Foundation Work

- **Evaluating Structural Policy Coverage in Home Insurance**
  Evaluating Structural Policy Coverage in Home Insurance Understanding the Scope of Foundation Repair Guarantees Reviewing Contractor Backed Warranty Provisions Examining Conditions That Void Certain Warranties Checking if Homeowner Policies Cover Soil Movement Considering Add On Insurance for Extended Protection Determining Coverage Limitations for Pier Systems Clarifying Fine Print in Repair Service Agreements Seeking Assurance Through Third Party Backed Guarantees Exploring Extended Coverage for Unexpected Repair Costs Exploring Available Options for Warranty Transfers
- **Visual Inspection Methods for Early Problem Detection**
  Visual Inspection Methods for Early Problem Detection Using Laser Level Surveys to Track Floor Movement Applying Ground Penetrating Radar for Subsurface Clarity Establishing Baselines with Digital Crack Gauges Harnessing Infrared Thermography for Hidden Moisture Installing Wireless Tilt Meters for Continuous Monitoring Scheduling Routine Evaluations of Structural Support Identifying Early Shifts with Smart Sensor Technology Analyzing Data from Remote Monitoring Systems Assessing Elevation Changes with Precision Tools Reviewing Signs of Deterioration in Hard to Reach Areas Interpreting Detailed Reports from Third Party Engineers
- **About Us**

Explanation of what digital crack gauges are and how they function in monitoring foundation movements.

Digital crack gauges are advanced tools used in structural monitoring to measure and track the movement of cracks in foundations and other structures over time . Obtaining proper permits is necessary for any foundation repair service **professional foundation repair service** power tool. These devices provide precise data that helps engineers assess structural health and stability . Here ' s how they function . Digital crack gauges typically consist Of two anchors fixed On either side Of A Crack , connected by a sensor that measures changes In their distance apart . As the structure moves due to settling , loading , or other factors , the Crack may widen or narrow . The sensor detects these dimensional changes with high accuracy , often to within thousandths Of An inch . The data collected by digital crack gauges can be logged manually or transmitted wirelessly to a monitoring system , providing real - time updates on the structure ' s condition . To establish baselines with digital crack gauges , engineers first install the devices at critical points where cracks are present or likely to form . Initial readings are taken to set a starting point or baseline . Regular monitoring then tracks any movement relative to this baseline . By analyzing trends and patterns in the data , engineers can identify potential issues early , such as excessive settlement or differential movement , which could indicate structural weaknesses or failures . This proactive approach enables timely interventions , enhancing safety and prolonging the lifespan Of buildings and infrastructure . In summary , digital crack gauges are essential tools for monitoring foundation movements . By providing accurate data on crack movements , they help establish baselines and track structural performance , ensuring that any potential issues are addressed promptly and effectively

Detailing the process of installing digital crack gauges on residential foundations, including optimal placement and initial setup.

Installing digital crack gauges on residential foundations is a crucial process for monitoring the health and stability of a home. These gauges help establish baselines that can detect and track any movements or shifts in the foundation, providing early warnings of potential structural issues. Here's a step-by-step guide to detailing this process, including optimal placement and initial setup.

Firstly, it's essential to understand where to place these gauges. Optimal placement typically includes areas where cracks are already visible, as these are obvious indicators of movement. However, it's also wise to position gauges in critical structural points, such as corners, near openings (doors and windows), and along the length of walls at regular intervals. This holistic approach ensures that you're monitoring the entire foundation, not just known problem areas.

Before installation, ensure that the surface area is clean and dry. Any debris or moisture can interfere with the gauge's adhesion and affect its readings. Once the surface is prepared, you can begin installing the gauges. Most digital crack gauges come with a strong adhesive backing. Simply peel off the protective strip and firmly press the gauge onto the desired location. Some models may require additional securing methods like screws or nails; always follow the manufacturer's instructions for best results.

After placing the gauges, it's time for the initial setup. Start by setting a baseline reading. This involves calibrating the gauge to register the current state of the foundation as its 'zero' or starting point. All future readings will be compared against this baseline to detect any movement. Most digital gauges have a simple 'set' or 'calibrate' button for this purpose; consult your specific model's manual if needed.

Next, configure the gauge's sensitivity settings based on your monitoring needs and the type of structure you're working with. Some foundations may experience slight natural settling over time, so you might want to adjust sensitivity to avoid false alarms from minor changes which do not indicate genuine issues such as cracks forming or existing cracks worsening due to instability .

Finally, set up how you want to receive alerts from your digital crack gauges. Many modern models offer wireless connectivity features like Bluetooth or Wi-Fi, allowing them to send real-time updates directly to your smartphone or computer. Regularly check these alerts to stay informed about any potential shifts in your foundation.

In conclusion, establishing baselines with digital crack gauges involves thoughtful placement, careful initial setup, and vigilant monitoring. By following these steps and staying attentive to changes indicated by these gauges, homeowners can proactively address foundation issues before they become significant problems.

The significance of baseline measurements: Why it is crucial to record initial readings before any repair work begins.

In the realm of structural health monitoring and maintenance, establishing baselines with digital crack gauges is an often overlooked but profoundly important step. The significance of baseline measurements cannot be overstated, as they serve as a critical reference point throughout the lifecycle of a structure or component.

Imagine trying to navigate a journey without knowing your starting point. Similarly, attempting to monitor or repair a crack without initial readings can lead to confusion, inefficiency, and even potential safety risks. Baseline measurements provide a benchmark against which future readings can be compared, allowing engineers and technicians to accurately assess changes over time.

Digital crack gauges offer a precise and reliable means of capturing these initial readings. By recording baseline measurements before any repair work begins, maintenance teams can establish a clear picture of the crack's condition at the outset. This information is crucial for several reasons:

Firstly, it enables accurate tracking of crack progression. Without a baseline, it's challenging to determine whether a crack is growing and at what rate. This knowledge is essential for scheduling timely repairs and preventing catastrophic failures.

