

WHAT BUILDERS NEED TO KNOW ABOUT modern floating stairs and railing



Viewrail

What Builders Need to Know

Foreword

by Matt Risinger

MATT RISINGER has been a builder of high end homes for over 20 years and has been cataloging his passions of Building Science and Fine Craftsmanship since 2008.

As a builder, one of my favorite parts of a home is its staircase (and, of course, the railings that go along with it) because it enables me to show off my craftsmanship. I often think of the stairs as the crown jewel of the house. I'm proud of the different staircases I've installed in the past because I've gotten so many compliments from other builders, homeowners, and their guests about how beautiful those areas are within the home.

On the other hand, these staircases and railings can be complex.



You may have a one-off master carpenter on site for several weeks working on them. Most times, especially when it comes to modern stairs and railings, you've got a subcontractor – a small fabricator or welder who might be working off-site on these for many weeks before they come in to install. The price for these staircases and railings varies widely. Often, what I've budgeted isn't the correct amount, and that's been a pain point for me.

My building inspector has also been extra critical when it comes to stairs and railings; they're one of the few things he pulls his tape measure out for, and he measures to the exact inch. Even in my own house, which I completed not too long ago, he checked the rise on every single tread up from my first and second floor to verify that I met the code and wasn't trying to pull the wool over him on the installation.

That's where Viewrail comes in. Viewrail checks all the boxes. Their made-in-America products and tight-knit family atmosphere have kept them in business for over 20 years. They work on budgets that you can get ahead of, so you know exactly how much to price for a client. Every time I've used them, their products have come out spectacularly, eliminating all of those pain points I experienced in the past with modern stairs and railings.

I'm excited to share more insights in this eBook – things I've learned along the way, both as a building professional and as a Viewrail customer. I hope you'll experience that same feeling of pride that comes along with a staircase that gets tons of compliments, along with all the other benefits of including something so beautiful in your home.

What Builders Need to Know

When it comes to Viewrail's modern stairs and railings, builders should understand that they are working with a product that can be fabricated and installed very quickly.

Viewrail systems come in a giant package that you assemble like a Lego set. If you're afraid of putting one of these together, I'd highly recommend you check out some of the videos that the company has put together. (I have a few videos of my own on the subject as well.)

I would encourage you not to be worried about the process. Move forward if it's your first time. However, if you're anxious about it and want to have Viewrail carry out the installation, you can do that too. They now have a nationwide install program, so they come out to you anywhere in the U.S. and bring their in-house crew to do the installation for you.

"Len's got that unique ability to merge a creative mind, engineering intellect, and business acumen to create an efficient team."

This entire process is the vision of Len Morris, Viewrail's founder and one of the most unique people I've ever met. Len has a unique ability to merge a creative mind, engineering intellect, and business acumen to create an efficient team. He tackled the challenge of fabricating staircases then shipping them to the job site for installation by a crew that's possibly never done it before.

What started as a company selling spare parts out of the garage over 20 years ago has grown to a group of more than 300 hardworking people who can take your dreams and visions, then fabricate, ship, and install it all for you -- in a fully customizable way, with incredibly short lead times.

Viewrail is a classic American success story, and I would highly encourage you to consider doing business with them if for no other reason than the founder of the company is just an incredible person that you would love to spend time with. The people I've met there are those salt of the earth, hardworking Americans who care about what they do for a living. Plus, they do offsite craftsmanship that translates to your job sites and provides a totally unique product while solving the pain points of the custom fabrication that I've experienced in the past.

Now let's get into the nitty-gritty about modern stairs and railing.





Modern Floating Stairs: Shattering Misconceptions

Floating staircases appear to float in mid-air, without any structural support, removing visual obstructions and maximizing living space. They add dramatic flair and elevate the space that they grace. However, there are a lot of misconceptions about these systems, especially when it comes to installation, safety, where to use them, and how much they cost.

Let's look at these common misconceptions and supply a bit of reality.

Misconception #1: They're Difficult and Time-Consuming to Install

In the past, floating stair installation involved creating a design and finding a local custom steel fabricator to visit the site, pull measurements, fabricate a stringer, and bring it to the site for modifications. Treads would be ordered from a local lumber yard, and once received, they would be modified to fit the fabricator's brackets. Railing purchases were conducted separately, and all aspects of staircase finishing would be performed onsite. By the time the staircase was complete, builders would have worked with four or five different vendors, an architect, and a professional engineer to ensure code compliance. The whole process would have taken more than 20 weeks from start to finish.

