

In-Person Classes by Glenn Mathewson

Based on the 2021 or 2024 International Residential Code

All courses are available for scheduling as Live Webinars
970-368-2633 (970-dot-code)
Glenn@BuildingCodeCollege.com

FULL-DAY CLASSES (6 to 8 hours, to fit your schedule)

Deck Inspection and Plan Review

Previously not specifically addressed in the code, residential decks have seen tremendous attention in the last few IRC editions. Generally thought of as simple structures and often constructed by ill-prepared homeowners or new contractors, the truth of their nuances is now clearly revealed in the recent standards. This course starts with a common under-detailed plan submission and walks through all aspects of the load path from the decking to the foundation. Useful for plan reviewers, inspectors, and contractors and taught by a former deck builder turned inspector who contributed to the creation of nearly all the new provisions. Abandon the guesswork of deck code compliance relied on in past years and get up to speed on how the IRC now provides for these common structures.

- Understand the limits of prescriptive design for decks.
- Learn the information that should be asked for during plan review.
- Be more confident to review and inspect residential decks according to the latest code provisions.

Deck Design and Plan Review

New prescriptive deck design codes have been developed and fine-tuned since the 2015 edition. Learn all the details and design flexibility in the 2024 IRC for deck construction from someone that was part of their development. This course will take you through a sample deck plan review that will capture a broad extent of what Section R507 can offer your community, whether designer or plan reviewer.

- Discover the enhancements to the 2024 deck design tables that can be utilized as a great alternative even in jurisdictions under the 2015, 2018 or 2021 IRC.
- Learn the variety of beam and joist sizes, types, and orientations that the IRC supports.
- Realize the broad applications prescriptive design can support, but also when additional engineering is necessary.

Deck Inspection

Deck design and construction codes have gotten a lot of attention since the 2015 edition, specifically in prescriptive structural design. This class is focused on what an inspector needs to understand about the design codes in Section R507, but not in the same depth as a design and plan review class. Instead, this class includes important subjects that are most-often only discovered during inspections. Starting with clearances to various features on the existing house and ending with guidance on stairs, guards, and handrails, this class is perfect for inspectors and contractors alike.

- Understand the various ways an improperly designed deck can negatively and hazardously affect building systems of the existing structure.
- Learn the flexibility and limitations of the prescriptive design methods in R507.
- Recognize important items not to overlook at final inspection.

Deck Code Update 18 to 24

New prescriptive deck design codes were introduced in the 2015 edition of the IRC. They were expanded and fine-tuned for the 2018 edition but were still very limited in scope and flexibility. The 2021 version of these codes expanded considerably, with important additions and corrections in the next 2024. This class takes professionals familiar with the 2018 IRC deck codes and explains in detail the changes and enhancements now found in the 2024 edition, including prescriptive design codes in Section 507 and changes to Chapter 3 requirements specifically related to decks.

- Realize the 2024 edition has the most useful and flexible design options for decks than any previous edition
- Understand that most the prescriptive design methods found in 507 are not universally required, but simply provide a way to be assured simple decks are built sufficiently.
- Discover the changes made to guard loading and stair landings that directly affect deck design.

Decks: The Existing Structure

This course is related to how a new deck will interact with an existing site and building. Building, plumbing, mechanical, electrical, and fuel-gas codes must all be considered when designing a deck to effectively work with a home.

- Know how to identify building systems and components located on the exterior of a typical home.
- Learn how to safely design a deck that will work with emergency escape and rescue windows.
- Understand the various ways an improperly designed deck can negatively and hazardously affect building systems of the existing structure.

Decks: Ledgers & Lateral Loads

This course reviews the basics of a deck structural system, including tributary loading and the load path. Lumber grading, treatment, and decay issues are discussed as well as hardware and hanger corrosion resistance requirements. Ledger connections and lateral load resistance is explained in detail, including practices necessary for a variety of exterior claddings. This class is complimented well with Decks, Down the Load Path where details of the other structural members are explained.