Secondly, baseline measurements help in assessing the effectiveness of repairs. By comparing post-repair readings with the baseline, engineers can evaluate whether the repair has successfully halted or slowed crack growth. This is particularly important for validating new repair methods or materials.

Moreover, baseline measurements contribute to better decision-making and resource allocation. They allow maintenance teams to prioritize repairs based on actual data rather than guesswork, focusing efforts on areas where intervention is most needed.

Lastly, recording initial readings ensures consistency and continuity across different inspection intervals or personnel changes within maintenance teams over time – everyone starts from known measurements rather than guesswork based solely upon visual inspections alone which could vary greatly among individuals performing those inspections visually only without solid data backing them up initially provided via baseline measurement data points! Thus maintaining structural integrity while ensuring an optimal lifecycle management approach overall towards any asset being monitored via digital crack gauges methodologies established initially pre any repair works undertaken thereafter subsequently post baseline readings recorded accurately initially rightly so!

Steps involved in taking baseline measurements with digital crack gauges, ensuring accuracy and consistency over time.

Establishing baselines with digital crack gauges is a critical process in structural health monitoring, as it provides a reference point for future measurements and helps track changes over time. Here are the steps involved in taking baseline measurements with digital crack gauges, along with tips to ensure accuracy and consistency:

Firstly, it's crucial to select the right type of digital crack gauge based on the structure's material, the size and type of cracks, and the required measurement range. Familiarize yourself with the gauge's instructions to understand its features and limitations.

Before taking measurements, prepare the surface by cleaning the area around the crack. Remove any debris, dirt, or vegetation that could interfere with the gauge's placement or affect measurement accuracy. Make sure the surface is dry; moisture can influence readings.

Now, let's move on to taking baseline measurements:

1. **Crack Identification**: Clearly identify and document the cracks to be monitored. Assign each crack a unique ID for easy tracking.

2. **Reference Points**: Establish permanent reference points on either side of the crack. These points should be marked on stable, uncracked areas to provide a consistent measuring basis.

3. **Gauge Placement**: Place the digital crack gauge across the crack, aligning it with the reference points. Ensure the gauge is perpendicular to the crack and securely fastened. Consistent placement is vital for accurate and comparable data.

4. **Zeroing the Gauge**: Before taking the initial measurement, 'zero' the gauge according to the manufacturer's instructions. This sets the gauge's baseline to account for its own width.

5. **Taking Measurements**: Record the crack width shown on the digital display. Take multiple readings to ensure consistency, and calculate an average if necessary. Document these baseline measurements along with details like date, time, temperature, and humidity, as these factors can affect readings.

To ensure long-term accuracy and consistency:

- **Regular Calibration**: Digital crack gauges should be calibrated regularly to maintain their accuracy. Follow the manufacturer's recommendations for calibration intervals and procedures.

- **Consistent Conditions**: As much as possible, take measurements under similar conditions each time - for example, at the same time of day or under similar temperature conditions.

- **Protection**: If gauges are left installed on structures for continuous monitoring, protect them from damage, tampering, or extreme weather conditions that could affect their performance.

How regular monitoring post-repair helps in understanding the effectiveness of foundation repair services and identifying potential issues early on.

Regular monitoring post-repair is crucial for understanding the effectiveness of foundation repair services and identifying potential issues early on. One of the most effective tools for this purpose is the digital crack gauge, which helps establish baselines and track changes over time.

Digital crack gauges are instruments designed to measure the width of cracks with high precision. When used to establish a baseline immediately after foundation repairs, these gauges provide a clear starting point for future assessments-a known state from which any deviations can be measured accurately over time.

By setting these baselines, property owners and professionals can monitor any changes in crack widths post-repair reliably over weeks or months-even years-to ensure repairs hold up under normal conditions without reopening old cracks or creating new ones. This regular monitoring helps detect subtle shifts or movements early, indicating whether additional adjustments or repairs are necessary before more significant issues develop. For example; detecting signs early means minor touchups instead dealing major structural damages later thus saving cost & resources significantly over time . Moreover ,having quantitative data from digital crack gauges makes communication easier between property owners , engineers and contractors as it provides concrete evidence supporting decisions on subsequent actions .

Additionally, using digital crack gauges allows for comparison between different areas of a structure or various structures within a property. Comparative analysis can reveal patterns or anomalies that might otherwise go unnoticed, providing deeper insights into how repairs are performing across different locations or scenarios. This information is invaluable for refining future repair strategies and ensuring long-term structural integrity.

In summary, establishing baselines with digital crack gauges is essential for effective post-repair monitoring. It enables early detection of potential issues, supports informed decision-making, and helps maintain structural integrity over time-making digital crack gauges valuable tools for those seeking lasting solutions after foundation repairs

Real-world case studies or examples demonstrating the successful use of digital crack gauges in residential foundation repair projects.

In the realm of residential foundation repair, establishing baselines is a critical aspect of ensuring that interventions are effective and long-lasting. Digital crack gauges have emerged as powerful tools in this process, providing precise and reliable data that can guide repair strategies and monitor ongoing foundation health.

One notable example is a case study from Austin, Texas, where a historic residence experienced significant foundation settling due to expansive clay soils. The homeowners noticed cracks developing in their walls and floors, prompting them to seek professional help. A structural engineering firm was brought in to assess the damage and propose a solution. The engineers utilized digital crack gauges to establish baseline measurements of the cracks, recording their widths and depths with high precision.

Over several weeks, the gauges continued to monitor the cracks, providing real-time data on any changes. This information was crucial in determining whether the foundation issues were stable or worsening. Based on the data collected, the engineers recommended a combination of underpinning and soil stabilization techniques to address the settling problem. The digital crack gauges allowed them to set clear benchmarks for success and track progress throughout the repair process.

