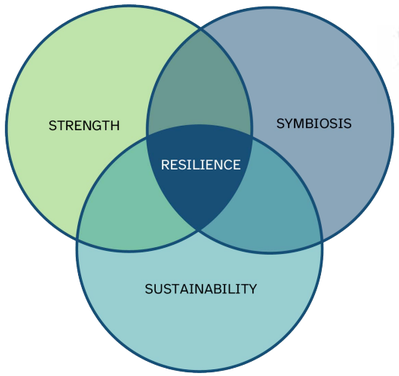
# RESILIENT DESIGN CONSIDERATIONS

*The decision-support content on this site provides practical guidance for selecting resilient building materials. Materials are organized by key categories—foundation, framing, exterior materials, interior materials, and finishes (like flooring, paint, wallcoverings, and subflooring), and roofing—with thumbnail images and brief overviews highlighting important considerations for designing homes that better withstand hazards.*

*These resources offer a comprehensive selection of material options and evaluation criteria, enabling Florida residents to make informed, data-driven decisions tailored to their unique structural requirements—without imposing a one-size-fits-all approach.*





**1 FOUNDATION**
***subfloor***
***flooring***

The foundation is the base of a home that helps keep it standing strong. It spreads out the weight of the building and helps it stay stable, especially during weather events such as strong winds, heavy rain, or flooding—especially if you're near the coast. Resilient foundations are built to handle these forces so the house doesn't shift or collapse.

**2 EXTERIOR**
***framing***
***covering***

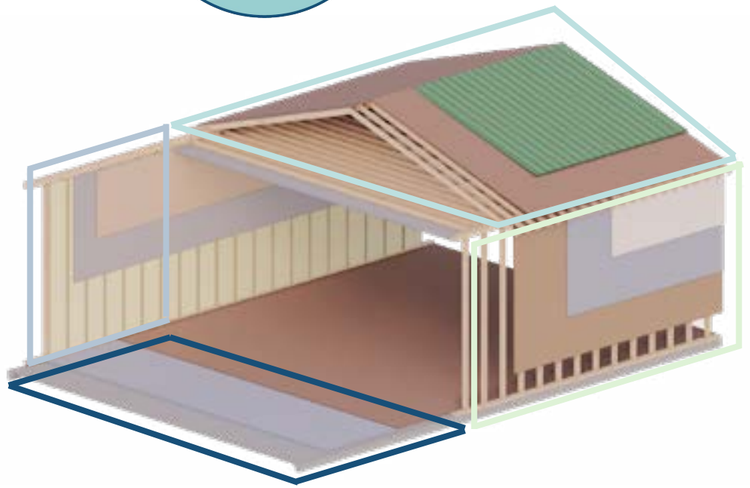
The exterior assembly of a home provides critical protection against water intrusion and heat-related damage. Residential walls are vulnerable to various threats, including exterior water accumulation, interior pipe bursts, and electrical issues. Selecting resilient materials not only enhances the home's durability but also improves its ability to withstand and recover from water-related damage and extends the structure's lifespan.

**3 INTERIOR**
***framing***
***covering***

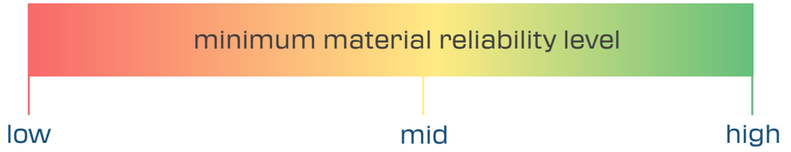
The interior wall assembly includes the materials that define the character of your home—surfaces you see, touch, paint, and decorate. These surfaces are particularly vulnerable to hidden water damage from sources like pipe bursts or leaks. Choosing resilient materials for interior walls helps ensure they maintain their integrity, even when damage occurs unnoticed.

**4 ROOF**
***covering***
***ceiling***

Roof assemblies must be built to withstand water and wind damage. A resilient combination of layered materials helps protect the home from leaks and deterioration, especially caused by strong weather events. Since the roof assembly directly affects the ceiling assembly below, it's important to use resilient materials throughout the entire system, not just single components, to protect the entire home.