Today, however, using a single-source floating staircase provider, like Viewrail, eliminates these challenges by providing end-to-end project management from design through installation. Access and installation are easy with a model like this. The best part is that you can shave a 20-week install down to just six weeks in many cases.

Misconception #2: They're Not Really Safe

Floating stairs adhere to strict code requirements. As long as they are installed according to code, floating staircases are just as safe as traditional stairs. Even better, Viewrail's floating stair systems have earned certifications from the International Code Council to verify their safety and speed up the permitting process. There are also several ways to make a floating staircase more secure and child-proof, including:

- Choosing wider treads
- Using wire-brushed treads for extra traction
- Paring stairs with a glass railing with no gaps in the infill



Viewrail adds an extra layer of safety to their staircases by flow-drilling and bolting stringers together, rather than welding them. Welding distorts the metal, leaving a scar where the two parts join together. Flow-drilling eliminates the weld, creating a long hole, and adding threads to the circular tube allows a bolt to be inserted. Not only is the process stronger and safer, it looks cleaner too.

"Viewrail adds an extra layer of safety to their staircases by flow-drilling and bolting stringers together."

Misconception #3: They Only Work in Expensive, Luxury Homes

In all price ranges – interior and exterior, ultra-modern to traditional – designs will benefit dramatically from the addition of floating staircases. Materials dictate cost, and many people are surprised at the dramatic effect achieved for the price spent. You can cut costs by choosing simpler stringer and finish options. Or, if you're building a dream home where you only want the highest-end finishes—those are available, too.

Misconception #4: They Only Work with a Few Design Styles

From stunning, matte black metal components, to luxurious wood parts made from tigerwood, walnut, African mahogany, white oak, Brazilian Cherry, floating staircases come in options that complement virtually any décor.

Options include glass, cable, or rod railing, and the treads come in various colors, materials, and wood finishes. Whether a home is all about modern, scandinavian minimalism, rustic industrialist architecture, or even distinguished traditionalism, floating stairs can be customized to fit any environment. It's all about the space you need to fill and the finishes you choose.

Misconception #5: They Won't Work in My Space

Increasingly popular and highly versatile, these staircases can be installed indoors or outdoors, and can be customized for every building type, including businesses, homes, and remodels. Plus, they come in various configurations, and each system is custom-engineered to fit each unique space perfectly.

So, forget what you've heard or thought you knew about yesterday's floating staircases. Talk to a Viewrail designer and see what's available to you now. Dive into the floating staircase possibilities for your next project.



Cable vs. Rod



While many floating staircase options exist, there are typically only two metal railing systems to choose from — rod and cable. Both options consist of durable, stainless steel materials and components. There are, however, several differences between rod and cable railing in terms of installation, corrosion resistance, long-term maintenance, and curved applications.

Here's an in-depth look at these differences.



Cable Railing

Cable railing is widely recognized in the residential framing space. This option provides a combination of indoor style and outdoor strength. Classic post-to-post cable systems are made from corrosion-resistant stainless steel. There are a variety of post mounting styles, powder coating colors, aluminum or stainless steel materials, and even wood handrails.

To deliver long lasting durability, the cables are made from 19 different metal strands, braided together to give lasting strength and superior safety. These cables act as a guardrail, while maintaining an open view. Stainless steel or wood posts come in various finishes and mounting options.

Metal posts are the most common cable railing support. They're sleek and modern, yet provide strength and durability. One benefit of a metal post system is the lack of maintenance required.

Rod Railing

An innovative and more recent alternative to cable railings, rod railings feature even greater strength and durability. Constructed from a single piece of ¼" hollow 2205 Stainless Steel rod with a round profile, it does not sag and can be bent to turn a radius. These railings are ideal for residential and commercial applications.

Rod railing is the most straightforward system to install, taking approximately half the time required to install cable. Viewrail's pre-drilled, pre-cut rods are spaced equally along the rod railing metal posts, which hide hardware and components for an uncompromised appearance.

Cable installs straight from points A to B, but rods can bend to follow curves given their tubular construction. Rods simply run through posts, and are tensioned at the end of a run, making them ideal for curved railings and stairs.

