



STUDY GUIDE
WACEL WOOD FRAMING SPECIAL
INSPECTOR

MARCH 2026

WACEL Study Guide

Wood Framing Special Inspector December 2025

CERTIFICATION REQUIREMENTS

Requirements to be certified as a Wood Framing Special Inspector include:

- Complete the WACEL [Certification Program Application](#) signed by the candidate and a WACEL-approved supervisor. Exam applicants that are not employed by a WACEL member firm must have their applications signed and sealed by a professional engineer who attests that the applicant has the education and experience to perform as a Wood Framing Special Inspector.
- Complete the Wood Framing Special Inspector written exam (75 questions) within three hours and obtain an overall grade of 75%.
- Obtain a grade of 70% on the plan reading section of the written exam (30 questions).
- Have a Reinforced Concrete Special Inspector (ICC, ACI or WACEL) or Structural Steel (ICC S1 or WACEL) certification.
- Provide a photo identification to the written exam proctor prior to taking the test or email a copy of a photo identification to WACEL if the test is taken online.
- Sign and date the cover sheet of the written exam.
- Pay for the exams (either the technician's employer or the technician individually can provide payment).

CERTIFICATION OBJECTIVE

The WACEL Wood Framing Special Inspector certification evaluates an engineering field inspector's knowledge and skill to provide construction observation, testing, and special inspections of wood framing. Topics addressed include project documentation and specifications, suitable materials for construction operations, and an ability to read and understand project plans.

EXAMINATION

The Wood Framing Special Inspector Examination is a 75-question test (45 academic, 30 plan-reading). Candidates must complete the exam within three hours. The exam is based on required references listed below and the contents of this Study Guide. An overall grade of 75 percent or better is required for passing; with a score of at least 70 percent on the plan-reading section of the exam.

Examination candidates should bring clean copies of the required references without markings, underlining or highlighting to the exam facility. Examinees and their authorized supervisors are required to certify that they will abide by WACEL's testing protocols that appear on the cover of each test and on test applications. No notes or working papers may be removed from the examination area.

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Cell phones, tablets, smart watches or any other device that can access the Internet are not permitted in the exam area. Candidates may use a nonprogrammable calculator.

REFERENCES

Most of the required and secondary references are available at no cost. Links are provided to allow you to access or download required references.

Required

1. “Carpentry & Building Construction,” McGraw Hill, 2016.¹ \$97.55 **Purchase** [here](#).
2. “Wood Construction Connections,” Simpson Strong-Tie, 2021-2023. **Free**. Click [here](#) to download.
3. “Introduction to Lateral Design,” The Engineered Wood Association (APA), 2003. **Free**. Click [here](#) to download
4. “Performance-Rated I-Joists,” The Engineered Wood Association (APA), 2024. **Free**. Click [here](#) to download.
5. “Wood Truss Awareness Guide,” American Wood Council (AWC), undated. **Free**. Click [here](#) to download.
6. “Glulam Product Guide,” The Engineered Wood Association (APA), 2023. **Free**. Click [here](#) to download.
7. “Interpreting Grade Stamps,” Western Wood Products Association. **Free**. Click [here](#) to access.
8. “Typical Southern Pine Lumber Grade Marks,” Southern Forest Product Association. **Free**. Click [here](#) to access.
9. “Building Component Safety Information (BCSI),” Structural Building Components Association, updated 2020. **Purchase**. \$62. Click [here](#) to buy.
10. “International Building Code,” 2021, Chapter 17, “Special Inspections” and Chapter 23, “Wood.”

¹ This reference is a textbook for students learning how plan and construct residential housing. It is included as part of this program to assist experienced inspectors whose current skills are based on the IBC’s Special Inspections Program to expand their skills in basic carpentry.

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11. "Engineered Wood Construction Guide," The Engineered Wood Association (APA), 2019. **Free**. Click [here](#) to download.
12. "Wood-framed Shear Wall Construction," International Code Council, 2011. **Purchase**. \$40.77 from [Amazon](#).