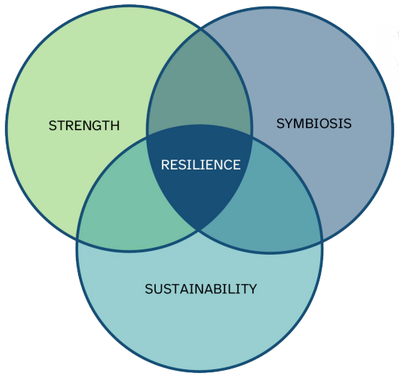



*SAMPL Predictive Resiliency Level.*
*The Resiliency level designation is drawn from the SAMPL computational model.*

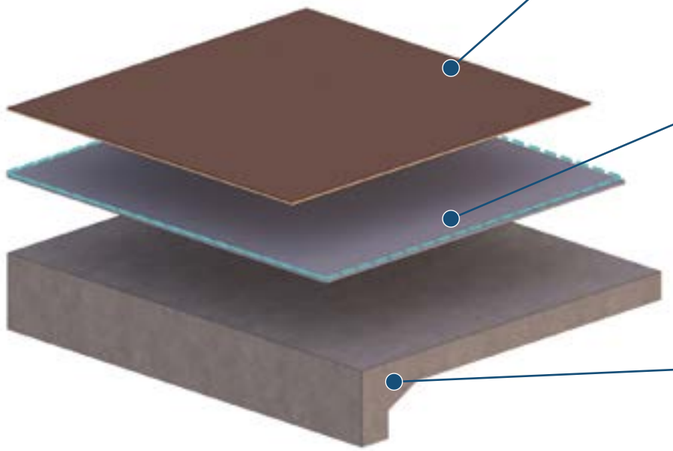


# 1 FOUNDATION *subfloor flooring*

The foundation is the base of a home that helps keep it standing strong. It spreads out the weight of the building and helps it stay stable, especially during weather events such as strong winds, heavy rain, or flooding—especially if you're near the coast. Resilient foundations are built to handle these forces so the house doesn't shift or collapse.







## FLOORING

Flooring is the visible, top layer of your home's floor—the surface you walk on every day. It can be exposed to moisture from things like leaks, flooding, or water seeping in through walls or windows. Choosing moisture-resistant flooring materials can help protect against damage and extend the life of your floors, especially in areas prone to damp conditions.


[1] CERAMIC/ PORCELAIN TILE


[2] STONE TILE


[3] ENGINEERED HARDWOOD


[4] CARPET


[5] LUXURY VINYL PLANK

## SUBFLOOR

The subfloor is a structural layer of a home's flooring system. It is a solid, flat base that receives the floor covering. The subfloor may be exposed to moisture from leaks, floods, or external factors such as heavy rain. The use of a subfloor will often depend on the type of foundation that is used.


[6] CONCRETE


[7] PLYWOOD


[8] CEMENT BACKER BOARD


[9] ORIENTED STRAND BOARD (OSB)

## FOUNDATION

The foundational structure of a home is the system that stabilizes the building on the ground. The type of structure should be determined by a qualified engineer and will depend on soil type, ground elevation, and the size of the home. Sealing the structure with a proper membrane can protect it and flooring above from moisture damage during floods and heavy rain conditions.


[10] SLAB ON GRADE


[11] PIER AND BEAM


[12] STEM WALL

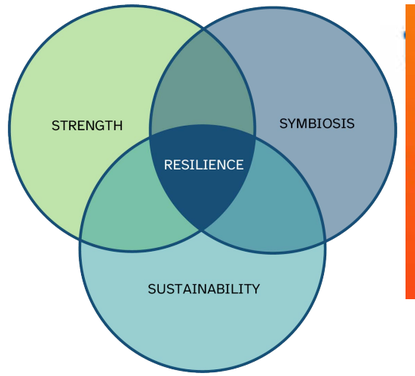

[13] PILE

All materials should be installed, sealed, and coated according to the manufacturer's instructions. To protect corners, edges, and changes in plane from water intrusion, use a **self-adhering flashing tape**. Membranes to protect the foundation from moisture accumulation include **polymer-modified bitumen**, a moderate resiliency option, and **asphalt-saturated organic felt**, a low resiliency option. For flooring, moderate-resiliency sealants such as **epoxy** can be used on all types of flooring. **Polyurethane** is commonly used to protect hardwood and engineered hardwood floors. **Acrylic-based sealants**, which have lower resiliency, are primarily used on concrete and hardwood surfaces.

