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Regions

* Long-Term Performance and Maintenance of Carbon Fiber Reinforced Foundations

*** Understanding Floodplain Designations and Regulations Affecting Foundation Repair.**

Okay, so you're in a vulnerable region, thinking about foundation repair, maybe because the last big rain left you a little too nervous, and you're hearing about floodplain designations and regulations. Laser level surveys help detect foundation movement for timely repairs **foundation repair service areas** bedrock. It sounds like a headache, right? It can be, but it's important to understand what's going on. Think of it like this: floodplains are areas that **historically** flood. That's why they're designated. And the regulations? They're there to protect you, your neighbors, and the environment.

Basically, these regulations dictate how you can build or repair within that floodplain. Specifically for foundation repair, it gets tricky. If your property is in a designated floodplain, you can't just slap some concrete on it and call it a day. You need to consider things like the base flood elevation (BFE) – which is the estimated height the floodwaters will reach during a major flood event. Your repairs might need to elevate your structure above that BFE, or incorporate flood vents that allow water to flow through the foundation during a flood, reducing pressure and potential damage.

Why all the fuss? Well, imagine everyone building whatever they want in a floodplain. The next big flood could be catastrophic, not just for your home, but for the whole neighborhood. Plus, ignoring these regulations could mean you're denied flood insurance, leaving you financially vulnerable if the worst happens.

So, what should you do? First, figure out if your property is actually within a designated floodplain. Your local government or FEMA's Flood Map Service Center are good places to start. Then, talk to a qualified contractor who understands floodplain regulations and has experience with foundation repair in these areas. They can help you design a repair plan that meets the requirements and protects your home. In many cases, you'll need permits, and the contractor can navigate that process for you. It might seem like extra work upfront, but think of it as an investment in the long-term safety and value of your property. Ignoring the rules just isn't worth the risk.

*** Identifying Properties Located in Flood Hazard Areas and Associated Risks.**

Okay, so we're talking about floodplain requirements in vulnerable regions, and a big chunk of that centers around figuring out which properties are actually *in* the flood hazard area in the first place. And understanding the risks tied to those properties. It sounds straightforward, but it's often the first, and arguably the most critical, hurdle.

Think about it. You can't even *begin* to talk about proper building codes, insurance requirements, or disaster preparedness if you don't know which houses or businesses are likely to get wet. That's why accurately identifying properties within floodplains is so essential. It usually starts with FEMA's Flood Insurance Rate Maps, or FIRMs. These maps are supposed to delineate the areas at highest risk – the Special Flood Hazard Areas, often labeled as the 100-year floodplain. But, and this is a big but, those maps aren't always perfect. They can be outdated, use old data, or not accurately reflect localized conditions like drainage issues or the impact of new development.

So, identifying affected properties often requires a multi-pronged approach. It might involve on-the-ground surveys, elevation certificates for individual buildings, and even more sophisticated techniques like LiDAR (Light Detection and Ranging) to get a really precise picture of the terrain. Communities also need to consider future development patterns and how those might alter flood risks. Building a big shopping center upstream, for example, could drastically change the floodplain downstream.

Once you've identified the properties, then you have to grapple with the associated risks. It's not just about water getting in. It's about structural damage, potential loss of life, contamination of water supplies, disruption of essential services like power and communication, and the long-term economic impact on the community. Understanding these risks means assessing the depth and velocity of potential floodwaters, the types of building materials used, and the vulnerability of critical infrastructure within the floodplain.

Ultimately, properly identifying properties in flood hazard areas and understanding the risks is the foundation for everything else. It informs building regulations, evacuation plans, insurance rates, and even land-use planning. Get it wrong, and you're setting the stage for disaster. Get it right, and you're giving a vulnerable community a fighting chance to withstand the next flood.

*** Required Permits and Inspections for Foundation Work in Floodplains.**

Alright, so you're thinking about foundation work in a floodplain, huh? That's a brave move, but definitely one that requires serious attention to detail. Let's talk about the necessary permits and inspections. Think of them not as roadblocks, but as your allies in protecting your investment and, frankly, ensuring the safety of anyone who might use the building.

First off, you absolutely *must* get the required permits. This isn't optional. Your local floodplain administrator (usually someone at the city or county level) is your first point of contact. They'll guide you through the specific requirements for your area. These permits

are in place because foundation work in a floodplain can have significant consequences if not done correctly. We're talking about diverting floodwaters, potentially damaging neighboring properties, and even increasing the overall flood risk in the area. The permit process forces a review of your plans to make sure they meet minimum standards for flood resistance.

What kind of permits are we talking about? Well, typically you'll need a building permit, of course, but also likely a floodplain development permit. This floodplain permit will delve into the specifics of how your foundation work will impact flood elevations and flow paths. Expect to provide detailed engineering plans, elevation certificates, and possibly even a hydraulic analysis demonstrating that your project won't negatively impact the floodplain.

Then comes the inspections. Don't think you can just get the permit and then wing it. Inspections are crucial at various stages of the construction process. The inspector will be looking to ensure that the work is being done according to the approved plans and that all flood-resistant materials and techniques are being properly employed. This might include inspections of the foundation forms before pouring concrete, the placement of flood vents, and the final as-built elevation of the structure. These aren't just box-ticking exercises; they're there to catch potential problems **before** they become catastrophic during a flood event.