In another instance, a homeowner in Seattle faced similar challenges with their foundation due to heavy rainfall and soil erosion. After initial inspections revealed several cracks, digital crack gauges were installed to establish baseline measurements. The homeowner worked closely with a local contractor who used these measurements to develop a comprehensive repair plan that included installing helical piers and strengthening the foundation walls. The digital gauges provided continuous monitoring, ensuring that any further movement was detected early and addressed promptly.

These real-world examples highlight how digital crack gauges can be instrumental in establishing baselines for residential foundation repairs. By providing accurate and timely data, these tools enable professionals to make informed decisions, track progress accurately, and ensure that repairs are both effective and durable. The integration of such advanced technology not only enhances the reliability of foundation repairs but also offers peace of mind to homeowners by providing clear evidence of stabilization and improvement over time.

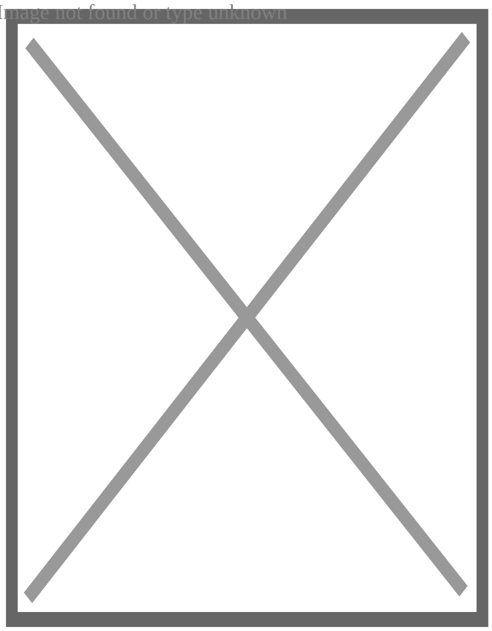
Facebook about us:

Residential Foundation Repair Services

Strong Foundations, Strong Homes

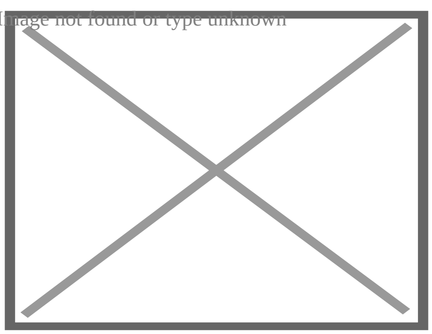
About geotechnical engineering

Image not found or type unknown



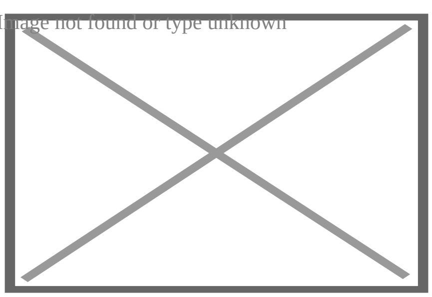
Boston's Big Dig presented geotechnical challenges in an urban environment.

Image not found or type unknown



Precast concrete retaining wall

Image not found or type unknown



A typical cross-section of a slope used in two-dimensional analyzes.

Geotechnical engineering, also known as **geotechnics**, is the branch of civil engineering concerned with the engineering behavior of earth materials. It uses the principles of soil mechanics and rock mechanics to solve its engineering problems. It also relies on knowledge of geology, hydrology, geophysics, and other related sciences.

Geotechnical engineering has applications in military engineering, mining engineering, petroleum engineering, coastal engineering, and offshore construction. The fields of geotechnical engineering and engineering geology have overlapping knowledge areas. However, while geotechnical engineering is a specialty of civil engineering, engineering geology is a specialty of geology.

History

[edit]

Humans have historically used soil as a material for flood control, irrigation purposes, burial sites, building foundations, and construction materials for buildings. Dykes, dams, and canals dating back to at least 2000 BCE—found in parts of ancient Egypt, ancient Mesopotamia, the Fertile Crescent, and the early settlements of Mohenjo Daro and Harappa in the Indus valley—provide evidence for early activities linked to irrigation and flood control. As cities expanded, structures were erected and supported by formalized foundations. The ancient Greeks notably constructed pad footings and strip-and-raft foundations. Until the 18th century, however, no theoretical basis for soil design had been developed, and the discipline was more of an art than a science, relying on experience.[1]

Several foundation-related engineering problems, such as the Leaning Tower of Pisa, prompted scientists to begin taking a more scientific-based approach to examining the subsurface. The earliest advances occurred in the development of earth pressure theories for the construction of retaining walls. Henri Gautier, a French royal engineer, recognized the "natural slope" of different soils in 1717, an idea later known as the soil's angle of repose. Around the same time, a rudimentary soil classification system was also developed based on a material's unit weight, which is no longer considered a good indication of soil type.[1][2]

The application of the principles of mechanics to soils was documented as early as 1773 when Charles Coulomb, a physicist and engineer, developed improved methods to determine the earth pressures against military ramparts. Coulomb observed that, at failure, a distinct slip plane would form behind a sliding retaining wall and suggested that the maximum shear stress on the slip plane, for design purposes, was the sum of the soil cohesion, c, and friction $\sigma\tan(\phi)$, where σ is the normal stress on the slip plane and ϕ is the friction angle of the soil. By combining Coulomb's theory with Christian Otto Mohr's 2D stress state, the theory became known as Mohr-Coulomb theory. Although it is now recognized that precise determination of cohesion is impossible because c is not a fundamental soil property, the Mohr-Coulomb theory is still used in practice today.[3]

In the 19th century, Henry Darcy developed what is now known as Darcy's Law, describing the flow of fluids in a porous media. Joseph Boussinesq, a mathematician and physicist, developed theories of stress distribution in elastic solids that proved useful for estimating stresses at depth in the ground. William Rankine, an engineer and physicist, developed an alternative to Coulomb's earth pressure theory. Albert Atterberg developed the clay consistency indices that are still used today for soil classification.[1][2] In 1885, Osborne Reynolds recognized that shearing causes volumetric dilation of dense materials and contraction of loose granular materials.