From a design perspective, polished, cylindrical rods look and feel like slim, smooth cable. Hidden hardware adds to the clean design, and they're available in a matte black finish.



Applications

The three most common applications for cable railing are decks, balconies, and stair railing. Cable railing is flexible, and although it won't bend in a smooth semi-circle, it will angle from one solid surface to the next solid surface, creating the illusion of curving.

Because of this angling, a curved cable railing system usually requires more posts to help make the turn gradual and not just sharp turns. Given the cable's braided construction, the grooves create areas for contaminants to attach easily. For that reason, it is not the best option in a coastal or harsh setting.

Rod railing, in comparison, works well in extreme coastal environments, curved applications, and as a stair railing. Rods come in 2205 duplex stainless steel when additional corrosion resistance is necessary.

This is the same material used in drills on deep-sea oil rigs. 304 stainless steel is used when corrosion isn't as much of a concern. Its smooth surface leaves no point of weakness for corrosion or rust. Unlike cable, these rods are simple to maintain, will never corrode, and won't sag over time.

Maintenance

Other than occasional cleaning, Viewrail's metal railing systems require little maintenance. Rod railings are non-porous, have no grooves, and are made from material that won't rust or decay. With no inherent points of weakness, maintenance involves using a Marine 31 cleaning solution every six months.

Depending on where cable railings are located, maintenance involves an annual check or touch-up of exterior wood products, retightening any cable that might have been stretched, and removing dirt or leaf build-up. If exterior, using Marine 31 Polish and Sealant on the cable ridges and surface area adds a layer of protection. Sometimes surface rust can appear. A stainless-steel cleaner and a rag should remove it, or a Scotch-Brite pad can be used on problematic areas.

Installation

Modern railing systems from Viewrail are easily installed — however, rod railings come together much faster. Cutting, deburring, crimping, and installing rods is simple and only takes approximately 30-40 minutes of installation time per post, often amounting to days less than installing cable railing.

In both cases, the mounting of posts and handrails are the same. Unlike cable, rod railing does not arrive in spools, so they are easy to measure and can be cut to length with an angle grinder and thin cutting wheel. Rods are delivered pre-cut by the foot and only require trimming to size.

In comparison, cable is delivered in 400-foot spools. Measuring and cutting cable is a two-person job — one to hold the line, which wants to return to its circular shape, and the other to measure and cut with cable cutters. Typically, the installation time of cable railing can take up to an hour per 8 foot run.



The Railing You Choose

Your choice between rod or cable railing depends on the environment and vision you are aiming to create. If you want the classic, modern-industrial vibe in an indoor space or an outdoor environment that's not on the coast, cable could be perfect. If you want an updated version of the classic metal railing option, and you are looking for added durability, the strongest, sleekest option is rod railing. Viewrail offers a wealth of choices and material options that will result in a railing system that you will be proud of for decades.



Viewrail = Your New Subcontractor

Building trends are always evolving. Over the past several years, there's been more significant use of technology, new materials, building practices, safety improvements, and collaboration. Although most companies still hire teams that include local, one-off service providers, a critical trend in the making is that of complete, end-to-end services. When a vendor trains and uses its own employees to provide its products and services, customers gain access to real experts, not just bodies carrying out work. Start-to-finish services get the job done better, faster, and typically at a lower cost. Viewrail is on the leading edge of this trend, especially in the floating stairs category. The trend equates to using suppliers who essentially serve as subcontractors. Shifting the mentality to that of a subcontractor changes emphasis from purchasing goods to providing quality work. This project ownership yields significant benefits to builders and their customers.

End-to-End Project Management

Viewrail's clientele counts on its complete project-management focus. The delivery of a comprehensive project includes all of the information needed to have an informed conversation with your client.

"They're designed for simplicity."

From that point, here's what your project would look like if you hired Viewrail as your new subcontractor for your floating stairs:

1. Viewrail works on a basic design with you, resulting in a 3D rendering illustrating how the staircase fits into the space.

2. Once drawings are approved and a deposit has been received, Viewrail takes all necessary measurements.

3. 2D shop drawings and 3D CAD representations are drawn using the measurements and sent for approval.

4. Once given a "go," Viewrail manufactures the stairs and ships them – in many cases using their own trucks, driven by their own drivers.