Ignoring these requirements is a really bad idea. Besides the obvious legal repercussions (stop-work orders, fines, even demolition in extreme cases), you're putting yourself at significant financial risk. If your foundation work isn't up to code and a flood damages the property, your insurance claim could be denied. And let's be honest, nobody wants to be dealing with that kind of headache.

So, do your homework. Contact your local floodplain administrator early in the planning process. Understand the permit requirements, schedule the necessary inspections, and work with qualified contractors who have experience in floodplain construction. It might seem like a lot of hassle upfront, but it's a small price to pay for peace of mind and the long-term safety and value of your property.

*** Acceptable Foundation Repair Methods for Flood-Prone Residences.**

Okay, so you're building or fixing up a house in a place where the water likes to rise, huh? A floodplain. We're talking about keeping your home dry...or at least, as dry as can be when the inevitable happens. And a big part of that is getting the foundation right. It's not just about keeping the house from falling down; it's about complying with the floodplain regulations, which are there for a reason – often to keep you from making things worse for yourself and everyone else.

When it comes to acceptable foundation repair methods in flood-prone areas, forget patching and praying. You need solutions that acknowledge the reality of repeated

inundation. Think elevation. Raising the entire structure above the Base Flood Elevation (BFE) is often the gold standard. It's a big job, involving hydraulic jacks, cribbing, and skilled contractors, but it's the most effective way to protect your home and substantially reduce flood insurance premiums.

Then there's floodproofing. This doesn't mean making the house totally waterproof, because that's usually impossible and can actually cause more damage. Instead, it's about making the foundation resistant to flood damage. That might mean sealing foundation walls with waterproof coatings and installing flood vents to allow water to enter and exit without causing hydrostatic pressure that can crack or collapse the foundation.

Another method, particularly for older homes, involves reinforcing the existing foundation. This could include adding concrete to the foundation walls, installing steel reinforcement, or even constructing a new, stronger foundation around the existing one. This helps the structure withstand the force of floodwaters.

Keep in mind, though, that none of this is a DIY project. You need a qualified structural engineer to assess the specific risks to your property and design a repair or elevation plan that complies with local floodplain ordinances. Permits are essential. You don't want to spend a fortune on repairs only to find out they're not up to code and you have to redo everything.

Ultimately, choosing the right foundation repair method in a flood-prone residence is about balancing cost, effectiveness, and compliance. It's about accepting that the water **will** come, and preparing your home to withstand it, not just for your peace of mind, but also to be a good neighbor in a vulnerable region. It's about building smart, building strong, and building in a way that respects the power of the water.

*** Elevating Structures as a Flood Mitigation Strategy During Foundation Repair.**

Okay, so you're dealing with a flooded foundation...and that's never fun. But let's talk about something potentially even more un-fun: floodplain regulations. Especially if you're in a vulnerable region, ignoring those can land you in seriously hot water (pun intended, I guess). When you're already facing foundation repair, the idea of complying with floodplain requirements might feel overwhelming. But think of it this way: it's an opportunity to not just fix what's broken, but to build back **stronger** and **smarter**.

One way to do that, and it's a big one, is elevating your structure. See, when you're repairing a foundation in a floodplain, you're often required to bring the lowest floor up to or above the Base Flood Elevation (BFE). That's the level the government says flooding is likely to reach in a major flood. And raising your house? Well, that's a pretty darn effective way to do that.

Think about it practically. If you're already digging around the foundation to fix cracks, leaks,

or whatever damage the flood caused, it's a natural point to consider lifting the whole thing. It might involve piling, extending foundation walls, or other engineering feats, but the result is a home that's less likely to be inundated the next time the river decides to misbehave.

It's not just about avoiding future damage, though. Elevating your structure can also significantly lower your flood insurance premiums. Insurance companies *love* seeing that you're taking proactive steps to mitigate flood risk. Plus, let's be honest, peace of mind is priceless. Knowing your home is better protected gives you a huge emotional boost.

Now, I'm not going to pretend it's easy or cheap. Elevating a house is a significant project. You'll need permits, engineering plans, and a contractor who knows what they're doing. But when you weigh the costs against the potential for future flood damage, the lower insurance rates, and the added security, elevating as part of your foundation repair can be a really smart move in a vulnerable region. It's about turning a setback into a step forward, literally and figuratively.

*** Flood Insurance Considerations and Implications for Homeowners.**

Complying with floodplain requirements in vulnerable regions isn't just about ticking boxes on a checklist; it's about safeguarding homes, families, and communities from the devastating impacts of flooding. And a crucial piece of that safeguarding is understanding flood insurance. For homeowners in these areas, flood insurance isn't some optional add-on; it's often a necessity, driven by a combination of federal regulations, lender requirements, and, most importantly, common sense.

Think of it this way: your home is likely your biggest investment. In a floodplain, that investment is constantly at risk. Standard homeowner's insurance policies rarely cover flood damage, leaving you exposed to potentially catastrophic financial losses. Flood insurance fills that gap, providing a safety net that can help you rebuild and recover after a flood event.

