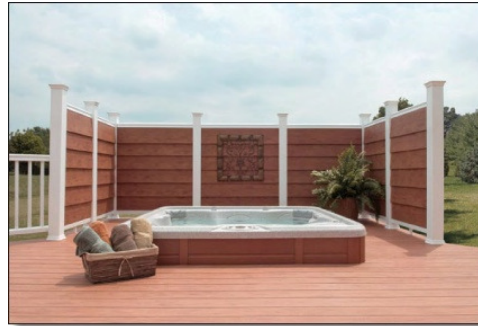


Design Trends

Design elements provide value to the deck and improve the aesthetic appeal.

- Inlays
- Planter Boxes/Benches
- Multiple Deck Levels
- Accessories
 - Lighting
 - Railing
 - Hidden Fastener Systems
 - Deck Drainage System



Design Trends

Inlays allow for design versatility

- Can be created with most Wood Plastic Composite Materials
- Contrasting Colors are often used
- Framing and blocking dependent upon design



Design Trends

Inlay photo gallery



Design Trends

Planter Boxes and Benches
add value and functionality

- The sizes are similar to dimensional lumber
- Multiple design are possible



Design Trends

Multiple deck levels allow the opportunity to segment the outdoor living space

- Allows for outdoor kitchen spaces



Design Trends

Lighting is often used as a safety mechanism and adds ambiance.

- Many local codes require lighting
- Lighting increases usability
- LEDs, low voltage and solar-lighting is available
- Products are made from vinyl or aluminum and come in different styles and colors
- Lighting is often easy to install and very little maintenance is required
- Products often include post top module lights and accent lighting for the front and sides of the posts



Design Trends

Railing adds unique design and style through decorative centerpieces, post caps and pipe railing options.

- **Variety of Materials are Available:**

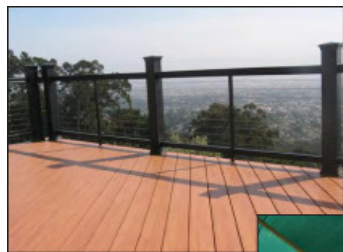
- Vinyl
- Metal
- Wood
- Wood Plastic Composite
- Cable
- Glass
- PVC Wood Railing

- **Many WPC and alternative deck manufacturers have matching rail systems**

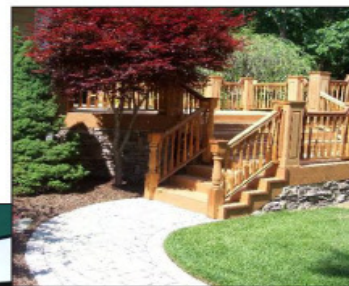


Design Trends

Railing Photo Gallery



Cable Railing



Wood Railing



Glass Railing

Design Trends

Railing Photo Gallery



PVC Wood Railing



WPC Railing



Metal Balusters

Installation Trends

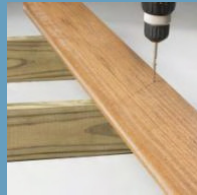
Hidden Fastener Systems provide a seamless, nail and screw free surface that preserve the beauty of the deck board and highlight the investment in premium composite materials.

- 30% increase in demand for hidden fasteners
- Allows the plank to be the focus, not the fasteners
- Generally installed between planks
- Controls uniform gapping
- Some fasteners can be installed using a pneumatic gun

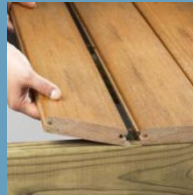


Installation Trends

Hidden Fastener Systems



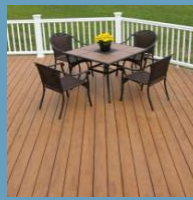
1 1st Plank



3 Additional Planks



2 Hidden Fastener



4 Relax

Installation Trends

Face fastener systems remain the method of choice for many deck installers. With the growing trend of color matched screws, face fastening remains a cost effective way to fasten composite decking.

- Color matched options
- Lower cost compared to hidden fastening
- Collated systems available for quick install
- Screw enhancements reduce mushrooming and end-splitting



Installation Trends

Innovative **fascia fastening systems** significantly reduce the potential for oil-canning. Systems are designed to hang fascia to the rim joist rather than fastening the fascia stationary. This allows the fascia to float and absorb the expansion and contraction

- Color matched options
- System designed to significantly reduce oil-canning
- Accessories designed for quick installation



Installation Trends

Tongue & Groove is a product advancement that allows for ease of installation and maximum span ability.

- Easy installation with no visible screws
- Some product profiles span 24" on-center for reduced supporting structure needs



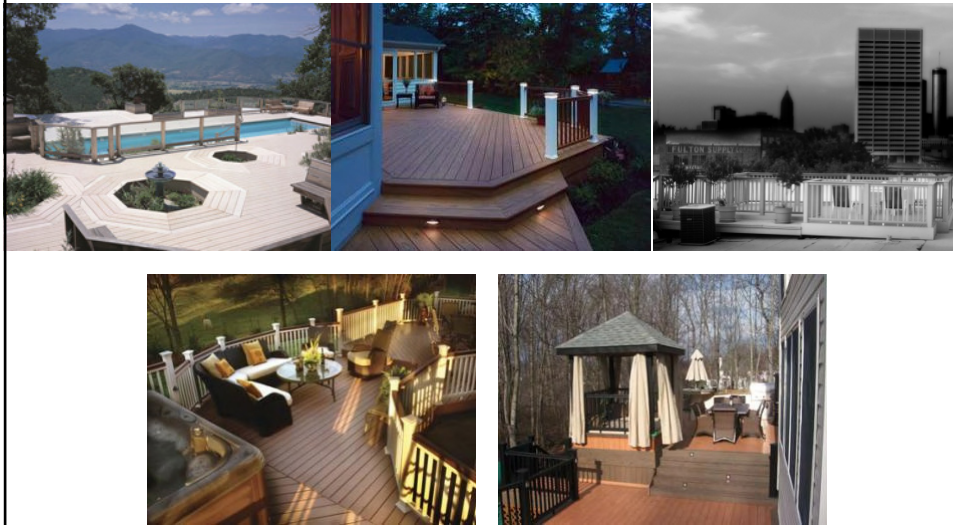
Installation Trends

Deck Drainage Systems provide leisure and storage space for second story deck applications.