5. Viewrail's expert technicians can take care of the installation in a fraction of the time it would take most other subcontractors, or you can install them yourself.

"One unique aspect of the process is that the floating stairs are completely finished in the factory with the goal of completing the installation as fast as one day. Fast and efficient, fresh and clean, and the job is done!"

Why this Model Works Better

The way Viewrail approaches their projects is a win-win for everyone. Viewrail's floating stairs are custommade to fit your space, and engineered for fast, safe, and hassle-free installation. Product innovation, manufacturing expertise, design insight, and a whole-project approach ensure that their entire staff are experts in their project segment. For builders and architects, it transforms a materials provider into a subcontractor. How many of your subcontractors, for example, can pull off installing a dramatic addition to the home in one day rather than 20?

In addition, instead of dealing with five separate vendors, you have one, which not only gives you more control, but makes sure every aspect of the job is done on time. Viewrail performs precisely the way they say they will, with no excuses.



Codes to Know

Floating Staircase Codes, Requirements, and the 4" Sphere

At this point, you might already be sold on the idea of including floating stairs in your next project. It just comes down to the nitty-gritty questions now – questions like: will this meet code? Fortunately, we have the answers you're looking for.

There are a few things that you should know for all of your staircase projects. For example, every code inspector carries a 4" ball and a 6" ball when inspecting floating stairs and railings. Long ago, an unnamed individual decided that 4" was approximately the size of a small baby's head, so there cannot be a gap greater than 4" for the open rise – this is called the 4" Sphere Rule.

This is just one of the things code inspectors are looking out for when they come to review your project. Let's look at the top cable, rod, and deck railings requirements first.

Cable Railing and Guardrail Requirements

When built to code, cable railing is very safe. Whether using cable railing on a staircase, balcony, or deck, specific requirements include handrail height, ability to withstand system pressure, and how far apart posts must be spaced.

Horizontal railing systems are subject to 4" and 6" Sphere Rules.

- The 4" Sphere Rule refers to naturally occurring gaps and spaces and states that a 4" sphere should not pass through any gap in a railing system. Viewrail posts are drilled with holes 3 1/8" center-to-center to avoid any deflection exceeding 4".
- The 6" Sphere Rule addresses the gap created between the bottom run of infill and the 90° angle where the rear of a stair tread meets a stair riser. In this case, a 6" sphere should be unable to pass through this triangular gap.

Handrail and Guardrail Height Requirements

- Handrail and guardrails are not the same
- A guardrail is required for stairs with 4-or-more risers or for a deck or balcony with 30" above grade. Guardrails in residential structures must be a minimum of 36". Be sure to check with your local code official regarding your area's requirements, which could vary.
- Handrails assist in ascending or descending a staircase and must be mounted between 34" and 38" and return into a wall or structural member of the railing system to meet code

Rod Railing Requirements

Requirements for rod railing cover handrail height, how a post must be spaced, and the maximum pressure a system must withstand. These code requirements are based on the International Residential Code (IRC). States, cities, and municipalities may have additional requirements. Before you build, it's essential to check with local code officials.

Horizontal railing systems are subject to these three basic rules:

Sphere Rules:

Rod railing code follows the same 4" and 6" sphere rules described above.



Load Requirements

Load is pressure applied to a specific point of a railing system or distributed throughout.

- Handrails and guardrails and structural members of a railing system must withstand 200 lbs. of concentrated force in any direction.
- Intermediate structures are only required to withstand 50lbs of concentrated force.
- Wood post systems require a structural post every 8' with intermediate posts spaced every 4' between structural posts. This allows for proper tension and little deflection.

Handrail and Guardrail codes :

- A guardrail is required for stairs with more than 4 risers, or a deck or balcony with 30" above grade.
- Guardrails in residential structures must be a minimum of 36". However, local codes may require they be taller.
- Handrails must be mounted between 34" and 38" and require handrails to return into a wall or structural member of the railing system (allowing all, including first responders, to use a staircase without snagging clothing or equipment on a handrail and falling).
- Handrails, guardrails, and railing system structural members must withstand 200 lbs. of concentrated force in any direction, while intermediate structures are only required to withstand 50 lbs. of concentrated force

Structural Post Spacing:

- Structural posts should be placed 4' apart, measured center-to-center.
- A wood post system requires structural posts every 8', with an intermediate or non-load bearing post every 4' between the structural posts to ensure the system complies with code and keeps the rods firmly tensioned.
- For curved applications, be sure to place a post every 4' to comply with code and meet sphere rules, handrail and guardrail height requirements, and load requirements.