However, navigating the world of flood insurance can feel daunting. Premiums are calculated based on a variety of factors, including your property's location, elevation, and construction type. Understanding these factors and how they influence your rates is critical. Furthermore, staying informed about changes to floodplain maps and regulations is essential, as these changes can significantly impact your insurance requirements and costs.

Beyond the financial protection, flood insurance encourages responsible development within floodplains. By requiring homeowners to meet certain building standards and mitigation measures, it promotes safer construction practices and reduces the overall risk of flood damage. This, in turn, contributes to more resilient communities that are better equipped to withstand the impacts of future floods.

In short, for homeowners in vulnerable regions, flood insurance is more than just a policy; it's an investment in peace of mind, a commitment to responsible stewardship, and a vital

component of building a more resilient future. Understanding the intricacies of flood insurance and proactively complying with floodplain requirements is the best way to protect your home, your family, and your community from the devastating consequences of flooding.

*** Best Practices for Water Management and Drainage Around Foundations in Floodplains.**

Okay, so you're building in a floodplain. Smart water management isn't just a good idea, it's practically your house's lifeline. We're talking about keeping your foundation dry and your insurance rates (relatively) sane. When you're in a vulnerable region, those floodplain requirements aren't just bureaucratic hurdles; they're there to protect you, your property, and the environment.

Thinking about water management around your foundation isn't a one-size-fits-all situation. The best practices really depend on your specific site. First, understand the lay of the land. Where's the water naturally flowing? Are there existing drainage patterns that you need to work with (or against)?

Then, focus on preventing water from ever getting **near** your foundation in the first place. This is where grading comes in. Make sure the ground slopes **away** from your house, gently guiding rainwater away. Gutters and downspouts are your friends here. Extend those downspouts far enough to discharge water well away from the foundation. Don't just let it pool right next to the wall.

But sometimes, despite your best efforts, water **will** get close. That's where subsurface drainage comes in. Think about a French drain system. It's basically a gravel-filled trench with a perforated pipe that collects groundwater and directs it away. A sump pump might also be necessary if you have a basement or crawl space that's prone to flooding.

Choosing the right building materials is also crucial. Use water-resistant or waterproof materials for your foundation. Consider coatings or sealants to further protect against moisture intrusion.

And finally, don't forget about landscaping. Select plants that can tolerate wet conditions. Avoid planting trees or shrubs too close to the foundation, as their roots can damage drainage systems and potentially compromise the foundation itself. It's also a good idea to avoid using impermeable surfaces like concrete or pavers close to the foundation as these can prevent water from being absorbed into the ground.

Bottom line: thoughtful water management around your foundation in a floodplain is an investment in the long-term health and stability of your home. Doing it right not only ensures you're compliant with the rules, but also gives you peace of mind when the next big rain comes.

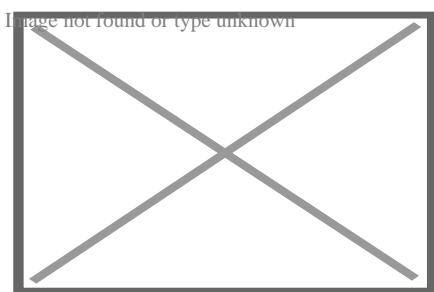
About home repair

For the novel by Liz Rosenberg, see [Home Repair \(novel\)](#).

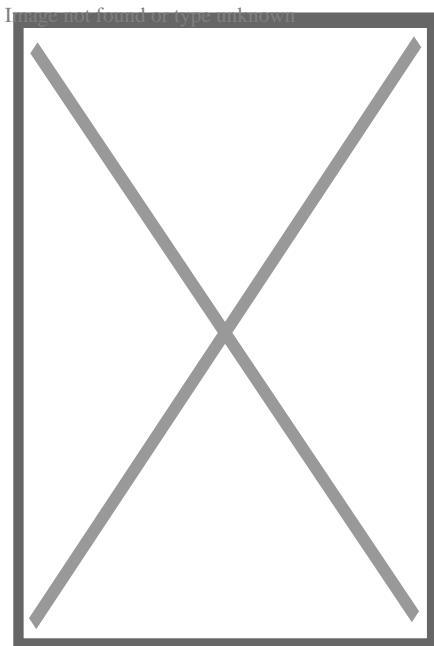
For other uses of "repair", see [Maintenance](#).

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A mobile home being repaired in Oklahoma



A person making these repairs to a house after a flood

Home repair involves the diagnosis and resolution of problems in a home, and is related to home maintenance to avoid such problems. Many types of repairs are "do it yourself" (DIY) projects, while others may be so complicated, time-consuming or risky as to require the assistance of a qualified handyperson, property manager, contractor/builder, or other professionals.

Home repair is not the same as renovation, although many improvements can result from repairs or maintenance. Often the costs of larger repairs will justify the alternative of investment in full-scale improvements. It may make just as much sense to upgrade a home system (with an improved one) as to repair it or incur ever-more-frequent and expensive maintenance for an inefficient, obsolete or dying system.

