



- **Understanding Expansive Clay and Its Impact on Foundations**
Understanding Expansive Clay and Its Impact on Foundations Examining Sandy Loam for Residential Support Identifying Areas Vulnerable to Soil Erosion Evaluating Soil Moisture Fluctuations Beneath Homes Approaches for Chemical Soil Stabilization Techniques for Addressing Soil Heave Issues Managing Settlement with Targeted Soil Compaction Recognizing Soil Drainage Limitations Investigating Soil Stress Testing in Residential Sites Incorporating Root Barriers to Prevent Shifts Examining Seasonal Swelling and Shrinking of Soil Employing Sustainable Methods for Long Term Soil Health
- **Planning French Drains for Effective Water Control**
Planning French Drains for Effective Water Control Setting Up Sump Pumps to Prevent Basement Flooding Extending Gutter Downspouts for Extra Protection Excavation Basics for Residential Construction Projects Coordinating Soil Compaction Methods on Site Limiting Erosion Through Proper Grading Techniques Evaluating Perimeter Drain Systems for Dry Foundations Installing Exterior Waterproof Barriers for Walls Adapting Site Plans to Local Rainfall Patterns Understanding Swale Placement for Controlled Water Flow Enhancing Overall Site Drainage with Gravel Trenches Minimizing Subsurface Water Accumulation Around Foundations
- **About Us**



Overview of common soil types and their challenges in residential construction.

In residential construction, understanding the soil types one is working with is crucial. Helical piers provide strong support for homes needing foundation repair expert service **residential foundation repair service** integrity. Different soils present unique challenges that can affect the stability and longevity of structures. Let's delve into some common soil types and the hurdles they pose, followed by an introduction to chemical soil stabilization as a potential solution.

Clay soils are notorious for their high plasticity and cohesion. While they can provide good support when dry, they tend to expand when wet, leading to foundation issues. This expansion can cause cracks in walls and uneven settling, compromising the structural integrity of a home.

Sandy soils, on the other hand, are loose and granular. They offer poor support for foundations due to their low cohesion and high permeability. Structures built on sandy soils are susceptible to sinking or shifting, especially during heavy rains or earthquakes.

Silt soils fall between clay and sand in terms of particle size. They are more stable than sandy soils but can still pose challenges. Silt soils have a tendency to compact under load, which can lead to settling issues over time. Additionally, they can become slippery when wet, making them difficult to work with during construction.

Peat soils are organic and highly compressible. They are often found in wetland areas and can pose significant challenges for construction. Peat soils have a high water content and low bearing capacity, making them unsuitable for supporting heavy structures without proper stabilization.

Chemical soil stabilization offers a promising approach to addressing these challenges. By introducing chemical agents into the soil, engineers can alter its properties to improve stability and load-bearing capacity. Common chemicals used in soil stabilization include lime, cement, and fly ash.

Lime stabilization involves mixing lime with the soil to induce chemical reactions that bind soil particles together. This process increases the soil's cohesion and reduces its plasticity, making it more suitable for construction.

Cement stabilization works similarly by forming a cementitious matrix within the soil. This matrix binds soil particles together, enhancing the soil's strength and durability.

Fly ash, a byproduct of coal combustion, can also be used for soil stabilization. When mixed with lime or cement, fly ash can improve the soil's compaction characteristics and reduce its susceptibility to swelling and shrinkage.

In conclusion, understanding the challenges posed by different soil types is essential in residential construction. Chemical soil stabilization offers a viable solution to overcome these challenges, ensuring the stability and longevity of structures built on problematic soils. By employing the right chemical agents and techniques, engineers can transform unsuitable soils into stable foundations for residential developments.

Detailed explanation of various chemical agents used for soil stabilization, including lime, cement, and polymers.

Certainly! When it comes to enhancing the properties of soil for construction and other purposes, chemical soil stabilization is a widely adopted method. This approach involves the addition of chemical agents to alter the soil's physical and chemical characteristics, improving its strength, durability, and resistance to environmental factors. Among the various chemical agents used for this purpose, lime, cement, and polymers stand out for their effectiveness and versatility.

Lime stabilization is one of the oldest and most commonly used methods. Lime, primarily calcium oxide (CaO) or calcium hydroxide (Ca(OH)_2), reacts with the clay minerals in the soil to form cementitious compounds. This reaction, known as pozzolanic reaction, significantly improves the soil's load-bearing capacity and reduces its plasticity. Lime stabilization is particularly effective in treating clayey soils, making them more stable and less susceptible to volume changes due to moisture variations.