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Secondary:

1. “Manual for Engineered Wood Construction,” American Wood Council (AWC), 2019. **Free**. Click [here](#) to download.
2. “Advanced Framing,” The Engineered Wood Association, 2014. **Free**. Click [here](#) to download.
3. “Introduction to Lateral Design,” The Engineered Wood Association, 2023. **Free**. Click [here](#) to download.
4. “ASTM F1667,” standard specifications for driven fasteners, spikes and staples. **Purchase**. \$136. Click [here](#) to buy.
5. The Engineered Wood Association (APA) On-Demand Webinars. **Free**. Click [here](#) to access.
6. “American Softwood Lumber Standard” P5 20-20, National Institute of Standards and Technology, 2021. **Free**. Click [here](#) to download.
7. “Design of Wood Structures,” Donald Breyer, 8th Edition. **Purchase**. \$82.99. From [Amazon](#).
8. “National Design Specification” for wood construction with commentary, American Wood Council (AWC), 2018. **Purchase**. \$145. Click [here](#) to buy or **Free** view only option. Click [here](#) to access.
9. “National Design Specification Supplement,” American Wood Council (AWC), 2018. Free view only option. Click [here](#) to access.

On-line Resources:

To complement references listed above, two websites can assist both Instructors and Inspectors to expand their technical knowledge of wood-framing topics.

1. Simpson-Strong Tie

The Simpson Strong-Tie Product Catalog (Primary Reference No. 3), which is available from the Simpson Strong-Tie [website](#) at no cost. It contains a large amount of background information, installation instructions, and inspection criteria.

From the Simpson Strong-Tie [website](#), users can access the “Training & Education”

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section and the “Builder Learning Center.” Users must register on the website to gain access to training resources that can be used by instructors or by interested individuals wanting to expand their knowledge. The site offers on-line courses, recorded webinars, video clips, and installation instructions.

2. APA - The Engineered Wood Association

Engineered Wood Association references are available at no cost from the Resources Library of the APA [website](#). Registration, however, is required. Additionally, many other resources are available for training.

LEARNING OBJECTIVES

1. Materials

A Wood Framing Special Inspector should know:

A. Dimensional Lumber

How to confirm lumber meets project requirements using visual inspection and grade stamps authorized by the Western Wood Products Association (WWPA) or the Southern Forest Products Association (SFPA). The examinee shall also know and understand:

- (1) Dry- or seasoned-lumber should have a moisture content of 19 percent or less.
- (2) The differences between nominal dimensions and actual or dressed dimensions of framing lumber.
- (3) Lumber that is permanently in contact with concrete or masonry (typically, sill plates) or permanently in contact with the ground, is required to be decay- and insect-resistant.
- (4) Which members are to be fire-retardant treated (FRT) based on project specifications and drawings.

B. Engineered Wood

How to confirm acceptability of engineered wood projects as described in project documents and as marked using the Engineered Wood Association (APA) trademarks. Products may include:

- (1) Plywood
- (2) Laminates Veneer Lumber (LVL)
- (3) Parallel Strand Lumber (PSL)
- (4) Oriented Strand Board (OSB)
- (5) Structural Composite Lumber (SCL)
 - a. Laminated Veneer Lumber (LVL)
 - b. Parallel Strand Lumber (PSL)
 - c. Laminated Strand Lumber (LSL)
 - d. Oriented Strand Lumber (OSL)

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- (6) Performance rated I-Joists (PRI)
- (7) Glued-Laminated Timber (GLULAM)
- (8) Cross-Laminated Timber (CLT)
- (9) Rim Boards
- (10) Finger-Jointed Lumber

C. Construction Nails

How to identify standard construction nail length, head types and shank configurations and their purposes.

Authorizations and limitations for cutting, notching and bored holes in wall studs, per Chapter 23 of the International Building Code (IBC), to include the proper use of double studs and potential accessories such as stud shoes and other reinforcement.