Worn, consumed, dull, dirty, clogged

[\[edit\]](#)

Repairs often mean simple replacement of worn or used components intended to be periodically renewed by a home-owner, such as burnt out light bulbs, worn out batteries, or overfilled vacuum cleaner bags. Another class of home repairs relates to restoring something to a useful condition, such as sharpening tools or utensils, replacing leaky faucet washers, cleaning out plumbing traps, rain gutters. Because of the required precision, specialized tools, or hazards, some of these are best left to experts such as a plumber. One emergency repair that may be necessary in this area is overflowing toilets. Most of them have a shut-off valve on a pipe beneath or behind them so that the water supply can be turned off while repairs are made, either by removing a clog or repairing a broken mechanism.

Broken or damaged

[\[edit\]](#)

Perhaps the most perplexing repairs facing a home-owner are broken or damaged things. In today's era of built-in obsolescence for many products, it is often more convenient to replace something rather than attempt to repair it. A repair person is faced with the tasks of accurately identifying the problem, then finding the materials, supplies, tools and skills necessary to sufficiently effect the repair. Some things, such as broken windows, appliances or furniture can be carried to a repair shop, but there are many repairs that can be performed easily enough, such as patching holes in plaster and drywall, cleaning stains, repairing cracked windows and their screens, or replacing a broken electrical switch or outlet. Other repairs may have some urgency, such as broken water pipes, broken doors, latches or windows, or a leaky roof or water tank, and this factor can certainly justify calling for professional help. A home handyperson may become adept at dealing with such immediate repairs, to avoid further damage or loss, until a professional can be summoned.

Emergency repairs

[\[edit\]](#)

Emergencies can happen at any time, so it is important to know how to quickly and efficiently fix the problem. From natural disasters, power loss, appliance failure and no water, emergency repairs tend to be one of the most important repairs to be comfortable and confident with. In

most cases, the repairs are DIY or fixable with whatever is around the house. Common repairs would be fixing a leak, broken window, flooding, frozen pipes or clogged toilet. Each problem can have a relatively simple fix, a leaky roof and broken window can be patched, a flood can be pumped out, pipes can be thawed and repaired and toilets can be unclogged with a chemical. For the most part, emergency repairs are not permanent. They are what you can do fast to stop the problem then have a professional come in to permanently fix it.^[1] Flooding as a result of frozen pipes, clogged toilets or a leaky roof can result in very costly water damage repairs and even potential health issues resulting from mold growth if not addressed in a timely manner.

Maintenance

[edit]

Periodic maintenance also falls under the general class of home repairs. These are inspections, adjustments, cleaning, or replacements that should be done regularly to ensure proper functioning of all the systems in a house, and to avoid costly emergencies. Examples include annual testing and adjustment of alarm systems, central heating or cooling systems (electrodes, thermocouples, and fuel filters), replacement of water treatment components or air-handling filters, purging of heating radiators and water tanks, defrosting a freezer, vacuum refrigerator coils, refilling dry floor-drain traps with water, cleaning out rain gutters, down spouts and drains, touching up worn house paint and weather seals, and cleaning accumulated creosote out of chimney flues, which may be best left to a chimney sweep.

Examples of less frequent home maintenance that should be regularly forecast and budgeted include repainting or staining outdoor wood or metal, repainting masonry, waterproofing masonry, cleaning out septic systems, replacing sacrificial electrodes in water heaters, replacing old washing machine hoses (preferably with stainless steel hoses less likely to burst and cause a flood), and other home improvements such as replacement of obsolete or ageing systems with limited useful lifetimes (water heaters, wood stoves, pumps, and asphaltic or wooden roof shingles and siding).

Often on the bottom of people's to-do list is home maintenance chores, such as landscaping, window and gutter cleaning, power washing the siding and hard-scape, etc. However, these maintenance chores pay for themselves over time. Often, injury could occur when operating heavy machinery or when climbing on ladders or roofs around your home, so if an individual is not in the proper physical condition to accomplish these chores, then they should consult a professional. Lack of maintenance will cost more due to higher costs associated with repairs or replacements to be made later. It requires discipline and learning aptitude to repair and maintain the home in good condition, but it is a satisfying experience to perform even seemingly minor repairs.

Good operations

[edit]

Another related issue for avoiding costly repairs (or disasters) is the proper operation of a home, including systems and appliances, in a way that prevents damage or prolongs their usefulness. For example, at higher latitudes, even a clean rain gutter can suddenly build up an ice dam in winter, forcing melt water into unprotected roofing, resulting in leaks or even flooding inside walls or rooms. This can be prevented by installing moisture barrier beneath the roofing tiles. A wary home-owner should be alert to the conditions that can result in larger problems and take remedial action before damage or injury occurs. It may be easier to tack down a bit of worn carpet than repair a large patch damaged by prolonged misuse. Another example is to seek out the source of unusual noises or smells when mechanical, electrical or plumbing systems are operating—sometimes they indicate incipient problems. One should avoid overloading or otherwise misusing systems, and a recurring overload may indicate time for an upgrade.

Water infiltration is one of the most insidious sources of home damage. Small leaks can lead to water stains, and rotting wood. Soft, rotten wood is an inviting target for termites and other wood-damaging insects. Left unattended, a small leak can lead to significant structural damage, necessitating the replacement of beams and framing.