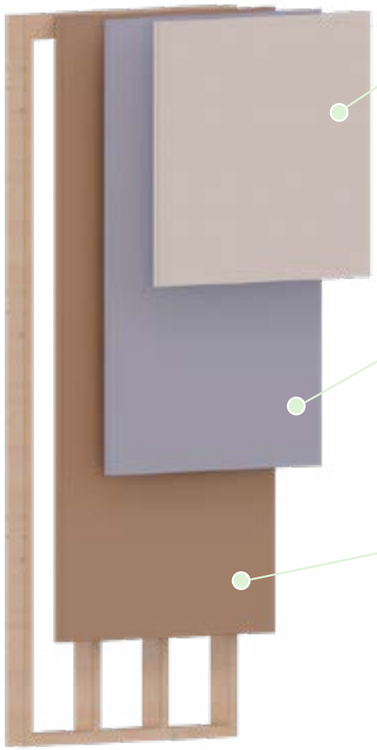
2

**EXTERIOR**
***framing***
***covering***

The exterior assembly of a home provides critical protection against water intrusion and heat-related damage. Residential walls are vulnerable to various threats, including exterior water accumulation, interior pipe bursts, and electrical issues. Selecting resilient materials not only enhances the home's durability but also improves its ability to withstand and recover from water-related damage and extends the structure's lifespan.







## WALL COVERING

Exterior wall coverings must be durable enough to withstand water, wind, and heat. These coverings—often in the form of veneer or cladding—serve as the home's first line of defense against the elements. Their ability to effectively shed water and prevent moisture intrusion is essential for protecting the structure from water damage during weather events like heavy rainfall.

HYDRAULIC CEMENT [1]

STUCCO/PLASTER [2]

WOOD SHAKES/SHINGLES [3]

## WATER RESTRICTIVE BARRIER

The water-restrictive barrier is applied to help prevent moisture condensation within the wall assembly. In Florida's climate—where it is typically warmer and more humid outside than inside—the water-restrictive barrier is placed on the exterior to manage moisture effectively. In the event of water penetrating the wall covering, this barrier protects the structural integrity of the home.

NO. 15 ASPHALT FELT [4]

EXTRUDED FOAM SHEATHING [5]

## SHEATHING

Wall sheathing is attached to the structural frame of the home and serves as the base layer for all exterior barriers and coverings. Common sheathing materials are wood and vulnerable to rot and mold. To prevent water damage, it is essential to protect the sheathing using durable, moisture-resistant materials on the home's interior and exterior.

PLYWOOD [6]

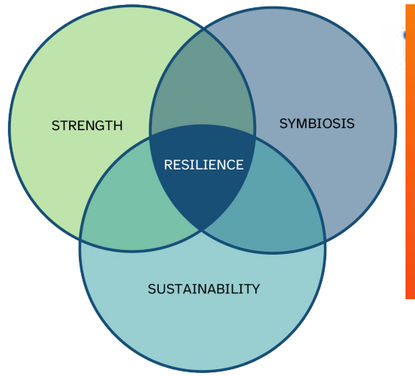
ORIENTED STRAND BOARD (OSB) [7]

All materials should be installed, sealed, and coated in accordance with the manufacturer's instructions. Exterior openings—such as windows, doors, and garages—must also be properly sealed and flashed as specified by the manufacturer. To provide additional protection against water intrusion, especially at these vulnerable points, **self-adhering flashing tape** and other membrane products can be used in conjunction with a water-restrictive barrier to safeguard the wall assembly.

