



**Home Builders  
Association of Alabama**

**Residential Construction Skills  
Certification  
Study Guide**

# **CERTIFICATION OVERVIEW**

The Home Builders Association of Alabama (HBAA) Residential Construction Skills Certification verifies an individual possesses fundamental competencies necessary to be a productive worker on a residential construction job site. Those who earn the certification are more qualified and prepared to enter high-demand roles within the construction industry. The certification exam assesses an individual's knowledge and skills of construction principles and practices.

## **EXAM OVERVIEW**

The HBAA Residential Construction Skills Certification is hosted on the iCEV testing platform. The certification exam is a 100-question, randomized assessment. Exam questions are in the format of multiple choice, sort order, diagramming, matching, labeling and other question types meant to fully evaluate an individual's competency of the industry standards. The certification exam should be proctored within a controlled environment. The proctor of the exam must review and verify all exam procedures and provide electronic documentation through the exam platform.

More information about the certification exam and testing platform, including optional preparation materials offered by iCEV, can be found at <https://www.icevonline.com/culinarymeat>.

## **ABOUT THE HOME BUILDERS ASSOCIATION OF ALABAMA**

HBAA is a trade association with 7,500 members in 26 local associations statewide. HBAA members include builders, remodelers, subcontractors, suppliers, real estate brokers and other industry professionals. Learn more at <https://hbaa.org/wp/industry-education/certification>

# INDUSTRY STANDARDS

The certification exam assesses knowledge and skills from the following weighted industry standards set by HBAA:



## **BUILDING TRADES- 25%**

- Drywall
- Plumbing
- Electrical
- HVAC



## **SAFETY & HEALTH- 25%**

- Personal & Occupational Health
- Hand Tool Safety
- Power Tool Safety
- Trenching & Excavating



## **BUILDING COMPONENTS- 50%**

- Construction Drawings
- Codes
- Site Preparation
- Foundation/Subflooring
- Framing
- Windows & Doors
- Roofing

# Industry Standard Overview

To pass the HBAA Residential Construction Skills Certification exam, certification candidates must have adequate knowledge of the industry standards. The following outlines an in-depth overview of the industry standards and sub-standards:

## Industry Standard: Building Trades



- Drywall
  - Drywall Installation Process
  - Preparing Studs/Joints
  - Installing Ceiling Panels
  - Installing Wall Panels
  - Installing Outside Corner Bead
  - Installing Paper Joint Tape
  - Spotting Screw/Nail Holes
  - Mudding Outside Corner
  - Bedding and Feathering
  - Sanding
  - Applying Texture
- Basic Repair Techniques
  - Backer Block
  - Dutch Patch
- Plumbing
  - Dry Fitting
  - PVC Fittings & Connections
    - Sanitary Tee
    - Tee Fitting with Threaded Connection
    - Wye Fitting
    - P-Trap
    - Cleanout Plug
    - Reducing Fitting
    - Elbow Fitting
  - Water Supply System
  - Toilet
  - Sink & Faucet
  - Soldering
- Electrical
  - Wiring Rough-In
    - Single-Gang Switch Outlet
    - Two-Gang Switch Outlet
    - Ceiling Box

- Non-Metallic Sheathed Cable
  - American Wire Gauge System
  - Wire Configurations
- Receptacle Terminals
  - Neutral terminal
  - Hot terminal
  - Ground terminal
- Screw Terminals
- Digital Multimeter
- HVAC: The Refrigeration Cycle
  - States of Matter
    - Solid
    - Liquid
    - Gas
  - Temperature
    - Fahrenheit
    - Celsius
    - Rankine
    - Kelvin
  - HVAC Temperature
    - British Thermal Unit
    - Ton of Refrigeration
  - Types of Heat
    - Sensible Heat
    - Latent Heat
    - Superheat
    - Subcooling
  - The Refrigeration Cycle
    - Compressor
    - Condenser
    - Metering Device
    - Evaporator Coil
  - Refrigerant
    - Types of Refrigerants
      - Hydrochlorofluorocarbon
      - Hydrofluorocarbons
    - Hydrofluoroolefin
  - HVAC Metering Devices
    - Thermostatic Expansion Valve
    - Electronic Expansion Valve
    - Capillary Tube
    - Fixed Bore Flow Rated Device