- Understand the limitations of the IRC's prescriptive design criteria and when alternatives are necessary.
- Comprehend the concept of a load path and how to determine the tributary load on a bearing point.
- Realize the significance provisions related to the attachment of a deck ledger to a home.

Decks: Down the Load Path

From the decking to the foundation, this course covers, in detail, all segments of a deck load path, except for ledgers and lateral loads. New IRC tables specific to deck joist and beam spans and deck foundations are explained with a deep understanding allowing for interpolation and use on more creative deck designs. This class is complimented well with Decks, Ledgers, and Lateral Loads.

- Understand the basics of deck foundation design and construction.
- Understand the variety of manufactured decking products and how to ensure their proper installation.
- Realize the potential flexibility of the joist and beam span tables not obvious in the code provisions.

Decks: Features & Finishes

Decks often contain many features typical inside a home, such as stairs, ramps, landings, guards, and handrails. These features, as well as common deck amenities, are explained in detail. Photos and graphics provide a clear understanding of the specific geometry required for the safe use and navigation of these features. Code provisions discussed in this class are useful in applications other than just decks.

- Understand the differences and similarities of guards and handrails.
- Learn the strict geometric requirements of various stairways, including straight, winder and spiral, and the uniformity required of their components.
- Understand how to work with the code more successfully through an understanding of some basic administrative principles related to adoption and enforcement.

Porch Roof Design, Plan Review & Inspection

Porch roofs are a popular backyard feature that many builders and homeowners design and construct. They can range from a simple shed attached to a wall to a gabled and vaulted design straddling over an existing roof. This course will take you through a variety of porch roof framing applications and offer a deep understanding of how they are built. This understanding fosters confidence to approve plans, but also to reject them and request more information.

- Learn the difference between ridge board and ridge beam construction.
- Understand the limits of prescriptive design for porch roofs and when engineering is necessary.
- Discover the prescriptive design provisions for porch roofs in the IRC and how to use them.

Single Family Homes, from Application to Occupancy

Construction of single-family, detached homes is quite a process. From planning to application to execution to inspection, there are many steps along the way. Like a dance, a beautiful performance comes from smooth steps timed by everyone in the group. Mutual understanding and respect for each professional involved and a good grasp of the choreography helps ensure no one trips up. Learn the steps of building a new home in this brand-new class. No formal wear required!

- Have been immersed in a photographic journey through all parts of new home construction.
- Better understand the inspections required for new home construction.
- Understand the complexity of coordinating over 100 individual tradesmen involved in house construction.

Conventional Wood Frame Construction

A fundamental of the IRC and its predecessor code, the One- and Two-Family Dwelling Code, is to provide Americans an affordable and prescriptive method to frame a house without a design professional. Though there are many engineered products and designs in common use, conventional wood framing is still in the code and across our communities. These generations-old techniques have been adapted with engineering validation and insulation accommodation over recent decades. Take a ride in the IRC from the foundation plates to the roof sheathing and learn the old and modern methods of prescriptive wood construction in between.

- Learn the details of conventional roof framing using a ridge board.
- Discover the history behind many wood framing provisions.
- Realize the similarities between vintage and modern wood-frame construction practices.

Energy Conservation Construction (see Framing for Energy for half day)

Energy conservation isn't all about insulation and the energy code. There are many ways that framing, plumbing, electrical, and other installations can enhance the energy performance of a home. Dimes add up to dollars and dollars add up to dinner, just the same, small gains in energy conservation can add up to lots of saved energy. Learn how to keep energy in mind throughout the whole construction process, long before the insulation crew arrives.

- Understand code provisions that reduce thermal bridges and increase insulation in the exterior envelope, such as single-ply and box headers, as well as single top plate construction and 24-inch-on-center wall spacing.
- Think outside the box about how various trades can enhance energy performance.
- Learn the complexities of providing certain air barriers and why they are essential to thermal performance.