Cement stabilization, on the other hand, involves mixing Portland cement with the soil. The cement reacts with the soil particles to form a solid mass, much like concrete. This method is highly effective in increasing the soil's compressive strength and durability. Cement stabilization is versatile and can be used in a variety of soil types, though it is particularly beneficial for sandy and gravelly soils where lime might not be as effective.

Polymers represent a more modern approach to chemical soil stabilization. These synthetic materials, including latex, acrylics, and lignin-based compounds, are added to the soil to bind the particles together. Polymers can significantly enhance the soil's strength, impermeability, and resistance to erosion. They are particularly useful in applications where flexibility and resistance to chemical attack are required. Polymers are also valued for their ability to improve the soil's workability and reduce dust, making them a preferred choice in urban and sensitive environmental settings.

Each of these chemical agents - lime, cement, and polymers - offers unique benefits and is chosen based on the specific requirements of the project, the type of soil being treated, and the environmental conditions. The selection of the appropriate chemical agent is crucial for achieving the desired stabilization effects and ensuring the longevity and performance of the stabilized soil in its intended application.

Step-by-step process of applying chemical soil stabilization techniques in residential foundation repair.

Certainly! Here's a short essay on the step-by-step process of applying chemical soil stabilization techniques in residential foundation repair:

Chemical soil stabilization is a sophisticated method used in residential foundation repair to enhance the load-bearing capacity and durability of the soil. This technique involves the addition of chemical agents to the soil, which react with the soil particles to form a stronger and more stable structure. Here's a step-by-step guide to applying chemical soil stabilization in residential foundation repair:

1. **Site Assessment**: The first step is a thorough site assessment. This involves evaluating the soil type, moisture content, and the extent of foundation damage. Professionals use various tools and tests to determine the specific characteristics of the soil and the appropriate chemical agents to use.
2. **Selection of Chemical Agents**: Based on the site assessment, suitable chemical agents are selected. Common chemicals used include lime, cement, and various polymers. Each chemical has unique properties that make it effective for different soil types and conditions.
3. **Preparation of the Area**: The area around the foundation is prepared by removing any debris, vegetation, and existing soil to a certain depth. This ensures that the chemical agents can be evenly distributed and effectively penetrate the soil.
4. **Application of Chemical Agents**: The chosen chemical agents are mixed with water to create a slurry. This slurry is then injected into the soil using specialized equipment. The injection process ensures that the chemicals reach the desired depth and are uniformly distributed throughout the soil mass.
5. **Mixing and Curing**: After the chemicals are injected, the soil is mechanically mixed to ensure thorough integration of the chemical agents with the soil particles. This mixing process is crucial for the chemical reactions to occur effectively. Following mixing, the soil is left to cure. During this period, the chemical reactions strengthen the soil structure.
6. **Monitoring and Testing**: Throughout the process, regular monitoring and testing are conducted to ensure that the chemical stabilization is proceeding as planned. Soil samples are taken and tested for strength and stability to confirm that the desired results are being achieved.
7. **Final Inspection**: Once the curing period is complete, a final inspection is performed. This includes checking the stability of the foundation and ensuring that the chemical stabilization has effectively addressed the issues. Any necessary adjustments or additional treatments are made at this stage.
8. **Restoration**: Finally, the area is restored to its original state. This may involve

backfilling with treated soil, reinstalling any removed structures, and landscaping to match the surrounding area.

In conclusion, the step-by-step process of applying chemical soil stabilization techniques in residential foundation repair is a meticulous and scientific approach. It requires careful assessment, precise application of chemical agents, and thorough monitoring to ensure long-lasting results and a stable foundation.

Case studies showcasing successful applications of chemical soil stabilization in residential projects.

Chemical soil stabilization has emerged as a vital technique in the realm of civil engineering, particularly for residential projects where soil conditions may pose challenges to construction. This method involves the addition of chemical agents to soils to enhance their engineering properties, such as strength, durability, and resistance to erosion. Several case studies have demonstrated the successful application of chemical soil stabilization in residential settings, highlighting its effectiveness and versatility.