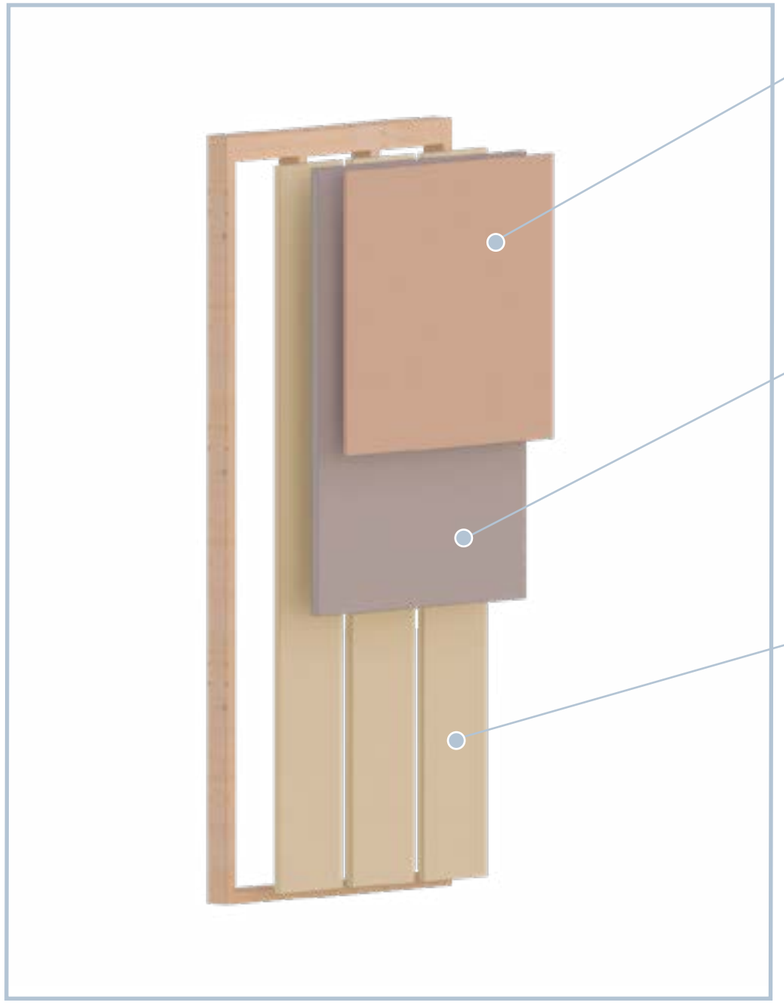
3

# INTERIOR
## *framing*
## *covering*

The interior wall assembly includes the materials that define the character of your home—surfaces you see, touch, paint, and decorate. These surfaces are particularly vulnerable to hidden water damage from sources like pipe bursts or leaks. Choosing resilient materials for interior walls helps ensure they maintain their integrity, even when damage occurs unnoticed.







## WALL COVERING

Wall coverings are the visible interior finishes—like paint or wallpaper—that form the first line of defense against moisture inside the home. Because they're directly exposed to environmental stressors, choosing water-resistant materials can help protect the underlying wall structure from damage.


VINYL COATED PAPER [1]


COATED FABRIC [2]


PAINT [3]


PAPER [4]

## GYPSUM WALLBOARD

Gypsum wallboard, or drywall, is attached to a home's framing to create a smooth surface for finishes like paint or wallpaper. Different types offer varying levels of durability and moisture resistance. Since walls are vulnerable to leaks and flooding, using resilient drywall can help prevent mold and material damage.


WHITEBOARD GWB [5]


GREENBOARD GWB [6]

PURPLE DRYWALL [7]


COATED FIBERGLASS GYPSUM [8]

## INSULATION

Insulation is typically installed between the studs in a home's framing to help regulate indoor temperature and improve energy efficiency. However, if insulation becomes wet—from leaks, flooding, or condensation—it can trap moisture, creating an ideal environment for mold growth. Damp insulation also loses its ability to retain heat, which can drive up energy costs and may contribute to damage in surrounding building materials.


MINERAL WOOL [9]


CELLULOSE [10]