- HVAC: Basic Tools
  - Swaging
  - Flaring
  - Sealing Duct Seams
  - HVAC PPE

## Industry Standard: Safety & Health



- Personal & Occupational Health
  - Rules & Regulations
    - Occupational Safety & Health Act
    - OSHA
      - USDOL
      - Laws
      - General Duty Clause
      - Part 1926
      - Hazard Communications
  - Material Safety Data Sheets
  - Safety Data Sheets
  - Workplace Injuries & Illnesses
  - “Safety Pays” Program
  - Safety Rules & Guides
  - Safety Inspections
  - Job Site Safety
  - Hazards
    - Chemical
    - Physical
    - Biological
  - Anticipation
  - Recognition
  - Evaluation
  - Control
  - Hierarchy Control
    - Elimination of Hazard
    - Engineering
    - Administrative Procedures
    - PPE
  - Hazards
    - Ironwork
    - Electrical
    - Chemical
    - Confined Space

- Fire
- Environmental
- Aerial
- Struck-by
- Caught-in
- Safety Tips
  - Ironwork
  - Electrical
  - Chemical
  - Confined Space
  - Fire
  - Environmental
  - Aerial
  - Struck-by
  - Caught-in
- Improving Job Site Safety
- Personal Protection
  - Personal Protective Equipment
    - Eye & Face
    - Foot
    - Hand
    - Head
    - Hearing
    - Fall
    - Respiratory
    - Body
- Hand & Power Tool Safety
  - Checklist for Tools
    - Cracked or Bent
    - Loose or Missing Parts
    - Rust or Corrosion
    - Splintered Handles
    - Dull Blades
    - Mushroom Tips
    - Loose or Damaged Switches
    - Hoses and Chords
    - Self-Adjusting Guard
  - Removing Broken Tools
  - Tag It
  - Proper Use of Tools
  - Proper Storage
  - Following Directions
  - Proper PPE

- Water Hazards
- Proper Grounding Techniques
- Prevent Kickback
  - Clamp Down Material
  - Allow Blade to Reach Full Speed Before Cutting
  - Make Sure to Use Both Hands
  - Use Proper Blades
  - Use Quality Materials
- Hazards
  - Use Sufficient Lighting
  - Remove or Cover Flammable Materials
  - Mark Unsafe Areas
  - Keep a Clean Work Area
- Trenching & Excavating
  - Cannot be Wider Than 15 feet
  - Hazards
    - Cave-ins
    - Disturbing Nearby Structures
    - Disturbing Natural Surfaces
    - Damaging Utility Lines
    - Creating Hazardous Atmosphere
    - Rain
    - Standing Water
    - Falls
    - Traffic
  - Soil Protective Systems
  - Sloping the wall
  - Benching the wall
  - Shoring
  - Shielding
  - Access & Egress Methods
    - Ladders
    - Stairway
    - Ramps
    - Walkways
  - Retaining Devices
  - Trench Safety
  - Excavator
    - Car Body
    - Track System
    - Upper Structure
    - Operator Cap
    - Boom and Stick



- Attachment
- Operator Responsibilities

## Industry Standard: Building Components



- Construction Drawings
  - Types of Construction Drawings
    - Site Plans
    - Foundation Plans
    - Floor Plans
    - Interior or Exterior Elevation Drawings
    - Section Drawings
    - Interior or Exterior Detail Drawings
    - Lighting and Electrical Floor Plans
    - Mechanical Plans
    - Plumbing Plans
    - Roof Plans
  - Elements & Symbols
    - Title Blocks
    - Bold Lines
    - Medium Lines
    - Light Lines
    - Border Lines
    - Solid Lines
    - Dashed Lines
    - Movement Lines
    - Leader Lines
    - Break Lines
    - Center Lines
    - Dimension Sines
    - Architectural Symbols
    - Electrical Symbols
    - Plumbing Symbols
  - Design Tools
    - Pen and Pencil
    - Drawing Board
    - Drafting Paper
    - Drafting Tape
    - Drafting Machine
    - Scales
    - Compass
    - Drafting Triangle