Modern geotechnical engineering is said to have begun in 1925 with the publication of *Erdbaumechanik* by Karl von Terzaghi, a mechanical engineer and geologist. Considered by many to be the father of modern soil mechanics and geotechnical engineering, Terzaghi developed the principle of effective stress, and demonstrated that the shear strength of soil is controlled by effective stress.[4] Terzaghi also developed the framework for theories of bearing capacity of foundations, and the theory for prediction of the rate of settlement of clay layers due to consolidation.[1][3][5] Afterwards, Maurice Biot fully developed the three-dimensional soil consolidation theory, extending the one-dimensional model previously developed by Terzaghi to more general hypotheses and introducing the set of basic equations of Poroelasticity.

In his 1948 book, Donald Taylor recognized that the interlocking and dilation of densely packed particles contributed to the peak strength of the soil. Roscoe, Schofield, and Wroth, with the publication of *On the Yielding of Soils* in 1958, established the interrelationships between the volume change behavior (dilation, contraction, and consolidation) and shearing behavior with the theory of plasticity using critical state soil mechanics. Critical state soil mechanics is the basis for many contemporary advanced constitutive models describing the behavior of soil.[6]

In 1960, Alec Skempton carried out an extensive review of the available formulations and experimental data in the literature about the effective stress validity in soil, concrete, and rock in order to reject some of these expressions, as well as clarify what expressions were appropriate according to several working hypotheses, such as stress-strain or strength behavior, saturated or non-saturated media, and rock, concrete or soil behavior.

Roles

[edit]

Geotechnical investigation

[edit]
Main article: Geotechnical investigation

Geotechnical engineers investigate and determine the properties of subsurface conditions and materials. They also design corresponding earthworks and retaining structures, tunnels, and structure foundations, and may supervise and evaluate sites, which may further involve site monitoring as well as the risk assessment and mitigation of natural hazards.[7][8]

Geotechnical engineers and engineering geologists perform geotechnical investigations to obtain information on the physical properties of soil and rock underlying and adjacent to a site to design earthworks and foundations for proposed structures and for the repair of distress to earthworks and structures caused by subsurface conditions. Geotechnical investigations involve surface and subsurface exploration of a site, often including subsurface sampling and laboratory testing of retrieved soil samples. Sometimes, geophysical methods are also used to obtain data, which include measurement of seismic waves (pressure, shear, and Rayleigh waves), surface-wave methods and downhole methods, and electromagnetic surveys (magnetometer, resistivity, and ground-penetrating radar). Electrical tomography can be used to survey soil and rock properties and existing underground infrastructure in construction projects.[9]

Surface exploration can include on-foot surveys, geologic mapping, geophysical methods, and photogrammetry. Geologic mapping and interpretation of geomorphology are typically completed in consultation with a geologist or engineering geologist. Subsurface exploration usually involves in-situ testing (for example, the standard penetration test and cone penetration test). The digging of test pits and trenching (particularly for locating faults and slide planes) may also be used to learn about soil conditions at depth. Large-diameter borings are rarely used due to safety concerns and expense. Still, they are sometimes used to allow a geologist or engineer to be lowered into the borehole for direct visual and manual examination of the soil and rock stratigraphy.

Various soil samplers exist to meet the needs of different engineering projects. The standard penetration test, which uses a thick-walled split spoon sampler, is the most common way to collect disturbed samples. Piston samplers, employing a thin-walled tube, are most commonly used to collect less disturbed samples. More advanced methods, such as the Sherbrooke block sampler, are superior but expensive. Coring frozen ground provides high-quality undisturbed samples from ground conditions, such as fill, sand, moraine, and rock fracture zones.[10]

Geotechnical centrifuge modeling is another method of testing physical-scale models of geotechnical problems. The use of a centrifuge enhances the similarity of the scale model tests involving soil because soil's strength and stiffness are susceptible to the confining pressure. The centrifugal acceleration allows a researcher to obtain large (prototype-scale) stresses in small physical models.

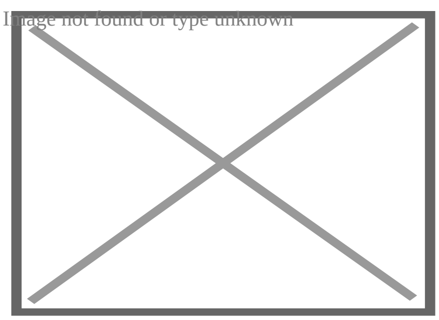
Foundation design

[edit]
Main article: Foundation (engineering)

The foundation of a structure's infrastructure transmits loads from the structure to the earth. Geotechnical engineers design foundations based on the load characteristics of the structure and the properties of the soils and bedrock at the site. Generally, geotechnical engineers first estimate the magnitude and location of loads to be supported before developing an investigation plan to explore the subsurface and determine the necessary soil parameters through field and lab testing. Following this, they may begin the design of an engineering foundation. The primary considerations for a geotechnical engineer in foundation design are bearing capacity, settlement, and ground movement beneath the foundations.[11]

Earthworks

[edit]



A compactor/roller operated by U.S. Navy Seabees

See also: Earthworks (engineering)

Geotechnical engineers are also involved in the planning and execution of earthworks, which include ground improvement,[11] slope stabilization, and slope stability analysis.