PMG Fundamentals

This class is helpful for everyone in the construction industry, as it explores the reasoning and science behind many plumbing, mechanical and fuel-gas code provisions. Whether a contractor or inspector, cross training in these specialized trades offers a better understanding of the work performed and how they "work".

- Realize the old saying "poop runs downhill" is completely false.
- Understand how natural draft venting works.
- Trust that there are sensible reasons for many seemingly arbitrary code provisions.

Furnaces & Water Heaters

Furnace and water heater installations and replacements are ubiquitous in every house. Many new contractors and inspectors are often tasked with their installation and inspection, and many homeowners tackle these projects on their own. Not as simple as often believed, these appliances are connected to many systems of a house, including electrical, venting, gas, water, and air distribution. This class explores, in depth, all the various code provisions regarding their installation.

- Understand the large list of requirements for a water heater temperature and pressure relief valve.
- Learn the various venting methods: natural, induced, and forced.
- Gain a greater respect for the various complications regarding their installation and inspection.

IRC Chapter 3: Means of Egress (see Escape and Rescue for half day)

This is the first in a series of classes covering nearly every section of IRC Chapter 3 in detail. Means of Egress starts by spelling out the basic requirements for the path to the egress door and beyond, including the design and construction of stairways, ramps, and handrails. These features are critical for safe egress from basements and upper floors, and thus, from treads to landings and handrails to headroom, there are a lot of specifics to cover in this course. After discussing calm egress applications, everything about emergency escape and rescue openings is covered.

- Discover the strict geometric requirements of stairway design.
- Discover the details that regulate the path of egress through a dwelling.
- Realize the critical provisions that help make sure emergency escape and rescue is possible.

IRC Chapter 3, The Human Element (see Safety Glazing for half day)

This is the second in a series of classes covering nearly every section of IRC Chapter 3 in detail. The Human Element covers the sections that address human safety, needs, wants, expectations, and the similar. Habitable rooms, ceiling height, safety glazing, water, sanitation, ventilation, lighting and more. Using research and history, the course reveals the intent and purpose of the code sections, as opposed to just reading them to you.

- Discover the reason there are two safety glazing standards.
- Understand the basic features required for human shelter.
- Realize the value in researching code history for better perspective and understanding.

IRC Chapter 3, Fire in 302! (see IRC Fire Resistance for half day)

Description: Fire in 302! has collected all the fire-related provisions of Chapter 3 and organized them in one class that explains how each code protects us from fire. Starting with fire separation distance and moving through gypsum protection, the passive fire resistive assemblies are explained in detail. Following this is an understanding of what's happening inside the walls with fireblocking, draftstopping and smoke development and flame spread limits. Foam plastics are discussed in detail and the course wraps up with active fire protections provided by smoke alarms and fire sprinklers. This course will offer you a clear understanding of the unique ways the IRC protects us from fire.

- Understand the difference between fireblocking, draftstopping, and fire stopping.
- Discover the details of foam plastic safety provisions in the IRC.
- Realize the unique reasons for various fire-resistive assemblies.

Building Codes for Basement Finish (half day option available)

Finishing a basement requires nearly all the trades and construction required for a new house, short of foundations and roofs. However, many applications are unique when transforming the former guts below a home into finished living space. Building, plumbing, mechanical, fuel-gas and electrical provisions involved with these projects will be reviewed in detail.

- Understand and identify the building components in the basement that need evaluation and consideration prior to concealment.
- Be introduced to code provisions that regulate the overall design of the finished space.
- Learn how emergency escape and rescue openings must be handled.

Vapor Control in the IRC (See A Century of Vapor Management for half day)

Over the last century, vapor control methods in residential building codes have evolved considerably but are only finally becoming a popular subject in home design. The latest IRC provisions provide extensive options in vapor control methods, depending on the climate zone, materials chosen, and the preference of assembly design. Ventilation and vapor barriers are the methods of the last century, but the future looks a lot more like insulation, dehumidification, and vapor open materials. Learn how the science of air temperature, air humidity and temperature of surfaces are embedded in so many design choices provided in the code.