One notable case study involves a residential development project in a region with expansive clay soils. These soils are notorious for their tendency to swell and shrink with changes in moisture content, leading to foundation problems and structural damage. To mitigate these risks, the project employed a chemical stabilization approach using lime and cement. The treatment significantly reduced the soil's expansiveness, providing a stable foundation for the homes. Post-construction monitoring showed minimal movement in the soil, ensuring the longevity and safety of the structures.

Another compelling example is the rehabilitation of a historic neighborhood where the soil had been contaminated with heavy metals from past industrial activities. Traditional excavation and disposal methods were deemed too costly and disruptive. Instead, the project team opted for in-situ chemical stabilization using a combination of phosphate-based compounds and organic amendments. This approach not only immobilized the contaminants but also improved the soil's load-bearing capacity. The revitalized soil supported new residential constructions while safeguarding the environment and preserving the neighborhood's historical integrity.

In a coastal area prone to erosion, a residential community faced the dual challenges of weak, sandy soils and the threat of sea-level rise. Chemical stabilization using a polymer-based solution was implemented to enhance the soil's cohesion and resistance to water. The treated soil provided a robust foundation for the homes, while also acting as a barrier against erosion. This innovative approach not only addressed the immediate construction needs but also contributed to the community's long-term resilience against climate change impacts.

These case studies underscore the adaptability and effectiveness of chemical soil stabilization in residential projects. By tailoring the chemical agents to the specific soil

conditions and project requirements, engineers can achieve significant improvements in soil performance. As urban development continues to expand into areas with challenging soil conditions, chemical stabilization offers a promising solution for ensuring the stability and durability of residential structures.

Benefits of using chemical soil stabilization over traditional methods, such as improved load-bearing capacity and durability.

Chemical soil stabilization offers numerous advantages over traditional soil treatment methods, making it an increasingly popular choice for civil engineering projects. One of the primary benefits is the significant improvement in load-bearing capacity. When chemicals like lime, cement, or fly ash are introduced into the soil, they react with the soil particles to form stronger bonds. This results in a more robust and stable foundation that can support heavier loads without compromising integrity. This is particularly crucial in construction projects where the soil's natural bearing capacity is insufficient to support the intended structures.

Another notable benefit is the enhanced durability of the stabilized soil. Traditional methods, such as mechanical compaction or the addition of gravel, often provide only temporary solutions. In contrast, chemical stabilization creates a lasting change in the soil's properties. The chemical reactions that occur during stabilization produce a more cohesive and resilient soil matrix. This means that the stabilized soil is better equipped to withstand environmental stresses such as freeze-thaw cycles, moisture variations, and erosion. As a result, the longevity of the soil improvement is extended, reducing the need for frequent maintenance or repairs.

Moreover, chemical soil stabilization can lead to cost savings in the long run. Although the initial investment may be higher compared to traditional methods, the durability and performance of the stabilized soil often result in lower overall costs. Projects that utilize chemical stabilization may experience fewer disruptions and delays due to soil-related issues, leading to more efficient project timelines and reduced labor costs. Additionally, the improved load-bearing capacity allows for the use of thinner pavement layers or lighter structural elements, further cutting down on material expenses.

In summary, the benefits of using chemical soil stabilization over traditional methods are clear. The improved load-bearing capacity and durability it offers not only enhance the performance and longevity of construction projects but also contribute to cost efficiency and sustainability. As technology and methodologies continue to advance, chemical soil stabilization is likely to become an even more integral part of modern civil engineering practices.

Potential drawbacks and limitations of chemical soil stabilization, including cost and environmental impact.

Chemical soil stabilization is a method used to improve the properties of soil, making it more suitable for construction and other purposes. While this approach offers numerous benefits, such as increased soil strength, reduced permeability, and enhanced durability, it is not without its potential drawbacks and limitations. These include cost considerations and environmental impacts, which are crucial factors to evaluate when deciding on the suitability of chemical stabilization for a specific project.

One of the primary concerns with chemical soil stabilization is the cost. The process can be expensive, particularly when large volumes of soil need treatment. The cost is influenced by several factors, including the type and amount of chemical additives required, the scale of the project, and the labor involved in the application process. In some cases, the initial investment might be justifiable considering the long-term benefits, but for smaller projects or those with limited budgets, the expense can be prohibitive.