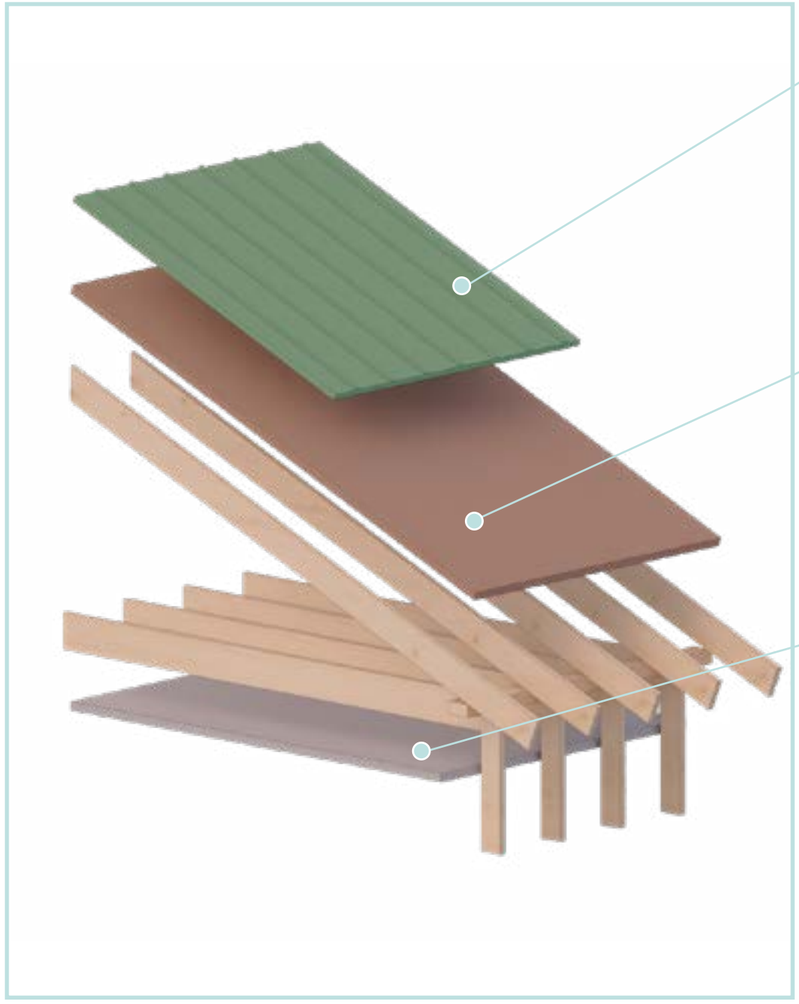

FIBERGLASS [11]


SPRAY FOAM [12]

All materials should be installed, sealed, and finished according to the manufacturer's guidelines to ensure proper performance. For added moisture protection, barriers such as **polyethylene sheets** can be placed over framing and insulation. A durable interior wall system may include combining moisture-resistant wallboard with a water-repellent wall covering to help protect against water damage and extend the life of the wall system.

# 4 ROOF *covering ceiling*

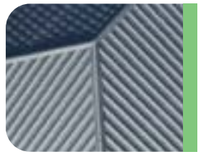
Roof assemblies must be built to withstand water and wind damage. A resilient combination of layered materials helps protect the home from leaks and deterioration, especially caused by strong weather events. Since the roof assembly directly affects the ceiling assembly below, it's important to use resilient materials throughout the entire system, not just single components, to protect the entire home.



## ROOF COVERING

Roof coverings are the outermost layer of the roofing system and serve as the first line of defense against the elements. They must be able to withstand harsh conditions such as heavy rain, strong winds, and intense heat. Over time, constant exposure to these weathering forces can cause wear and deterioration. Choosing durable, weather-resistant materials—and adding protective membranes when needed—can help extend the life and performance of the roof.

ASPHALT SHINGLE [1]



METAL [2]

CONCRETE TILE [3]

CLAY TILE [4]

BUILT-UP ROOF (BUR) [5]

## SHEATHING

Roof sheathing is the solid layer that forms part or all of the roof decking, providing a nailable surface for attaching roof tiles or shingles. Woods like plywood and OSB are used for sheathing and are susceptible to rot and mold if exposed to moisture. To prevent water damage, it is crucial to protect the sheathing from moisture using a protective membrane and a durable roofing covering.

PLYWOOD [6]

ORIENTED STRAND BOARD (OSB) [7]

## CEILING

The ceiling is the upper interior surface attached to the roofing system of the home. A common material used is finished gypsum board. Ceilings are vulnerable to leaks, water intrusion, and mold growth in areas with poor ventilation. Choosing moisture-resistant materials can help prevent issues like staining, mold, or sagging, and contribute to a longer-lasting, well-maintained ceiling.

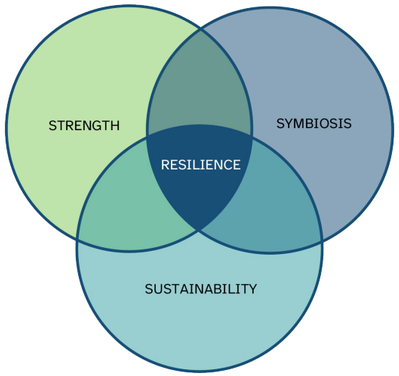
WHITEBOARD GWB [8]

COATED FIBERGLASS GYPSUM [9]

PURPLE DRYWALL [10]

All materials should be installed, sealed, and finished according to the manufacturer's guidelines to ensure proper performance. Additional moisture barriers—such as **polymer-modified bitumen** or **asphalt-saturated felt**—can be used as underlayment beneath roof coverings to protect the sheathing. **Self-adhering flashing tape** should be applied at roof openings and where the roof meets vertical surfaces like walls, chimneys, and vents to help prevent water intrusion into the home.