Deck Code Requirements

Decks can feature wood or iron vertical stair balusters, horizontal cable or rod railing, or glass panel systems and guardrails. Guardrails are designed to prevent falls from such open-sided walkways as stairs, ramps, or balconies.

Specific deck codes :

- The 2024 IRC requires guard railing on any open-sided walkway elevated more than 30" and at all points within 36" horizontally to the edge of the open side.
- The minimum height requirement for residential guard railing is 36" in some states. Viewrail offers 36", 39", and 42" handrail heights that address all variations.
- The 4" Sphere Rule applies to deck railings as well.
- The 4" rule also applies to glass panel systems with an open space between the top of the glass panel and the handrail or between the bottom of the glass panel and the walking surface.
- An exception to this is at the back of the step for a gap up to 6". Horizontal railing on a diagonal across the rise and run of step, will almost always exceed a 4" gap.

A Look at Codes

ICC-ES is the United States' leading evaluation and testing service for innovative building components and systems. ICC-ES Evaluation Reports (ESRs), Building Product Listings, and PMG Listings prove that codes and technical standards are met. Cable railing code requirements originate from the International Residential Code (IRC) and local, city, or state codes. Here are a few important things to note :

• Each state and local area decides if they want to adopt the IRC.

• The ICC has resources that indicate which version of the international code your state uses. ICC also offers a two-week free trial of one of their codebooks, which allows you to review questions to ask your state code representative.

• Most cities have a Code Compliance Office or Town Hall official that can direct you to the right person. Reconstructions and alterations have their own sections of code laid out in the 2024 IRC. ICC makes a builder's life easier—but Viewrail takes it much further.

Viewrail, Codes, and Why You Should Care (But Not Worry)

Viewrail received the first certification (ICC-ES evaluation report ESR-4797) for floating stairs (monostringer) in the United States. Proprietary glass hardware, manufactured by Viewrail, also received an evaluation (report ESR-4799), evidence that the base rail, surface talons, standoff pins, and hardware meet code. Viewrail has ICC certification for all cable and rod infill when used with surface-mounted posts and universal top metal handrail options as well. These certifications mean that the permit process is typically fast and painless. What else makes Viewrail different?



- Viewrail products meet requirements and exceed some by 4x
- Viewrail's modular, automated, and repeatable engineered system has been used thousands of times
- Their proprietary software does all of the designing and is built on top of AutoCAD software
- Codes are part of the system, preventing anything being done that breaks the codes
- Viewrail is actively increasing its ICC certifications, indicating its commitment to safety

If you are tackling a project yourself, know that all of the people involved, from a fabricator, architect, and engineer, will be wading through codes to ensure compliance and pass inspection.

If you want to worry less, work with Viewrail.

They worry about all the code requirements for you, making a builder's life and experience much, much easier.

Modern Stairs, Minimal Hassle: **Viewrail Has You Covered**

Modern stairs and railings no longer have to be the budget-busting, schedule-stretching, code-confounding headache they once were. With Viewrail, you gain a true subcontractor — one that engineers, fabricates, ships, and (if you choose) installs a fully code-compliant system in weeks, not months.

By embracing custom-manufactured floating stairs, rod and cable railings, and an end-to-end project-management model, you can:

- Protect your schedule Install after the mess-making trades and close out the job faster.
- Control your costs Get upfront pricing instead of ball-park allowances that balloon later.
- Simplify inspections Rely on ICC-certified components that meet or exceed codes.
- Elevate craftsmanship Deliver a "crown jewel" staircase that earns compliments from both clients and peers.
- Expand opportunity Offer dramatic designs to a range of price points, from mid-range homes to ultra-luxury builds.

Viewrail removes the barriers that once kept modern stairs and railings in the "complicated" column. All that remains is the fun part: choosing the finishes, watching the install come together, and handing over a home that stops visitors in their tracks.

Ready to turn your next staircase into a signature statement piece - without the hassle?

Partner with Viewrail, and **build boldly.**