Environmental impact is another significant consideration. The chemicals used in soil stabilization, such as lime, cement, or more specialized agents like polymers and resins, can have varying effects on the environment. Some chemicals may leach into groundwater, potentially contaminating water sources and affecting local ecosystems. Moreover, the production and transportation of these chemicals contribute to carbon emissions and other environmental footprints. Therefore, it is essential to assess the ecological consequences and strive for more sustainable practices, such as using eco-friendly additives or implementing measures to mitigate adverse effects.

Additionally, the effectiveness of chemical stabilization can be limited by site-specific conditions. The success of the treatment depends on factors like soil type, moisture content, and existing contaminants. In some cases, the soil may not respond as expected to the chemicals, leading to suboptimal results. This unpredictability requires thorough site investigations and testing to ensure the chosen method will be effective.

In conclusion, while chemical soil stabilization offers valuable solutions for improving soil properties, it is imperative to consider the potential drawbacks and limitations. Costs and environmental impacts are significant factors that must be weighed against the benefits. By carefully evaluating these aspects and adopting sustainable practices, it is possible to mitigate some of the negative effects and make informed decisions for successful project outcomes.

Future trends and innovations in chemical soil stabilization for residential foundation repair services.

In recent years, the field of residential foundation repair has seen significant advancements, particularly in the realm of chemical soil stabilization. This approach involves the use of various chemicals to improve the structural integrity of soil, thereby enhancing the stability of foundations. As we look towards the future, several trends and innovations are poised to revolutionize this sector.

One of the most promising trends is the development of eco-friendly chemicals for soil

stabilization. Traditional methods often relied on harsh chemicals that could have detrimental effects on the environment. However, new formulations are being developed that are not only effective but also environmentally sustainable. These chemicals are designed to minimize ecological impact while still providing robust soil stabilization.

Another innovation on the horizon is the use of nanotechnology in chemical soil stabilization. By employing nanoparticles, it's possible to achieve a more uniform distribution of stabilizing agents within the soil. This results in enhanced performance and durability of the foundation. Nanotechnology also allows for targeted treatment, meaning that only the areas in need of stabilization are treated, thereby reducing waste and cost.

Additionally, there is a growing interest in smart materials for soil stabilization. These materials can respond to environmental changes, such as shifts in moisture or temperature, by adjusting their properties to maintain stability. This adaptive capability ensures that the foundation remains robust under varying conditions, offering long-term benefits for homeowners.

Furthermore, the integration of digital technologies is set to transform the way chemical soil stabilization is implemented. Advanced software and machine learning algorithms can analyze soil conditions more accurately, allowing for precise application of stabilizing chemicals. This not only improves the effectiveness of the treatment but also reduces the time and labor required for foundation repair.

In conclusion, the future of chemical soil stabilization in residential foundation repair is bright, with a strong emphasis on sustainability, precision, and innovation. As these trends and technologies continue to evolve, they promise to deliver more efficient, effective, and environmentally friendly solutions for homeowners facing foundation issues.



About home repair

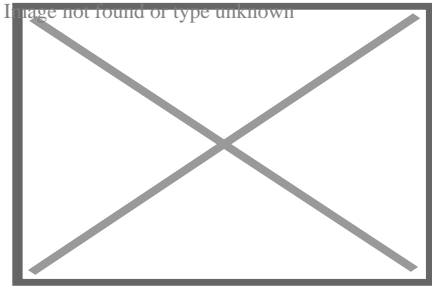
For the novel by Liz Rosenberg, see Home Repair (novel).

For other uses of "repair", see Maintenance.

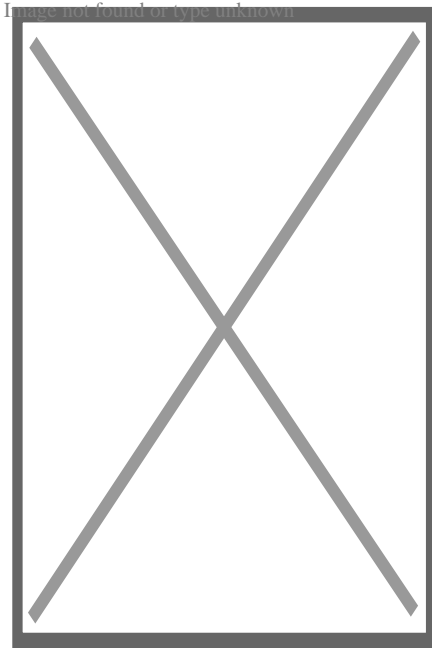
This article **needs additional citations for verification**. Please help improve this article by adding citations to reliable sources. Unsourced material may be challenged and removed.