- Understand the variables of condensation and how to keep it from occurring.
- Learn the variety of methods for controlling vapor in walls, attics and crawlspaces provided in the IRC.
- Discover the variety of vapor permeability of different materials and how they can work together to create assemblies that can dry out.

Building Codes: Past, Present & Future (see Building Codes, History & Evolution for half day)

Building codes in the US have a centuries old history that began with the colonies before a country was even formed. This presentation, prepared by a dedicated building code historian and collector, will reveal so many important moments in the timeline of code history. Presidents, professional organizations, mortgages, disaster, legislation, worldwide energy panic, and so much more has created something that's hard to fully understand without understanding the days past. The modern organization of I-Codes and other codes is also revealed in detail, followed by an explanation of how new editions of the I-Codes are developed.

- Past: Discover the interesting history of US construction codes that you don't think is going to be interesting.
- Present: Learn the organization of the family of I-codes, their scopes, and administrative basics of all the I-codes
- Future: Understand the ICC process for code development that allows everyone to be involved.

IRC Energy Code Mandatory Requirements - 2024 (See Residential Energy Code Basics for half day)

Chapter 11 of the International Residential Code contains all the requirements from the International Energy Conservation Code that apply to one- and two-family dwellings and townhouses, but within these requirements are a lot of choices for code compliance. Well, that's not what this course is about. In this on-demand course, all the mandatory requirements from Chapter 11 are covered; the ones that apply regardless of the compliance design option. If you're new to energy codes, this course will cover the basics. If you're seasoned in energy codes, this course will highlight many changes in the 2024 IRC/IECC. If you use the prescriptive, performance or ERI method in your work, this course will reveal the mandatory requirements that cannot be designed around.

- Realize the requirements of the energy code that will always apply, regardless of the design compliance method.
- Be introduced to many updates in the 2024 edition.
- Discover the nuances of insulation identification.

HALF-DAY CLASSES (3 to 4 hours, to fit your schedule)

A Century of Vapor Management

In the last century of construction and codes, vapor control has gone from simply opening windows to various detailed assemblies of ventilation, insulation and vapor retarders. Existing houses across the US have a variety of existing vapor control methods depending on climate, year of construction, and preference of the builder. Building codes follow society, so as old methods are retired and new methods are developed, the code evolves and adapts. Moisture damage from vapor condensation is often out of sight and out of mind...until it's not. Take a journey through vapor control methods from the 1800's to the upcoming 2024 IRC.

- Realize the evolution of vapor control methods throughout the last 100 years of building codes.
- Understand how the IRC addresses the three variables of vapor management, air temperature, air humidity, and surface temperatures.
- Discover the choices the IRC provides in vapor control design.

Residential Energy Code Basics

Since the 1970's energy conservation codes have been well funded and heavily promoted by the US Federal government. From their initial creation to the latest edition of the International Energy Conservation Code, energy codes have been continuously updated to address new materials and methods, to allow significant design freedom, and to continue to push new construction into more and more efficient use and conservation energy. This presentation will take you through some evolution of energy codes over their last 50 years but will primarily focus on the 2021 IECC provisions found in Chapter 11 of the 2021 IRC. A high-level overview of the residential energy code requirements and options will be provided in this presentation.

- Understand some history of "model energy codes."
- Learn the scope of purpose of the IECC and IRC Chapter 11.
- Be introduced to the different energy compliance paths.

IRC Fire Resistance (half day of Fire in 302!)