D. Wood Construction Connectors (Primary Reference 3)

(1) How to confirm the identity and proper installation of specified and approved wood construction connectors. Products may include:

- (a) Standard joist hangers
- (b) I-Joists hangers
- (c) Post bases and caps
- (d) Ties and straps
- (e) Screws and lag bolts
- (f) Hurricane clips/ties
- (g) Anchor solutions (cast-in-place and post-installed)
- (h) Hold downs
- (i) Post bases

(2) Fasteners and connectors in contact with pressure-treated lumber must be compatible either by coating the hangers (e.g., galvanized) or by using approved materials (e.g., stainless steel).

- (a) How to inspect metal-plate connected floor and roof wood trusses.

2. Load Paths (Primary Reference 4)

The examinee shall know and understand how gravity loads transfer through the structure.

A. How vertical- and lateral-load paths affect some of the features of wood-framed construction.

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- B. Vertical loads act in the up-and-down direction and consist of the weight of the building itself (dead load), the weight of everything in the building (live loads) and variable loads, such as snow.
- C. Lateral loads are loads acting parallel to the ground such as high winds (hurricanes) and seismic (earthquake) forces.
- D. The concept of a continuous load path as loads are transferred from one building element to the next until they reach the ground.
- E. The major elements in wood-framed building that enable them to withstand lateral loads are shear walls and diaphragms.
- F. If approved foundation bolts or hold-down anchors are required by project drawings to fasten shear walls to the foundation elements.
- G. If approved continuous ties, rods or other elements are installed to connect shear walls from one floor level to the next.
- H. The appropriate nail size and spacing (edge distance, spacing, field spacing) is installed at shear walls. Note that shear walls may be sheathed with plywood, OSB or drywall, depending on the design of the SER.

3. Concrete Connections

From project plans, specifications, and/or approved submittal requirements for concrete connectors and anchors, the examinee should know:

- A. How to confirm proper size, type, quality and location.
- B. How to monitor proper installation in accordance with project drawings and/or manufacturer's instructions.

4. Framing Systems (Primary Reference 1)

The examinee shall know:

- A. Basic Load Path Considerations (see Learning Objective 2).
- B. Conventional framing concepts to include the primary components: joists, studs, beams and rafters.
- C. The differences between balloon-frame, post-and-beam and platform-frame construction.

- D. The role of metal framing connectors to improve the strength of connections.
- E. The different spacing intervals and orientation for joists, studs and rafters.
- F. The purposes of hurricane straps and hold-down anchors in wood framing systems.
- G. The criticality of proper installation of shear walls when specified by the project's structural engineer.
- H. The differences between live loads and dead loads.

5. Floor Framing

The examinee shall be able to understand and identify structural components typically associated with floor framing and can monitor proper installation of:

- A. Wood Posts and Steel Posts (Lally Columns)
- B. Girders
 - (1) Solid Wood
 - (2) Built-up Wood
 - (3) Glulam Beams

The examinee shall be familiar with the fabrication, specification and use of glued-laminated timber (glulam) as addressed in the APA's "Glulam Product Guide." The examinee shall know:

- (a) The fabrication process for glulam timbers.
- (b) Glulam products typically have widths from 2 1/2 to 10 3/4 inches.
- (c) Glulam beams can be produced as either balanced or unbalanced members.
- (d) Unbalanced beams must be marked on the top with the word "top" and properly installed.
- (e) Glulam members can be specified with four appearance classifications; Framing, Industrial, Architectural, and Premium.

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- (f) Selected glulam timbers can be specified with a required amount of camber to compensate for deflection.
- (g) APA's Technical Note 5560, "Field Notching and Drilling of Glued Laminated Timber Beams."
- (h) The correct APA trademark on glulam members.
- (i) The recommended storage and handling requirements for glulam beams.
- (j) There have been instances of Fiber Reinforced Polymer (FRP) materials having been incorporated into glulam assemblies to nearest strength.
- (k) Glulam connections are essential for proper performance, must be inspected and can only be modified with the approval of the project's design professional.