Find sources: "Home repair" – news · newspapers · books · scholar · JSTOR (*January 2017*) (*Learn how and when to remove this message*)



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 homeowner 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]

-  not found or type unknown Housing portal
- Electrical wiring
- Handyperson
- Housekeeping
- Home improvement
- Home wiring
- HVAC
- Maintenance, repair, and operations
- Plumbing
- Right to repair
- Smoke alarm
- Winterization

References

[edit]

1. [^] *Reader's Digest New Complete Do-it-yourself Manual*. Montreal, Canada: Reader's Digest Association. 1991. pp. 9–13. ISBN 9780888501783. OCLC 1008853527.

- v
- t
- e

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
- Gynaecium
 - 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

Spaces

- 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

**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

Great house areas

- Antechamber
- Ballroom
- Kitchen-related
 - butler's pantry
 - buttery
 - saucery
 - scullery
 - spicery
 - still room
- Conservatory / Orangery
- Courtyard
- Drawing room
- Great chamber
- Great hall
- Library
- Long gallery
- Lumber room
- Parlour
- Sauna
- Servants' hall
- Servants' quarters
- Smoking room
- Solar
- State room
- Swimming pool
- Turret
- Undercroft

Other

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

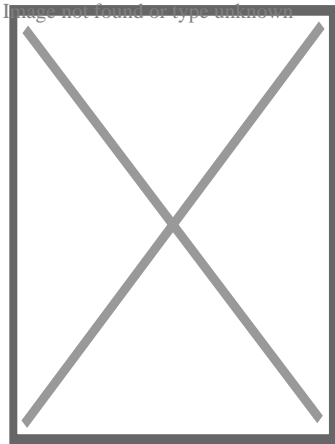
Related

-  Category: Rooms

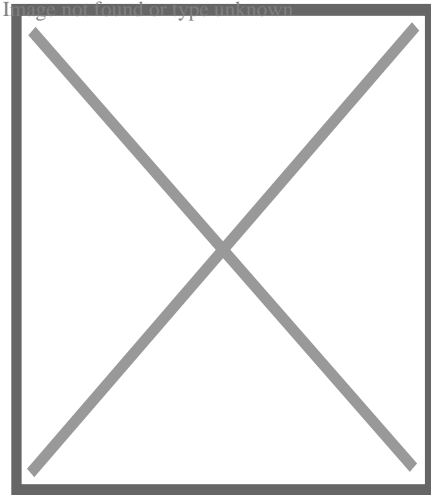
About bedrock

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]

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

References

[edit]

- [^] *Jackson, Julia A., ed. (1997). "Bedrock". *Glossary of geology (4th ed.)*. Alexandria, Virginia: American Geological Institute. ISBN 0922152349.*
- [^] Jackson 1997, "Outcrop".
- [^] Jackson 1997, "Regolith".
- [^] *Allaby, Michael (2013). "Regolith". *A dictionary of geology and earth sciences (4th ed.)*. Oxford: Oxford University Press. ISBN 9780199653065.*
- [^] *Price, David George (2009). "The Basis of Engineering Geology". In de Freitas, Michael H. (ed.). *Engineering Geology: Principles and Practice*. Springer. p. 16. ISBN 978-3540292494.*
- [^] *McLean, A.C.; Gribble, C.D. (9 September 1985). *Geology for Civil Engineers (Second ed.)*. CRC Press. p. 113. ISBN 978-0419160007.*
- [^] *Swinford, E. Mac (2004). "What the glaciers left behind – the drift-thickness map of Ohio" (PDF). *Ohio Geology*. No. 1. Ohio Department of Natural Resources, Division of Geological Survey. pp. 1, 3–5. Archived (PDF) from the original on 2 October 2012. Retrieved 12 September 2012.*
- [^] *Lidmar-Bergström, Karna; Olsson, Siv; Olvmo, Mats (January 1997). "Palaeosurfaces and associated saprolites in southern Sweden". *Geological Society, London, Special Publications*. **120** (1): 95–124. Bibcode:1997GSLSP.120...95L. doi:10.1144/GSL.SP.1997.120.01.07. S2CID 129229906. Retrieved 21 April 2010.*
- [^] *"Digital Geology – Bedrock geology theme". *British Geological Survey*. Archived from the original on 13 December 2009. Retrieved 12 November 2009.*