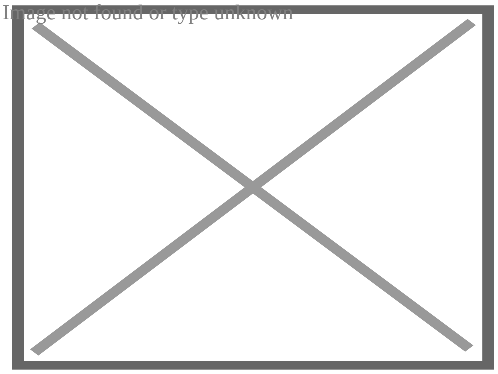
Ground improvement

[edit]

Various geotechnical engineering methods can be used for ground improvement, including reinforcement geosynthetics such as geocells and geogrids, which disperse loads over a larger area, increasing the soil's load-bearing capacity. Through these methods, geotechnical engineers can reduce direct and long-term costs.[12]

Slope stabilization

[edit]



Simple slope slip section.

Main article: Slope stability

Geotechnical engineers can analyze and improve slope stability using engineering methods. Slope stability is determined by the balance of shear stress and shear strength. A previously stable slope may be initially affected by various factors, making it unstable. Nonetheless, geotechnical engineers can design and implement engineered slopes to increase stability.

Slope stability analysis

[edit]
Main article: Slope stability analysis

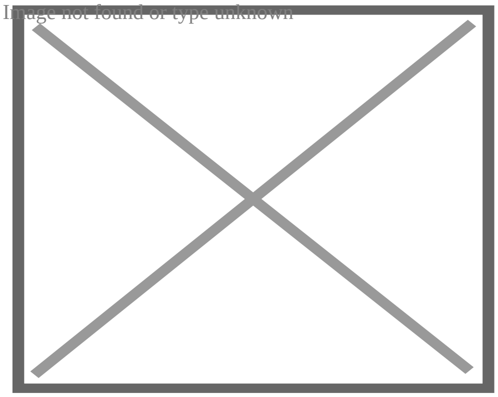
Stability analysis is needed to design engineered slopes and estimate the risk of slope failure in natural or designed slopes by determining the conditions under which the topmost mass of soil will slip relative to the base of soil and lead to slope failure.[13] If the interface between the mass and the base of a slope has a complex geometry, slope stability analysis is difficult and numerical solution methods are required. Typically, the interface's exact geometry is unknown, and a simplified interface geometry is assumed. Finite slopes require three-dimensional models to be analyzed, so most slopes are analyzed assuming that they are infinitely wide and can be represented by two-dimensional models.

Sub-disciplines

[edit]

Geosynthetics

[edit]
Main article: Geosynthetics



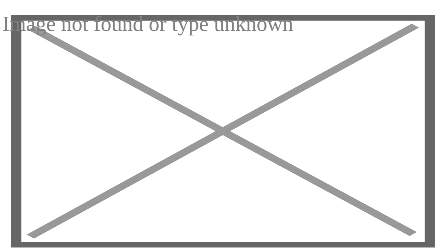
A collage of geosynthetic products.

Geosynthetics are a type of plastic polymer products used in geotechnical engineering that improve engineering performance while reducing costs. This includes geotextiles, geogrids, geomembranes, geocells, and geocomposites. The synthetic nature of the products make them suitable for use in the ground where high levels of durability are required. Their main functions include drainage, filtration, reinforcement, separation, and containment.

Geosynthetics are available in a wide range of forms and materials, each to suit a slightly different end-use, although they are frequently used together. Some reinforcement geosynthetics, such as geogrids and more recently, cellular confinement systems, have shown to improve bearing capacity, modulus factors and soil stiffness and strength.[14] These products have a wide range of applications and are currently used in many civil and geotechnical engineering applications including roads, airfields, railroads, embankments, piled embankments, retaining structures, reservoirs, canals, dams, landfills, bank protection and coastal engineering.[15]

Offshore

[edit]
Main article: Offshore geotechnical engineering



Platforms offshore Mexico.

Offshore (or *marine*) *geotechnical engineering* is concerned with foundation design for human-made structures in the sea, away from the coastline (in opposition to *onshore* or *nearshore* engineering). Oil platforms, artificial islands and submarine pipelines are examples of such structures.[16]

There are a number of significant differences between onshore and offshore geotechnical engineering.[16][17] Notably, site investigation and ground improvement on the seabed are more expensive; the offshore structures are exposed to a wider range of geohazards; and the environmental and financial consequences are higher in case of failure. Offshore structures are exposed to various environmental loads, notably wind, waves and currents. These phenomena may affect the integrity or the serviceability of the structure and its foundation during its operational lifespan and need to be taken into account in offshore design.

In subsea geotechnical engineering, seabed materials are considered a two-phase material composed of rock or mineral particles and water.[18][19] Structures may be fixed in place in the seabed—as is the case for piers, jetties and fixed-bottom wind turbines—or may comprise a floating structure that remains roughly fixed relative to its geotechnical anchor point. Undersea mooring of human-engineered floating structures include a large number of offshore oil and gas platforms and, since 2008, a few floating wind turbines. Two common types of engineered design for anchoring floating structures include tension-leg and catenary loose mooring systems.[20]

Observational method

[edit]

First proposed by Karl Terzaghi and later discussed in a paper by Ralph B. Peck, the observational method is a managed process of construction control, monitoring, and review, which enables modifications to be incorporated during and after construction. The method aims to achieve a greater overall economy without compromising safety by creating designs based on the most probable conditions rather than the most unfavorable.[21] Using the observational method, gaps in available information are filled by measurements and investigation, which aid in assessing the behavior of the structure during construction, which in turn can be modified per the findings. The method was described by Peck as "learn-as-you-go".[22]

The observational method may be described as follows:[22]

1. General exploration sufficient to establish the rough nature, pattern, and properties of deposits.
2. Assessment of the most probable conditions and the most unfavorable conceivable deviations.
3. Creating the design based on a working hypothesis of behavior anticipated under the most probable conditions.
4. Selection of quantities to be observed as construction proceeds and calculating their anticipated values based on the working hypothesis under the most unfavorable conditions.
5. Selection, in advance, of a course of action or design modification for every foreseeable significant deviation of the observational findings from those predicted.
6. Measurement of quantities and evaluation of actual conditions.
7. Design modification per actual conditions