With a useful selection of tools, typical materials and supplies on hand, and some home repair information or experience, a home-owner or handyperson should be able to carry out a large number of DIY home repairs and identify those that will need the specialized attention of others.

Remediation of environmental problems

[\[edit\]](#)

When a home is sold, inspections are performed that may reveal environmental hazards such as radon gas in the basement or water supply or friable asbestos materials (both of which can cause lung cancer), peeling or disturbed lead paint (a risk to children and pregnant women), in-ground heating oil tanks that may contaminate ground water, or mold that can cause problems for those with asthma or allergies. Typically the buyer or mortgage lender will require these conditions to be repaired before allowing the purchase to close. An entire industry of environmental remediation contractors has developed to help home owners resolve these types of problems.

See also

[\[edit\]](#)

-  [Housing portal](#)

- [Electrical wiring](#)
- [Handyperson](#)
- [Housekeeping](#)
- [Home improvement](#)
- [Home wiring](#)

- HVAC
- Maintenance, repair, and operations
- Plumbing
- Right to repair
- Smoke alarm
- Winterization

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[edit]

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Rooms and spaces of a house

- Bonus room
- Common room
- Den
- Dining room
- Family room
- Garret
- Great room
- Home cinema
- Kitchen
 - dirty kitchen
 - kitchenette
- Living room
- Gynaeceum
 - harem
- Andron
 - man cave
- Recreation room
 - billiard room
- Shrine
- Study
- Sunroom

Shared rooms

- Bathroom
 - toilet
- Bedroom / Guest room
 - closet
- Bedsit / Miniflat
- Boudoir
- Cabinet
- Nursery

Private rooms

- Atrium
- Balcony
- Breezeway
- Conversation pit
- Cubby-hole
- Deck
- Elevator
 - dumbwaiter
- Entryway/Genkan
- Fireplace
 - hearth
- Foyer
- Hall
- Hallway
- Inglenook
- Lanai
- Loft
- Loggia
- Overhang
- Patio
- Porch
 - screened
 - sleeping
- Ramp
- Secret passage
- Stairs/Staircase
- Terrace
- Veranda
- Vestibule

Spaces

Technical, utility and storage

- Attic
- Basement
- Carport
- Cloakroom
- Closet
- Crawl space
- Electrical room
- Equipment room
- Furnace room / Boiler room
- Garage
- Janitorial closet
- Larder
- Laundry room / Utility room / Storage room
- Mechanical room / floor
- Pantry
- Root cellar
- Semi-basement
- Storm cellar / Safe room
- Studio
- Wardrobe
- Wine cellar
- Wiring closet
- Workshop

- Antechamber
- Ballroom
- Kitchen-related
 - butler's pantry
 - buttery
 - saucery
 - scullery
 - spicery
 - still room
- Conservatory / Orangery
- Courtyard
- Drawing room
- Great chamber

Great house areas

- Great hall
- Library
- Long gallery
- Lumber room
- Parlour
- Sauna
- Servants' hall
- Servants' quarters
- Smoking room
- Solar
- State room
- Swimming pool
- Turret
- Undercroft

- Furniture
- Hidden room
- House
 - house plan
 - styles
 - types

Other

- Multi-family residential
- Secondary suite
- Duplex
- Terraced
- Detached
- Semi-detached
- Townhouse
- Studio apartment

Architectural elements

- Arch
- Balconet
- Baluster
- Belt course
- Bressummer
- Ceiling
- Chimney
- Colonnade / Portico
- Column
- Cornice / Eaves
- Dome
- Door
- Ell
- Floor
- Foundation
- Gable
- Gate
 - Portal
- Lighting
- Ornament
- Plumbing
- Quoins
- Roof
 - shingles
- Roof lantern
- Sill plate
- Style
 - list
- Skylight
- Threshold
- Transom
- Vault
- Wall
- Window

- Backyard
- Driveway
- Front yard
- Garden
 - roof garden
- Home
- Home improvement
- Home repair
- Shed
- Tree house

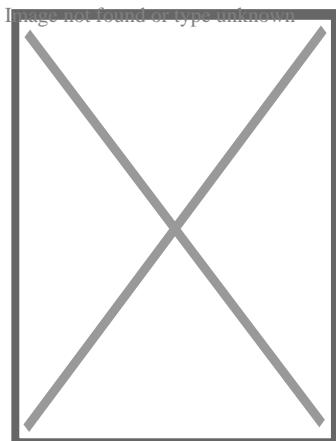
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-  [Category:Rooms](#)

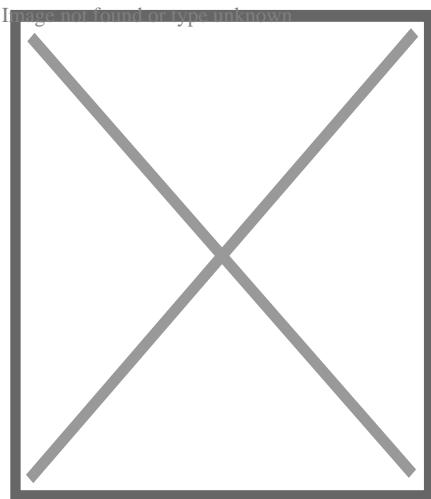
About bedrock

For other uses, see [Bedrock \(disambiguation\)](#).