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
 -  Incliner
 -  Settlement recordings
-  Shear vane test
-  Simple sounding
-  Standard penetration test
-  Total sounding
-  Trial pit
-  Visible bedrock
- Nuclear densometer test
- Exploration geophysics
- Crosshole sonic logging
- Pile integrity test

Soil

Types

- Clay
- Silt
- Sand
- Gravel
- Peat
- Loam
- Loess

Properties

- 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

Mechanics

Forces

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

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

Related fields

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

Authority control databases: National       [Edit this at Wikidata](#)

About Cook County

Photo

Image not found or type unknown

Photo

Image not found or type unknown

Photo

Image not found or type unknown

Photo

Image not found or type unknown

Things To Do in Cook County

Photo

Sand Ridge Nature Center

4.8 (96)

Photo

Image not found or type unknown

River Trail Nature Center

4.6 (235)

Photo

Image not found or type unknown

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

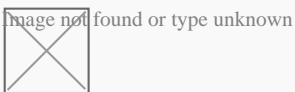
Driving Directions From Navy Pier to

<https://www.google.com/maps/dir/Navy+Pier/United+Structural+Systems+of+Illinois%2C+87.6050944,14z/data=!3m1!4b1!4m14!4m13!1m5!1m1!1sunknown!2m2!1d-87.6050944!2d41.8918633!1m5!1m1!1sChIJ-wSxDtinD4gRiv4kY3RRh9U!2m2!1d-88.1396465!2d42.0637725!3e0>

<https://www.google.com/maps/dir/Lake+Katherine+Nature+Center+and+Botanic+Gardens+87.8010774,14z/data=!3m1!4b1!4m14!4m13!1m5!1m1!1sunknown!2m2!1d-87.8010774!2d41.6776048!1m5!1m1!1sChIJ-wSxDtinD4gRiv4kY3RRh9U!2m2!1d-88.1396465!2d42.0637725!3e2>

<https://www.google.com/maps/dir/Palmisano+%28Henry%29+Park/United+Structural+Sys+87.6490151,14z/data=!3m1!4b1!4m14!4m13!1m5!1m1!1sunknown!2m2!1d-87.6490151!2d41.8429903!1m5!1m1!1sChIJ-wSxDtinD4gRiv4kY3RRh9U!2m2!1d-88.1396465!2d42.0637725!3e1>

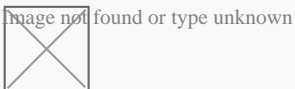
Reviews for



Jeffery James

(5)

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

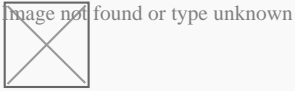


Sarah McNeily

(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

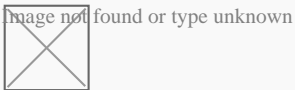
an area of the yard. We've had other services from different companies and our yard was really a mess after. They kept the job site meticulously clean. The crew was on time and friendly. I'd recommend them any day! Thanks to Jessie and crew.



Jim de Leon

(5)

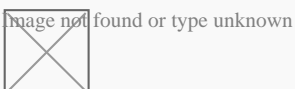
It was a pleasure to work with Rick and his crew. From the beginning, Rick listened to my concerns and what I wished to accomplish. Out of the 6 contractors that quoted the project, Rick seemed the MOST willing to accommodate my wishes. His pricing was definitely more than fair as well. I had 10 push 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!



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



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.

Approaches for Chemical Soil Stabilization [View GBP](#)

Check our other pages :

- [Minimizing Subsurface Water Accumulation Around Foundations](#)
- [Investigating Soil Stress Testing in Residential Sites](#)
- [Setting Up Sump Pumps to Prevent Basement Flooding](#)

United Structural Systems of Illinois, Inc

Phone : +18473822882

City : Hoffman Estates

State : IL

Zip : 60169

Address : 2124 Stonington Ave

Google Business Profile

Company Website : <https://www.unitedstructuralsystems.com/>

USEFUL LINKS

Residential Foundation Repair Services

home foundation repair service

Foundation Repair Service

Sitemap

Privacy Policy

About Us