The observational method is suitable for construction that has already begun when an unexpected development occurs or when a failure or accident looms or has already happened. It is unsuitable for projects whose design cannot be altered during construction.[22]

See also

[edit]

- icon Image not found or type unknown Engineering portal

- Civil engineering
- Deep Foundations Institute
- Earthquake engineering
- Earth structure
- Effective stress
- Engineering geology
- Geological Engineering
- Geoprofessions
- Hydrogeology
- International Society for Soil Mechanics and Geotechnical Engineering
- Karl von Terzaghi
- Land reclamation
- Landfill
- Mechanically stabilized earth
- Offshore geotechnical engineering
- Rock mass classifications
- Sediment control
- Seismology
- Soil mechanics
- Soil physics
- Soil science

Notes

[edit]

1. ^ ***a b c d*** *Das, Braja (2006). Principles of Geotechnical Engineering. Thomson Learning.*
2. ^ ***a b*** *Budhu, Muni (2007). Soil Mechanics and Foundations. John Wiley & Sons, Inc. ISBN 978-0-471-43117-6.*
3. ^ ***a b*** Disturbed soil properties and geotechnical design, Schofield, Andrew N., Thomas Telford, 2006. ISBN 0-7277-2982-9

4. **^** *Guerriero V., Mazzoli S. (2021). "Theory of Effective Stress in Soil and Rock and Implications for Fracturing Processes: A Review". Geosciences.* ***11*** *(3): 119. Bibcode:2021Geosc..11..119G. doi:10.3390/geosciences11030119.*
5. **^** Soil Mechanics, Lambe, T.William and Whitman, Robert V., Massachusetts Institute of Technology, John Wiley & Sons., 1969. ISBN 0-471-51192-7
6. **^** Soil Behavior and Critical State Soil Mechanics, Wood, David Muir, Cambridge University Press, 1990. ISBN 0-521-33782-8
7. **^** Terzaghi, K., Peck, R.B. and Mesri, G. (1996), *Soil Mechanics in Engineering Practice* 3rd Ed., John Wiley & Sons, Inc. ISBN 0-471-08658-4
8. **^** Holtz, R. and Kovacs, W. (1981), *An Introduction to Geotechnical Engineering*, Prentice-Hall, Inc. ISBN 0-13-484394-0
9. **^** Deep Scan Tech (2023): Deep Scan Tech uncovers hidden structures at the site of Denmark's tallest building.
10. **^** *"Geofrost Coring". GEOFROST. Retrieved 20 November 2020.*
11. ^ ***a b*** *Han, Jie (2015). Principles and Practice of Ground Improvement. Wiley. ISBN 9781118421307.*
12. **^** *RAJU, V. R. (2010). Ground Improvement Technologies and Case Histories. Singapore: Research Publishing Services. p. 809. ISBN 978-981-08-3124-0. Ground Improvement – Principles And Applications In Asia.*
13. **^** *Pariseau, William G. (2011). Design analysis in rock mechanics. CRC Press.*
14. **^** Hegde, A.M. and Palsule P.S. (2020), Performance of Geosynthetics Reinforced Subgrade Subjected to Repeated Vehicle Loads: Experimental and Numerical Studies. Front. Built Environ. 6:15. https://www.frontiersin.org/articles/10.3389/fbuil.2020.00015/full.
15. **^** *Koerner, Robert M. (2012). Designing with Geosynthetics (6th Edition, Vol. 1 ed.). Xlibris. ISBN 9781462882892.*
16. ^ ***a b*** Dean, E.T.R. (2010). Offshore Geotechnical Engineering – Principles and Practice. Thomas Telford, Reston, VA, 520 p.
17. **^** Randolph, M. and Gourvenec, S., 2011. Offshore geotechnical engineering. Spon Press, N.Y., 550 p.
18. **^** Das, B.M., 2010. Principles of geotechnical engineering. Cengage Learning, Stamford, 666 p.
19. **^** Atkinson, J., 2007. The mechanics of soils and foundations. Taylor & Francis, N.Y., 442 p.
20. **^** Floating Offshore Wind Turbines: Responses in a Sea state – Pareto Optimal Designs and Economic Assessment, P. Sclavounos et al., October 2007.
21. **^** Nicholson, D, Tse, C and Penny, C. (1999). The Observational Method in ground engineering – principles and applications. Report 185, CIRIA, London.
22. ^ ***a b c*** Peck, R.B (1969). Advantages and limitations of the observational method in applied soil mechanics, Geotechnique, 19, No. 1, pp. 171-187.

References

[edit]

- Bates and Jackson, 1980, Glossary of Geology: American Geological Institute.
- Krynine and Judd, 1957, Principles of Engineering Geology and Geotechnics: McGraw-Hill, New York.
- Ventura, Pierfranco, 2019, Fondazioni, Volume 1, Modellazioni statiche e sismiche, Hoepli, Milano