- Some products secures to the joists of any new or existing deck with 12" and 16" on-center joist spacing



Challenge Your Creativity



Technical Guidelines

Code Listing Agencies

In the past, wood plastic composite and plastic composites have not been addressed directly in the building code. However, as of 2009 the IRC has added these materials to the code. A significant amount of work is still underway to complete this process, but definitely a step forward. Currently there are several listing agencies that conduct code compliance evaluations.

The most notable are:

- ICC-ES
- Architectural Testing, Inc.
- Underwriters Laboratory



Code Listing Agencies

If a product complies with code requirements, the listing agency publishes a report to that effect. Each listing agency issues different types of reports.

- ICC-ES issues: Evaluation Service Report (ESR)
 - Architectural Testing, Inc. issues: Code Compliance Research Report (CCRR)
 - Underwriters Laboratory issues: UL Listing
-
- The report is then available to the public and local building officials
 - The local building officials use the reports to evaluate the given products suitability to the given application

Technical Evaluations

Each code listing provides technical evaluations of decking and railing products based upon Acceptance Criteria 174 (AC 174)

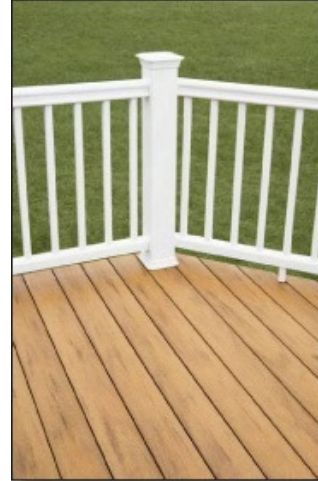
Under this criteria, materials are evaluated for:

- Stiffness & Strength
- Ability to withstand environmental factors
- Evaluated for
 - Termite Damage
 - Decay
 - Fire Performance



Support Requirements

- Most composite decking materials are evaluated to a minimum span/load combination of 16" at 100 pounds per square foot.
- Railings for residential use are evaluated to a design load of 200 pounds
- For other than 1 and 2 family dwellings under the IRC:
 - In addition to the 200 pound design load, the railings are also subjected to a minimum of 50 pounds per linear foot in a uniform load test.



Support Requirements

The deck spans and rail test loads are subject to safety factors of two and a half and any environmental adjustment factors based upon test results.

- For railings:
 - This is a minimum of 500 pounds in residential applications and 125 pounds per foot for non-residential application
 - That is a minimum of 1000 pounds on an eight foot section of rail!



Benefits of Certification

- **Product Liability Issues**
 - The certification ensures that the product has been produced and tested accordingly
- **Traceability**
 - The certification has a paper trail that enables it to be traced from the job site to the raw materials
- **Safety**
 - Provides a higher degree of confidence in reliability

How Listings Work on the Jobsite

- **Labeling & Packaging**
 - Allows the field inspector to verify that the materials have met the appropriate requirements
- **Installation**
 - Products are to be installed per the manufacturer's instructions



Installing Wood Plastic Composite

Wood Plastic Composites are as easy to install as wood using:

- **Tools**
 - Saw Blades (should be new, sharp and clean); Fine finished blades are recommended
 - Drills
- **Difference:**
 - Composites typically have higher thermal expansion coefficients and need to be spaced at both the ends and edges of the boards to allow for expansion and contraction



Gapping

Typically 1/8" to 3/16" minimum gap between the end joints of planks and 1/4" minimum gap where the planking meets an adjoining structure

- Refer to the manufacturers installation & maintenance guide for detailed instructions
- Many of the hidden fasteners on the market today provide the needed gap spacing for the manufacturer-specific product.



Joist Span

- Generally the joist spacing on residential and commercial applications is 16" on center
- Some Wood Plastic Composite manufacturers can span up to 24" on center
- Check with the manufacturer on specific details for their profiles



Railing – Planning and Installation

- Make railing part of the design element, not an afterthought. Pay attention to stair locations and proper spacing of each railing section.
- Plumb 4x4's or support posts are critical in achieving a dimensionally and physically sound railing system.
- Double check both manufacturer installations and code listing specifications to ensure compliance.
- Consult your local building official regarding any specific regulations for the designated area of construction.
- Measure Twice, Cut Once!



Care & Handling

- **Storage**
 - Store WPC products under cover to maintain a clean surface
- **Stacking**
 - To decrease damage of the product, stack the units with banding and bottom supports aligned
- **Handling**
 - Carry planks on edge for better support
 - Never dump materials when unloading



WPC Care & Cleaning

- Requires periodic cleaning
- Does not require painting, staining, or sealing
- Scratches, nicks, cuts & grooves
 - Varies by product
- To Combat Mildew
 - Maintain a clean, dry deck surface



WPC Warranties

- On average: 10 – 25 years; some are pro-rated.
- Generally includes splinter, cracking, rotting & warping
- Some manufacturers warrant against fade and stain for capped WPC
- Check with the manufacturer on specific warranty information



Course Evaluation Options



THANK YOU

Thank you for taking the time to familiarize yourself with composite decking and railing!

Please contact TimberTech directly with any questions. **Call 937.655.5237**



This concludes the American Institute of Architects
Continuing Education Systems Program