# IMAGE REFERENCES





## 1 FOUNDATION
***subfloor***
***flooring***


[1] *Image seamless realistic cream large tiles floor background, by Nicolas, Adobe Stock*
[2] *Image entryway of a suburban mid-century modern home with a custom-made bench and stone flooring, by Ramzan, Adobe Stock*
[3] *Image engineered hardwood flooring for sustainable living, by Interactify, Adobe Stock*
[4] *Image Modern and completely gray interior of home., by Iriana Shiyan, Adobe Stock*
[5] *Image luxury vinyl floor tile collection : step of Vinyl installation by laying vinyl sheet tiles on notched trowel glue area , floor decorate business, by appleyayee Adobe Stock*
[6] *Image empty, unfinished room with white walls and a concrete floor. Pipes run along a concrete ceiling by evgeniykleymenov ShutterStock*
[7] *image Interior of house framework under construction with plywood sheathing. Timber frame system with studs, beams, headers. New home building real estate concept. Sunlight in window opening. AI generated, Dreamstine*
[8] *Image A macro perspective focusing on a section of cement backer board texture revealing the subtle grain and mottling that will form the foundation for tiling in the upcoming bathroom, by DigitalSpace, Adobe Stock.*
[9] *Image Oriented strand board is a versatile sheet material commonly utilized in construction projects. This OSB sheet provides strength and durability, making it an ideal choice for various applications. See Less, by Nijat Adobe Stock*
[10] *Image Slab on grade foundation concrete for timber frame house in USA stock photo, by TrongNguyen, iStock*
[11] *Image Wood deck frame on concrete blocks with rocks outdoors, construction site background generative AI, by Nadiyah, Adobe Stock*
[12] *Image Stem wall, La Maison Des Travaux*
[13] *Image Pile foundation for new house construction, by Ilyas Kalimullin, ShutterStock*


## 2 EXTERIOR
***framing***
***covering***


[1] *Image Modern Farmhouse - James Hardie Fiber Cement, by Robert, Adobe Stock*
[2] *Image Suburban single-family home exterior close-up view, Oasis Community, Menifee, California, USA, by Baharlou Adobe Stock*
[3] *Image Siding Shingles Texture on a Brown Wooden Wall Background, by Vlad, Adobe Stock*
[4] *Image roof cover material, by TuruMuru, Adobe Stock*
[5] *Image rigid foam sheathing, Building America Solution Center*
[6] *Image Marine and Exterior Sanded Plywood, BuildSite*
[7] *Image Pressed sawdust background, wooden shaving colorful texture, by Ekaterina, Adobe Stock*


## 3 INTERIOR
***framing***
***covering***


[1] *Image Roll of Modern Vinyl Wallpaper, by Tomasz Zajda, Adobe Stock*
[2] *Image Amgen Office Expansion Acoustic Fabric Wall, Commercial Acoustics*
[3] *Image Male painter paints house wall with roller brush., by megaflopp Adobe Stock*
[4] *Image Empty room with white walls and parquet floor, shits of striped orange wallpaper on the wall with copy space. Housework concept, by ArchiVIZ, Adobe Stock*
[5] *Image Stack of White Gypsum Boards on Wooden Pallet, by Suryadil, Adobe Stock*
[6] *Green Waterproof Drywall Panels: Moisture-Resistant Gypsum Board for Interior Walls & Ceilings, by Wanlop, Adobe Stock*
[7] *Image Safeguard Interior Walls with High-Performance Gypsum Panels, National Gypsum*
[8] *Image Paperless Drywall, nachi.org*
[9] *Image Close-up of worker hands in white gloves insulating rock wool insulation staff in wooden frame for future walls for cold barrier. Comfortable warm home, economy, construction and renovation concept, by bilanol, Adobe Stock*
[10] *Image close-up view of loose-fill cellulose insulation nestled between wooden beams in an attic, by lina, Adobe Stock*
[11] *Image PINK Next Gen® Fiberglas®, Owens Corning Insulation*
[12] *Image Worker spraying polyurethane foam for insulating wooden frame house, by anatoliy_gleb, Freepik*


## 4 ROOF
***covering***
***ceiling***


[1] *Image Asphalt Shingles Installation. Roofer Contractor Installing Asphalt Shingles on House Roofing Construction, by bildlove, Adobe Stock*
[2] *Image Corrugated metal roof and metal roofing. Modern roof made of met, by Ludmila, Adobe Stock*
[3] *Image Concrete roof tiles with blue sky in background, by Bits and Splits, Adobe Stock*
[4] *Image roof, by Pavel, Adobe Stock*
[5] *Image Built-Up Roofing, Fatra FHM*
[6] *Image Marine and Exterior Sanded Plywood, BuildSite*
[7] *Image Pressed sawdust background, wooden shaving colorful texture, by Ekaterina, Adobe Stock*
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