- T-square
- French Curve
- Template
- Lettering Guide
- Blueprint Measuring Tool
- Protractor
- Caliper
- CAD
- Project Planning & Development
  - Collecting Information
  - Schematic Design
    - Zoning Laws
  - Distribution
  - Circulation
  - Lighting
  - Ventilation
  - Sizes, Areas. And Shapes
  - Orientation
  - Height
  - Electrical Layout
  - Locations of Doors and Windows
  - Line of Sight
- Design Development
- Construction Documents
- Bidding
- Construction Administration
- Construction
- Codes
  - Regulatory Agencies & Organizations
    - International Code Council
      - American Society of Civil Engineers
      - The American Institute Protection Association
      - National Fire Protection Association
      - Environmental Protection Agency
      - Occupational Safety & Health Administration
      - Federal Emergency Management Agency
  - Codes and Regulations
    - Building Codes
  - International Code Council
    - International Building Code
    - ICC Electrical Code
    - International Energy Conservation Code
    - International Existing Building Code

- International Fire Code
  - International Fuel Gas Code
  - International Mechanical Code
  - International Performance Code
  - International Plumbing Code
  - International Private Sewage Disposal Code
  - International Property Maintenance Code
  - International Residential Code
  - International Zoning Code
- Site Preparations
  - Site Evaluation
    - Slope
    - Orientation
    - Soil Types
    - Utilities
    - Traffic
    - Vegetation
  - Surveying
  - Common Surveying Equipment
    - Satellites
    - Plastic and Nylon Tapes
    - Measuring Wheel
    - Dumpy Level
    - Surveyor's Pole
    - Transit
    - Tripod
    - Plumb Bob
    - Laser Plane
  - Site Development
  - Zoning Codes
    - Residential Zones
    - Commercial Zones
    - Industrial Zones
- Foundation/Subflooring
  - Lumber Grades
    - Select A – D
    - Common No. 1 – Common No. 5
  - Span Tables
    - Span
    - E Value
    - Fb Value
    - Dead Load
    - Live Load

- Maximum Allowable Deflection
- Foundation & Subflooring Installation Process
  - Construct Girders
  - Attaching Mudsill
  - Constructing Headers
  - Attaching Header to Mudsill
  - Constructing Joists
  - Installing Joists
  - Installing Outside Joists and Outside Headers
  - Installing Bridging Installing Subfloor
- Framing
  - Girders
  - Mudsill
  - Inside Header
  - Outside Header
  - Common Joist
  - Bridging Member
- Windows and Doors
  - Parts of a Window
    - Rails
    - Stiles
    - Muntins
    - Panes
    - Sash Locks
    - Jambs
    - Flange
    - Sill
    - Casing
  - Window Installation Process
  - Parts of a Door
    - Top Rail
    - Intermediate Rail
    - Lock Rail
    - Bottom Rail
    - Panels
    - Mullion Lock Stile
    - Hinge Stile
    - Sweep
    - Casing
    - Jamb
    - Stop
    - Threshold
    - Hinges

- Door Installation Process
- Roofing
  - Roofing Installation Process
  - Parts of a Roof
    - Dormer
    - Ridge Vent
    - Eaves
    - Gutter
    - Ridges
    - Valley
    - Soffit
    - Roof Penetrations
  - Types of Roofs

# Optional Preparation Materials Overview

The preparation materials offered by iCEV for the HBAA Residential Construction Skills Certification was specifically created to prepare candidates for the certification exam. While it is not required to complete the preparatory materials before accessing the certification exam, HBAA recommends certification candidates complete some form of training. The following outlines the lessons scope and objectives:

## Lesson 1: Personal & Occupational Health & Safety

1. To understand OSHA's role in occupational health and safety.
2. To learn the rules and regulations of a job site.
3. To understand basic job site hazards and safety.
4. To learn about and care for personal protective equipment.
5. To understand emergency preparedness plans and actions.