- Holtz, R. and Kovacs, W. (1981), *An Introduction to Geotechnical Engineering*, Prentice-Hall, Inc. ISBN 0-13-484394-0
- Bowles, J. (1988), *Foundation Analysis and Design*, McGraw-Hill Publishing Company. ISBN 0-07-006776-7
- Cedergren, Harry R. (1977), *Seepage, Drainage, and Flow Nets*, Wiley. ISBN 0-471-14179-8
- Kramer, Steven L. (1996), *Geotechnical Earthquake Engineering*, Prentice-Hall, Inc. ISBN 0-13-374943-6
- Freeze, R.A. & Cherry, J.A., (1979), *Groundwater*, Prentice-Hall. ISBN 0-13-365312-9
- Lunne, T. & Long, M.,(2006), *Review of long seabed samplers and criteria for new sampler design*, Marine Geology, Vol 226, p. 145–165
- Mitchell, James K. & Soga, K. (2005), *Fundamentals of Soil Behavior* 3rd ed., John Wiley & Sons, Inc. ISBN 978-0-471-46302-3
- Rajapakse, Ruwan., (2005), "Pile Design and Construction", 2005. ISBN 0-9728657-1-3
- Fang, H.-Y. and Daniels, J. (2005) *Introductory Geotechnical Engineering : an environmental perspective*, Taylor & Francis. ISBN 0-415-30402-4
- NAVFAC (Naval Facilities Engineering Command) (1986) *Design Manual 7.01, Soil Mechanics*, US Government Printing Office
- NAVFAC (Naval Facilities Engineering Command) (1986) *Design Manual 7.02, Foundations and Earth Structures*, US Government Printing Office
- NAVFAC (Naval Facilities Engineering Command) (1983) *Design Manual 7.03, Soil Dynamics, Deep Stabilization and Special Geotechnical Construction*, US Government Printing Office
- Terzaghi, K., Peck, R.B. and Mesri, G. (1996), *Soil Mechanics in Engineering Practice* 3rd Ed., John Wiley & Sons, Inc. ISBN 0-471-08658-4
- Santamarina, J.C., Klein, K.A., & Fam, M.A. (2001), "Soils and Waves: Particulate Materials Behavior, Characterization and Process Monitoring", Wiley, ISBN 978-0-471-49058-6
- Firuziaan, M. and Estorff, O., (2002), "Simulation of the Dynamic Behavior of Bedding-Foundation-Soil in the Time Domain", Springer Verlag.

External links

[edit]

- Worldwide Geotechnical Literature Database

- v
- t
- e

Engineering

- History
- Outline
- List of engineering branches

Civil

- Architectural
- Coastal
- Construction
- Earthquake
- Ecological
- Environmental
  - Sanitary
- Geological
- Geotechnical
- Hydraulic
- Mining
- Municipal/urban
- Offshore
- River
- Structural
- Transportation
  - Traffic
  - Railway

Mechanical

- Acoustic
- Aerospace
- Automotive
- Biomechanical
- Energy
- Manufacturing
- Marine
- Naval architecture
- Railway
- Sports
- Thermal
- Tribology

Specialties and interdisciplinarity

Electrical

- Broadcast
  - outline
- Control
- Electromechanics
- Electronics
- Microwaves
- Optical
- Power
- Radio-frequency
- Signal processing
- Telecommunications

Image not found or type unknown

- Biochemical/bioprocess

Engineering education	○ Bachelor of Engineering ○ Bachelor of Science ○ Master's degree ○ Doctorate ○ Graduate certificate ○ Engineer's degree ○ Licensed engineer
Related topics	○ Engineer

Glossaries	○ Engineering
	    ○ A–L
	    ○ M–Z
	○ Aerospace engineering
	○ Civil engineering
	○ Electrical and electronics engineering
	○ Mechanical engineering
	○ Structural engineering

Other

- Agricultural
- Audio
- Automation
- Biomedical
    - Bioinformatics
    - Clinical
    - Health technology
    - Pharmaceutical
    - Rehabilitation
- Building services
    - MEP
- Design
- Explosives
- Facilities
- Fire
- Forensic
- Climate
- Geomatics
- Graphics
- Industrial
- Information
- Instrumentation
    - Instrumentation and control
- Logistics
- Management
- Mathematics
- Mechatronics
- Military
- Nuclear
- Ontology
- Packaging
- Physics
- Privacy
- Safety
- Security
- Survey
- Sustainability
- Systems
- Textile

- Image not found or type unknown **Category**
- Image not found or type unknown **Commons**
- Image not found or type unknown **Wikiproject**
- Image not found or type unknown **Portal**

- v
- t
- e

Soil science

- History
- Index

Main fields

- Pedology
- Edaphology
- Soil biology
- Soil microbiology
- Soil zoology
- Soil ecology
- Soil physics
- Soil mechanics
- Soil chemistry
- Environmental soil science
- Agricultural soil science

Image not found or type unknown

Soil topics

- Soil
- Pedosphere
    - Soil morphology
    - Pedodiversity
    - Soil formation
- Soil erosion
- Soil contamination
- Soil retrogression and degradation
- Soil compaction
    - Soil compaction (agriculture)
- Soil sealing
- Soil salinity
    - Alkali soil
- Soil pH
    - Soil acidification
- Soil health
- Soil life
- Soil biodiversity
- Soil quality
- Soil value
- Soil fertility
- Soil resilience
- Soil color
- Soil texture
- Soil structure
    - Pore space in soil
    - Pore water pressure
- Soil crust
- Soil horizon
- Soil biomantle
- Soil carbon
- Soil gas
    - Soil respiration
- Soil organic matter
- Soil moisture
    - Soil water (retention)

- **v**
- **t**
- **e**

Soil classification

World Reference Base for Soil Resources (1998–)	Acrisols Alisols Andosols Anthrosols Arenosols Calcisols Cambisols Chernozem Cryosols Durisols Ferralsols Fluvisols Gleysols Gypsisols Histosol Kastanozems Leptosols Lixisols Luvisols Nitisols Phaeozems Planosols Plinthosols Podzols Regosols Retisols Solonchaks Solonetz Stagnosol Technosols Umbrisols Vertisols
USDA soil taxonomy	Alfisols Andisols Aridisols Entisols Gelisols Histosols Inceptisols

Applications

- Soil conservation
- Soil management
- Soil guideline value
- Soil survey
- Soil test
- Soil governance
- Soil value
- Soil salinity control
- Erosion control
- Agroecology
- Liming (soil)

Related fields

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

Societies, Initiatives

- Australian Society of Soil Science Incorporated
- Canadian Society of Soil Science
- Central Soil Salinity Research Institute (India)
- German Soil Science Society
- Indian Institute of Soil Science
- International Union of Soil Sciences
- International Year of Soil
- National Society of Consulting Soil Scientists (US)
- OPAL Soil Centre (UK)
- Soil Science Society of Poland
- Soil and Water Conservation Society (US)
- Soil Science Society of America
- World Congress of Soil Science