(4) Laminated Veneer Lumber (LVL)

(5) Steel

C. Sill Plates

The examinee shall know:

- (1) How to verify that sill plates are fastened to the foundation as specified in approved construction drawings.
- (2) How to verify that sill plate installation is coordinated with slab edges.

D. Joist Hangers

How to confirm that joist hangers are in accordance with project drawings, specifications or approved submittals.

E. Wood Joists

F. I-Joists

How to monitor the correct handling and installation of specified Performance-Rated I-Joints and in accordance with the APA's "Performance Rated I-Joists Design and Construction Guide." The examinee shall know:

- (1) The correct size of I-Joists and if they carry the APA PRI-400 markings.

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- (2) If vertically installed I-Joists (within 1/2 inch of vertical) are properly spaced and undamaged.
- (3) If flanges are cut (except to length), drilled or notched.
- (4) If prescored knockouts in I-Joist webs are used for utility installation.
- (5) If filler blocks and web stiffeners are used where specified and if bearing stiffeners and load stiffeners are installed correctly per APA's "Performance-rated I-joints."
- (6) If end-bearing length is at least 1 3/4 inches and intermediate bearing length is at least 3 1/2 inches.
- (7) If APA-rated RIM boards or I-joist blocking materials restrain joint ends from rolling over.
- (8) If proper gluing and fasteners were used to install rated sheathing.
- (9) If PRIs and joist hangers are installed in accordance with APA guidelines?

G. Floor Trusses. See details for roof trusses in Learning Objectives 6 below.

H. RIM Joists/Boards

The examinee shall know:

- (1) The ends of conventional-lumber floor joists are connected using solid lumber of the same size as required by project documents.
- (2) The ends of I-joists must be stabilized and supported using rim boards composed of engineered wood such as plywood, OSB or laminated veneer lumber due to different expansion characteristics,.

I. Web Stiffeners

Examinees shall know:

- (1) That properly-sized web stiffeners are installed where indicated on project drawings.
- (2) If there is a gap between the top of the stiffener and the bottom of the top flange and when it is to be located at the bottom of the stiffener.

J. Bridging.

K. Subfloor Sheathing:

The examinee should know:

- (1) How project drawings and specifications governing the floor sheathing (plywood or OSB) area comply with grade, thickness, and size.
- (2) Blocking is required for unsupported edges or that tongue-in-groove (T&G) edges may be required.
- (3) The long dimension of floor sheathing should be perpendicular to floor joists.
- (4) Gluing to include in the groove of T&G panels is usually recommended.
- (5) One-eighth inch spacing is maintained at all edges and end joints unless otherwise specified.
- (6) Proper fastener size and spacing for glue-nails or nailed-only panels.
- (7) If required, underlayment panels should only be installed immediately before laying finish flooring.

6. Wall Framing

A. The examinee should know the structural components typically associated with wall framing:

- (1) Load-bearing walls
- (2) Partition walls
- (3) Sheathing
- (4) Bottom or sole plate
- (5) Top or double plate
- (6) Studs, trimmer studs and cripple studs
- (7) Sill or rough sill
- (8) Header and linter
- (9) Shear walls. Knows to pay particular attention to size, quantity and specified installation
- (10) By-walls vs. butt-walls
- (11) Blocking (cabinets, ducts, plumbing fixtures, etc.)
- (12) Fire blocking

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- B. How to verify that studs and plates comply with project drawing quantity, spacing, grade, and species.
- C. Authorizations and limitations for cutting, notching and bored holes in wall studs per Chapter 23 of the International Building Code (IBC) to include the proper use of double studs and potential accessories such as stud shoes.
- D. Wall Sheathing
 - (1) How to verify that wall sheathing is fastened in accordance with manufacturer's recommendations and as specified on structural drawings.
 - (2) How to verify that, where required, blocking has been added to accommodate nailing patterns for shear walls.
 - (3) How to verify that the correct size, length, and type of fastener is used for each application.
 - (4) How to verify that nails in exterior sheathing are not over-driven.
 - (5) How to verify that load transfer elements across floor lines are installed in accordance with approved construction drawings.
- E. How to verify that fire blocking and draft stopping features are installed as specified by approved construction documents.