This presentation has collected all the fire-resistance provisions of Chapter 3 and organized them in one class that explains how each code protects us from fire. Starting with fire separation distance and moving through gypsum protection, the passive fire resistive assemblies are explained in detail. Following this is an understanding of what's happening inside the walls with fireblocking, draftstopping and smoke development and flame spread limits. Learn all the details of how the IRC provides us fire resistance in dwelling construction.

- Understand the difference between fireblocking, draftstopping, and fire stopping.
- Discover the details of foam plastic safety provisions in the IRC.
- Realize the unique reasons for various fire-resistive assemblies.

Building Codes, Purpose, Process & People

This course uncovers how the code works and the people involved. It begins with some fun history leading up to the current International Codes and follows with an enlightening explanation of how the code is developed and adopted into law. Before applying the provisions, this course lays the foundation of how to navigate the code and how the code is administered as a minimum standard. The course concludes with sessions about key players in the use of the code and offers perspective from each of them in hope for a team effort in applying the codes across our communities.

- Be introduced to some of the history of codes and how they got to be what they are today.
- Learn how the code is developed, adopted, administered, and navigated. Learn the rules of the rules.
- Gain perspective by seeing what it's like working with code behind the plans examiner's desk, through the inspector's eyes, and in the contractor's boots.

Asphalts Shingles & The Code

This class is designed for inspectors, roofers, foremen, general contractors, remodelers and other professionals involved with roofs or roofing. Asphalt shingle installation requirements are discussed in detail. A general overview of standards and manufacturer requirements rolled asphalt products, tile and clay shingles, and wood shingles is also provided. Common issues related to roof modifications and additions will also be discussed.

- Have a better understanding of residential roofing systems.
- Be introduced to various problems that can occur in connecting a new roof to an existing roof.
- Learn how to inspect asphalt shingles for proper installation.

Porch Roof Framing

Like decks, porch roofs are often considered easy construction and are often attempted by new contractors or weekend warrior homeowners. However, the truth is quite the contrary. Porch roofs require significant evaluation depending on the extreme variety of their design. This class reviews the code application of these projects from the foundation to the roofing.

- Understand the significant differences between constructing with a ridge board or a ridge beam.
- Learn the various ways to connect a porch roof to an existing house.
- Realize the limitations of prescriptive, structural design and when engineered design is necessary.

Framing for Energy

“The Code” is often referred to as “the worst you can build and still be legal”, but when prescriptive design provisions provide various choices of how to build that attempted insult doesn’t make sense. The IRC provides a lot of flexibility and options when it comes to wood frame construction and those choices all meet code, but all have different results on the overall energy performance of a dwelling. This course explores how thoughtful choices in minimum code framing methods can make a significant impact on the final project.

- Learn the variety of choices and resulting energy performance of wood frame window and door headers.
- Understand the small considerations in framing that can have big impacts on energy performance.
- Realize the importance of air barriers during the framing stage of construction.

Building Codes, History & Evolution

Building codes in the US have a centuries old history that began with the colonies before a country was even formed. This presentation, prepared by a dedicated building code historian and collector, will reveal so many important moments in the timeline of code history. Presidents, professional organizations, mortgages, disaster, legislation, worldwide energy panic, and so much more has created something that’s hard to fully understand without understanding the days past.

- Discover the interesting history of US codes that you definitely don’t think is going to be interesting.
- Understand the insanely complicated interrelationship of governments when it comes to code authority.
- Learn how the Federal Government has greatly impact US building codes, while not technically having jurisdiction over them.

Safety Glazing

Windows are a necessity of every dwelling but depending on where they are located can provide more than just natural light. Glass located in “hazardous locations” are those areas where the probability of human contact is higher. In these areas, safety glazing is required to minimize injury. Where are these hazardous locations and what is safety glazing? It’s not just tempered glass. Find out in this session that is packed with all the details and nuance of safety glazing and a few other glazing codes.

- Learn what safety glazing is and how to verify it is present.
- Discover the hazardous locations in the code where safety glazing is required.
- Understand the reasoning behind provisions related to glazing (glass).