Fire Sup- pression
1.	4.	7.	10.	13.	16.	19.	22.	25.	28.	31.
2.	5.	8.	11.	14.	17.	20.	23.	26.	29.	32.
3.	6.	9.	12.	15.	18.	21.	24.	27.	30.	33.
# Correct	# Correct	# Correct	# Correct	# Correct	# Correct	# Correct	# Correct	# Correct	# Correct	# Correct
_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____

Percent Correct _____

Total Correct _____



POST-TEST (ENTER ANSWERS AND SCORE EXAM)

NAME: _____

DATE: _____

PART 1: BUSINESS/LAW

Enforcement/Licensing		Mechanic's Liens	Warranty	Management	Authority for Zoning	Administration—Chapter 1300	
1.	12.	16.	22.	29.	33.	36.	48.
2.	13.	17.	23.	30.	34.	37.	49.
3.	14.	18.	24.	31.	35.	38.	50.
4.	15.	19.	25.	32.		39.	
5.		20.	26.			40.	
6.		21.	27.			41.	
7.			28.			42.	
8.						43.	
9.						44.	
10.						45.	
11.						46.	
						47.	
	# Correct	# Correct	# Correct	# Correct	# Correct	# Correct	# Correct
	_____	_____	_____	_____	_____	_____	_____

Percent Correct _____

Total Correct _____



PART 2: TRADE

Chapter 1303	Chapter 1322	Building Planning	Founda- tions	Floors	Wall Con- struction	Wall Covering	Roof-Ceiling Construction	Roof Assemblies	Chimneys and Fireplaces	Fire Sup- pression
1.	5.	10.	19.	26.	31.	38.	43.	48.	53.	58.
2.	6.	11.	20.	27.	32.	39.	44.	49.	54.	59.
3.	7.	12.	21.	28.	33.	40.	45.	50.	55.	60.
4.	8.	13.	22.	29.	34.	41.	46.	51.	56.	
	9.	14.	23.	30.	35.	42.	47.	52.	57.	
		15.	24.		36.					
		16.	25.		37.					
		17.								
		18.								
# Correct	# Correct	# Correct	# Correct	# Correct	# Correct	# Correct	# Correct	# Correct	# Correct	# Correct
_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____

Percent Correct _____

Total Correct _____