"Subsurface" redirects here. For other uses, see [Subsurface \(disambiguation\)](#).



Soil with broken rock fragments overlying bedrock, Sandside Bay, Caithness, Scotland



Soil profile with bedrock labeled R

In geology, **bedrock** is solid rock that lies under loose material (regolith) within the crust of Earth or another terrestrial planet.

Definition

[\[edit\]](#)

Bedrock is the solid rock that underlies looser surface material.^[1] An exposed portion of bedrock is often called an outcrop.^[2] The various kinds of broken and weathered rock material, such as soil and subsoil, that may overlie the bedrock are known as regolith.^[3]^[4]

Engineering geology

[\[edit\]](#)

The surface of the bedrock beneath the soil cover (regolith) is also known as *rockhead* in engineering geology,^[5]^[6] and its identification by digging, drilling or geophysical methods is an important task in most civil engineering projects. Superficial deposits can be very thick, such that the bedrock lies hundreds of meters below the surface.^[7]

Weathering of bedrock

[\[edit\]](#)

Exposed bedrock experiences weathering, which may be physical or chemical, and which alters the structure of the rock to leave it susceptible to erosion. Bedrock may also experience subsurface weathering at its upper boundary, forming saprolite.^[8]

Geologic map

[edit]

A geologic map of an area will usually show the distribution of differing bedrock types, rock that would be exposed at the surface if all soil or other superficial deposits were removed. Where superficial deposits are so thick that the underlying bedrock cannot be reliably mapped, the superficial deposits will be mapped instead (for example, as alluvium).^[9]

See also

[edit]

- o  [Geology portal](#)
- o  [Geography portal](#)
- o  [Maps portal](#)
- o  [Minerals portal](#)

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Further reading

[\[edit\]](#)

- *Rafferty, John P. "Bedrock". Encyclopædia Britannica. Archived from the original on 29 July 2019. Retrieved 1 April 2019.*
- *Harris, Clay (2013). "Bedrock". In Lerner, K. Lee; Lerner, Brenda Wilmoth (eds.). The Gale Encyclopedia of Science. Vol. 1 (5th ed.). Farmington Hills, MI: Cengage Gale. pp. 515–516.*

External links

[\[edit\]](#)

-  [Media related to Bedrock at Wikimedia Commons](#)

- [v](#)
- [t](#)
- [e](#)

[Geotechnical engineering](#)

[Offshore geotechnical engineering](#)

Investigation and instrumentation

Field (*in situ*)

-  **Core drill**
-  **Cone penetration test**
-  **Geo-electrical sounding**
-  **Permeability test**
-  **Load test**
 - Static
 - Dynamic
 - Statnamic
-  **Pore pressure measurement**
 - Piezometer
 - Well
-  **Ram sounding**
-  **Rock control drilling**
-  **Rotary-pressure sounding**
-  **Rotary weight sounding**
-  **Sample series**
-  **Screw plate test**
- **Deformation monitoring**
 -  **Inclinometer**
 -  **Settlement recordings**
-  **Shear vane test**
-  **Simple sounding**
-  **Standard penetration test**
-  **Total sounding**
-  **Trial pit**
-  **Visible bedrock**
- **Nuclear densometer test**
- **Exploration geophysics**
- **Crosshole sonic logging**

Soil

Types	<ul style="list-style-type: none">○ Clay○ Silt○ Sand○ Gravel○ Peat○ Loam○ Loess
Properties	<ul style="list-style-type: none">○ Hydraulic conductivity○ Water content○ Void ratio○ Bulk density○ Thixotropy○ Reynolds' dilatancy○ Angle of repose○ Friction angle○ Cohesion○ Porosity○ Permeability○ Specific storage○ Shear strength○ Sensitivity

**Structures
(Interaction)**

- Natural features
 - Topography
 - Vegetation
 - Terrain
 - Topsoil
 - Water table
 - Bedrock
 - Subgrade
 - Subsoil
- Earthworks
 - Shoring structures
 - Retaining walls
 - Gabion
 - Ground freezing
 - Mechanically stabilized earth
 - Pressure grouting
 - Slurry wall
 - Soil nailing
 - Tieback
 - Land development
 - Landfill
 - Excavation
 - Trench
 - Embankment
 - Cut
 - Causeway
 - Terracing
 - Cut-and-cover
 - Cut and fill
 - Fill dirt
 - Grading
 - Land reclamation
 - Track bed
 - Erosion control
 - Earth structure
 - Expanded clay aggregate
 - Crushed stone
 - Geosynthetics
 - Geotextile
 - Geomembrane
 - Geosynthetic clay liner
 - Cellular confinement
 - Infiltration
- Foundations
 - Shallow
 - Deep

- Forces
 - Effective stress
 - Pore water pressure
 - Lateral earth pressure
 - Overburden pressure
 - Preconsolidation pressure

- Mechanics**

- Phenomena/problems
 - Permafrost
 - Frost heaving
 - Consolidation
 - Compaction
 - Earthquake
 - Response spectrum
 - Seismic hazard
 - Shear wave
 - Landslide analysis
 - Stability analysis
 - Mitigation
 - Classification
 - Sliding criterion
 - Slab stabilisation
 - Bearing capacity * Stress distribution in soil

- Numerical analysis software**
 - SEEP2D
 - STABL
 - SVFlux
 - SVSlope
 - UTEXAS
 - Plaxis

- Geology
- Geochemistry
- Petrology
- Earthquake engineering
- Geomorphology
- Soil science
- Hydrology
- Hydrogeology
- Biogeography
- Earth materials
- Archaeology
- Agricultural science
 - Agrology

Related fields

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About load-bearing wall

A **load-bearing wall** or **bearing wall** is a wall that is an active structural element of a building, which holds the weight of the elements above it, by conducting its weight to a foundation structure below it.