## Lesson 2: Hand & Power Tool Safety in Construction Environments

1. To explain the hazards of working with hand and power tools.
2. To summarize the safe working practices for using hand and power tools.
3. To demonstrate how to maintain safe working environments while using hand and power tools.

## Lesson 3: Trenching & Shoring Safety in Construction Environments

1. To discuss the hazards of trenching.
2. To explain the safety regulations keeping workers safe on worksites with trenches.
3. To list the safe work practices workers can utilize to stay safe on worksites with trenches.

## Lesson 4: Excavator Safety

1. To describe the procedures for inspecting excavator components.
2. To explain how operators protect the safety of themselves and their coworkers.

## Lesson 5: Introduction to Construction Drawings

1. To understand classifications of different construction drawings.
2. To recognize elements and symbols of construction drawings.
3. To recognize various drawing tools.
4. To understand how to develop and design a building plan.

## Lesson 6: Understanding Construction Codes, Regulations & Contracts

1. To know the regulatory agencies and organizations involved in construction.
2. To understand building codes, regulations and standards.
3. To become knowledgeable on construction contracts.

## **Lesson 7: Site Preparation**

1. To evaluate specific characteristics at potential sites.
2. To identify surveying equipment and understand various surveying types.
3. To understand factors involved in pre-construction and specific procedures involved in development.

## **Lesson 8: Installation: Foundation & Subflooring**

1. To discuss tools and materials needed for foundation and subflooring installation.
2. To describe safety precautions relevant to foundation and subflooring installation.
3. To understand the basics of lumber.
4. To demonstrate the installation of foundation and subflooring.

## **Lesson 9: Installation: Framing**

1. To discuss tools and materials needed for framing installation.
2. To describe safety precautions relevant to framing installation.
3. To demonstrate the installation of wall, ceiling and roof framing.
4. To demonstrate the of decking and framing member buildup.

## **Lesson 10: Installation: Windows**

1. To discuss tools and materials needed for window installation.
2. To describe safety precautions relevant to window installation.
3. To demonstrate the installation of a window.

## **Lesson 11: Installation: Doors**

1. To discuss tools and materials needed for door installation.
2. To describe safety precautions relevant to door installation.
3. To demonstrate the installation of an exterior door.

## **Lesson 12: Installation: Roofing**

1. To discuss tools and materials needed for roof installation.
2. To describe safety precautions relevant to roof installation.
3. To demonstrate the installation of a traditional shingle roof.

## **Lesson 13: Installation: Drywall**

1. To discuss tools and materials needed for drywall installation.
2. To describe safety precautions relevant to drywall installation.
3. To demonstrate the installation of a drywall interior wall.
4. To demonstrate the installation of a drywall ceiling.
5. To demonstrate the process of repairing a hole in a wall made of drywall.

## **Lesson 14: Installation: Plumbing Equipment & Fixtures**

1. To discuss tools and materials needed for plumbing installation.
2. To describe safety precautions relevant to plumbing installation.
3. To demonstrate the installation of basic plumbing systems.

## **Lesson 15: Installation: Electrical Wiring & Control Systems**

1. To discuss tools and materials needed for electrical wiring and control system installation.
2. To describe safety precautions relevant to electrical wiring and control system installation.
3. To demonstrate the installation of electrical wiring and control systems.

## **Lesson 16: HVAC: The Refrigeration Cycle**

1. To define the basic terminology associated with the refrigeration cycle.
2. To identify the four primary components of the refrigeration cycle.
3. To explore various types of refrigerants.
4. To summarize the effect each of the four primary components has on refrigerant during the refrigeration cycle.

## **Lesson 17: HVAC: Basic Tools**

1. To summarize the key safety rules and OSHA regulations required for a safe worksite.
2. To explain the types of personal protective equipment used during the service and installation of HVAC systems.
3. To identify the tools used for service and installation of HVAC systems, including tools used for brazing, testing and metal duct fabrication.