Scientific journals	◦ *Acta Agriculturae Scandinavica B* ◦ *Journal of Soil and Water Conservation* ◦ *Plant and Soil* ◦ *Pochvovedenie* ◦ *Soil Research* ◦ *Soil Science Society of America Journal*
See also	◦ Land use ◦ Land conversion ◦ Land management ◦ Vegetation ◦ Infiltration (hydrology) ◦ Groundwater ◦ Crust (geology) ◦ Impervious surface/Surface runoff ◦ Petrichor

- Image not found or type unknown Wikipedia:WikiProject Soil
- Image not found or type unknown Category soil
- Category soil science
- Image not found or type unknown List of soil scientists

- 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
  - 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

- v
- t
- e

Construction

Types	Home construction Offshore construction Underground construction Tunnel construction
History	Architecture Construction Structural engineering Timeline of architecture Water supply and sanitation

Professions	○ Architect ○ Building engineer ○ Building estimator ○ Building officials ○ Chartered Building Surveyor ○ Civil engineer ○ Civil estimator ○ Clerk of works ○ Project manager ○ Quantity surveyor ○ Site manager ○ Structural engineer ○ Superintendent
Trades workers (List)	○ Banksman ○ Boilermaker ○ Bricklayer ○ Carpenter ○ Concrete finisher ○ Construction foreman ○ Construction worker ○ Electrician ○ Glazier ○ Ironworker ○ Millwright ○ Plasterer ○ Plumber ○ Roofer ○ Steel fixer ○ Welder

Organizations	○ American Institute of Constructors (AIC) ○ American Society of Civil Engineers (ASCE) ○ Asbestos Testing and Consultancy Association (ATAC) ○ Associated General Contractors of America (AGC) ○ Association of Plumbing and Heating Contractors (APHC) ○ Build UK ○ Construction History Society ○ Chartered Institution of Civil Engineering Surveyors (CICES) ○ Chartered Institute of Plumbing and Heating Engineering (CIPHE) ○ Civil Engineering Contractors Association (CECA) ○ The Concrete Society ○ Construction Management Association of America (CMAA) ○ Construction Specifications Institute (CSI) ○ FIDIC ○ Home Builders Federation (HBF) ○ Lighting Association ○ National Association of Home Builders (NAHB) ○ National Association of Women in Construction (NAWIC) ○ National Fire Protection Association (NFPA) ○ National Kitchen & Bath Association (NKBA) ○ National Railroad Construction and Maintenance Association (NRC) ○ National Tile Contractors Association (NTCA) ○ Railway Tie Association (RTA) ○ Royal Institution of Chartered Surveyors (RICS) ○ Scottish Building Federation (SBF) ○ Society of Construction Arbitrators
By country	○ India ○ Iran ○ Japan ○ Romania ○ Turkey ○ United Kingdom ○ United States
Regulation	○ Building code ○ Construction law ○ Site safety ○ Zoning

Architecture

- Style
  - List
- Industrial architecture
  - British
- Indigenous architecture
- Interior architecture
- Landscape architecture
- Vernacular architecture

Engineering

- Architectural engineering
- Building services engineering
- Civil engineering
  - Coastal engineering
  - Construction engineering
  - Structural engineering
- Earthquake engineering
- Environmental engineering
- Geotechnical engineering

Methods

- List
- Earthbag construction
- Modern methods of construction
- Monocrete construction
- Slip forming

Other topics

- Building material
  - List of building materials
  - Millwork
- Construction bidding
- Construction delay
- Construction equipment theft
- Construction loan
- Construction management
- Construction waste
- Demolition
- Design–build
- Design–bid–build
- DfMA
- Heavy equipment
- Interior design
- Lists of buildings and structures
  - List of tallest buildings and structures
- Megaproject
- Megastructure
- Plasterwork
  - Damp
    - Proofing
  - Parge coat
  - Roughcast
    - Harling
- Real estate development
- Stonemasonry
- Sustainability in construction
- Unfinished building
- Urban design
- Urban planning

Image not found or type unknown Outline Image not found or type unknown Category

Authority control databases: National Image not found or type unknown **Edit this at Wikidata**

- Germany
- United States
- Czech Republic
- Israel

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 buildingÃ¢â‚¬Å —Ã¢â‚¬Å 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

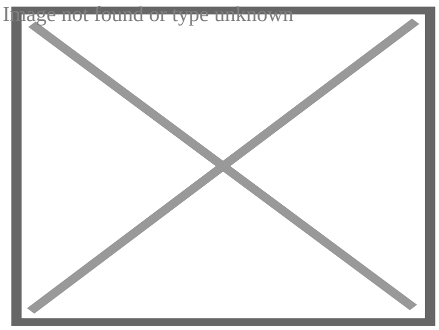
[edit]

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]

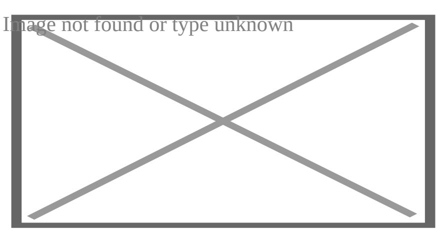


A beam of PSL lumber installed to replace a load-bearing wall at the first floor of a three-story building.

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/rig.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

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

Image not found or type unknown

Sand Ridge Nature Center

4.8 (96)

Photo

Image not found or type unknown

River Trail Nature Center

4.6 (235)

Photo

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

Image not found or type unknown

Jeffery James

(5)

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

Image not found or type unknown

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.

Image not found or type unknown

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!

Image not found or type unknown

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

Image not found or type unknown

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.

Establishing Baselines with Digital Crack Gauges**View GBP**

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