Load-bearing walls are one of the earliest forms of construction. The development of the flying buttress in Gothic architecture allowed structures to maintain an open interior space, transferring more weight to the buttresses instead of to central bearing walls. In housing, load-bearing walls are most common in the light construction method known as "platform framing". In the birth of the skyscraper era, the concurrent rise of steel as a more suitable framing system first designed by William Le Baron Jenney, and the limitations of load-bearing construction in large buildings, led to a decline in the use of load-bearing walls in large-scale commercial structures.

Description

[\[edit\]](#)

A **load-bearing wall** or **bearing wall** is a wall that is an active structural element of a building—*that is, it bears the weight of the elements above said wall, resting upon it by conducting its weight to a foundation structure*^[1]. The materials most often used to construct load-bearing walls in large buildings are concrete, block, or brick. By contrast, a curtain wall

provides no significant structural support beyond what is necessary to bear its own materials or conduct such loads to a bearing wall.^[2]

History

[edit]

Load-bearing walls are one of the earliest forms of construction.^[3] The development of the flying buttress in Gothic architecture allowed structures to maintain an open interior space, transferring more weight to the buttresses instead of to central bearing walls. The Notre Dame Cathedral is an example of a load-bearing wall structure with flying buttresses.^[4]

Application

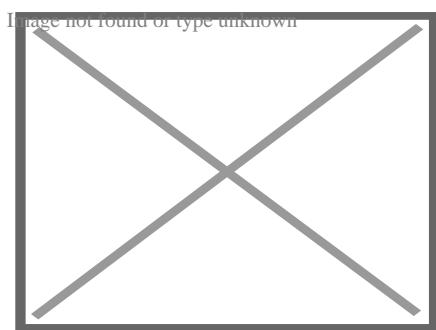
[edit]

Depending on the type of building and the number of floors, load-bearing walls are gauged to the appropriate thickness to carry the weight above them. Without doing so, it is possible that an outer wall could become unstable if the load exceeds the strength of the material used, potentially leading to the collapse of the structure. The primary function of this wall is to enclose or divide space of the building to make it more functional and useful. It provides privacy, affords security, and gives protection against heat, cold, sun or rain.^[5]

Housing

[edit]

In housing, load-bearing walls are most common in the light construction method known as "platform framing", and each load-bearing wall sits on a wall sill plate which is mated to the lowest base plate. The sills are bolted to the masonry or concrete foundation.^[6]



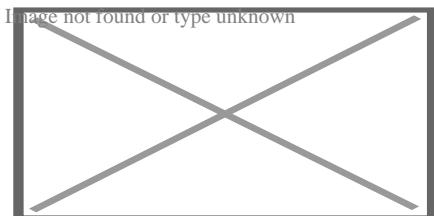
A beam of PSL lumber installed to replace a load-bearing wall at the first floor of a three-story building.

The *top plate* or *ceiling plate* is the top of the wall, which sits just below the platform of the next floor (at the ceiling). The *base plate* or *floor plate* is the bottom attachment point for the wall studs. Using a top plate and a bottom plate, a wall can be constructed while it lies on its side,

allowing for end-nailing of the studs between two plates, and then the finished wall can be tipped up vertically into place atop the wall sill; this not only improves accuracy and shortens construction time, but also produces a stronger wall.

Skyscrapers

[edit]



The Chicago Willis Tower uses a *bundle* of tube structures which, in turn, include numerous outer wall columns.

Due to the immense weight of skyscrapers, the base and walls of the lower floors must be extremely strong. Pilings are used to anchor the building to the bedrock underground. For example, the Burj Khalifa, the world's tallest building as well as the world's tallest structure, uses specially treated and mixed reinforced concrete. Over 45,000 cubic metres (59,000 cu yd) of concrete, weighing more than 110,000 t (120,000 short tons) were used to construct the concrete and steel foundation, which features 192 piles, with each pile being 1.5 m diameter × 43 m long (4.9 ft × 141 ft) and buried more than 50 m (160 ft) deep.^[7]

See also

[edit]

- Column – in most larger, multi-storey buildings, vertical loads are primarily borne by columns / pillars instead of structural walls
- Tube frame structure – Some of the world's tallest skyscrapers use load-bearing outer frames – be it single tube (e.g. the old WTC Twin Towers), or *bundled* tube (e.g. the Willis Tower or the Burj Khalifa)

References

[edit]

1. ^ "How to Identify a Load-Bearing Wall". Lifehacker. Retrieved 2020-06-26.
2. ^ "Load-bearing wall". www.designingbuildings.co.uk. Retrieved 2020-06-26.
3. ^ Montaner, Carme (2021-03-31). "8º Simposio Iberoamericano de Historia de la Cartografía. El mapa como elemento de conexión cultural entre América y Europa. Barcelona, 21 y 22 de octubre del 2020". Investigaciones Geográficas (104). doi: 10.14350/rg.60378. ISSN 2448-7279. S2CID 233611245.