7. Roof Framing

- A. The examinee should know the proper handling, installing, bracing and connection of metal plate connected wood roof trusses in “Building Component Safety Information,” the “Wood Truss Awareness Guide,” and approved construction documents. Key inspection areas include:
 - (1) Reviewing approved construction drawing and truss design drawings.
 - (2) Inspecting trusses at delivery for conformance with truss design drawings, and any damage and proper storage.
 - (3) Monitoring proper installation and temporary-restraint bracing.
 - (4) Monitoring proper installation of permanent bracing and connection to the supporting structure. This includes proper installation of hurricane clips when specified.

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- (5) Verifying that nailing for multiple-member trusses is installed as shown on approved construction drawings.
- (6) Verifying the approved structural sheathing is applied and correctly fastened to the trusses.
- (7) Monitoring and reporting damage or modifications to trusses during construction. Knows that repairs or modifications must be formally approved by the truss manufacturer.

B. I-Joist Roof Framing

C. Roof Sheathing

- (1) The examinee shall determine that project drawings and specifications of roof panel sheathing (plywood or OSB) meet grade, thickness and size requirements.
- (2) When support spacing exceeds the allowable length of an unsupported edge, knows blocking, tongue-and-groove edges or panel clips may need to be addressed with the project designer.
- (3) Monitors that sheathing is installed with 1/8-inch spacing at edge and end joints unless otherwise specified.
- (4) Knows that gluing of sheathing to framing is typically not recommended.

- D. Determines that required hangers, connectors, and clips are installed in accordance with the manufacturer's instructions.

8. International Building Code (IBC)

A. Chapter 17, Special Inspections and Tests

The examinee shall know:

- (1) Special Inspection requirements of applicable wood-fabricated items.
- (2) The listed observations of designated high-load diaphragms.
- (3) Special Inspections are required for metal-plate-connected wood trusses spanning 60 feet or more.
- (4) Required Special Inspections for structural wood in designed wind exposure categories.

(5) Tasks for installation of structural wood, which are part of seismic force resistant structures in identified seismic design categories, require periodic or continuous inspections.

B. Chapter 23, Wood

The examinee should know:

(1) How to identify quality standards for structural wood and related products as listed in Section 2303 of the International Building Code.

(2) How to locate and extract general construction requirements for wood framing construction as specified in Section 2304 of the International Building Code, with a particular emphasis on the Fastening Schedule contained in Table 2304.10.2.

(3) How to refer and apply some of the more common inspection/construction requirements of Section 2308, “Conventional Light-Frame Construction,” of the International Building Code. Several of the applicable items include:

- (a) Allowable floor-to-floor height limitations (2308.2.2)
- (b) Foundation plates or sills (2308.3.1)
- (c) Floor joist bearing (2308.4.2.2)
- (d) Notches and holes in sawed timber joists (2308.4.2.4)
- (e) Notches and holes in engineered wood products (2408.4.3)
- (f) Stud size, height, and spacing (2308.5.1)
- (g) Plates and sills (2308.5.3)
- (h) Bridging (2308.5.7)
- (i) Exterior wall sheathing (2304.6)
- (j) Notches and holes in exterior walls and bearing partitions (2308.5.9 ANA 2308.5.10)

9. Construction Documents

The examinee should know how to properly identify and use approved structural drawings, specifications, and field erection drawings.

- A. How to verify approved contract documents are being used and procedures if conflicts are noted.
- B. How to review contract documents and determine requirements to include proper size, species and grade of materials; moisture content; connection details;

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fabrication and erection tolerances; and certifications needed for materials, organizations and individuals involved in the process.

C. How to review approved requests for Information (RFIs) and submittals.