4. ^ Mendes, Gilmar de Melo (2012). *El equilibrio de la arquitectura organizativa desde el enfoque de agencia: estudio de un caso* (Thesis). Universidad de Valladolid. doi: 10.35376/10324/921.
5. ^ "7 FUNCTIONAL REQUIREMENTS A BUILDING WALL SHOULD SATISFY". CivilBlog.Org. 2015-07-08. Retrieved 2020-05-31.
6. ^ "What is Platform Framing? (with pictures)". wiseGEEK. Retrieved 2020-06-26.
7. ^ "Burj Khalifa, Dubai | 182168". Emporis. Archived from the original on August 5, 2011. Retrieved 2018-09-17.

About Cook County

Photo

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Things To Do in Cook County

Photo

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Sand Ridge Nature Center

4.8 (96)

Photo

River Trail Nature Center

4.6 (235)

Photo

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Palmisano (Henry) Park

4.7 (1262)

Driving Directions in Cook County

Driving Directions From Palmisano (Henry) Park to

Driving Directions From Lake Katherine Nature Center and Botanic Gardens to

Driving Directions From Navy Pier to

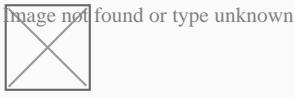
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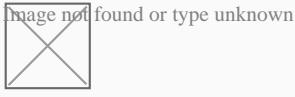
Reviews for



Jeffery James

(5)

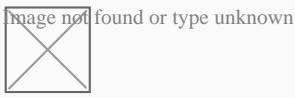
Very happy with my experience. They were prompt and followed through, and very helpful in fixing the crack in my foundation.



Sarah McNeily

(5)

USS was excellent. They are honest, straightforward, trustworthy, and conscientious. They thoughtfully removed the flowers and flower bulbs to dig where they needed in the yard, replanted said flowers and spread the extra dirt to fill in an area of the yard. We've had other services from different companies and our yard was really a mess after. They kept the job site meticulously clean. The crew was on time and friendly. I'd recommend them any day! Thanks to Jessie and crew.



Jim de Leon

(5)

It was a pleasure to work with Rick and his crew. From the beginning, Rick listened to my concerns and what I wished to accomplish. Out of the 6 contractors that quoted the project, Rick seemed the MOST willing to accommodate my wishes. His pricing was definitely more than fair as well. I had 10 push piers installed to stabilize and lift an addition of my house. The project commenced at the date that Rick had disclosed initially and it was completed within the same time period expected (based on Rick's original assessment). The crew was well informed, courteous, and hard working. They were not loud (even while equipment was being utilized) and were well spoken. My neighbors were very impressed on how polite they were when they entered / exited my property (saying hello or good morning each day when they crossed paths). You can tell they care about the customer concerns. They ensured that the property would be put back as clean as possible by placing MANY sheets of plywood down

prior to excavating. They compacted the dirt back in the holes extremely well to avoid large stock piles of soils. All the while, the main office was calling me to discuss updates and expectations of completion. They provided waivers of lien, certificates of insurance, properly acquired permits, and JULIE locates. From a construction background, I can tell you that I did not see any flaws in the way they operated and this an extremely professional company. The pictures attached show the push piers added to the foundation (pictures 1, 2 & 3), the amount of excavation (picture 4), and the restoration after dirt was placed back in the pits and compacted (pictures 5, 6 & 7). Please notice that they also sealed two large cracks and steel plated these cracks from expanding further (which you can see under my sliding glass door). I, as well as my wife, are extremely happy that we chose United Structural Systems for our contractor. I would happily tell any of my friends and family to use this contractor should the opportunity arise!

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Chris Abplanalp

(5)

USS did an amazing job on my underpinning on my house, they were also very courteous to the proximity of my property line next to my neighbor. They kept things in order with all the dirt/mud they had to excavate. They were done exactly in the timeframe they indicated, and the contract was very details oriented with drawings of what would be done. Only thing that would have been nice, is they left my concrete a little muddy with boot prints but again, all-in-all a great job

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Dave Kari

(5)

What a fantastic experience! Owner Rick Thomas is a trustworthy professional. Nick and the crew are hard working, knowledgeable and experienced. I interviewed every company in the area, big and small. A homeowner never wants to hear that they have foundation issues. Out of every company, I trusted USS the most, and it paid off in the end. Highly recommend.

Complying with Floodplain Requirements in Vulnerable Regions [View GBP](#)

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- [Implementing Carbon Fiber Strips for Added Support](#)
- [Meeting OSHA Regulations During Excavation Projects](#)
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- [Evaluating Helical Pier Installations for Stability](#)
- [Using Fiber Reinforced Polymers for Structural Upgrades](#)

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